

DEPARTMENT OF
CITY PLANNING

200 N. SPRING STREET, ROOM 525
LOS ANGELES, CA 90012-4801
AND
6262 VAN NUYS BLVD., SUITE 351
VAN NUYS, CA 91401

CITY PLANNING COMMISSION

WILLIAM ROSCHEN

PRESIDENT

REGINA M. FREER

VICE-PRESIDENT

SEAN O. BURTON

DIEGO CARDOSO

GEORGE HOVAGUIMIAN

JUSTIN KIM

ROBERT LESSIN

BARBARA ROMERO

DANA M. PERLMAN

JAMES WILLIAMS

COMMISSION EXECUTIVE ASSISTANT II

(213) 978-1300

CITY OF LOS ANGELES
CALIFORNIA



ANTONIO R. VILLARAIGOSA
MAYOR

EXECUTIVE OFFICES

MICHAEL J. LOGRANDE

DIRECTOR

(213) 978-1271

ALAN BELL, AICP

DEPUTY DIRECTOR

(213) 978-1272

EVA YUAN-MCDANIEL

DEPUTY DIRECTOR

(213) 978-1273

LISA M. WEBBER, AICP

DEPUTY DIRECTOR

(213) 978-1274

FAX: (213) 978-1275

INFORMATION

www.planning.lacity.org

FINAL ENVIRONMENTAL IMPACT REPORT

CORNFIELD ARROYO SECO SPECIFIC PLAN

VOLUME III of III

This document, together with the Original DEIR, the Recirculated Portions DEIR, and their appendices comprises the Final EIR as required under the California Environmental Quality Act

Cornfield Arroyo Seco Specific Plan

ENV-2009-599-EIR

CPC-2009-598-SP

State Clearinghouse No. 2009031002

Council District 1

Project Location: The Plan is located entirely within Los Angeles City Council District One, and comprises portions of the Central City North, Northeast, and Silverlake-Echo Park Community Plan areas. The Plan includes two of the opportunity areas identified in the Los Angeles River Revitalization Masterplan—the Cornfield and Arroyo Seco (City of Los Angeles 2007b).

Project Description: The project, which is the Cornfield Arroyo Seco Specific Plan, guides the future development of an approximately 660 acre area. The Plan is intended to transform an underserved and neglected vehicular-oriented industrial and public facility area into a cluster of mixed-use, pedestrian oriented and aesthetically pleasing neighborhoods. The Plan is also intended to maintain and enhance the concentration of jobs, provide a range of housing choices, provide shops and services for everyday needs, increase access to open space, reduce per capita water and energy use, and lessen dependence on the automobile by facilitating pedestrian and transit mobility and encouraging bicycle use. To facilitate the realization of these goals the Plan includes the designation of new mixed-use zoning districts that will expand the range and intensities of permitted uses, establish building height, massing, façade, open space and conservation standards, while also requiring the provision of unbundled parking, reducing parking requirements, expanding bicycle parking standards, establishing transportation demand management strategies, implementing new street and urban design standards, and providing access to a variety of transit options including frequent light rail and bus connections, shared vehicles and bicycles, and taxis. For complete details of the project please refer to the complete draft of the Plan at:

<https://sites.google.com/site/cornfieldsla/>

PREPARED BY:

Los Angeles Department of City Planning

August 2012

**CORNFIELD ARROYO SECO SPECIFIC PLAN
FINAL ENVIRONMENTAL IMPACT REPORT**

RESPONSE TO COMMENTS

TABLE OF CONTENTS

VOLUME I

Chapter

Page

1	Introduction to the Final EIR	1-1
2	List of Commenters (Original and RP-DEIR) Comments on the Original DEIR Comments on the RP-DEIR	2-1

VOLUME II

Chapter

3	Responses to Comments Master Responses	3-1 3-1
4	Corrections and Additions	4-1
5	Supplemental Analysis of the Project Revisions	5-1

VOLUME III

Appendices

A1	Mitigation Monitoring and Plan (MMP) –Appendix A1 of the Draft CASP
A2	CalEE Mod Input Table
A3	CalEEMod Energy Output Tables
A4	SCAG Model Development Report
A5	August 6, 2012 Draft Cornfield Arroyo Seco Specific Plan (Draft CASP)
A6	Potential Hazardous Property Inventory- Appendix A1.B. of the Draft CASP

A1 Mitigation Monitoring and Plan (MMP) –Appendix A1 of the Draft CASP

MITIGATION MONITORING PLAN

Section 21081.6 of the Public Resources Code and Section 15097 of the CEQA Guidelines require adoption of a Mitigation Monitoring or Reporting Plan (MMP) for all projects for which an Environmental Impact Report (EIR) or Mitigated Negative Declaration (MND) has been prepared. This requirement was originally mandated by Assembly Bill (AB) 3180 which was enacted on January 1, 1989 to ensure the implementation of all mitigation measures adopted through the California Environmental Quality Act (CEQA) process. Specifically, Section 21081.6 of the Public Resources Code states that "...the agency shall adopt a reporting or monitoring Plan for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment...[and that the Plan]...shall be designed to ensure compliance during project implementation."

AB 3180 provided general guidelines for implementing monitoring and reporting Plans, which are enumerated in more detail in Section 15097 of the CEQA Guidelines. Specific reporting and/or monitoring requirements to be enforced during project implementation are defined prior to final approval of the project. The proposed monitoring Plan will be considered by the City of Los Angeles (the lead agency) prior to certification of the EIR. Although the lead agency may delegate reporting or monitoring responsibilities to other agencies or entities, it "...remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the Plan."

The Mitigation Monitoring Plan describes the procedures for the implementation of the mitigation measures to be adopted for the proposed project as identified in the Draft and Final EIR. The MMP for the proposed project will be in place through the planning horizon of the Plan (2035) or until the Plan and EIR are updated again. While the Proposed Project is a planning document, it is anticipated that development that occurs pursuant to the plan will include the following phases: design (pre-construction), construction, and operation (post-construction both prior to and post-occupancy), and therefore some mitigation measures are tied to these phases. The City is responsible for administering the MMP activities. The City may choose to delegate parts of the Plan (particularly enforcement and monitoring) to staff, other City departments (e.g., Department of Building and Safety, Department of Public Works, etc.), consultants, or contractors. The City may choose to designate one or more environmental monitor(s) (e.g. City building inspector, project contractor, certified professionals, etc., depending on the provision specified below).

Each mitigation measure is categorized by impact area, with an accompanying identification of:

Performance Criteria/Monitoring Actions – this is the criteria that would determine when the measure has been accomplished and/or the monitoring actions to be undertaken to ensure the measure is implemented.

The implementing agency – this is the agency or agencies that will actually undertake the measure.

The enforcement agency and monitoring agency -- this is the agency or agencies that will monitor the measure and ensure that it is implemented in accordance with this MMP.

**Cornfield Arroyo Seco Specific Plan
Mitigation Monitoring Plan**

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
4. Transportation		
<p>Mitigation Measure Transportation 4.1:</p> <p><i>Transportation Demand Management Strategies (TDM).</i></p> <p>All projects shall include the following:</p> <p><u>Unbundled Parking.</u> All projects shall unbundle the cost of parking from the cost of living and employment areas, either by charging a rent or lease fee, or selling the parking space separately. (See Section 2.5.B.2)</p> <p><u>Bicycle Facilities.</u> Residential projects or those portions of mixed-use projects that are residential shall provide a minimum of one bicycle parking space for every two units. Nonresidential projects, or those portions of mixed-use projects that are nonresidential shall provide a minimum of one bicycle parking space or locker for every 2,000 square feet. Open Space and public parks shall provide a minimum of two bicycle parking space for every 15,000 square feet. (See Section 2.5.B.5a, 6a, and 7b.)</p> <p><u>Transportation Information Center.</u> All projects shall provide a centrally located Transportation Information Center (TIC) where residents, employees, and visitors can obtain information regarding a variety of local transportation Plans and services. A TIC typically provides information about transit schedules, commute planning, ridesharing, telecommuting, bicycle and pedestrian routes and facilities, taxis, para-transit, onsite services, and local businesses. (See Section 2.3.C.2)</p> <p><u>Rideshare or Carshare Parking.</u> Residential projects or those portions of mixed-use projects that are residential and provide parking shall provide, in a publicly accessible area, one shared vehicle parking space for every 25 units. Nonresidential projects, and those portions of mixed-use projects that are nonresidential shall provide a minimum of one share or carpool space for every 25,000 square feet. (See Section 2.5.B.4.b)</p> <p><u>Scooters, Mopeds and Motorcycles.</u> Residential projects or those portions of mixed-use projects that are residential shall provide a designated stall for scooters, mopeds, and motorcycles at a ratio of one space for every 25 units. Nonresidential projects or those portions of mixed-use projects that are nonresidential shall provide a designated stall for scooters, mopeds, and motorcycles at a ratio of one space for every 25,000 square feet. (See Section 2.5.B.4.c)</p>	DCP/DOT	DBS/DCP/DOT

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>Projects seeking a Project Permit Compliance, or otherwise requiring additional environmental analysis may be required to include the following additional TDM strategies:</p> <p><u>Transit Pass Subsidy Plan.</u> Provide a subsidized transit pass to new residents for a period of one year; and, provide a subsidized transit pass, or equivalent cash-out to employees who walk, bicycle, or take transit to work.</p> <p><u>Parking Cash Out.</u> Employers that offer subsidized or no cost parking shall offer the cash equivalent to employees who forgo their parking space and use alternative travel modes such as biking, walking, or taking the bus to work.</p> <p><u>Guaranteed Ride Home.</u> All employers shall implement a Guaranteed Ride Home (GRH) Plan for employees who do not drive to work. The GRH Plan provides emergency rides to participating employees who may need to leave work during the day due to a family emergency or are asked to work late into the evening after their bus/ride-share/shuttle service no longer operates.</p> <p><u>Flexible Work Hours.</u> Establish Flexible Work Hours, or flextime, to spread out the arrival and departure of employees and shifts trips (especially vehicle trips) to non-peak hours.</p> <p><u>Commuter Club.</u> Develop a Commuter Club to offer incentives to employees for choosing alternative modes of transportation to and from work. Employees who agree to use alternative modes of travel (including walk, bike, transit, carpool or vanpool) to travel to work for a minimum number of days per week (e.g. at least three days per week) may participate in the Club. As a member, employees are entitled to various discounts at local businesses, special offers, and monthly raffle prizes. These benefits shall be determined and negotiated for each development project.</p> <p><u>Ridesharing Services Plan.</u> Develop a Ridesharing Services Plan to reduce the number of employees that drive alone to work. The Plan will identify the home location of participating employees and implement strategies to ensure that at least 25% of the employees who do not walk, bicycle, or take transit to work are enrolled in either a carpool/vanpool and/or employer or area sponsored shuttle service.</p> <p><u>Flex Work Trips.</u> Provide transportation options for work-related trips (exclusive of home to work trips). Options may include access to a flex/shared car and/or bicycle share Plan and/or transit passes.</p>		

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
6. Earth Resources		
<p>Mitigation Measure Transportation Earth Resources 6.1:</p> <p><i>Seismic Standards</i></p> <p>All projects shall conform to the California Building Code seismic standards as approved by the Department of Building and Safety.</p>	DBS	DBS
<p>Mitigation Measure Earth Resources 6.2:</p> <p><i>Geotechnical Report.</i></p> <p>Prior to the issuance of grading or building permits, the applicant shall submit a geotechnical report, prepared by a registered civil engineer or certified engineering geologist, to the Department of Building and Safety, for review and approval. The geotechnical report shall assess potential consequences of any soil strength loss, estimation of settlement, lateral movement or reduction in foundation soil-bearing capacity, and discuss mitigation measures that may include building design consideration. Building design considerations shall include, but are not limited to: ground stabilization, selection of appropriate foundation type and depths, selection of appropriate structural systems to accommodate anticipated displacements or any combination of these measures.</p> <p>The aforementioned project shall comply with the conditions contained within the Department of Building and Safety’s Geology and Soils Report Approval Letter for the proposed project, and as it may be subsequently amended or modified.</p>	DBS	DBS
<p>Mitigation Measure Earth Resources 6.3:</p> <p><i>Liquefaction.</i></p> <p>Prior to the issuance of grading or building permits, the applicant shall submit a geotechnical report, prepared by a registered civil engineer or certified engineering geologist, to the Department of Building and Safety, for review and approval. The project shall comply with the Uniform Building Code Chapter 18. Division1 Section1804.5 Liquefaction Potential and Soil Strength Loss. The geotechnical report shall assess potential consequences of any liquefaction and soil strength loss, estimation of settlement, lateral movement or reduction in foundation soil-bearing capacity, and discuss mitigation measures that may include building design consideration. Building design considerations shall include, but are not limited to: ground stabilization, selection of appropriate foundation type and depths, selection</p>	DBS	DBS

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>of appropriate structural systems to accommodate anticipated displacements or any combination of these measures.</p> <p>The aforementioned project shall comply with the conditions contained within the Department of Building and Safety's Geology and Soils Report Approval Letter for the proposed project, and as it may be subsequently amended or modified.</p>		
<p>Mitigation Measure Earth Resources 6.4:</p> <p><i>Hillside Grading Areas.</i></p> <p>All projects that require a grading permit and are located in a designated hillside area shall conform to the City's Landform Grading Manual guidelines, subject to approval by the Advisory Agency and the Department of Building and Safety's Grading Division.</p> <p>Appropriate erosion control and drainage devices for the aforementioned projects shall be provided to the satisfaction of the Building and Safety Department. These measures include interceptor terraces, berms, vee-channels, and inlet and outlet structures, as specified by Section 91.7013 of the Building Code, including planting fast-growing annual and perennial grasses in areas where construction is not immediately planned.</p>	DBS	DBS
<p>Mitigation Measure Earth Resources 6.5:</p> <p><i>Grading Activities. (20,000 Cubic Yards, or 60,000 SF of Surface Area or Greater.)</i></p> <p>All projects that require grading permits for 20,000 Cubic Yards, or 60,000 square feet of surface area or greater shall include the following best management practices (bmps):</p> <ul style="list-style-type: none"> • A deputy grading inspector shall be on-site during grading operations, at the owner's expense, to verify compliance with the conditions described below. The deputy inspector shall report weekly to the Department of Building and Safety (LADBS); however, they shall immediately notify LADBS if any conditions are violated. • "Silt fencing" supported by hay bales and/or sand bags shall be installed based upon the final evaluation and approval of the deputy inspector to minimize water and/or soil from going through the chain link fencing potentially resulting in silt washing off-site and creating mud accumulation 	DBS	DBS

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation's Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>impacts.</p> <ul style="list-style-type: none"> • “Orange fencing” shall not be permitted as a protective barrier from the secondary impacts normally associated with grading activities. • Movement and removal of approved fencing shall not occur without prior approval by LADBS. <p>The applicant shall provide a staked signage at the site with a minimum of 3-inch lettering containing contact information for the Senior Street Use Inspector (Department of Public Works), the Senior Grading Inspector (LADBS) and the hauling or general contractor.</p>		
7. Hydrology and Water Quality		
<p>Mitigation Measure Hydrology and Water Quality 7.1:</p> <p><i>Floodplain.</i></p> <p>Projects located within the 100 year floodplain shall comply with the requirements of the Flood Hazard Management Specific Plan, and shall obtain any required concurrence from FEMA that the new development complies with the requirements of that agency.</p>	BOS	BOS
<p>Mitigation Measure Hydrology and Water Quality 7.2:</p> <p><i>Stormwater Infiltration.</i></p> <p>Shallow, perched conditions, or seepage may be encountered in the project area and therefore all projects shall, as part of their compliance with the City’s new Low-Impact Development Ordinance, demonstrate as part of their LID application that the infiltration of stormwater on the site will not raise groundwater conditions to such a level that they would adversely affect existing facilities or structures.</p>	BOS	BOS
<p>Mitigation Measure Hydrology and Water Quality 7.3:</p> <p><i>Dewatering System.</i></p> <p>Projects that impact groundwater quantity as a result of direct additions or withdrawals, or through interception of an aquifer by cuts or excavations, or through substantial loss of groundwater recharge capacity shall modify the structural design of a building so as not to need a permanent dewatering system. When a permanent dewatering system is necessary, and unavoidable, the Department of Building and Safety requires the following measures:</p>	DBS/BOS	DBS/BOS

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<ul style="list-style-type: none"> • Prior to the issuance of any permit for excavation, the applicant shall, in consultation with the Department of Building and Safety, submit a Dewatering Plan to the decision-maker for review and approval. Such plan shall indicate estimates for how much water is anticipated to be pumped and how the extracted water will be utilized and/or disposed of. • Extracted groundwater shall be pumped to a beneficial on-site use such as, but not limited to: 1) landscape irrigation; 2) decorative fountains or lakes; 3) toilet flushing; or 4) cooling towers. • Return water to the groundwater basin by an injection well. 		
<p>Mitigation Measure Hydrology and Water Quality 7.4:</p> <p><i>Stormwater Pollution Prevention. (Demolition, Grading, and Construction Activities)</i></p> <p>During construction all projects shall comply with the following requirements:</p> <ul style="list-style-type: none"> • Leaks, drips and spills shall be cleaned up immediately to prevent contaminated soil on paved surfaces that can be washed away into the drains. • All vehicles/equipment maintenance, repair, and washing shall be conducted away from storm drains. All major repairs shall be conducted off-site. Drip pans or drop cloths shall be used to catch drips and spills. • Pavement shall not be hosed down at material spills. Dry cleanup methods shall be used whenever possible. • Dumpsters shall be covered and maintained. Uncovered dumpsters shall be placed under a roof or be covered with tarps or plastic sheeting. 	DBS/BOS	DBS/BOS
<p>Mitigation Measure Hydrology and Water Quality 7.5:</p> <p><i>Standard Stormwater Mitigation Plan. (SUSMP)</i></p> <p>All projects must meet the requirements of the Standard Urban</p>	BOS	BOS

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
Stormwater Mitigation Plan (SUSMP) approved by Los Angeles Regional Water Quality Control Board, including the following (a copy of the SUSMP can be downloaded at: http://www.swrcb.ca.gov/rwqcb4/)		
8. Biological Resources		
<p>Mitigation Measure Biological Resources 8.1:</p> <p><i>Habitat Modification. (Nesting Native Birds)</i></p> <p>Migratory nongame native bird species are protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA) of 1918 (50 C.F.R Section 10.13). Sections 3503, 3503.5 and 3513 of the California Fish and Game Code prohibits the taking of any birds and their active nests including raptors and other migratory nongame birds (as listed under the Federal MBTA). Therefore, all projects that require a grading and/or building permit are subject to the following:</p> <ul style="list-style-type: none"> • Proposed project activities (including disturbances to native and non-native vegetation, structures and substrates) should take place outside of the breeding bird season which generally runs from March 1- August 31 (as early as February 1 for raptors) to avoid take (including disturbances which would cause abandonment of active nests containing eggs and/or young). Take means to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture of kill (Fish and Game Code Section 86). • If project activities cannot feasibly avoid the breeding bird season, beginning thirty days prior to the disturbance of suitable nesting habitat, the applicant shall: <ol style="list-style-type: none"> 1. Arrange for weekly bird surveys to detect any protected native birds in the habitat to be removed and any other such habitat within properties adjacent to the project site, as access to adjacent areas allows. The surveys shall be conducted by a qualified biologist with experience in conducting breeding bird surveys. The surveys shall continue on a weekly basis with the last survey being conducted no more than 3 days prior to the initiation of clearance/construction work. 2. If a protected native bird is found, the applicant shall delay all clearance/construction disturbance activities until August 31; or, 	DCP	DBS/DCP/ DF&G

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>3. Alternatively, the qualified biologist could continue the surveys in order to locate any nests. If an active nest is located the qualified biological monitor shall develop a mitigation plan that includes a buffer appropriate to the specific species of bird as well as the type and degree of disturbance expected at the construction site. The mitigation plan and identified buffer shall remain in place until the nest is vacated and juveniles have fledged and when there is no evidence of a second attempt at nesting. The buffer zone from the nest shall be established in the field with flagging and stakes. Construction personnel shall be instructed on the sensitivity of the area.</p> <p>4. The applicant shall record the results of the recommended protective measures described above to document compliance with applicable State and Federal laws pertaining to the protection of native birds. Such record shall be submitted and received into the case file for the associated discretionary action permitting the project.</p>		
<p>Mitigation Measure Biological Resources 8.2:</p> <p><i>Oak Trees.</i></p> <p>A person shall not cut, destroy, remove, relocate, inflict damage, or encroach into the protected zone of any tree of the oak tree genus, which is 8 inches or more in diameter, four and one-half feet above mean natural grade, or in the case of oaks with multiple trunks, combined diameter of twelve inches or more of the two largest trunks, without first obtaining approval from the Board of Public Works. Contact Urban Forestry Division at: 213.847.3077 and complying with the following:</p> <ul style="list-style-type: none"> • Prior to the issuance of a grading or building permit, the applicant shall prepare and submit a Tree Report, prepared by a Tree Expert as defined in Section 17.02, indicating the location, size, and condition of all oak trees on the site, to the Urban Forestry Division of the Bureau of Street Services, Department of Public Works, for review and approval (213-847-3077), prior to implementation of the Report's recommended measures. Such report shall also contain a recommendation of measures to ensure the protection, relocation, or replacement of affected trees during grading and construction activities. 	<p>DPW- BOE/Urban Forestry Division</p>	<p>DPW- BOE//Urban Forestry Division</p>

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation's Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<ul style="list-style-type: none"> A minimum of two trees (a minimum of 48-inch box in size if available) shall be planted for each protected tree that is removed. The canopy of the replacement trees, at the time they are planted, shall be in proportion to the canopies of the protected tree(s) removed and shall be to the satisfaction of the Urban Forestry Division. The location of trees planted for the purposes of replacing a removed protected tree shall be clearly indicated on the required landscape plan, which shall also indicate the replacement tree species and further contain the phrase "Replacement Tree" in its description. <p><u>Bonding (Tree Survival):</u></p> <ul style="list-style-type: none"> The applicant shall post a cash bond or other assurances acceptable to the Bureau of Engineering in consultation with the Urban Forestry Division and the decision maker guaranteeing the survival of trees required to be maintained, replaced or relocated in such a fashion as to assure the existence of continuously living trees for a minimum of three years from the date that the bond is posted or from the date such trees are replaced or relocated, whichever is longer. Any change of ownership shall require that the new owner post a new oak tree bond to the satisfaction of the Bureau of Engineering. Subsequently, the original owner's oak tree bond may be exonerated. The City Engineer shall use the provisions of Section 17.08 as its procedural guide in satisfaction of said bond requirements and processing. Prior to exoneration of the bond, the owner of the property shall provide evidence satisfactory to the City Engineer and Urban Forestry Division that the oak trees were properly replaced, the date of the replacement and the survival of the replacement trees for a period of three years. 		
9. Cultural Resources		
<p>Mitigation Measure Cultural Resources 9.1a:</p> <p><i>Archeological Resources.</i></p> <p>If any archaeological materials are encountered during the course of project development, all further development activity shall halt and:</p>	DBS	DBS/DCP

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation's Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<ul style="list-style-type: none"> • The services of an archaeologist shall then be secured by contacting the South Central Coastal Information Center (657-278-5395) located at California State University Fullerton, or a member of the Society of Professional Archaeologist (SOPA) or a SOPA-qualified archaeologist, who shall assess the discovered material(s) and prepare a survey, study or report evaluating the impact. • The archaeologist's survey, study or report shall contain a recommendation(s), if necessary, for the preservation, conservation, or relocation of the resource. • The applicant shall comply with the recommendations of the evaluating archaeologist, as contained in the survey, study or report. • Project development activities may resume once copies of the archaeological survey, study or report are submitted to: <p style="text-align: center;"> SCCIC Department of Anthropology McCarthy Hall 477 CSU Fullerton 800 North State College Boulevard Fullerton, CA 92834 </p> • Prior to the issuance of any building permit, the applicant shall submit a letter to the case file indicating what, if any, archaeological reports have been submitted, or a statement indicating that no material was discovered. • A covenant and agreement binding the applicant to this condition shall be recorded prior to issuance of a grading permit. 		
<p>Mitigation Measure Cultural Resources 9.1.b:</p> <p><i>Paleontological Resources.</i></p> <p>If any paleontological materials are encountered during the course of project development, all further development activities shall halt and:</p> <ul style="list-style-type: none"> • The services of a paleontologist shall then be secured by contacting the Center for Public Paleontology - USC, UCLA, California State University Los Angeles, California State 	DBS	DBS/DCP

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation's Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>University Long Beach, or the Los Angeles County Natural History Museum - who shall assess the discovered material(s) and prepare a survey, study or report evaluating the impact.</p> <ul style="list-style-type: none"> • The paleontologist's survey, study or report shall contain a recommendation(s), if necessary, for the preservation, conservation, or relocation of the resource. • The applicant shall comply with the recommendations of the evaluating paleontologist, as contained in the survey, study or report. • Project development activities may resume once copies of the paleontological survey, study or report are submitted to the Los Angeles County Natural History Museum. • Prior to the issuance of any building permit, the applicant shall submit a letter to the case file indicating what, if any, paleontological reports have been submitted, or a statement indicating that no material was discovered. • A covenant and agreement binding the applicant to this condition shall be recorded prior to issuance of a grading permit. 		
<p>Mitigation Measure Cultural Resources 9.1.c:</p> <p><i>Human Remains.</i></p> <p>In the event that human remains are discovered during excavation activities, the following procedure shall be observed:</p> <ul style="list-style-type: none"> • Stop immediately and contact the County Coroner: <ul style="list-style-type: none"> 1104 N. Mission Road Los Angeles, CA 90033 323-343-0512 (8 a.m. to 5 p.m. Monday through Friday); or, 323-343-0714 (After Hours, Saturday, Sunday, and Holidays) • The coroner has two working days to examine human remains after being notified by the responsible person. If the remains are Native American, the Coroner has 24 hours to notify the Native American Heritage Commission. 	<p>County Coroner/Native American Heritage Commission (NAHC)</p>	<p>DBS/DCP/Native American Heritage Commission (NAHC)</p>

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation's Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<ul style="list-style-type: none"> • The Native American Heritage Commission will immediately notify the person it believes to be the most likely descendent of the deceased Native American. • The most likely descendent has 48 hours to make recommendations to the owner, or representative, for the treatment or disposition, with proper dignity, of the human remains and grave goods. • If the descendent does not make recommendations within 48 hours the owner shall reinter the remains in an area of the property secure from further disturbance, or; • If the owner does not accept the descendant's recommendations, the owner or the descendent may request mediation by the Native American Heritage Commission. • <i>Discuss and confer</i> means the meaningful and timely discussion careful consideration of the views of each party. 		
<p>Mitigation Measure Cultural Resources 9.2:</p> <p><i>Historic Resources.</i></p> <p>Projects that could potentially impact either an identified or eligible historic structure or resource* shall demonstrate compliance with the Secretary of the Interior's Standards for Historic Resources by the following measures:</p> <p>*Please see Appendix A. Historic Resources Survey for a list of eligible resources or structures but note that the inventory of designated or eligible historic resources or structures is continually updated and therefore no one list of historic resources or structures shall be considered the definitive or exhaustive list.</p> <ul style="list-style-type: none"> • Prior to the issuance of any permit, the project shall obtain clearance from the Office of Historic Resources for the proposed work. • A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment. • The historic character of a property shall be retained and preserved. The removal of historic material or alteration of features and spaces shall be avoided. 	DBS	DCP's Office of Historic Resources (OHR)

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation's Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<ul style="list-style-type: none"> • Each property shall be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other buildings, shall not be undertaken. • Most properties change over time; those changes that have acquired significance in their own right shall be retained and preserved. • Distinctive features, finishes and construction techniques or examples of skilled craftsmanship which characterize an historic property shall be preserved. • Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive historic feature, the new feature shall match the old in design, color, texture, and other visual qualities, and where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence. • Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible. • Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken. See below. • New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment. • New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. 		
<p>Mitigation Measure Cultural Resources 9.3:</p> <p><i>Native American Gabrielino Ground Disturbance Monitor.</i></p>	DBS	DBS/ Native American of Gabrielino descent

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>All projects that require a grading permit which will include ground disturbances 15' or more below the surface shall retain a Native American of Gabrielino descent to observe and monitor sub-surface activities. Prior to issuance of a grading or building permit that involves sub-surface activities 15' or more below the surface, evidence shall be provided for placement in the Project file that a Native American monitor has been retained.</p>		
10. Hazardous Materials		
<p>Mitigation Measure Hazardous Materials. 10.1 and 2:</p> <p><i>Hazardous Substances.</i></p> <p>Prior to the issuance of a use of land or building permit for any new industrial uses, or a change in the existing occupancy/use permit to an industrial use, the applicant shall provide a letter from the Fire Department stating that it has permitted the facility's use, storage, transport, creation, and disposal of hazardous substances. Approved plans for the transport, creation, use, containment, treatment and disposal of the hazardous materials shall be retained in the project's case file.</p>	DBS	LAFD
<p>Mitigation Measure Hazardous Materials 10.3:</p> <p><i>Hazardous Materials near Schools.</i></p> <p>Prior to the issuance of a use of land or building permit for any new commercial or industrial uses within ¼ mile of an existing school, the applicant shall provide a letter from the Fire Department stating that it has permitted the facility's use, storage, transport, creation, and disposal of hazardous substances as well as provided adequate provisions with respect to emergency response and evacuation procedures.</p>	DBS	DBS/LAFD
<p>Mitigation Measure Hazardous Materials 10.4:</p> <p><i>Contaminated Soil or Groundwater.</i> (including Cortese List Sites)</p> <p><u>Phase I and II Environmental Site Assessment</u></p> <p>Prior to the issuance of a grading permit all projects, including properties listed and ranked 1 through 3 in Table 1 of the Hazardous Property Inventory in the Mitigation Plan (Appendix A1.B. of the Specific Plan), shall conduct a Phase I Environmental Site Assessment (ESA) to determine the potential for contaminated soil or groundwater on site. If the Phase I ESA determines that potential exist for contaminated soil or groundwater exists on site, than the project applicant shall conduct a Phase II ESA and shall follow its recommendations. A Phase I ESA shall not be required if it is already determined through previous monitoring activities that</p>	DBS	DBS/ LAFCD, LAFD, RWQB, DTSC

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation's Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>contamination exists and a Phase II ESA shall not be required if a remedial plan is already underway to address on site contaminants. On site contaminants must be addressed to the satisfaction of either the Cal/EPA or Los Angeles County Fire Department (LACFD) Site Mitigation Unit (SMU) with their approval of completion of activities/ Remediation Action Plans (RAP) submitted to the Department of Building and Safety prior to the issuance of a building permit.</p> <p><u>Los Angeles Regional Water Quality Board</u> The project applicant and the responsible parties for any open case, including the properties listed in Table 1 of the Hazardous Property Inventory in the Mitigation Plan (Appendix A1.B. of the Specific Plan), with the Los Angeles Regional Water Quality Control Board (LARWQCB), or where a subsequent Phase II ESA confirms groundwater contamination above the Maximum Concentration Level (MCL) for the proposed use(s) shall submit to the LARWQCB a dewatering plan and treatment plan/soil RAP for the handling and disposal of contaminated groundwater/soil that may be encountered during excavation of the project for review and approval. The dewatering plan/ RAP shall include but not be limited to monitoring of excavation activities by a certified environmental consultant to identify/sample groundwater and soil that may be contaminated; and exaction, treatment and disposal of contaminated groundwater/soil in accordance with applicable regulatory requirements. Written verification from the LARWQCB of approval of dewatering plan/management plan completion (ie “no futher action” letter) shall be submitted to the Department of Building and Safety prior to issuance of building permit.</p> <p><u>Department of Toxic Substance and Control (DTSC)</u> The project applicant and the responsible parties for any open case, including properties listed in Table 1 of the Hazardous Property Inventory in the Mitigation Plan (Appendix A1.B. of the Specific Plan), with the Department of Toxic Substance and Control or where a subsequent Phase II ESA confirms soil contamination above the MCL for the proposed use(s) shall submit to the Los Angeles County Fire Department (LACFD) Site Mitigation Unit (SMU) a soil RAP for the handling and disposal of contaminated soil that may be encountered during excavation of the project for review and approval. The RAP shall include but not be limited to monitoring of excavation activities by a certified environmental consultant to identify/sample soil that may be contaminated; and exaction, treatment and disposal of contaminated soil in accordance with applicable regulatory requirements. Written verification from the LACFD SMU of approval of RAP completion (ie “no futher action” letter) shall be submitted to the Department of Building and Safety prior to issuance of building permit.</p> <p><u>Bortz Oil Company and Kennington Ltd.</u></p>		

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>The future uses of the Bortz Oil Company, and the Kennington Ltd. site will have to be compatible with the level of remediation completed at those sites or will have to incorporate additional measures to ensure that the future uses of these sites do not result in hazards to people or the environment and meet the stipulated land restriction requirements pursuant to the governing agency over the remediation efforts. Therefore, future uses at these sites shall comply with the State requirements related to listing on the Cortese List. Elder care, day care uses are prohibited at the Kennington Ltd. site located at 3209 Humboldt Street. Elder care, day care, public and private school and residential uses are prohibited for the Bortz Oil Company site located at 1746 Spring Street.</p>		
<p>Mitigation Measure Hazardous Materials 10.5:</p> <p><i>Existing Toxic/Hazardous Construction Materials</i></p> <p><u>Asbestos.</u> Prior to the issuance of any permit for the demolition or alteration of existing structure(s), the applicant shall provide a letter to the Department of Building and Safety from a qualified asbestos abatement consultant indicating that no Asbestos-Containing Materials (ACM) are present in the building. If ACMs are found to be present, it will need to be abated in compliance with the South Coast Air Quality Management District's Rule 1403 as well as all other applicable State and Federal rules and regulations.</p> <p><u>Lead Paint.</u> Prior to issuance of any permit for the demolition or alteration of the existing structure(s), a lead-based paint survey shall be performed to the written satisfaction of the Department of Building and Safety. Should lead-based paint materials be identified, standard handling and disposal practices shall be implemented pursuant to OSHA regulations.</p> <p><u>Polychlorinated Biphenyl.</u> (Commercial and Industrial Buildings) Prior to issuance of a demolition permit, a polychlorinated biphenyl (PCB) abatement contractor shall conduct a survey of the project site to identify and assist with compliance with applicable state and federal rules and regulation governing PCB removal and disposal.</p>	DBS	DBS/SCAQMD
<p>Mitigation Measure Hazardous Materials 10.6:</p> <p><i>Human Health Hazard.</i></p> <p>All projects are subject to the following:</p> <ul style="list-style-type: none"> The property shall be maintained in a neat, attractive, and 	BOS	DBS

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation's Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>safe condition at all times.</p> <ul style="list-style-type: none"> On-site activities shall be conducted so as not to create noise, dust, odor, or other nuisances to surrounding properties. Garbage bins shall be maintained with a lid in working condition; such lid shall be kept closed at all times. Trash and garbage collection bins shall be maintained in good condition and repair such that there are no holes or points of entry through which a rodent could enter. Trash and garbage collection containers shall be emptied a minimum of once per week. Trash and garbage bin collection areas shall be maintained free from trash, litter, garbage, and debris. 		
<p>Mitigation Measure Hazardous Materials 10.7:</p> <p><i>None Required.</i></p>		
<p>Mitigation Measure Hazardous Materials 10.8:</p> <p><i>Methane Zone.</i></p> <p>Projects located in a Methane Zone or a Methane Buffer Zone in the City's Zoning Information Map Access System (ZIMAS) shall do the following:</p> <ul style="list-style-type: none"> All commercial, industrial, and institutional buildings shall be provided with an approved Methane Control System, which shall include these minimum requirements; a vent system and gas-detection system which shall be installed in the basements or the lowest floor level on grade, and within underfloor space of buildings with raised foundations. The gas-detection system shall be designed to automatically activate the vent system when an action level equal to 25% of the Lower Explosive Limit (LEL) methane concentration is detected within those areas. All commercial, industrial, institutional and multiple residential buildings covering over 50,000 square feet of lot area or with more than one level of basement shall be independently analyzed by a qualified engineer, as defined in Section 91.7102 of the Municipal Code, hired by the building owner. The engineer shall investigate and 	DBS	DBS

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation's Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>recommend mitigation measures which will prevent or retard potential methane gas seepage into the building. In addition to the other items listed in this section, the owner shall implement the engineer's design recommendations subject to Department of Building and Safety and Fire Department approval.</p> <ul style="list-style-type: none"> All multiple residential buildings shall have adequate ventilation as defined in Section 91.7102 of the Municipal Code of a gas-detection system installed in the basement or on the lowest floor level on grade, and within the underfloor space in buildings with raised foundations. 		
<p>Mitigation Measure Hazardous Materials 10.9:</p> <p><i>Abandoned Wells.</i></p> <p>Prior to the issuance of grading permits for the three properties identified in Table 1 of the Hazardous Property Inventory in the Mitigation Plan (Appendix A1.B. of the Specific Plan), that include abandoned wells, an investigation of the abandoned wells shall be carried out to determine if further testing and/or re-abandonment, plugging or re-plugging is necessary. Well abandonment, plug or re-plug shall be conducted under the supervision of Department of Conservation's Division of Oil, Gas, and Geothermal Resources (DOGGR) pursuant to Section 3106 and 3208.1 of the Public Resource Code (PRC). An adequate gas venting system shall be provided in the event that construction over an abandoned well is unavoidable. The applicants should obtain a copy of the "Construction Project Site Review and Well Abandonment Procedures" published by DOGGR that outlines the information required for DOGGR review. The applicants shall obtain a determination letter from DOGGR prior to issuance of building permit.</p> <p>Remedial action plans shall be required if any plugged, abandoned, and/or unrecorded wells are damaged or uncovered during site excavation or grading. DOGGR office shall be contacted to obtain information on the requirements for and approval to perform remedial operations. If contaminated soils are identified then a suitable remediation plan shall be developed to the satisfaction of the County of Los Angeles Fire Department Site Mitigation Unit (SMU), and a "no further action" letter shall be submitted to the Department of Building and Safety prior to the issuance of a building permit.</p>	DBS	DBS/DOGGR
<p>Mitigation Measure Hazardous Materials 10.10:</p>	DBS	DBS/LAFD

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation's Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p><i>Underground Storage Tanks.</i> Underground Storage Tanks shall be decommissioned or removed as determined by the Los Angeles City Fire Department Underground Storage Tank Division. If any contamination is found, further remediation measures shall be developed with the assistance of the Los Angeles City Fire Department and other appropriate State agencies.</p>		
<p>Mitigation Measure Hazardous Materials 10.11: <i>Emergency Evacuation Plan.</i> Prior to the issuance of a building permit, the applicant shall develop an emergency response plan in consultation with the Fire Department. The emergency response plan shall include but not be limited to the following: mapping of emergency exits, evacuation routes for vehicles and pedestrians, location of nearest hospitals, and fire departments.</p>	DBS	DBS/LAFD
11. Air Quality		
<p>Mitigation Measure Air Quality 11.1: <i>Sustainable Community Development.</i> Prior to approving future developments the City shall ensure that the proposed project includes feasible measures for reducing automobile dependence and potential vehicle emissions as part of the basic project design. These measures include providing for a mix of uses, local and regional transit, and peak-hour shuttle services, bicycle and pedestrian measures such as sidewalks and bicycle lanes, and local-serving retail.</p>	DCP	DCP
<p>Mitigation Measure Air Quality 11.2: <i>Sensitive Land uses near Freeways.</i> Based on the recommended buffer distances of the California Air Resources Board (CARB), for all projects that proposes sensitive land uses, which may include residential uses, daycare centers, medical facilities, and other sensitive receptors within at least 500 feet from either the I-5 or SR-110 freeways, the Project Applicant shall submit a health risk assessment (HRA) prepared in accordance with policies and procedures of the state Office of Environmental Health Hazard Assessment (OEHHA) and the South Coast Air Quality Management District (SCAQMD) to the Director of Planning or their designee, prior to issuance of building permit. If the HRA shows that</p>	DCP/ DBS	DBS/DCP/SCAQ MD

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>the incremental cancer risk exceeds ‘an acceptable level’ here defined as either one in one hundred thousand (1.0E-05), or the appropriate non-cancer hazard index of 1.0, the applicant shall be required to identify and demonstrate that Best Available Control Technologies for Toxics (T-BACTs) are capable of reducing potential cancer and non-cancer risks to an acceptable level, including appropriate enforcement mechanisms. T-BACTs may include, but are not limited to installation of Minimum Efficiency Reporting Value (MERV) filters rated at 13 or better at all residential units.</p>		
<p>Mitigation Measure Air Quality 11.3:</p> <p><i>Sensitive Land Uses near Freeways and/or Heavy Railway and/or, Distribution Centers.</i></p> <p>As described in the proposed zoning for the Specific Plan applicants for new developments that proposes sensitive land uses, which may include residential uses, daycare centers, medical facilities, and other sensitive receptors in the Project Area within 500 feet of either the SR-110 or I-5 freeways; or within 1,000 feet of a heavy railway (ie LATC railyard), distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU operations exceed 300 hours per week), or other industrial facility which emits toxic air contaminants; or within 300 feet of dry cleaners; or within 50 feet of a fuel dispensing facility shall be required to install and maintain air filters meeting or exceeding the ASHRAE Standard 52.2 Minimum Efficiency Reporting Value (MERV) filters of MERV 13 in the intake of ventilation systems, to the satisfaction of the Department of Building and Safety.</p> <p>Developer, sale, and/or rental representative shall provide notification to all affected tenants/residents of the potential health risk from SR-110 or I-5 freewqys, or other TAC sources for all affected units.</p>	DCP	DBS/DCP/CAQ MD
<p>Mitigation Measure Air Quality 11.4:</p> <p><i>Sensitive Land uses within 1500’ feet of a Freeway, TAC and other sources of DPM.</i></p> <p>For any project that proposes sensitive land uses, which may include residential uses, daycare centers, medical facilities, and other sensitive</p>	DCP	DBS/ DCP /SCAQMD

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>receptors located at or within 1,500 feet of a freeway or TAC sources including heavy railways (ie LATC railyard) and other sources of DPM and other known carcinogens shall be required to install and maintain air filters meeting or exceeding the ASHRAE Standard 52.2 Minimum Efficiency Reporting Value (MERV) of 12 in the intake of ventilation systems, to the satisfaction of the Department of Building and Safety.</p> <p>Developer, sale, and/or rental representative shall provide notification to all affected tenants/residents of the potential health risk from TAC sources for all affected units.</p>		
<p>Mitigation Measure Air Quality 11.5:</p> <p><i>Sensitive Land uses beyond 1500' feet of a Freeway or TAC Sources.</i></p> <p>For any project that proposes sensitive land uses, which may include residential uses, daycare centers, medical facilities, and other sensitive receptors located beyond 1,500 feet of a freeway or other industrial TAC sources shall be required to install and maintain air filters meeting or exceeding the ASHRAE Standard 52.2 Minimum Efficiency Reporting Value (MERV) of 11 in the intake of ventilation systems, to the satisfaction of the Department of Building and Safety.</p>	DCP	DBS/DCP/SCAQ MD
<p>Mitigation Measure Air Quality 11.6:</p> <p><i>Added Measures for Air Filtration Systems.</i></p> <ul style="list-style-type: none"> • If the installation of an air filtration system is determined to be necessary to reduce exposure of on-site occupants to TACs, the following additional measures shall occur to guarantee long-term maintenance and replacement of the air filters in the individual units: • For rental units the owner/property manager shall maintain the air filtration system and replace air filters in accordance with the manufacture's recommendations. The property owner shall inform renters of increased risk of exposure to TACs when windows are open. • For residential owned units the Homeowner's Association (HOA) shall incorporate requirements for long-term 	DBS	DBS/DCP/SCAQ MD

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation's Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>maintenance in the Covenant Conditions and Restrictions and inform homeowners of their responsibility to maintain the air filtration system in accordance with the manufacturer's recommendations. The HOA shall inform homeowner's of increased risk of exposure to TACs when windows are open.</p> <ul style="list-style-type: none"> Air filtration system may create more resistance to airflow because the filter media becomes denser as efficiency increases. Heating, air conditioning and ventilation (HVAC) systems shall be installed with a fan unit designed with sufficient power to force air through the air filters. 		
<p>Mitigation Measure Air Quality 11.7:</p> <p><i>Sensitive Land uses within 1,000 feet of Heavy Railway or other DPM Sources.</i></p> <p>For any project that proposes a sensitive land use within 500 feet of freeways, or within 1,000 feet of heavy railways (ie LATC railyard) and other sources of DPM or known carcinogens shall plant appropriate vegetation to screen the receptor from the DPM source to reduce exposure unless it is determined by an HRA to not be necessary to reduce health impacts. The vegetation shall be selected (such as certain types of coniferous trees) on the demonstrated effectiveness in filtering air pollution. A Covenants and Agreement shall be recorded on the property to maintain the vegetation in good condition.</p>	DCP	DBS/DCP/SCAQ MD
<p>Mitigation Measure Air Quality 11.8:</p> <p><i>Sensitive Land Uses-Site and Building Orientation.</i></p> <p>Sensitive land uses shall be oriented to reduce exposure from the main entry and exit points of distribution centers (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU operations exceed 300 hours per week), unless an HRA shows that the incremental cancer risk is less than one in one hundred thousand (1.0E-05), or the appropriate non-cancer hazard index is less than 1.0.</p>	DCP	DBS/DCP/SCAQ MD

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation's Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>Mitigation Measure Air Quality 11.9:</p> <p><i>Active Use Recreational Areas</i></p> <p>All outdoor active-use public recreational areas associated with Proposed Alternatives shall be located more than 500 feet from the nearest lane of traffic on the SR-110 or I-5 freeways, unless an HRA shows that the incremental cancer risk is less than one in one hundred thousand (1.0E-05), or the appropriate non-cancer hazard index is less than 1.0.</p>	DRP/DCP	DBS/DCP/SCAQMD
<p>Mitigation Measure Air Quality 11.10:</p> <p><i>Permission to Install an Alternative Design Feature.</i></p> <p>The applicant/developer may be permitted to install an alternative design feature or mitigation than those measures that are prescribed by the City if the developer carries out a health risk assessment (HRA) that demonstrates the air quality impacts to on site occupants would be less than significant after inclusion of specific site design features. The HRA shall include a dispersion model acceptable to SCAQMD, meteorological data and estimation of both cancer and non-cancer risks. If the HRA shows that the incremental cancer risk exceeds 'an acceptable level' here defined as either one in one hundred thousand (1.0E-05), or the appropriate non-cancer hazard index that exceeds of 1.0, the applicant shall be required to identify and demonstrate that Best Available Control Technologies for Toxics capable of reducing potential cancer and non-cancer risks to an acceptable level, including appropriate enforcement mechanisms.</p>	Applicant/DCP	DBS/DCP/SCAQMD
<p>Mitigation Measure Air Quality 11.11:</p> <p><i>Construction Emission Control Measures.</i></p> <p><u>Basic.</u> The following controls should be implemented at all construction sites:</p> <ul style="list-style-type: none"> • Water all active construction areas at least twice daily. • Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard. • Pave, apply water three times daily, or apply (non-toxic) 	DBS	DBS

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation's Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.</p> <ul style="list-style-type: none"> • Sweep daily (with water sweepers) all paved roads, parking areas, and staging areas at construction sites. • Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets. • Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 miles per hour. • Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site. <p><u>Construction Equipment.</u> The following control measures are required of all construction equipment:</p> <ul style="list-style-type: none"> • Maintain properly tuned engines. • Minimize the idling time of diesel-powered construction equipment to two minutes. • Use alternative powered construction equipment (e.g., compressed natural gas, biodiesel, electric) whenever possible. • Use add-on control devices such as diesel oxidation catalysts or particulate filters, as appropriate. • Limit the operating hours of heavy-duty equipment. <p><u>Enhanced.</u> The following measures shall be implemented at construction sites greater than four acres in area:</p> <ul style="list-style-type: none"> • All “Basic” control measures listed above. • Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more). • Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles (dirt, sand, etc.) • Limit traffic speeds on unpaved roads to 15 miles per hour. • Install sandbags or other erosion control measures to prevent silt runoff to public roadways. • Replant vegetation in disturbed areas as quickly as 		

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
possible.		
12. Noise and Vibration		
<p>Mitigation Measure Noise and Vibration 12.1.a:</p> <p><i>Residences, Hospitals, or Nursing Homes Adjacent to Spring Street, North Broadway, Main Street, San Fernando Road, I-5, or SR 110.</i></p> <p>Projects that include residential uses, daycare centers, medical facilities, or other sensitive receptors that are located on parcels of land adjacent to Spring Street, North Broadway, Main Street, San Fernando Road, I-5, or R 110 shall either:</p> <ul style="list-style-type: none"> • Construct all exterior windows, having a line of sight of any of the aforementioned highways, with double-pane glass and use exterior wall construction which provides a Sound Transmission Coefficient (STC) value of 50, as determined in accordance with ASTM E90 and ASTM E413, or any amendment thereto. • Or, as an alternative, the applicant may retain an acoustical engineer to submit evidence, along with the application for a building permit, of any alternative means of sound insulation sufficient to mitigate interior noise levels below a CNEL of 45 dBA in any habitable room. 	DBS	DBS
<p>Mitigation Measure Noise and Vibration 12.1.b:</p> <p><i>Commercial Uses Adjacent to North Broadway and Main Street.</i></p> <p>Projects that include commercial uses located on parcels of land adjacent North Broadway and Main Street shall retain an acoustical engineer to submit evidence, along with the application for a building permit, of any alternative means of sound insulation sufficient to mitigate interior noise levels below a CNEL of 45 dBA in any habitable room.</p>	DBS	DBS
<p>Mitigation Measure Noise and Vibration 12.1.c:</p> <p><i>Public parks.</i></p> <p>Any public parks shall retain an acoustical engineer to submit evidence (acoustical analysis), along with the application for a grading permit, that grading, barrier walls, or setbacks have been employed in the design of the park to mitigate traffic noise form adjacent roads.</p>	RAP, DBS	DBS
<p>Mitigation Measure Noise and Vibration 12.1.d:</p>	DBS	DBS

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p><i>School, Library, and/or Church Facilities.</i></p> <p>Any project that includes school, library, and/or church facilities shall:</p> <ul style="list-style-type: none"> • Retain an acoustical engineer to submit evidence, along with the application for a building permit, of any alternative means of sound insulation sufficient to mitigate interior noise levels below a CNEL of 45 dBA in any habitable room. • Use grading, barrier walls, or setback distance to mitigate traffic noise from adjacent roads to an STC value of at least 50, as determined in accordance with ASTM E90 and ASTM E413. 		
<p>Mitigation Measure Noise and Vibration 12.2:</p> <p><i>Construction Noise.</i></p> <p>All projects requiring a development permit shall adhere to the following conditions of approval:</p> <ul style="list-style-type: none"> • Construction and demolition shall be restricted to the hours of 7:00 am to 6:00 pm Monday through Friday, and 8:00 am to 6:00 pm on Saturday. • Demolition and construction activities shall be scheduled so as to avoid operating several pieces of equipment simultaneously, which causes high noise levels. • The project contractor shall use power construction equipment with state-of-the-art noise shielding and muffling devices. • Whenever construction occurs adjacent to occupied residences (on- or offsite), temporary barriers shall be constructed around the construction sites to shield the ground floor of the noise-sensitive uses. These barriers shall be of ¾-inch medium density plywood sheeting, or equivalent, and shall achieve an STC of 30 or greater, based on certified sound transmission loss data taken according to American Society for Testing and Materials Test Method E90 or as approved by the City of Los Angeles Building Department. • Construction equipment staging areas shall be located as far as feasible from residential areas while still serving the needs of construction contractors. 	DBS	DBS

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<ul style="list-style-type: none"> Quieter “sonic” pile drivers shall be used, unless engineering studies are submitted to the City of Los Angeles showing this is not feasible and cost effective, based on geotechnical considerations. Groundborne vibration impacts from construction activities shall be considered in the construction Plans to minimize the disturbance to noise-sensitive receptors. Routes for heavy construction site vehicles shall be identified to minimize noise and vibration impacts to residences and noise-sensitive receptors. Activities that generate high noise levels — such as pile driving and the use of jackhammers, drills, and impact wrenches — shall be restricted to the hours of 7:00 am to 6:00 pm Monday through Friday. 		
<p>Mitigation Measure Noise and Vibration 12.3:</p> <p><i>Operational Noise Attenuation.</i></p> <p>All projects shall submit engineering and acoustical specifications for project mechanical HVAC and utility transformers (including generators) to the Department of Building and Safety, prior to obtaining a building permit, demonstrating that the equipment design (types, location, enclosure, specifications) can control noise to meet the requirements of the City’s noise ordinance at nearby residential and other noise-sensitive land uses.</p>	DBS	DBS
<p>Mitigation Measure Noise and Vibration 12.4:</p> <p><i>Groundborne Vibration.</i></p> <p>Projects located within the FTA’s Screening Distances for Vibration Assessment of an existing rail line, shall be required to conduct vibration measurements and analysis demonstrating that the FTA Groundborne Vibration Impact Criteria for the proposed land use are not exceeded. If the criteria cannot be met then the project will need to specify the modifications that will be made to ensure criteria compliance.</p>	DBS	DBS
14. Public Services and Recreation Facilities		
<p>Mitigation Measure Public Service and Recreation Facilities 14.1:</p> <p><i>Fire.</i></p> <p>Any project requiring a Change of Use or Building permit shall comply with the</p>	DBS	DBS/LAFD

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>following Firefighting Personnel and Firefighting Apparatus Access Standards: Firefighting Personell Access Standards:</p> <ul style="list-style-type: none"> • No building or portion of a building shall be constructed more than 150 feet from the edge of a roadway or an improved street, access road, or designated fire lane. • No building or portion of a building shall be constructed more than 300 feet from an approved fire hydrant. Distance shall be computed along path of travel. • Entrance to the main lobby shall be located off of the address side of the building. • Any required Fire Annunciator panel or Fire Control Room shall be located within a 50' visual line of site of the main entrance stairwell or to the satisfaction of the Fire Department <p><u>Firefighting Apparatus Access Standards:</u></p> <ul style="list-style-type: none"> • All access roads, including fire lanes, shall be maintained in an obstructed manner, removal of obstructions shall be at the owner's expense. The entrance to all required fire lanes or required private driveways shall be posted with a sign no less than three square feet in area in accordance with Section 57.09.05 of the Los Angeles Municipal Code. • Fire lane width shall not be less than 20 feet. When a fire lane must accommodate the operation of Fire Department aerial ladder apparatus or where fire hydrants are installed, those portions shall not be less than 28' in width. • Private roadways for general access use shall have a minimum width of 20' feet. • Access for Fire Department apparatus and personnel to and into all structures shall be required. • Private streets shall be recorded as Private Streets, AND Fire Lane. All private street plans shall show the words "Private Street and Fire Lane" within the private street easement. • All parking restrictions for fire lanes shall be posted and/or painted prior to any Temporary Certificate of Occupancy being posted. 		
15. Utilities		
Mitigation Measure Utilities 15.1: Water.	DBS	DBS/DWP

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation's Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
<p>All projects shall:</p> <ul style="list-style-type: none"> • Install a separate water meter (or submeter), flow sensor, and master valve shutoff shall be installed for existing and expanded irrigated landscape areas totaling 5,000 sf and greater. • Install restroom faucets with a self-closing design. • Be prohibited from installing single-pass cooling equipment. Prohibition of such equipment shall be indicated on the building plans and incorporated into tenant lease agreements. (Single-pass cooling refers to the use of potable water to extract heat from process equipment, e.g. vacuum pump, ice machines, by passing the water through equipment and discharging the heated water to the sanitary wastewater system). • Install and utilize only high-efficiency clothes washers (as determined by DWP). If such appliance is to be furnished by a tenant, this requirement shall be incorporated into the lease agreement, and the applicant shall be responsible for ensuring compliance. • Install and utilize only high-efficiency Energy Star-rated dishwashers.). If such appliance is to be furnished by a tenant, this requirement shall be incorporated into the lease agreement, and the applicant shall be responsible for ensuring compliance. • Any application that includes a car wash shall incorporate a water recycling system to the satisfaction of the Department of Building and Safety. 		
<p>Mitigation Measure Utilities 15.2:</p> <p><i>Wastewater.</i></p> <p>All projects shall:</p> <ul style="list-style-type: none"> • Include a holding tank large enough to hold three times the project’s daily wastewater flow so that the tank could hold all project wastewater during peak wastewater flow periods for discharge into the wastewater collection system during off-peak hours. • Install a grey water system to reuse wastewater from the 	BOS	BOS

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

Mitigation Measure	Implementing Agency	Enforcement and Monitoring Agency
project.		
<p>Mitigation Measure Utilities 15.3:</p> <p><i>Electricity.</i></p> <p>Projects shall obtain confirmation from LADWP that the existing electrical supply infrastructure can meet the project’s potential energy demand.</p>	DWP	DWP
<p>Mitigation Measure Utilities 15.4:</p> <p><i>Natural Gas.</i></p> <p>Projects shall obtain confirmation from the Southern California Gas Company that the existing gas supply infrastructure can meet the project’s potential natural gas demand.</p>	Southern California Gas Company	DBS
<p>Mitigation Measure Utilities 15.5:</p> <p><i>IT/COMM.</i></p> <p>Projects shall obtain confirmation from the local IT/COMM provider that the existing infrastructure can meet the project’s potential needed services and facilities.</p>	IT/COMM Provider	DBS
16. Energy and Greenhouse Gases		
<p>Mitigation Measure Energy and Greenhouse Gases 16.1:</p> <p><i>Energy Generation.</i></p> <p>Projects shall supply 20 percent of non-residential and 10 percent of residential energy demand with renewable energy generation.</p>	DWP	DWP
<p>Mitigation Measure Energy and Greenhouse Gases 16.2:</p> <p><i>Climate Action Plan.</i></p> <p>The City shall implement the Climate Action Plan.</p>	Mayor’s Office	Mayor’s Office

DCP = Department of City Planning, DBS = Department of Building and Safety, LAFCD = Los Angeles County Fire Department, LAFD = Los Angeles Fire Department, LAPD = Los Angeles Police Department, LADOT= Los Angeles Department of Transportation, RAP = Department of Recreation and Parks, LAUSD = Los Angeles Unified School District, DWP = Department of Water and Power, BOS = Bureau of Sanitation, SCAQMD = South Coast Air Quality Management District, DOGGR = Department of Conservation’s Division of Oil, Gas, and Geothermal Resources, BOE = Bureau of Engineering, DF&G = Department of Fish and Game

A2 CalEE Mod Input Table

tblProjectCharacteristics

ProjectName CASP-ProposedAlt-2035 (May 12, 2012)	LocationScope AD	EMFAC_ID SCAQMD	WindSpeed 2.2	Precipitation Frequency 31	Climate Zone 11	Urbanization Level Urban
UtilityCompany Los Angeles Department of Water & Power	CO2Intensity Factor 1238.52	CH4 Intensity Factor 0.029	N2O Intensity Factor 0.011	Total Population 29556	Total Lot Acreage 619.39	UsingHistorical Energy Use Data 0
Operational Year 2035						

tblPollutants

Pollutant Selection	PollutantFullName	PollutantName
1	Reactive Organic Gases (ROG)	ROG
1	Nitrogen Oxides (NOx)	NOX
1	Carbon Monoxide (CO)	CO
1	Sulfur Dioxide (SO2)	SO2
1	Particulate Matter 10um (PM10)	PM10
1	Particulate Matter 2.5um (PM2.5)	PM2_5
1	Fugitive PM10um (PM10)	PM10_FUG
1	Fugitive PM2.5um (PM2.5)	PM25_FUG
1	Total Organic Gases (TOG)	TOG
1	Lead (Pb)	PB
1	Biogenic Carbon Dioxide (CO2)	CO2_BIO
1	Non-Biogenic Carbon Dioxide (CO2)	CO2_NBIO
1	Carbon Dioxide (CO2)	CO2
1	Methane (CH4)	CH4
1	Nitrous Oxide (N2O)	N2O
1	CO2 Equivalent GHGs (CO2e)	CO2E

tblLandUse

LandUseType	LandUseSubType	Land Use Unit	Land Use Size	LotAcreage	LandUse	
		Amount	Metric		Square Feet	Population
Commercial	Bank (with Drive-Through)	68.09	1000sqft	1.56	68090	0
Commercial	General Office Building	425.54	1000sqft	9.77	425540	0
Commercial	Government Office Building	765.97	1000sqft	17.58	765970	0
Commercial	Medical Office Building	85.11	1000sqft	1.95	85110	0
Commercial	Office Park	340.43	1000sqft	7.82	340430	0
Commercial	Pharmacy/Drugstore w/o Drive Thru	17.02	1000sqft	0.39	17020	0
Educational	Day-Care Center	30	1000sqft	0.69	30000	0
Educational	Elementary School	24	1000sqft	0.55	24000	0
Educational	High School	18	1000sqft	0.41	18000	0
Educational	Junior High School	18	1000sqft	0.41	18000	0
Educational	Place of Worship	40	1000sqft	0.92	40000	0
Educational	University/College (4Yr)	1272	Student	5.37	70000	0
Industrial	General Light Industry	3285.83	1000sqft	75.43	3285830	0
Industrial	Industrial Park	985.75	1000sqft	22.63	985750	0
Industrial	Manufacturing	1642.91	1000sqft	37.72	1642910	0
Industrial	Refrigerated Warehouse-No Rail	657.17	1000sqft	15.09	657170	0
Recreational	City Park	47.45	Acre	47.45	0	0
Recreational	Health Club	119.15	1000sqft	2.74	119150	0
Recreational	High Turnover (Sit Down Restaurant)	142.36	1000sqft	3.27	142360	0
Recreational	Hotel	693	Room	23.1	1006236	0
Residential	Apartments High Rise	1755	Dwelling Unit	28.31	1233000	6369
Residential	Apartments Low Rise	439	Dwelling Unit	27.44	1195000	1593
Residential	Apartments Mid Rise	2721	Dwelling Unit	71.59	3119000	7782
Residential	Condo/Townhouse	1755	Dwelling Unit	109.69	4779000	6369
Residential	Condo/Townhouse High Rise	1755	Dwelling Unit	27.42	1195000	6369
Residential	Congregate Care (Assisted Living)	264	Dwelling Unit	40.6	1617000	822
Residential	Retirement Community	0	Dwelling Unit	0	0	0
Residential	Single Family Housing	88	Dwelling Unit	29.25	1274000	252
Retail	Convenience Market (24 Hour)	18.3	1000sqft	0.42	18300	0
Retail	Convenience Market With Gas Pumps	18.3	1000sqft	0.42	18300	0
Retail	Discount Club	11	1000sqft	0.42	11000	0
Retail	Electronic Superstore	5.49	1000sqft	0.13	5490	0
Retail	Free-Standing Discount Store	12.81	1000sqft	1.26	12810	0
Retail	Free-Standing Discount Superstore	12.81	1000sqft	0.42	12810	0
Retail	Gasoline/Service Station	9	Pump	0.03	1270.57	0
Retail	Hardware/Paint Store	45.76	1000sqft	1.05	45760	0
Retail	Home Improvement Superstore	104.2	1000sqft	2.52	104200	0
Retail	Regional Shopping Center	36.6	1000sqft	1.68	36600	0
Retail	Supermarket	82.36	1000sqft	1.89	82360	0

tblLandUse1

tblConstructionPhase

Phase Number	PhaseName	PhaseType	Phase StartDate	Phase EndDate	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	2013/01/02	2013/09/06	5	178	
2	Site Preparation	Site Preparation	2013/09/07	2015/04/17	5	420	
3	Grading	Grading	2015/04/18	2017/06/14	5	563	
4	Building Construction	Building Construction	2017/06/15	2034/12/29	5	4577	
5	Paving	Paving	2017/06/15	2019/12/28	5	662	
6	Architectural Coating	Architectural Coating	2020/01/01	2034/12/29	5	3913	

tblOffRoadEquipment

PhaseName	OffRoadEquipmentType	OffRoad			
		Equipment Unit Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	10	8	81	0.73
Demolition	Excavators	30	8	157	0.57
Demolition	Rubber Tired Dozers	20	8	358	0.59
Site Preparation	Rubber Tired Dozers	30	8	358	0.59
Site Preparation	Tractors/Loaders/Backhoes	40	8	75	0.55
Grading	Excavators	20	8	157	0.57
Grading	Graders	10	8	162	0.61
Grading	Rubber Tired Dozers	10	8	358	0.59
Grading	Scrapers	20	8	356	0.72
Grading	Tractors/Loaders/Backhoes	20	8	75	0.55
Building Construction	Cranes	10	7	208	0.43
Building Construction	Forklifts	30	8	149	0.3
Building Construction	Generator Sets	10	8	84	0.74
Building Construction	Tractors/Loaders/Backhoes	30	7	75	0.55
Building Construction	Welders	10	8	46	0.45
Paving	Pavers	20	8	89	0.62
Paving	Paving Equipment	20	8	82	0.53
Paving	Rollers	20	8	84	0.56
Architectural Coating	Air Compressors	10	6	78	0.48

tblTripsAndVMT

PhaseName	WorkerTr ip Number	VendorTr ip Number	HaulingTr ip Number	WorkerTr ip Length	VendorTr ip Length	HaulingTr ip Length	WorkerVe hicleClas s	Vendor Vehicle Class	HaulingV ehicleCla ss
Demolition	150	0	4548	12.7	7.4	20	LD_Mix	HDT_Mix	HHDT
Site Preparation	175	0	0	12.7	7.4	20	LD_Mix	HDT_Mix	HHDT
Grading	200	0	0	12.7	7.4	20	LD_Mix	HDT_Mix	HHDT
Building Construction	10321	2592	0	12.7	7.4	20	LD_Mix	HDT_Mix	HHDT
Paving	150	0	0	12.7	7.4	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2064	0	0	12.7	7.4	20	LD_Mix	HDT_Mix	HHDT

tblOnRoadDust

PhaseName	WorkerPercentPaved	VendorPercentPaved	HaulingPercentPaved	RoadSiltLoading	MaterialSiltContent	MaterialMoistureContent	AverageVehicleWeight	MeanVehicleSpeed
Demolition	100	100	100	0.1	8.5	0.5	2.4	40
Site Preparation	100	100	100	0.1	8.5	0.5	2.4	40
Grading	100	100	100	0.1	8.5	0.5	2.4	40
Building Construction	100	100	100	0.1	8.5	0.5	2.4	40
Paving	100	100	100	0.1	8.5	0.5	2.4	40
Architectural	100	100	100	0.1	8.5	0.5	2.4	40

tblDemolition

PhaseName	DemolitionSizeMetric	DemolitionUnitAmount
Demolition	Building Square Footage	1000000

tblGrading

PhaseName	MaterialImported	MaterialExported	GradingSizeMetric	ImportExportPhase	MeanVehicleSpeed	AcresOfGrading	MaterialMoistureContentBulldozing	MaterialMoistureContentTruckLoading	MaterialSiltContent	
Site Preparation	0	0			0	7.1	0	7.9	12	6.9
Grading	0	0			0	7.1	2712.5	7.9	12	6.9

tblArchitecturalCoating

PhaseName	ArchitecturalCoatingStartDate	ArchitecturalCoatingEndDate	EF_Residential_Interior	ConstArea_Residential_Interior	EF_Residential_Exterior	ConstArea_Residential_Exterior	EF_Nonresidential_Interior	ConstArea_Nonresidential_Interior	EF_Nonresidential_Exterior	ConstArea_Nonresidential_Exterior
Architectur	2008/07/01	3000/12/31	50	29184300	100	9728100	250	15135700	250	5045233

tblPaving

ParkingL
otAcreag
e

tblVehicleTrips

VehicleTripsLand		WD_TR	ST_TR	SU_TR	HW_TL	HS_TL	HO_TL	CC_TL	CW_TL	CNW_TL	PR_TP
VehicleTripsLandUseSubType	UseSizeMetric										
Apartments High Rise	Dwelling Unit	6.59	7.16	6.07	12.7	7	9.5	0	0	0	86
Apartments Low Rise	Dwelling Unit	6.59	7.16	6.07	12.7	7	9.5	0	0	0	86
Apartments Mid Rise	Dwelling Unit	6.59	7.16	6.07	12.7	7	9.5	0	0	0	86
Bank (with Drive-Through)	1000sqft	148.15	86.32	31.9	0	0	0	13.3	8.9	7.4	27
City Park	Acre	1.59	1.59	1.59	0	0	0	13.3	8.9	7.4	66
Condo/Townhouse	Dwelling Unit	6.59	7.16	6.07	12.7	7	9.5	0	0	0	86
Condo/Townhouse High Rise	Dwelling Unit	6.59	7.16	6.07	12.7	7	9.5	0	0	0	86
Congregate Care (Assisted Living)	Dwelling Unit	2.74	2.2	2.44	12.7	7	9.5	0	0	0	86
Convenience Market (24 Hour)	1000sqft	737.99	863.1	758.45	0	0	0	13.3	8.9	7.4	24
Convenience Market With Gas Pumps	1000sqft	845.6	1448.33	1182.08	0	0	0	13.3	8.9	7.4	14
Day-Care Center	1000sqft	79.26	6.21	5.83	0	0	0	13.3	8.9	7.4	28
Discount Club	1000sqft	41.8	53.75	33.67	0	0	0	13.3	8.9	7.4	45
Electronic Superstore	1000sqft	45.04	45.04	45.04	0	0	0	13.3	8.9	7.4	27
Elementary School	1000sqft	15.43	0	0	0	0	0	13.3	8.9	7.4	63
Free-Standing Discount Store	1000sqft	57.24	71.07	56.36	0	0	0	13.3	8.9	7.4	47.5
Free-Standing Discount Superstore	1000sqft	53.13	64.07	56.12	0	0	0	13.3	8.9	7.4	47.5
Gasoline/Service Station	Pump	162.78	162.78	162.78	0	0	0	13.3	8.9	7.4	14
General Light Industry	1000sqft	6.97	1.32	0.68	0	0	0	13.3	8.9	7.4	92
General Office Building	1000sqft	11.01	2.37	0.98	0	0	0	13.3	8.9	7.4	77
Government Office Building	1000sqft	68.93	0	0	0	0	0	13.3	8.9	7.4	50
Hardware/Paint Store	1000sqft	51.29	82.52	68.65	0	0	0	13.3	8.9	7.4	45
Health Club	1000sqft	32.93	20.87	26.73	0	0	0	13.3	8.9	7.4	52
High School	1000sqft	12.89	4.37	1.79	0	0	0	13.3	8.9	7.4	75
High Turnover (Sit Down Restaurant)	1000sqft	127.15	158.37	131.84	0	0	0	13.3	8.9	7.4	37
Home Improvement Superstore	1000sqft	29.8	56.72	55.8	0	0	0	13.3	8.9	7.4	32
Hotel	Room	8.17	8.19	5.95	0	0	0	13.3	8.9	7.4	58
Industrial Park	1000sqft	6.96	2.49	0.73	0	0	0	13.3	8.9	7.4	79
Junior High School	1000sqft	13.78	0	0	0	0	0	13.3	8.9	7.4	63
Manufacturing	1000sqft	3.82	1.49	0.62	0	0	0	13.3	8.9	7.4	92
Medical Office Building	1000sqft	36.13	8.96	1.55	0	0	0	13.3	8.9	7.4	60
Office Park	1000sqft	11.42	1.64	0.76	0	0	0	13.3	8.9	7.4	82
Pharmacy/Drugstore w/o Drive Thru	1000sqft	90.06	90.06	90.06	0	0	0	13.3	8.9	7.4	41
Place of Worship	1000sqft	9.11	10.37	36.63	0	0	0	13.3	8.9	7.4	64
Refrigerated Warehouse-No Rail	1000sqft	2.59	2.59	2.59	0	0	0	13.3	8.9	7.4	92
Regional Shopping Center	1000sqft	42.94	49.97	25.24	0	0	0	13.3	8.9	7.4	54
Retirement Community	Dwelling Unit	2.81	2.81	2.81	12.7	7	9.5	0	0	0	86
Single Family Housing	Dwelling Unit	9.57	10.08	8.77	12.7	7	9.5	0	0	0	86
Supermarket	1000sqft	102.24	177.59	166.44	0	0	0	13.3	8.9	7.4	34
University/College (4Yr)	Student	2.38	1.3	0	0	0	0	13.3	8.9	7.4	91

tblVehicleTrips

DV_TP	PB_TP	HW_TTP	HS_TTP	HO_TTP	CC_TTP	CW_TTP	CNW_TT P
11	3	40.2	19.2	40.6	0	0	0
11	3	40.2	19.2	40.6	0	0	0
11	3	40.2	19.2	40.6	0	0	0
26	47	0	0	0	74.4	6.6	19
28	6	0	0	0	48	33	19
11	3	40.2	19.2	40.6	0	0	0
11	3	40.2	19.2	40.6	0	0	0
11	3	40.2	19.2	40.6	0	0	0
15	61	0	0	0	80.1	0.9	19
21	65	0	0	0	80.2	0.8	19
58	14	0	0	0	82.3	12.7	5
40	15	0	0	0	64.3	16.7	19
33	40	0	0	0	65.5	15.5	19
25	12	0	0	0	30	65	5
35.5	17	0	0	0	68.8	12.2	19
35.5	17	0	0	0	67.8	13.2	19
27	59	0	0	0	79	2	19
5	3	0	0	0	28	59	13
19	4	0	0	0	48	33	19
34	16	0	0	0	62	33	5
29	26	0	0	0	67.4	13.6	19
39	9	0	0	0	64.1	16.9	19
19	6	0	0	0	17.2	77.8	5
20	43	0	0	0	72.5	8.5	19
20	48	0	0	0	57.6	23.4	19
38	4	0	0	0	61.6	19.4	19
19	2	0	0	0	28	59	13
25	12	0	0	0	22.2	72.8	5
5	3	0	0	0	28	59	13
30	10	0	0	0	51.4	29.6	19
15	3	0	0	0	48	33	19
6	53	0	0	0	73.6	7.4	19
25	11	0	0	0	95	0	5
5	3	0	0	0	0	59	41
35	11	0	0	0	64.7	16.3	19
11	3	40.2	19.2	40.6	0	0	0
11	3	40.2	19.2	40.6	0	0	0
30	36	0	0	0	74.5	6.5	19
9	0	0	0	0	88.6	6.4	5

tblVehicleEF

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	FleetMix	0.467434	0.079379	0.240235	0.113678	0.022761	0.006758	0.016078	0.03958	0.001042	0.001849	0.005314	0.001056	0.004836
A	CH4_IDLEX	0	0	0	0	0.0014	0.0012	0.0009	0.1	0.0009	0	0	0.02	0
A	CH4_RUNE>	0.007	0.008	0.01	0.01	0.0053	0.0043	0.0051	0.01	0.005	0.02	0.21	0.01	0.0072
A	CH4_STREX	0.0023	0.0028	0.0056	0.0079	0.0091	0.0066	0.0061	0.01	0.0086	0.07	0.12	0.0085	0.01
A	CO_IDLEX	0	0	0	0	0.19	0.18	0.13	11.76	0.14	0	0	4.89	0
A	CO_RUNEX	0.52	0.63	1.01	1.3	0.34	0.38	1.12	1.56	1	3.02	22.75	3.03	0.22
A	CO_STREX	0.78	0.96	1.64	2.3	2.14	1.67	1.66	6.03	2.46	13.7	10.34	2.5	4.21
A	CO2_IDLEX	0	0	0	0	7.281	7.704	11.394	1689.201	11.214	0	0	496.89	0
A	CO2_RUNE>	239.634	306.504	352.44	478.863	601.803	563.706	1223.784	1651.752	1220.778	1432.863	156.897	1283.184	677.763
A	CO2_STREX	42.993	55.098	63.027	86.013	37.008	31.617	9.792	4.878	11.034	61.785	36.306	11.961	29.781
A	NOX_IDLEX	0	0	0	0	0.01	0.04	0.18	35.01	0.17	0	0	8.92	0
A	NOX_RUNE>	0.03	0.04	0.07	0.09	0.35	0.56	1.1	2.42	0.98	4.58	1.1	5.17	0.26
A	NOX_STRE>	0.03	0.04	0.09	0.12	1.19	0.92	0.24	0.62	0.37	2.33	0.3	0.27	0.56
A	PM10_IDLEX	0	0	0	0	0.0002	0.0005	0.0019	0.03	0.0018	0	0	0.09	0
A	PM10_PMBV	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.0063	0.01	0.01
A	PM10_PMTV	0.008	0.008	0.008	0.008	0.01	0.01	0.01	0.03	0.01	0.0098	0.004	0.01	0.01
A	PM10_RUNE	0.01	0.01	0.03	0.03	0.01	0.01	0.09	0.11	0.07	0.09	0.01	0.28	0.0061
A	PM10_STRE	0.0066	0.0074	0.01	0.01	0.0021	0.0017	0.0011	0.0007	0.0011	0.0056	0.0085	0.0007	0.0006
A	PM25_IDLEX	0	0	0	0	0.0002	0.0004	0.0018	0.03	0.0017	0	0	0.08	0
A	PM25_PMBV	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.01	0.0054	0.0054	0.0027	0.0054	0.0054
A	PM25_PMTV	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.0089	0.003	0.0025	0.001	0.003	0.003
A	PM25_RUNE	0.01	0.01	0.03	0.03	0.01	0.01	0.08	0.1	0.07	0.08	0.01	0.26	0.0056
A	PM25_STRE	0.0061	0.0068	0.01	0.01	0.002	0.0016	0.001	0.0006	0.0011	0.0052	0.0066	0.0007	0.0006
A	ROG_DIURN	0.02	0.03	0.06	0.07	0.0011	0.0008	0.0002	0.0002	0.0003	0.0054	0.94	0.0019	0.33
A	ROG_HTSK	0.06	0.08	0.12	0.12	0.03	0.02	0.0055	0.0045	0.0097	0.07	0.33	0.01	0.01
A	ROG_IDLEX	0	0	0	0	0.03	0.02	0.01	2.17	0.02	0	0	0.66	0
A	ROG_RESTL	0.02	0.03	0.07	0.08	0.0006	0.0004	0.0001	0.0001	0.0002	0.0035	0.51	0.0009	0.19
A	ROG_RUNE>	0.0087	0.01	0.01	0.02	0.02	0.03	0.08	0.23	0.07	0.32	2.68	0.3	0.01
A	ROG_RUNL<	0.036453	0.055131	0.078508	0.081963	0.207347	0.113345	0.042757	0.001637	0.087123	0.026633	0.29619	0.012298	0.002372
A	ROG_STRE>	0.04	0.04	0.1	0.13	0.16	0.11	0.1	0.21	0.15	1.27	2.03	0.15	0.23
A	SO2_IDLEX	0	0	0	0	0.0001	0.0001	0.0001	0.01	0.0001	0	0	0.0053	0
A	SO2_RUNE>	0.0038	0.0047	0.0049	0.0066	0.0064	0.006	0.01	0.01	0.01	0.01	0.0021	0.01	0.0072
A	SO2_STREX	0.0007	0.0009	0.0009	0.0012	0.0004	0.0004	0.0001	0.0001	0.0002	0.0009	0.0006	0.0002	0.0004
A	TOG_DIURN	0.02	0.03	0.06	0.07	0.0011	0.0008	0.0002	0.0002	0.0003	0.0054	0.94	0.0019	0.33
A	TOG_HTSK	0.06	0.08	0.12	0.12	0.03	0.02	0.0055	0.0045	0.0097	0.07	0.33	0.01	0.01
A	TOG_IDLEX	0	0	0	0	0.03	0.03	0.02	2.48	0.02	0	0	0.73	0
A	TOG_RESTL	0.02	0.03	0.07	0.08	0.0006	0.0004	0.0001	0.0001	0.0002	0.0035	0.51	0.0009	0.19
A	TOG_RUNE>	0.01	0.01	0.03	0.04	0.02	0.03	0.09	0.27	0.08	0.37	2.94	0.35	0.01
A	TOG_RUNL<	0.036453	0.055131	0.078508	0.081963	0.207347	0.113345	0.042757	0.001637	0.087123	0.026633	0.29619	0.012298	0.002372
A	TOG_STRE>	0.04	0.05	0.1	0.14	0.17	0.12	0.11	0.22	0.16	1.35	2.18	0.16	0.24
S	FleetMix	0.467434	0.079379	0.240235	0.113678	0.022761	0.006758	0.016078	0.03958	0.001042	0.001849	0.005314	0.001056	0.004836
S	CH4_IDLEX	0	0	0	0	0.0014	0.0012	0.0009	0.09	0.0009	0	0	0.02	0

tblVehicleEF

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
S	CH4_RUNE>	0.0075	0.0086	0.01	0.01	0.0054	0.0043	0.0052	0.01	0.005	0.02	0.21	0.01	0.0073
S	CH4_STREX	0.0019	0.0023	0.0047	0.0065	0.008	0.0057	0.0054	0.01	0.0076	0.06	0.1	0.0077	0.01
S	CO_IDLEX	0	0	0	0	0.19	0.18	0.13	8.55	0.14	0	0	4.89	0
S	CO_RUNEX	0.59	0.71	1.14	1.47	0.34	0.38	1.12	1.56	1	3.06	21.76	3.04	0.22
S	CO_STREX	0.59	0.72	1.24	1.73	1.67	1.31	1.32	4.82	1.96	11.52	8.89	2.13	3.36
S	CO2_IDLEX	0	0	0	0	7.281	7.704	11.394	1785.465	11.214	0	0	496.89	0
S	CO2_RUNE>	256.662	327.564	376.659	511.785	601.803	563.706	1223.784	1651.752	1220.778	1432.863	156.897	1283.184	677.763
S	CO2_STREX	42.993	55.098	63.027	86.013	37.008	31.617	9.792	4.878	11.034	61.785	36.306	11.961	29.781
S	NOX_IDLEX	0	0	0	0	0.01	0.04	0.18	36.24	0.17	0	0	8.92	0
S	NOX_RUNE>	0.03	0.04	0.07	0.08	0.35	0.56	1.09	2.42	0.98	4.54	1.05	5.15	0.26
S	NOX_STREX	0.03	0.04	0.09	0.11	1.14	0.89	0.23	0.6	0.36	2.22	0.29	0.25	0.54
S	PM10_IDLEX	0	0	0	0	0.0002	0.0005	0.0019	0.03	0.0018	0	0	0.09	0
S	PM10_PMBV	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.0063	0.01	0.01
S	PM10_PMTV	0.008	0.008	0.008	0.008	0.01	0.01	0.01	0.03	0.01	0.0098	0.004	0.01	0.01
S	PM10_RUNE	0.01	0.01	0.03	0.03	0.01	0.01	0.09	0.11	0.07	0.09	0.01	0.28	0.0061
S	PM10_STRE	0.0066	0.0074	0.01	0.01	0.0021	0.0017	0.0011	0.0007	0.0011	0.0056	0.0085	0.0007	0.0006
S	PM25_IDLEX	0	0	0	0	0.0002	0.0004	0.0018	0.02	0.0017	0	0	0.08	0
S	PM25_PMBV	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.01	0.0054	0.0054	0.0027	0.0054	0.0054
S	PM25_PMTV	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.0089	0.003	0.0025	0.001	0.003	0.003
S	PM25_RUNE	0.01	0.01	0.03	0.03	0.01	0.01	0.08	0.1	0.07	0.08	0.01	0.26	0.0056
S	PM25_STRE	0.0061	0.0068	0.01	0.01	0.002	0.0016	0.001	0.0006	0.0011	0.0052	0.0066	0.0007	0.0006
S	ROG_DIURN	0.04	0.06	0.12	0.13	0.0018	0.0013	0.0004	0.0002	0.0005	0.0084	1.83	0.003	0.53
S	ROG_HTSK	0.07	0.09	0.12	0.13	0.03	0.02	0.0057	0.0046	0.01	0.09	0.42	0.01	0.01
S	ROG_IDLEX	0	0	0	0	0.03	0.02	0.01	2.04	0.02	0	0	0.66	0
S	ROG_RESTL	0.03	0.05	0.11	0.12	0.0009	0.0007	0.0002	0.0001	0.0003	0.0059	1.02	0.0015	0.31
S	ROG_RUNE>	0.0094	0.01	0.02	0.02	0.02	0.03	0.08	0.24	0.07	0.33	2.63	0.3	0.01
S	ROG_RUNL<	0.034778	0.052337	0.074548	0.077859	0.201565	0.110062	0.041916	0.001626	0.085512	0.024524	0.277041	0.011111	0.002312
S	ROG_STRE>	0.03	0.04	0.08	0.11	0.14	0.1	0.09	0.18	0.13	1.15	1.78	0.13	0.2
S	SO2_IDLEX	0	0	0	0	0.0001	0.0001	0.0001	0.01	0.0001	0	0	0.0053	0
S	SO2_RUNE>	0.0041	0.0051	0.0052	0.0071	0.0064	0.006	0.01	0.01	0.01	0.01	0.0021	0.01	0.0072
S	SO2_STREX	0.0007	0.0009	0.0009	0.0012	0.0004	0.0004	0.0001	0.0001	0.0002	0.0009	0.0006	0.0002	0.0004
S	TOG_DIURN	0.04	0.06	0.12	0.13	0.0018	0.0013	0.0004	0.0002	0.0005	0.0084	1.83	0.003	0.53
S	TOG_HTSK	0.07	0.09	0.12	0.13	0.03	0.02	0.0057	0.0046	0.01	0.09	0.42	0.01	0.01
S	TOG_IDLEX	0	0	0	0	0.03	0.03	0.02	2.33	0.02	0	0	0.73	0
S	TOG_RESTL	0.03	0.05	0.11	0.12	0.0009	0.0007	0.0002	0.0001	0.0003	0.0059	1.02	0.0015	0.31
S	TOG_RUNE>	0.01	0.02	0.03	0.04	0.02	0.03	0.09	0.27	0.08	0.37	2.88	0.35	0.02
S	TOG_RUNL<	0.034778	0.052337	0.074548	0.077859	0.201565	0.110062	0.041916	0.001626	0.085512	0.024524	0.277041	0.011111	0.002312
S	TOG_STRE>	0.03	0.04	0.08	0.12	0.15	0.1	0.1	0.19	0.14	1.22	1.91	0.14	0.21
W	FleetMix	0.467434	0.079379	0.240235	0.113678	0.022761	0.006758	0.016078	0.03958	0.001042	0.001849	0.005314	0.001056	0.004836
W	CH4_IDLEX	0	0	0	0	0.0014	0.0012	0.0009	0.1	0.0009	0	0	0.02	0
W	CH4_RUNE>	0.0068	0.0078	0.01	0.01	0.0053	0.0043	0.0051	0.01	0.005	0.02	0.21	0.01	0.0072
W	CH4_STREX	0.0024	0.0028	0.0057	0.008	0.0092	0.0067	0.0061	0.01	0.0086	0.07	0.12	0.0087	0.01

tblVehicleEF

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
W	CO_IDLE	0	0	0	0	0.19	0.18	0.13	16.25	0.14	0	0	4.89	0
W	CO_RUNEX	0.5	0.6	0.96	1.24	0.34	0.38	1.12	1.55	1	3.01	22.84	3.03	0.22
W	CO_STREX	0.8	0.98	1.69	2.36	2.17	1.7	1.66	6.05	2.47	13.78	10.39	2.61	4.22
W	CO2_IDLE	0	0	0	0	7.281	7.704	11.394	1554.435	11.214	0	0	496.89	0
W	CO2_RUNEX	232.488	297.684	342.297	465.075	601.803	563.706	1223.784	1651.752	1220.778	1432.863	156.897	1283.184	677.763
W	CO2_STREX	42.993	55.098	63.027	86.013	37.008	31.617	9.792	4.878	11.034	61.785	36.306	11.961	29.781
W	NOX_IDLE	0	0	0	0	0.01	0.04	0.18	33.28	0.17	0	0	8.92	0
W	NOX_RUNEX	0.04	0.04	0.08	0.1	0.38	0.6	1.17	2.59	1.05	4.93	1.23	5.51	0.29
W	NOX_STREX	0.03	0.04	0.1	0.12	1.19	0.92	0.24	0.62	0.37	2.34	0.3	0.28	0.56
W	PM10_IDLE	0	0	0	0	0.0002	0.0005	0.0019	0.04	0.0018	0	0	0.09	0
W	PM10_PMBV	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.0063	0.01	0.01
W	PM10_PMTV	0.008	0.008	0.008	0.008	0.01	0.01	0.01	0.03	0.01	0.0098	0.004	0.01	0.01
W	PM10_RUNEX	0.01	0.01	0.03	0.03	0.01	0.01	0.09	0.11	0.07	0.09	0.01	0.28	0.0061
W	PM10_STREX	0.0066	0.0074	0.01	0.01	0.0021	0.0017	0.0011	0.0007	0.0011	0.0056	0.0085	0.0007	0.0006
W	PM25_IDLE	0	0	0	0	0.0002	0.0004	0.0018	0.04	0.0017	0	0	0.08	0
W	PM25_PMBV	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.01	0.0054	0.0054	0.0027	0.0054	0.0054
W	PM25_PMTV	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.0089	0.003	0.0025	0.001	0.003	0.003
W	PM25_RUNEX	0.01	0.01	0.03	0.03	0.01	0.01	0.08	0.1	0.07	0.08	0.01	0.26	0.0056
W	PM25_STREX	0.0061	0.0068	0.01	0.01	0.002	0.0016	0.001	0.0006	0.0011	0.0052	0.0066	0.0007	0.0006
W	ROG_DIURN	0.02	0.03	0.06	0.07	0.0012	0.0008	0.0002	0.0002	0.0003	0.0063	1.22	0.0021	0.34
W	ROG_HTSK	0.07	0.09	0.12	0.13	0.03	0.02	0.0057	0.0046	0.01	0.09	0.44	0.01	0.01
W	ROG_IDLE	0	0	0	0	0.03	0.02	0.01	2.36	0.02	0	0	0.66	0
W	ROG_RESTL	0.02	0.03	0.06	0.07	0.0005	0.0004	0.0001	0.0001	0.0002	0.0031	0.43	0.0008	0.17
W	ROG_RUNEX	0.0085	0.01	0.01	0.02	0.02	0.03	0.08	0.23	0.07	0.32	2.69	0.3	0.01
W	ROG_RUNL	0.041741	0.06424	0.091316	0.095246	0.228746	0.124975	0.045951	0.001745	0.093356	0.033119	0.358418	0.01502	0.00256
W	ROG_STREX	0.04	0.05	0.1	0.14	0.16	0.11	0.1	0.21	0.15	1.28	2.04	0.15	0.23
W	SO2_IDLE	0	0	0	0	0.0001	0.0001	0.0001	0.01	0.0001	0	0	0.0053	0
W	SO2_RUNEX	0.0037	0.0046	0.0047	0.0064	0.0064	0.006	0.01	0.01	0.01	0.01	0.0021	0.01	0.0072
W	SO2_STREX	0.0007	0.0009	0.0009	0.0012	0.0004	0.0004	0.0001	0.0001	0.0002	0.0009	0.0006	0.0002	0.0004
W	TOG_DIURN	0.02	0.03	0.06	0.07	0.0012	0.0008	0.0002	0.0002	0.0003	0.0063	1.22	0.0021	0.34
W	TOG_HTSK	0.07	0.09	0.12	0.13	0.03	0.02	0.0057	0.0046	0.01	0.09	0.44	0.01	0.01
W	TOG_IDLE	0	0	0	0	0.03	0.03	0.02	2.68	0.02	0	0	0.73	0
W	TOG_RESTL	0.02	0.03	0.06	0.07	0.0005	0.0004	0.0001	0.0001	0.0002	0.0031	0.43	0.0008	0.17
W	TOG_RUNEX	0.01	0.01	0.03	0.04	0.02	0.03	0.09	0.27	0.08	0.36	2.94	0.35	0.01
W	TOG_RUNL	0.041741	0.06424	0.091316	0.095246	0.228746	0.124975	0.045951	0.001745	0.093356	0.033119	0.358418	0.01502	0.00256
W	TOG_STREX	0.04	0.05	0.1	0.15	0.17	0.12	0.11	0.22	0.16	1.36	2.19	0.16	0.25

tblRoadDust

RoadPerc	RoadSiltL	MaterialS	MaterialM	MobileAv	MeanVehi
entPave	oading	iltContent	oistureCo	erageVeh	cleSpeed
			ntent	icleWeigh	
			t	t	
100	0.1	4.3	0.5	2.4	40

tblWoodstoves

WoodstovesLandUseSubType	NumberConventional	NumberCatalytic	NumberNuc	NumberPellet	WoodstoveDayYear	WoodstoveWoodMass
Apartments High Rise	0	0	0	0	25	0
Apartments Low Rise	0	0	0	0	25	0
Apartments Mid Rise	0	0	0	0	25	0
Condo/Townhouse	0	0	0	0	25	0
Condo/Townhouse High Rise	0	0	0	0	25	0
Congregate Care (Assisted Living)	0	0	0	0	25	0
Retirement Community	0	0	0	0	25	0
Single Family Housing	0	0	0	0	25	0

tblFireplaces

FireplacesLandUseSubType	Number Wood	NumberG as	Number Propane	NumberNo Fireplace	Fireplace Hour Day	Fireplace Day Year	Fireplace Wood Mass
Apartments High Rise	0	1491.75	0	175.5	3	75	0
Apartments Low Rise	0	373.15	0	43.9	3	75	0
Apartments Mid Rise	0	2312.85	0	272.1	3	75	0
Condo/Townhouse	0	1491.75	0	175.5	3	75	0
Condo/Townhouse High Rise	0	1491.75	0	175.5	3	75	0
Congregate Care (Assisted Living)	0	224.4	0	26.4	3	75	0
Retirement Community	0	0	0	0	3	75	0
Single Family Housing	0	74.8	0	8.8	3	75	0

tblConsumerProducts

ROG_EF
0.0000198

tblAreaCoating

Area EF Residential Interior	Area Residential Interior	Area EF Residential Exterior	Area Residential Exterior	Area EF Nonresidential Interior	Area Nonresidential Interior
50	29184300	100	9728100	250	15135706

Area EF Nonresidential Exterior	Area Nonresidential Exterior	Reapplication Rate Percent
250	5045235	10

tblLandscapeEquipment

NumberS	ummerDa
now Days	ys
0	365

tblEnergyUse

EnergyUse	Lighting				
LandUse	Lighting				
SubType	T24E	NT24E	Elect	T24NG	NT24NG
Apartments High	239.97	2392.12	805.7	11281.92	1980.9
Apartments Low	160.16	2399.07	876.36	17860.46	2762.6
Apartments Mid	239.97	2392.12	805.7	11281.92	1980.9
Bank (with Drive	2.75	5.75	3.55	14.36	4.45
City Park	0	0	0	0	0
Condo/Townhou	145.06	2943.11	1016.08	22817.71	3381
Condo/Townhou	145.06	2943.11	1016.08	22817.71	3381
Congregate Car	239.97	2392.12	805.7	11281.92	1980.9
Convenience Ma	4.9	3.23	7.04	1.21	0.49
Convenience Ma	4.9	3.23	7.04	1.21	0.49
Day-Care Cente	2.13	1.59	2.98	9.81	1.08
Discount Club	4.9	3.23	7.04	1.21	0.49
Electronic Super	4.9	3.23	7.04	1.21	0.49
Elementary Sch	2.13	1.59	2.98	9.81	1.08
Free-Standing C	4.9	3.23	7.04	1.21	0.49
Free-Standing C	4.9	3.23	7.04	1.21	0.49
Gasoline/Service	2.75	5.75	3.55	14.36	4.45
General Light In	2.75	5.75	3.55	14.36	4.45
General Office E	5.62	4.62	4.29	10.54	0.39
Government Off	5.62	4.62	4.29	10.54	0.39
Hardware/Paint	4.9	3.23	7.04	1.21	0.49
Health Club	2.75	5.75	3.55	14.36	4.45
High School	2.13	1.59	2.98	9.81	1.08
High Turnover (9.91	28.16	8.84	45.23	187.78
Home Improver	4.9	3.23	7.04	1.21	0.49
Hotel	3.12	2.89	2.49	20.96	4.06
Industrial Park	5.62	4.62	4.29	10.54	0.39
Junior High Sch	2.13	1.59	2.98	9.81	1.08
Manufacturing	2.75	5.75	3.55	14.36	4.45
Medical Office B	5.62	4.62	4.29	10.54	0.39
Office Park	6.86	4.79	4.25	10.1	0.19
Pharmacy/Drug	4.9	3.23	7.04	1.21	0.49
Place of Worshi	2.75	5.75	3.55	14.36	4.45
Refrigerated Wa	0.51	13.61	3.14	0.99	0.09
Regional Shopp	4.9	3.23	7.04	1.21	0.49
Retirement Com	145.06	2943.11	1016.08	22817.71	3381
Single Family H	457.79	4476.23	1478.48	35042.36	5940.4
Supermarket	5.4	25.88	7.89	10.35	12.24
University/Collec	3.71	3.59	3.86	27.88	0.59

tblWater

Water Land Use SubType	WaterLand Use Size Metric	Indoor Water Use Rate	Outdoor Water UseRate	ElectricityIntensity FactorToSupply	ElectricityIntensity FactorToTreat	ElectricityIntensity FactorToDistribute	ElectricityIntensity Factor For Wastewater Treatment	Septic Tank Percent	AerobicPercent
Apartments High Rise	Dwelling Unit	114345315	72087263.78	9727	111	1272	1911	10	84.69
Apartments Low Rise	Dwelling Unit	28602617.3	18032084.79	9727	111	1272	1911	10	84.69
Apartments Mid Rise	Dwelling Unit	177284104	111766065.4	9727	111	1272	1911	10	84.69
Bank (with Drive-Through)	1000sqft	2697924.53	1653566.65	9727	111	1272	1911	10	84.69
City Park	Acre	0	56535790.04	9727	111	1272	1911	10	84.69
Condo/Townhouse	Dwelling Unit	114345315	72087263.78	9727	111	1272	1911	10	84.69
Condo/Townhouse High Rise	Dwelling Unit	114345315	72087263.78	9727	111	1272	1911	10	84.69
Congregate Care (Assisted Living)	Dwelling Unit	17200662.8	10843896.09	9727	111	1272	1911	10	84.69
Convenience Market (24 Hour)	1000sqft	1355527.14	830806.96	9727	111	1272	1911	10	84.69
Convenience Market With Gas Pumps	1000sqft	1355527.14	830806.96	9727	111	1272	1911	10	84.69
Day-Care Center	1000sqft	1286687.02	3308623.78	9727	111	1272	1911	10	84.69
Discount Club	1000sqft	814797.74	499392.16	9727	111	1272	1911	10	84.69
Electronic Superstore	1000sqft	406658.14	249242.09	9727	111	1272	1911	10	84.69
Elementary School	1000sqft	695926.01	1789524.03	9727	111	1272	1911	10	84.69
Free-Standing Discount Store	1000sqft	948869	581564.87	9727	111	1272	1911	10	84.69
Free-Standing Discount Superstore	1000sqft	948869	581564.87	9727	111	1272	1911	10	84.69
Gasoline/Service Station	Pump			9727	111	1272	1911	10	84.69
General Light Industry	1000sqft	759848188	0	9727	111	1272	1911	10	84.69
General Office Building	1000sqft	75632819.1	46355598.82	9727	111	1272	1911	10	84.69
Government Office Building	1000sqft	152167360	93263865.55	9727	111	1272	1911	10	84.69
Hardware/Paint Store	1000sqft	3389558.58	2077471.39	9727	111	1272	1911	10	84.69
Health Club	1000sqft	7046905.61	4319071.18	9727	111	1272	1911	10	84.69
High School	1000sqft	597683.52	1536900.48	9727	111	1272	1911	10	84.69
High Turnover (Sit Down Restaurant)	1000sqft	43211059.3	2758152.72	9727	111	1272	1911	10	84.69
Home Improvement Superstore	1000sqft	7718356.74	4730605.74	9727	111	1272	1911	10	84.69
Hotel	Room	17579171.6	1953241.29	9727	111	1272	1911	10	84.69
Industrial Park	1000sqft	227954688	0	9727	111	1272	1911	10	84.69
Junior High School	1000sqft	371178.08	954457.92	9727	111	1272	1911	10	84.69
Manufacturing	1000sqft	379922938	0	9727	111	1272	1911	10	84.69
Medical Office Building	1000sqft	10679648.6	2034218.77	9727	111	1272	1911	10	84.69
Office Park	1000sqft	60505899.8	37084261.19	9727	111	1272	1911	10	84.69
Pharmacy/Drugstore w/o Drive Thru	1000sqft	1199016.84	734881.29	9727	111	1272	1911	10	84.69
Place of Worship	1000sqft	1251556.33	1957562.47	9727	111	1272	1911	10	84.69
Refrigerated Warehouse-No Rail	1000sqft	151970563	0	9727	111	1272	1911	10	84.69
Regional Shopping Center	1000sqft	2711054.29	1661613.92	9727	111	1272	1911	10	84.69
Retirement Community	Dwelling Unit	0	0	9727	111	1272	1911	10	84.69
Single Family Housing	Dwelling Unit	5733554.25	3614632.03	9727	111	1272	1911	10	84.69
Supermarket	1000sqft	10152370.2	313990.83	9727	111	1272	1911	10	84.69
University/College (4Yr)	Student	2723479.2	4259800.8	9727	111	1272	1911	10	84.69

tblSolidWaste

Solid Waste Land Use	Land Use SubType	Solid Waste Land Use Size Metric	Solid Waste Generation Rate	LandfillIN o Gas Capture	LandfillIC aptureGas s Flare	Landfill CaptureGas Energy Recovery
Apartments High Rise		Dwelling Unit	807.3	6	94	0
Apartments Low Rise		Dwelling Unit	201.94	6	94	0
Apartments Mid Rise		Dwelling Unit	1251.66	6	94	0
Bank (with Drive-Through)		1000sqft	63.53	6	94	0
City Park		Acre	4.08	6	94	0
Condo/Townhouse		Dwelling Unit	807.3	6	94	0
Condo/Townhouse High Rise		Dwelling Unit	807.3	6	94	0
Congregate Care (Assisted Living)		Dwelling Unit	240.9	6	94	0
Convenience Market (24 Hour)		1000sqft	55	6	94	0
Convenience Market With Gas Pumps		1000sqft	55	6	94	0
Day-Care Center		1000sqft	39	6	94	0
Discount Club		1000sqft	47.31	6	94	0
Electronic Superstore		1000sqft	16.51	6	94	0
Elementary School		1000sqft	31.2	6	94	0
Free-Standing Discount Store		1000sqft	55.09	6	94	0
Free-Standing Discount Superstore		1000sqft	55.09	6	94	0
Gasoline/Service Station		Pump	4.85	6	94	0
General Light Industry		1000sqft	2267	6	94	0
General Office Building		1000sqft	395.75	6	94	0
Government Office Building		1000sqft	712.35	6	94	0
Hardware/Paint Store		1000sqft	507.44	6	94	0
Health Club		1000sqft	679.16	6	94	0
High School		1000sqft	23.4	6	94	0
High Turnover (Sit Down Restaurant)		1000sqft	1694.08	6	94	0
Home Improvement Superstore		1000sqft	1155.49	6	94	0
Hotel		Room	379.42	6	94	0
Industrial Park		1000sqft	680	6	94	0
Junior High School		1000sqft	23.4	6	94	0
Manufacturing		1000sqft	1133.6	6	94	0
Medical Office Building		1000sqft	919.19	6	94	0
Office Park		1000sqft	316.6	6	94	0
Pharmacy/Drugstore w/o Drive Thru		1000sqft	51.18	6	94	0
Place of Worship		1000sqft	228	6	94	0
Refrigerated Warehouse-No Rail		1000sqft	453.4	6	94	0
Regional Shopping Center		1000sqft	38.43	6	94	0
Retirement Community		Dwelling Unit	0	6	94	0
Single Family Housing		Dwelling Unit	103.32	6	94	0
Supermarket		1000sqft	464.51	6	94	0
University/College (4Yr)		Student	232.14	6	94	0

tblLandUseChange

VegetationLandUseType	VegetationLandUseSubType	AcresBegin	AcresEnd	CO2peracre
-----------------------	--------------------------	------------	----------	------------

tblSequestration

BroadSpecies	NumberOfNewTrees	CO2perTree
--------------	------------------	------------

tblSequestration1

tblConstEquipMitigation

Const Mitigation Equipment Type	Fuel Type	Tier	NumberOf Equipment Mitigated	Total NumberOf Equipment Mitigated		DPF	Oxidation Catalyst
Air Compressors	Diesel	Tier 4 Final	10	10	Level 3		30
Concrete/Industrial Saws	Diesel	Tier 4 Final	10	10	Level 3		30
Cranes	Diesel	Tier 4 Final	10	10	Level 3		30
Excavators	Diesel	Tier 4 Final	50	50	Level 3		30
Forklifts	Diesel	Tier 4 Final	30	30	Level 3		30
Generator Sets	Diesel	Tier 4 Final	10	10	Level 3		30
Graders	Diesel	Tier 4 Final	10	10	Level 3		30
Pavers	Diesel	Tier 4 Final	20	20	Level 3		30
Paving Equipment	Diesel	Tier 4 Final	20	20	Level 3		30
Rollers	Diesel	Tier 4 Final	20	20	Level 3		30
Rubber Tired Dozers	Diesel	Tier 4 Final	60	60	Level 3		30
Scrapers	Diesel	Tier 4 Final	20	20	Level 3		30
Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	90	90	Level 3		30
Welders	Diesel	Tier 4 Final	10	10	Level 3		30

tblConstDustMitigation

Soil Stabilizer Check	Soil Stabilizer PM10Percent Reduction	Soil Stabilizer PM25Percent Reduction	Replace GroundCover Check	Replace GroundCover PM10 Percent Reduction	Replace GroundCover PM25 Percent Reduction	WaterExposedAreaCheck
1	50	50	1	50	50	1
WaterExposedAreaFrequency	Water Exposed Area PM10 Percent Reduction	Water Exposed Area PM25 Percent Reduction	WaterUnpaved Road Moisture ContentCheck	Water Unpaved Road Vehicle Speed Check	Water Unpaved Road Moisture Content	Water Unpaved Road VehicleSpeed
2	55	55	0	1	0	15
Clean Paved Road Check	Clean Paved Road Percent Reduction					
1	10					

tblLandUseMitigation

ProjectSetting	Increase Density Check	Increase Density Duplicates Per Acre	Increase Density Jobs Per Acre	Increase Diversity Check	Improve Walkability Design Check	Improve Walkability Design Check	Improve Walkability Design Check	Improve Destination Accessibility Check	Improve Destination Accessibility Distance	Increase Transit Accessibility Check	Increase Transit Accessibility Distance	Integrate Below Market Rate Housing Check
Urban Center	1	13.3	16	1	1	1	0	1	10	1	2	1

Integrate Below Market Rate Housing	Improve Pedestrian Network Check	Improve Pedestrian Network Selection	Provide Traffic Calming Measures Check	Provide Traffic Calming Measures Percent Street	Provide Traffic Calming Measures Percent Intersection	Provide Traffic Calming Measures Percent Intersection	Expand Transit Network Check	Expand Transit Network Coverage Percent Increase	Increase Transit Frequency Check	Increase Transit Frequency Implementation Level	Increase Transit Frequency Headway Reduction
20	1	Project Site	1	25	25	1	0	0	>= 50%	0	

Implement NEV Network Check	Limit Parking Supply Check	Limit Parking Supply Percent Reduction	Unbundle Parking Cost Check	Unbundle Parking Cost Check	On Street Market Pricing Check	On Street Market Pricing Check	On Street Market Pricing Check	Provide BRT System Check	Provide BRT System Percent
0	1	10	1	50	1	50	1	100	

tblCommuteMitigation

ImplementTrip	ImplementTrip	ImplementTrip	TransitSubsidyCheck	TransitSubsidyEmployee	TransitSubsidyDailySubsidyAmount	ImplementEmployeeParkingCashOutCheck	ImplementEmployeeParkingCashOutPercentEmployee	WorkplaceParkingChargeCheck
1	100	Voluntary	1	100	\$1.49	0	100	1
WorkplaceParkingChargeEmployee	WorkplaceParkingChargeCost	EncourageTelecommutingCheck	EncourageTelecommutingPercentEmployee90	EncourageTelecommutingPercentEmployee40	EncourageTelecommutingPercentEmployee1_5days	MarketCommuterTripReductionOptionCheck	MarketCommuterTripReductionOptionPercentEmployee	EmployeeVanpoolCheck
100	\$2	1	10	10	10	1	100	1
EmployeeVanpoolPercentEmployee	EmployeeVanpoolPercentModeShare	ProvideRideSharingProgramCheck	ProvideRideSharingProgramPercentEmployee	ImplementSchoolBusProgramCheck	ImplementSchoolBusProgramPercentFamilyUsing			
100	2	1	100	0	50			

tblAreaMitigation

LandscapeLawnmowerCheck	LandscapeLawnmowerPercentElectric	LandscapeLawnmowerCheck	LandscapeLeafblowerPercentElectric	LandscapeChainSawCheck	LandscapeChainSawPercentElectric	UseLowVOCPaintResidentialInteriorCheck	UseLowVOCPaintResidentialInteriorValue	UseLowVOCPaintResidentialExteriorCheck	UseLowVOCPaintResidentialExteriorValue	UseLowVOCPaintNonresidentialExteriorValue	HearthOnlyNatural GasHearth Check	NoHearthCheck	UseLowVOCCleaningSuppliesCheck	
1	50	1	50	1	50	1	50	1	100	1	250	1	0	1

tblEnergyMitigation

ExceedTi tle24Che ck	Exceed Title24 CheckPercent Improvement	Install High Efficiency LightingChec k	Install High Efficiency LightingPercentEnerg y Reduction	OnSite RenewableE nergy Check	KwhGene ratedChe ck	KwhGene rated	Percent Of ElectricityUse Generated Check	percent of Electricity Use Generated
1		15	1	15	1	1 44400000		1 20

tblApplianceMitigation

ApplianceType	Appliance LandUse SubType	Percent Improvement
ClothWasher		30
DishWasher		15
Fan		50
Refrigerator		15

tblWaterMitigation

ApplyWaterConservationStrategyCheck	Apply Water Conservation Strategy Percent Reduction Indoor	Apply Water Conservation Strategy Percent Reduction Outdoor	Use Reclaimed WaterCheck	PercentOutdoorReclaimedWaterUse	PercentIndoorReclaimedWaterUse	UseGreyWaterCheck	PercentOutdoorGreyWaterUse		
	1	20.1	20.1	0	0	0	0	0	0
PercentIndoorGreyWaterUse	InstallLowFlowBathroomFaucetCheck	PercentReductionInFlowBathroomFaucet	InstallLowFlowKitchenFaucetCheck	PercentReductionInFlowKitchenFaucet	InstallLowFlowToiletCheck	PercentReductionInFlowToilet	InstallLowFlowShowerCheck		
	0	1	32	1	18	1	20	1	
PercentReductionInFlowShower	Turf Reduction Check	TurfReductionTurfArea	Turf Reduction Percent Reduction	Use Water EfficientIrrigationSystemCheck	Use Water EfficientIrrigation System Percent Reduction	Water Efficient LandscapeCheck	MAWA	ETWU	
20	1	0	0	1	6.1	1	0	0	0

tblWasteMitigation

Institute Recycling And Composting Services Check	Institute Recycling And Composting Services Waste Percent Reduction	1	50
---	--	---	----

tblRemarks

Sub Module ID	Phase Name	Season	Remarks
1			
3			Land use square footage and populations per City estimates
4			Defaults push completion dates past end of construction period
5	Architectural Coating		arch. coating needs additional equipment
5	Building Construction		building construction needs additional equipment
5	Demolition		More equipment needed than the default to complete by 2034
5	Grading		Grading needs additional equipment
5	Paving		Paving needs additional equipment
5	Site Preparation		Site preparation needs more than default equipment
8			Assume 25% of existing building square footage (4,023,362) to be demolished
9			Estimate about 500 acres will be disturbed in the CASP
12			Trip Rates adjusted to correspond to Traffic model VMT
15			No wood stoves allowed
21			All development will use sewers. No septic. Industrial modified to 925 gal/1,000 sf per day per SCAQMD advice.
22			Solid waste for Industrial modified to equivalent of 1.15 ton/employee/yr per SCAQMD advice DPF level 3 and catalysts to be required for off-road construction equipment. PM10 reduction from street cleaning from available research Low-Moderate catalyst conversion of 30% is assumed. 10 %
25			
27			
28			
29			
30			Exceeding Title 24 by 15% has been found cost-effective in California. The City provides incentives for exceeding Title 24. Assume 20% on-site renewable energy (total demand =222million kWh)
32			Water conservation Strategy from WSA resulting in 20.1% reduction
33			

A3 CalEEMod Energy Output Tables

CASP_Existing (May 2012)
South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	59.54	1000sqft
Government Office Building	68.05	1000sqft
Medical Office Building	8.51	1000sqft
Office Park	34.03	1000sqft
Day-Care Center	3.71	1000sqft
Elementary School	24.76	1000sqft
High School	18.57	1000sqft
Junior High School	18.57	1000sqft
Place of Worship	24.76	1000sqft
General Light Industry	936.14	1000sqft
Industrial Park	56.17	1000sqft
Manufacturing	318.29	1000sqft
Refrigerated Warehouse-No Rail	561.68	1000sqft
City Park	16.7	Acre
Fast Food Restaurant w/o Drive Thru	9.81	1000sqft
Fast Food Restaurant with Drive Thru	10.4	1000sqft
High Turnover (Sit Down Restaurant)	9.51	1000sqft
Apartments Low Rise	443	Dwelling Unit
Apartments Mid Rise	456	Dwelling Unit
Condo/Townhouse	165	Dwelling Unit
Single Family Housing	203	Dwelling Unit
Convenience Market (24 Hour)	16.34	1000sqft
Convenience Market With Gas Pumps	3.27	1000sqft
Gasoline/Service Station	4	Pump
Hardware/Paint Store	16.34	1000sqft
Home Improvement Superstore	104.1	1000sqft
Strip Mall	24.52	1000sqft
Supermarket	73.55	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Utility Company	Los Angeles Department of Water & Power
Climate Zone	11	Precipitation Freq (Days)	31		

1.3 User Entered Comments

- Project Characteristics -
- Land Use - Population adjusted to City numbers
- Water And Wastewater - Industrial water demand modified per SCAQMD advice
- Solid Waste - Solid Waste modified to 1.15 ton/employee/year per SCAQMD
- Mobile Land Use Mitigation -

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	22,881.53	22,881.53	0.54	0.20	22,955.78
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	22,881.53	22,881.53	0.54	0.20	22,955.78
NaturalGas Mitigated	0.35	3.08	2.06	0.02		0.00	0.24		0.00	0.24	0.00	3,443.96	3,443.96	0.07	0.06	3,464.92
NaturalGas Unmitigated	0.35	3.08	2.06	0.02		0.00	0.24		0.00	0.24	0.00	3,443.96	3,443.96	0.07	0.06	3,464.92
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9,136,020	0.05	0.42	0.18	0.00		0.00	0.03		0.00	0.03	0.00	487.53	487.53	0.01	0.01	490.50
Apartments Mid Rise	6,047,850	0.03	0.28	0.12	0.00		0.00	0.02		0.00	0.02	0.00	322.74	322.74	0.01	0.01	324.70
City Park	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Condo/Townhouse	4,322,790	0.02	0.20	0.08	0.00		0.00	0.02		0.00	0.02	0.00	230.68	230.68	0.00	0.00	232.08
Convenience Market (24 Hour)	27,778	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	1.48	1.48	0.00	0.00	1.49
Convenience Market With Gas Pumps	5,559	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.30	0.30	0.00	0.00	0.30
Day-Care Center	40,402	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.16	2.16	0.00	0.00	2.17
Elementary School	269,636	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	14.39	14.39	0.00	0.00	14.48
Fast Food Restaurant w/o Drive	2,285,830	0.01	0.11	0.09	0.00		0.00	0.01		0.00	0.01	0.00	121.98	121.98	0.00	0.00	122.72
Fast Food Restaurant with	2,423,300	0.01	0.12	0.10	0.00		0.00	0.01		0.00	0.01	0.00	129.32	129.32	0.00	0.00	130.10
Gasoline/Service Station	10,622	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.57	0.57	0.00	0.00	0.57
General Light Industry	17,608,800	0.09	0.86	0.73	0.01		0.00	0.07		0.00	0.07	0.00	939.67	939.67	0.02	0.02	945.39
General Office Building	650,772	0.00	0.03	0.03	0.00		0.00	0.00		0.00	0.00	0.00	34.73	34.73	0.00	0.00	34.94
Government Office Building	743,787	0.00	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	39.69	39.69	0.00	0.00	39.93
Hardware/Paint Store	27,778	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	1.48	1.48	0.00	0.00	1.49
High School	202,227	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	10.79	10.79	0.00	0.00	10.86
High Turnover (Sit Down Restaurant)	2,215,930	0.01	0.11	0.09	0.00		0.00	0.01		0.00	0.01	0.00	118.25	118.25	0.00	0.00	118.97
Home Improvement Superstore	176,970	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	9.44	9.44	0.00	0.00	9.50
Industrial Park	613,938	0.00	0.03	0.03	0.00		0.00	0.00		0.00	0.00	0.00	32.76	32.76	0.00	0.00	32.96
Junior High School	202,227	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	10.79	10.79	0.00	0.00	10.86
Manufacturing	5,987,030	0.03	0.29	0.25	0.00		0.00	0.02		0.00	0.02	0.00	319.49	319.49	0.01	0.01	321.44

Medical Office Building	93,014	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	4.96	4.96	0.00	0.00	4.99
Office Park	350,169	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	18.69	18.69	0.00	0.00	18.80
Place of Worship	465,736	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	24.85	24.85	0.00	0.00	25.00
Refrigerated Warehouse-No Rail	606,614	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	32.37	32.37	0.00	0.00	32.57
Single Family Housing	8,319,500	0.04	0.38	0.16	0.00		0.00	0.03		0.00	0.03	0.00	443.96	443.96	0.01	0.01	446.66
Strip Mall	41,684	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.22	2.22	0.00	0.00	2.24
Supermarket	1,661,490	0.01	0.08	0.07	0.00		0.00	0.01		0.00	0.01	0.00	88.66	88.66	0.00	0.00	89.20
Total	64,537,453	0.30	3.06	2.05	0.01		0.00	0.23		0.00	0.23	0.00	3,443.95	3,443.95	0.06	0.06	3,464.91

Mitigated

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9,136,020	0.05	0.42	0.18	0.00		0.00	0.03		0.00	0.03	0.00	487.53	487.53	0.01	0.01	490.50
Apartments Mid Rise	6,047,850	0.03	0.28	0.12	0.00		0.00	0.02		0.00	0.02	0.00	322.74	322.74	0.01	0.01	324.70
City Park	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Condo/Townhouse	4,322,790	0.02	0.20	0.08	0.00		0.00	0.02		0.00	0.02	0.00	230.68	230.68	0.00	0.00	232.08
Convenience Market (24 Hour)	27,778	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	1.48	1.48	0.00	0.00	1.49
Convenience Market With Gas Pumps	5,559	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.30	0.30	0.00	0.00	0.30
Day-Care Center	40,402	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.16	2.16	0.00	0.00	2.17
Elementary School	269,636	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	14.39	14.39	0.00	0.00	14.48
Fast Food Restaurant w/o Drive	2,285,830	0.01	0.11	0.09	0.00		0.00	0.01		0.00	0.01	0.00	121.98	121.98	0.00	0.00	122.72
Fast Food Restaurant with Gasoline/Service Station	2,423,300	0.01	0.12	0.10	0.00		0.00	0.01		0.00	0.01	0.00	129.32	129.32	0.00	0.00	130.10
Gasoline/Service Station	10,622	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.57	0.57	0.00	0.00	0.57
General Light Industry	17,608,800	0.09	0.86	0.73	0.01		0.00	0.07		0.00	0.07	0.00	939.67	939.67	0.02	0.02	945.39
General Office Building	650,772	0.00	0.03	0.03	0.00		0.00	0.00		0.00	0.00	0.00	34.73	34.73	0.00	0.00	34.94
Government Office Building	743,787	0.00	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	39.69	39.69	0.00	0.00	39.93
Hardware/Paint Store	27,778	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	1.48	1.48	0.00	0.00	1.49
High School	202,227	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	10.79	10.79	0.00	0.00	10.86
High Turnover (Sit Down Restaurant)	2,215,930	0.01	0.11	0.09	0.00		0.00	0.01		0.00	0.01	0.00	118.25	118.25	0.00	0.00	118.97
Home Improvement Superstore	176,970	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	9.44	9.44	0.00	0.00	9.50
Industrial Park	613,938	0.00	0.03	0.03	0.00		0.00	0.00		0.00	0.00	0.00	32.76	32.76	0.00	0.00	32.96
Junior High School	202,227	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	10.79	10.79	0.00	0.00	10.86
Manufacturing	5,987,030	0.03	0.29	0.25	0.00		0.00	0.02		0.00	0.02	0.00	319.49	319.49	0.01	0.01	321.44
Medical Office Building	93,014	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	4.96	4.96	0.00	0.00	4.99

Office Park	350,169	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	18.69	18.69	0.00	0.00	18.80
Place of Worship	465,736	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	24.85	24.85	0.00	0.00	25.00
Refrigerated Warehouse-No Rail	606,614	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	32.37	32.37	0.00	0.00	32.57
Single Family Housing	8,319,500	0.04	0.38	0.16	0.00		0.00	0.03		0.00	0.03	0.00	443.96	443.96	0.01	0.01	446.66
Strip Mall	41,684	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.22	2.22	0.00	0.00	2.24
Supermarket	1,661,490	0.01	0.08	0.07	0.00		0.00	0.01		0.00	0.01	0.00	88.66	88.66	0.00	0.00	89.20
Total	64,537,453	0.30	3.06	2.05	0.01		0.00	0.23		0.00	0.23	0.00	3,443.95	3,443.95	0.06	0.06	3,464.91

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1,521,970					855.02	0.02	0.01	857.79
Apartments Mid Rise	1,567,630					880.67	0.02	0.01	883.53
City Park	0					0.00	0.00	0.00	0.00
Condo/Townhouse	677,201					380.44	0.01	0.00	381.67
Convenience Market (24 Hour)	247,878					139.25	0.00	0.00	139.71
Convenience Market With Gas Pumps	49,606					27.87	0.00	0.00	27.96
Day-Care Center	24,857					13.96	0.00	0.00	14.01
Elementary School	165,892					93.20	0.00	0.00	93.50
Fast Food Restaurant w/o Drive	460,187					258.53	0.01	0.00	259.36
Fast Food Restaurant with Gasoline/Service Station	487,864					274.07	0.01	0.00	274.96
General Light Industry	6,805					3.82	0.00	0.00	3.84
General Office Building	11,280,500					6,337.19	0.15	0.06	6,357.75
Government Office Building	865,116					486.01	0.01	0.00	487.58
Hardware/Paint Store	988,767					555.47	0.01	0.00	557.27
High School	247,878					139.25	0.00	0.00	139.71
High Turnover (Sit Down Restaurant)	124,419					69.90	0.00	0.00	70.12
Home Improvement Superstore	446,114					250.62	0.01	0.00	251.43
Industrial Park	1,579,200					887.17	0.02	0.01	890.05
Junior High School	816,150					458.50	0.01	0.00	459.99
Manufacturing	124,419					69.90	0.00	0.00	70.12
Medical Office Building	3,835,390					2,154.66	0.05	0.02	2,161.65
Office Park	123,650					69.46	0.00	0.00	69.69
Place of Worship	541,077					303.97	0.01	0.00	304.95
Refrigerated Warehouse-No Rail	298,358					167.61	0.00	0.00	168.16
Single Family Housing	9,694,600					5,446.26	0.13	0.05	5,463.93
Strip Mall	1,301,740					731.29	0.02	0.01	733.67
Supermarket	371,968					208.97	0.00	0.00	209.64
Total	40,730,186					22,881.53	0.53	0.18	22,955.76

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1,521,970					855.02	0.02	0.01	857.79
Apartments Mid Rise	1,567,630					880.67	0.02	0.01	883.53
City Park	0					0.00	0.00	0.00	0.00
Condo/Townhouse	677,201					380.44	0.01	0.00	381.67
Convenience Market (24 Hour)	247,878					139.25	0.00	0.00	139.71
Convenience Market With Gas Pumps	49,606					27.87	0.00	0.00	27.96
Day-Care Center	24,857					13.96	0.00	0.00	14.01
Elementary School	165,892					93.20	0.00	0.00	93.50
Fast Food Restaurant w/o Drive	460,187					258.53	0.01	0.00	259.36
Fast Food Restaurant with Gasoline/Service Station	487,864					274.07	0.01	0.00	274.96
General Light Industry	6,805					3.82	0.00	0.00	3.84
General Office Building	11,280,500					6,337.19	0.15	0.06	6,357.75
Government Office Building	865,116					486.01	0.01	0.00	487.58
Hardware/Paint Store	988,767					555.47	0.01	0.00	557.27
High School	247,878					139.25	0.00	0.00	139.71
High Turnover (Sit Down Restaurant)	124,419					69.90	0.00	0.00	70.12
Home Improvement Superstore	446,114					250.62	0.01	0.00	251.43
Industrial Park	1,579,200					887.17	0.02	0.01	890.05
Junior High School	816,150					458.50	0.01	0.00	459.99
Manufacturing	124,419					69.90	0.00	0.00	70.12
Medical Office Building	3,835,390					2,154.66	0.05	0.02	2,161.65
Office Park	123,650					69.46	0.00	0.00	69.69
Place of Worship	541,077					303.97	0.01	0.00	304.95
Refrigerated Warehouse-No Rail	298,358					167.61	0.00	0.00	168.16
Single Family Housing	9,694,600					5,446.26	0.13	0.05	5,463.93
Strip Mall	1,301,740					731.29	0.02	0.01	733.67
Supermarket	371,968					208.97	0.00	0.00	209.64
Total	40,730,186					22,881.53	0.53	0.18	22,955.76

CASP_NoProject2035 (May 2012)
South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	57.3	1000sqft
Government Office Building	114.6	1000sqft
Medical Office Building	11.46	1000sqft
Office Park	45.84	1000sqft
Day-Care Center	21.79	1000sqft
Elementary School	27.24	1000sqft
High School	20.43	1000sqft
Junior High School	27.24	1000sqft
Place of Worship	39.49	1000sqft
General Light Industry	934.35	1000sqft
Industrial Park	62.29	1000sqft
Manufacturing	352.98	1000sqft
Refrigerated Warehouse-No Rail	726.72	1000sqft
City Park	45.5	Acre
Fast Food Restaurant w/o Drive Thru	10.33	1000sqft
Fast Food Restaurant with Drive Thru	10.95	1000sqft
High Turnover (Sit Down Restaurant)	10.01	1000sqft
Apartments Low Rise	572	Dwelling Unit
Apartments Mid Rise	572	Dwelling Unit
Condo/Townhouse	180	Dwelling Unit
Congregate Care (Assisted Living)	82	Dwelling Unit
Retirement Community	0	Dwelling Unit
Single Family Housing	229	Dwelling Unit
Convenience Market (24 Hour)	17.21	1000sqft
Convenience Market With Gas Pumps	17.21	1000sqft
Discount Club	5.48	1000sqft
Gasoline/Service Station	8	Pump
Hardware/Paint Store	18.93	1000sqft
Home Improvement Superstore	104.06	1000sqft
Strip Mall	25.82	1000sqft
Supermarket	77.46	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	Utility Company	Los Angeles Department of Water & Power
Climate Zone	11			
		Precipitation Freq (Days)		

1.3 User Entered Comments

Project Characteristics -
 Land Use - Population adjusted to City estimates for No Project in 2035
 Water And Wastewater - Indoor water use for Industrial categories adjusted per SCAQMD advice
 Solid Waste - Solid WWaste for Industrial adjusted to 1.15 tons/employee per SCAQMD advice
 Mobile Land Use Mitigation -

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	26,559.07	26,559.07	0.62	0.24	26,645.26
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	26,559.07	26,559.07	0.62	0.24	26,645.26
NaturalGas Mitigated	0.40	3.52	2.30	0.02		0.00	0.28		0.00	0.28	0.00	3,943.90	3,943.90	0.08	0.07	3,967.90
NaturalGas Unmitigated	0.40	3.52	2.30	0.02		0.00	0.28		0.00	0.28	0.00	3,943.90	3,943.90	0.08	0.07	3,967.90
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										Mt/yr					
Apartments Low Rise	11,796,400	0.06	0.54	0.23	0.00		0.00	0.04	0.00	0.04	0.00	0.00	629.50	629.50	0.01	0.01	633.33
Apartments Mid Rise	7,586,330	0.04	0.35	0.15	0.00		0.00	0.03	0.00	0.03	0.00	0.00	404.84	404.84	0.01	0.01	407.30
City Park	0	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Condo/townhouse	4,715,770	0.03	0.22	0.09	0.00		0.00	0.02	0.00	0.02	0.00	0.00	251.65	251.65	0.00	0.00	253.18
Congregate Care (Assisted Living)	1,087,550	0.01	0.05	0.02	0.00		0.00	0.00	0.00	0.00	0.00	0.00	58.04	58.04	0.00	0.00	58.39
Convenience Market (24 Hour)	29,257	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	1.56	1.56	0.00	0.00	1.57
Convenience Market With Gas Pumps	29,257	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	1.56	1.56	0.00	0.00	1.57
Day-Care Center	237,293	0.00	0.01	0.01	0.00		0.00	0.00	0.00	0.00	0.00	0.00	12.66	12.66	0.00	0.00	12.74
Discount Club	9,316	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00	0.50
Elementary School	296,644	0.00	0.01	0.01	0.00		0.00	0.00	0.00	0.00	0.00	0.00	15.83	15.83	0.00	0.00	15.93
Fast Food Restaurant w/o Drive	2,406,990	0.01	0.12	0.10	0.00		0.00	0.01	0.00	0.01	0.00	0.00	128.45	128.45	0.00	0.00	129.23
Fast Food Restaurant with Gasoline/Service Station	2,551,460	0.01	0.13	0.11	0.00		0.00	0.01	0.00	0.01	0.00	0.00	136.16	136.16	0.00	0.00	136.98
General Light Industry	21,244	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	1.13	1.13	0.00	0.00	1.14
General Office Building	17,575,100	0.09	0.86	0.72	0.01		0.00	0.07	0.00	0.07	0.00	0.00	937.88	937.88	0.02	0.02	943.58
Government Office Building	626,289	0.00	0.03	0.03	0.00		0.00	0.00	0.00	0.00	0.00	0.00	33.42	33.42	0.00	0.00	33.62
Hardware/Paint Store	1,252,580	0.01	0.06	0.05	0.00		0.00	0.00	0.00	0.00	0.00	0.00	66.84	66.84	0.00	0.00	67.25
High School	32,181	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	1.72	1.72	0.00	0.00	1.73
High Turnover (Sit Down Restaurant)	222,483	0.00	0.01	0.01	0.00		0.00	0.00	0.00	0.00	0.00	0.00	11.87	11.87	0.00	0.00	11.94
Home Improvement Superstore	2,332,430	0.01	0.11	0.10	0.00		0.00	0.01	0.00	0.01	0.00	0.00	124.47	124.47	0.00	0.00	125.22
Industrial Park	176,902	0.00	0.01	0.01	0.00		0.00	0.00	0.00	0.00	0.00	0.00	9.44	9.44	0.00	0.00	9.50
Junior High School	680,830	0.00	0.03	0.03	0.00		0.00	0.00	0.00	0.00	0.00	0.00	36.33	36.33	0.00	0.00	36.55
Manufacturing	296,644	0.00	0.01	0.01	0.00		0.00	0.00	0.00	0.00	0.00	0.00	15.83	15.83	0.00	0.00	15.93
Medical Office Building	6,639,550	0.04	0.33	0.27	0.00		0.00	0.02	0.00	0.02	0.00	0.00	354.31	354.31	0.01	0.01	356.47
	125,258	0.00	0.01	0.01	0.00		0.00	0.00	0.00	0.00	0.00	0.00	6.68	6.68	0.00	0.00	6.72

Office Park	471,694	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	25.17	25.17	0.00	0.00	25.32
Place of Worship	742,807	0.00	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	39.64	39.64	0.00	0.00	39.88
Refrigerated Warehouse-No Rail	784,858	0.00	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	41.88	41.88	0.00	0.00	42.14
Retirement Community	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Single Family Housing	9,385,050	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	500.82	500.82	0.01	0.01	503.87
Strip Mall	43,894	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.34	2.34	0.00	0.00	2.36
Supermarket	1,749,820	0.01	0.09	0.07	0.00		0.00	0.01		0.00	0.01	0.00	93.38	93.38	0.00	0.00	93.95
Total	73,905,881	0.37	3.51	2.29	0.01		0.00	0.25		0.00	0.25	0.00	3,943.90	3,943.90	0.06	0.06	3,967.89

Mitigated

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	11,796,400	0.06	0.54	0.23	0.00		0.00	0.04		0.00	0.04	0.00	629.50	629.50	0.01	0.01	633.33
Apartments Mid Rise	7,586,330	0.04	0.35	0.15	0.00		0.00	0.03		0.00	0.03	0.00	404.84	404.84	0.01	0.01	407.30
City Park	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Condo/Townhouse	4,715,770	0.03	0.22	0.09	0.00		0.00	0.02		0.00	0.02	0.00	251.65	251.65	0.00	0.00	253.18
Congregate Care (Assisted Living)	1,087,550	0.01	0.05	0.02	0.00		0.00	0.00		0.00	0.00	0.00	58.04	58.04	0.00	0.00	58.39
Convenience Market (24 Hour)	29,257	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	1.56	1.56	0.00	0.00	1.57
Convenience Market With Gas Pumps	29,257	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	1.56	1.56	0.00	0.00	1.57
Day-Care Center	237,293	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	12.66	12.66	0.00	0.00	12.74
Discount Club	9,316	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.50	0.50	0.00	0.00	0.50
Elementary School	296,644	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	15.83	15.83	0.00	0.00	15.93
Fast Food Restaurant w/o Drive	2,406,990	0.01	0.12	0.10	0.00		0.00	0.01		0.00	0.01	0.00	128.45	128.45	0.00	0.00	129.23
Fast Food Restaurant with Gasoline/Service Station	2,551,460	0.01	0.13	0.11	0.00		0.00	0.01		0.00	0.01	0.00	136.16	136.16	0.00	0.00	136.98
General Light Industry	17,575,100	0.09	0.86	0.72	0.01		0.00	0.07		0.00	0.07	0.00	937.88	937.88	0.02	0.02	943.58
General Office Building	626,289	0.00	0.03	0.03	0.00		0.00	0.00		0.00	0.00	0.00	33.42	33.42	0.00	0.00	33.62
Government Office Building	1,252,580	0.01	0.06	0.05	0.00		0.00	0.00		0.00	0.00	0.00	66.84	66.84	0.00	0.00	67.25
Hardware/Paint Store	32,181	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	1.72	1.72	0.00	0.00	1.73
High School	222,483	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	11.87	11.87	0.00	0.00	11.94
High Turnover (Sit Down Restaurant)	2,332,430	0.01	0.11	0.10	0.00		0.00	0.01		0.00	0.01	0.00	124.47	124.47	0.00	0.00	125.22
Home Improvement Superstore	176,902	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	9.44	9.44	0.00	0.00	9.50
Industrial Park	680,830	0.00	0.03	0.03	0.00		0.00	0.00		0.00	0.00	0.00	36.33	36.33	0.00	0.00	36.55
Junior High School	296,644	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	15.83	15.83	0.00	0.00	15.93
Manufacturing	6,639,550	0.04	0.33	0.27	0.00		0.00	0.02		0.00	0.02	0.00	354.31	354.31	0.01	0.01	356.47
Medical Office Building	125,258	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	6.68	6.68	0.00	0.00	6.72
Office Park	471,694	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	25.17	25.17	0.00	0.00	25.32

Place of Worship	742,807	0.00	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	39.64	39.64	0.00	0.00	39.88
Refrigerated Warehouse-No Rail	784,858	0.00	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	41.88	41.88	0.00	0.00	42.14
Retirement Community	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Single Family Housing	9,385,050	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	500.82	500.82	0.01	0.01	503.87
Strip Mall	43,894	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.34	2.34	0.00	0.00	2.36
Supermarket	1,749,820	0.01	0.09	0.07	0.00		0.00	0.01		0.00	0.01	0.00	93.38	93.38	0.00	0.00	93.95
Total	73,905,881	0.37	3.51	2.29	0.01		0.00	0.25		0.00	0.25	0.00	3,943.90	3,943.90	0.06	0.06	3,967.89

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1,965,160					1,103.99	0.03	0.01	1,107.57
Apartments Mid Rise	1,966,420					1,104.70	0.03	0.01	1,108.28
City Park	0					0.00	0.00	0.00	0.00
Condo/Townhouse	738,765					415.03	0.01	0.00	416.37
Congregate Care (Assisted Living)	281,899					158.37	0.00	0.00	158.88
Convenience Market (24 Hour)	261,076					146.67	0.00	0.00	147.14
Convenience Market With Gas	261,076					146.67	0.00	0.00	147.14
Day-Care Center	145,993					82.02	0.00	0.00	82.28
Discount Club	83,132					46.70	0.00	0.00	46.85
Elementary School	182,508					102.53	0.00	0.00	102.86
Fast Food Restaurant w/o	484,580					272.23	0.01	0.00	273.11
Fast Food Restaurant with	513,864					288.57	0.01	0.00	289.50
Gasoline/Service Station	13,609					7.65	0.00	0.00	7.67
General Light Industry	11,258,900					6,325.07	0.15	0.06	6,345.60
General Office Building	832,569					467.72	0.01	0.00	469.24
Government Office Building	1,665,140					935.45	0.02	0.01	938.48
Hardware/Paint Store	287,168					161.33	0.00	0.00	161.85
High School	136,881					76.90	0.00	0.00	77.15
High Turnover (Sit Down Restaurant)	469,569					263.80	0.01	0.00	264.65
Home Improvement Superstore	1,576,590					886.83	0.02	0.01	889.70
Industrial Park	905,074					508.46	0.01	0.00	510.11
Junior High School	182,508					102.53	0.00	0.00	102.86
Manufacturing	4,253,410					2,389.49	0.06	0.02	2,397.25
Medical Office Building	166,514					93.54	0.00	0.00	93.85
Office Park	728,856					409.46	0.01	0.00	410.79
Place of Worship	475,855					267.33	0.01	0.00	268.19
Refrigerated Warehouse-No Rail	12,543,200					7,046.55	0.16	0.06	7,069.42
Retirement Community	0					0.00	0.00	0.00	0.00
Single Family Housing	1,468,460					824.96	0.02	0.01	827.63
Strip Mall	391,689					220.04	0.01	0.00	220.76
Supermarket	3,034,110					1,704.51	0.04	0.02	1,710.04
Total	47,276,375					26,559.10	0.62	0.21	26,645.22

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1,965,160					1,103.99	0.03	0.01	1,107.57
Apartments Mid Rise	1,966,420					1,104.70	0.03	0.01	1,108.28
City Park	0					0.00	0.00	0.00	0.00
Condo/Townhouse	738,765					415.03	0.01	0.00	416.37
Congregate Care (Assisted Living)	281,899					158.37	0.00	0.00	158.88
Convenience Market (24 Hour)	261,076					146.67	0.00	0.00	147.14
Convenience Market With Gas	261,076					146.67	0.00	0.00	147.14
Day-Care Center	145,993					82.02	0.00	0.00	82.28
Discount Club	83,132					46.70	0.00	0.00	46.85
Elementary School	182,508					102.53	0.00	0.00	102.86
Fast Food Restaurant w/o	484,580					272.23	0.01	0.00	273.11
Fast Food Restaurant with	513,664					288.57	0.01	0.00	289.50
Gasoline/Service Station	13,609					7.65	0.00	0.00	7.67
General Light Industry	11,258,900					6,325.07	0.15	0.06	6,345.60
General Office Building	832,569					467.72	0.01	0.00	469.24
Government Office Building	1,665,140					935.45	0.02	0.01	938.48
Hardware/Paint Store	267,168					161.33	0.00	0.00	161.85
High School	136,881					76.90	0.00	0.00	77.15
High Turnover (Sit Down Restaurant)	469,569					263.80	0.01	0.00	264.65
Home Improvement Superstore	1,578,590					886.83	0.02	0.01	889.70
Industrial Park	905,074					508.46	0.01	0.00	510.11
Junior High School	182,508					102.53	0.00	0.00	102.86
Manufacturing	4,253,410					2,389.49	0.06	0.02	2,397.25
Medical Office Building	166,514					93.54	0.00	0.00	93.85
Office Park	728,856					409.46	0.01	0.00	410.79
Place of Worship	475,855					267.33	0.01	0.00	268.19
Refrigerated Warehouse-No Rail	12,543,200					7,046.55	0.16	0.06	7,069.42
Retirement Community	0					0.00	0.00	0.00	0.00
Single Family Housing	1,468,460					824.96	0.02	0.01	827.63
Strip Mall	391,689					220.04	0.01	0.00	220.76
Supermarket	3,034,110					1,704.51	0.04	0.02	1,710.04
Total	47,276,375					26,559.10	0.62	0.21	26,645.22

CASP-ProposedAlt-2035 (May 12, 2012)
South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Bank (with Drive-Through)	68.09	1000sqft
General Office Building	425.54	1000sqft
Government Office Building	765.97	1000sqft
Medical Office Building	85.11	1000sqft
Office Park	340.43	1000sqft
Pharmacy/Drugstore w/o Drive Thru	17.02	1000sqft
Day-Care Center	30	1000sqft
Elementary School	24	1000sqft
High School	18	1000sqft
Junior High School	18	1000sqft
Place of Worship	40	1000sqft
University/College (4Yr)	1272	Student
General Light Industry	3285.83	1000sqft
Industrial Park	985.75	1000sqft
Manufacturing	1642.91	1000sqft
Refrigerated Warehouse-No Rail	657.17	1000sqft
City Park	47.45	Acre
Health Club	119.15	1000sqft
High Turnover (Sit Down Restaurant)	142.36	1000sqft
Hotel	693	Room
Apartments High Rise	1755	Dwelling Unit
Apartments Low Rise	439	Dwelling Unit
Apartments Mid Rise	2721	Dwelling Unit
Condo/Townhouse	1755	Dwelling Unit
Condo/Townhouse High Rise	1755	Dwelling Unit
Congregate Care (Assisted Living)	264	Dwelling Unit
Retirement Community	0	Dwelling Unit
Single Family Housing	88	Dwelling Unit
Convenience Market (24 Hour)	18.3	1000sqft
Convenience Market With Gas Pumps	18.3	1000sqft
Discount Club	11	1000sqft
Electronic Superstore	5.49	1000sqft
Free-Standing Discount Store	12.81	1000sqft
Free-Standing Discount Superstore	12.81	1000sqft
Gasoline/Service Station	9	Pump
Hardware/Paint Store	45.76	1000sqft
Home Improvement Superstore	104.2	1000sqft
Regional Shopping Center	36.6	1000sqft
Supermarket	82.36	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Utility Company	Los Angeles Department of Water & Power
Climate Zone	11	Precipitation Freq (Days)			

1.3 User Entered Comments

31

Project Characteristics -

Land Use - Land use square footage and populations per City estimates

Construction Phase - Defaults push completion dates past end of construction period

Off-road Equipment - arch. coating needs additional equipment

Off-road Equipment - building construction needs additional equipment

Off-road Equipment - More equipment needed than the default to complete by 2034

Off-road Equipment - Grading needs additional equipment

Off-road Equipment - Paving needs additional equipment

Off-road Equipment - Site preparation needs more than default equipment

Demolition - Assume 25% of existing building square footage (4,023,362) to be demolished

Grading - Estimate about 500 acres will be disturbed in the CASP

Vehicle Trips - Trip Rates adjusted to correspond to Traffic model VMT

Woodstoves - No wood stoves allowed

Water And Wastewater - All development will use sewers. No septic. Industrial modified to 925 gal/1,000 sf per day per SCAQMD advice.

Solid Waste - Solid waste for Industrial modified to equivalent of 1.15 ton/employee/yr per SCAQMD advice

Construction Off-road Equipment Mitigation - DPF level 3 and catalysts to be required for off-road construction equipment. Low-Moderate catalyst conversion of 30% is required. 10% PM10 reduction from street cleaning from available equipment

Mobile Land Use Mitigation -

Mobile Commute Mitigation -

Area Mitigation -

Energy Mitigation - Exceeding Title 24 by 15% has been found cost-effective in California. The City provides incentives for exceeding Title 24. Assume 20% on-site renewable energy (total demand =222million kWh)

Water Mitigation - Water conservation Strategy from WSA resulting in 20.1% reduction

Waste Mitigation -

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

Kilowatt Hours of Renewable Electricity Generated

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										M1/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	45,163.87	45,163.87	1.06	0.40	45,310.43
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	94,755.95	94,755.95	2.22	0.84	95,063.44
NaturalGas Mitigated	1.70	15.03	9.84	0.09		0.00	1.17		0.00	1.17	0.00	16,830.20	16,830.20	0.32	0.31	16,932.63
NaturalGas Unmitigated	1.93	17.01	11.09	0.11		0.00	1.33		0.00	1.33	0.00	19,055.81	19,055.81	0.37	0.35	19,171.78
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments High Rise	23,276,200	0.13	1.07	0.46	0.01	0.00	0.09	0.00	0.09	0.00	0.09	0.00	1,242.11	1,242.11	0.02	0.02	1,249.67
Apartments Low Rise	9,053,520	0.05	0.42	0.18	0.00	0.00	0.03	0.00	0.03	0.00	0.03	0.00	483.13	483.13	0.01	0.01	486.07
Apartments Mid Rise	36,088,100	0.19	1.66	0.71	0.01	0.00	0.13	0.00	0.13	0.00	0.13	0.00	1,925.80	1,925.80	0.04	0.04	1,937.52
Bank (with Drive-Through)	1,280,770	0.01	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.35	68.35	0.00	0.00	68.76
City Park	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Condo/ Townhouse	45,978,700	0.25	2.12	0.90	0.01	0.00	0.17	0.00	0.17	0.00	0.17	0.00	2,453.60	2,453.60	0.05	0.04	2,468.53
Condo/ Townhouse High Rise	45,978,700	0.25	2.12	0.90	0.01	0.00	0.17	0.00	0.17	0.00	0.17	0.00	2,453.60	2,453.60	0.05	0.04	2,468.53
Congregate Care (Assisted Living)	3,501,380	0.02	0.16	0.07	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	186.85	186.85	0.00	0.00	187.98
Convenience Market (24 Hour)	31,110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66	1.66	0.00	0.00	1.67
Convenience Market With Gas Furnos	31,110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66	1.66	0.00	0.00	1.67
Day-Care Center	326,700	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.43	17.43	0.00	0.00	17.54
Discount Club	18,700	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Electronic Superstore	9,333	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00	0.50
Elementary School	251,360	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.95	13.95	0.00	0.00	14.03
Free-Standing Discount Store	21,777	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.16	1.16	0.00	0.00	1.17
Free-Standing Discount Superstore	21,777	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.16	1.16	0.00	0.00	1.17
Gasoline/Service Station	23,899	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	1.28	0.00	0.00	1.28
General Light Industry	61,806,500	0.33	3.03	2.54	0.02	0.00	0.23	0.00	0.23	0.00	0.23	0.00	3,298.23	3,298.23	0.06	0.06	3,318.30
General Office Building	4,651,150	0.03	0.23	0.19	0.00	0.00	0.02	0.00	0.02	0.00	0.02	0.00	248.20	248.20	0.00	0.00	249.71
Government Office Building	8,372,050	0.05	0.41	0.34	0.00	0.00	0.03	0.00	0.03	0.00	0.03	0.00	446.76	446.76	0.01	0.01	449.48
Hardware/Paint Store	77,792	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.15	4.15	0.00	0.00	4.18
Health Club	2,241,210	0.01	0.11	0.09	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	119.60	119.60	0.00	0.00	120.33
High School	196,020	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.46	10.46	0.00	0.00	10.52
High Turnover (Sit Down Restaurant)	33,171,300	0.18	1.63	1.37	0.01	0.00	0.12	0.00	0.12	0.00	0.12	0.00	1,770.15	1,770.15	0.03	0.03	1,780.92
Home Improvement Superstore	177,140	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.45	9.45	0.00	0.00	9.51
Hotel	25,176,000	0.14	1.23	1.04	0.01	0.00	0.09	0.00	0.09	0.00	0.09	0.00	1,343.49	1,343.49	0.03	0.02	1,351.66
Industrial Park	10,774,200	0.06	0.53	0.44	0.00	0.00	0.04	0.00	0.04	0.00	0.04	0.00	574.95	574.95	0.01	0.01	578.45
Junior High School	196,020	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.46	10.46	0.00	0.00	10.52
Manufacturing	30,903,100	0.17	1.51	1.27	0.01	0.00	0.12	0.00	0.12	0.00	0.12	0.00	1,649.11	1,649.11	0.03	0.03	1,659.15

Medical Office Building	830,252	0.01	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.64	49.64	0.00	0.00	49.94
Office Park	3,503,020	0.02	0.17	0.14	0.00	0.00	0.01	0.00	0.01	0.00	0.00	186.93	186.93	0.00	0.00	188.07
Pharmacy/Drugstore w/o Drive Thru	28,934	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.54	1.54	0.00	0.00	1.55
Place of Worship	752,400	0.00	0.04	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.15	40.15	0.00	0.00	40.40
Refrigerated Warehouse-No Rail	709,744	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.87	37.87	0.00	0.00	38.11
Regional Shopping Center	62,220	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.32	3.32	0.00	0.00	3.34
Retirement Community	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Single Family Housing	3,606,480	0.02	0.17	0.07	0.00	0.00	0.01	0.00	0.01	0.00	0.00	192.46	192.46	0.00	0.00	193.63
Supermarket	1,860,510	0.01	0.09	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.28	99.28	0.00	0.00	99.89
University/College (4Yr)	1,992,900	0.01	0.10	0.08	0.00	0.00	0.01	0.00	0.01	0.00	0.00	106.35	106.35	0.00	0.00	107.00
Total	357,092,078	1.94	17.00	11.07	0.09	0.00	1.30	0.00	1.30	0.00	0.00	19,055.79	19,055.79	0.34	0.31	19,171.75

Mitigated

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments High Rise	20,308,300	0.11	0.94	0.40	0.01	0.00	0.00	0.08	0.00	0.00	0.08	0.00	1,083.62	1,083.62	0.02	0.02	1,090.22
Apartments Low Rise	7,877,410	0.04	0.36	0.15	0.00	0.00	0.00	0.03	0.00	0.00	0.03	0.00	420.37	420.37	0.01	0.01	422.93
Apartments Mid Rise	31,483,400	0.17	1.45	0.62	0.01	0.00	0.00	0.12	0.00	0.00	0.12	0.00	1,680.08	1,680.08	0.03	0.03	1,690.30
Bank (with Drive-Through)	1,134,110	0.01	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.52	60.52	0.00	0.00	60.89
City Park	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Condo/Townhouse	39,972,000	0.22	1.84	0.78	0.01	0.00	0.00	0.15	0.00	0.00	0.15	0.00	2,133.06	2,133.06	0.04	0.04	2,146.04
Condo/Townhouse High Rise	39,972,000	0.22	1.84	0.78	0.01	0.00	0.00	0.15	0.00	0.00	0.15	0.00	2,133.06	2,133.06	0.04	0.04	2,146.04
Congregate Care (Assisted Living)	3,054,620	0.02	0.14	0.06	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	163.01	163.01	0.00	0.00	164.00
Convenience Market (24 Hour)	27,789	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48	1.48	0.00	0.00	1.49
Convenience Market With Gas Pumps	27,789	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48	1.48	0.00	0.00	1.49
Day-Care Center	282,655	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.98	15.98	0.00	0.00	15.17
Discount Club	16,704	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.89	0.89	0.00	0.00	0.90
Electronic Superstore	8,337	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.44	0.00	0.00	0.45
Elementary School	226,044	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.06	12.06	0.00	0.00	12.14
Free-Standing Discount Store	19,452	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04	1.04	0.00	0.00	1.04
Free-Standing Discount Superstore	19,452	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04	1.04	0.00	0.00	1.04
Gasoline/Service Station	21,163	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13	1.13	0.00	0.00	1.14

General Light Industry	54,728,800	0.30	2.68	2.25	0.02	0.00	0.20	0.00	0.20	0.00	2,920.54	2,920.54	0.06	0.05	2,938.31
General Office Building	3,978,370	0.02	0.20	0.16	0.00	0.00	0.01	0.00	0.01	0.00	212.30	212.30	0.00	0.00	213.59
Government Office Building	7,161,050	0.04	0.35	0.29	0.00	0.00	0.03	0.00	0.03	0.00	382.14	382.14	0.01	0.01	384.47
Hardware/Paint Store	69,487	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.71	3.71	0.00	0.00	3.73
Health Club	1,984,560	0.01	0.10	0.08	0.00	0.00	0.01	0.00	0.01	0.00	105.90	105.90	0.00	0.00	106.55
High School	169,533	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	9.05	9.05	0.00	0.00	9.10
High Turnover (Sit Down Restaurant)	32,205,500	0.17	1.58	1.33	0.01	0.00	0.12	0.00	0.12	0.00	1,718.61	1,718.61	0.03	0.03	1,729.07
Home Improvement Superstore	158,228	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	8.44	8.44	0.00	0.00	8.50
Hotel	22,012,400	0.12	1.08	0.91	0.01	0.00	0.08	0.00	0.08	0.00	1,174.67	1,174.67	0.02	0.02	1,181.82
Industrial Park	9,215,780	0.05	0.45	0.38	0.00	0.00	0.03	0.00	0.03	0.00	491.79	491.79	0.01	0.01	494.78
Junior High School	169,533	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	9.05	9.05	0.00	0.00	9.10
Manufacturing	27,364,300	0.15	1.34	1.13	0.01	0.00	0.10	0.00	0.10	0.00	1,460.26	1,460.26	0.03	0.03	1,469.15
Medical Office Building	795,693	0.00	0.04	0.03	0.00	0.00	0.00	0.00	0.00	0.00	42.46	42.46	0.00	0.00	42.72
Office Park	2,987,270	0.02	0.15	0.12	0.00	0.00	0.01	0.00	0.01	0.00	159.41	159.41	0.00	0.00	160.38
Pharmacy/Drugstore w/o Drive Thru	25,845	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.38	1.38	0.00	0.00	1.39
Place of Worship	666,240	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	35.55	35.55	0.00	0.00	35.77
Refrigerated Warehouse-No Rail	612,154	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	32.67	32.67	0.00	0.00	32.87
Regional Shopping Center	55,577	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.97	2.97	0.00	0.00	2.98
Retirement Community	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Single Family Housing	3,143,920	0.02	0.14	0.06	0.00	0.00	0.01	0.00	0.01	0.00	167.77	167.77	0.00	0.00	168.79
Supermarket	1,732,650	0.01	0.08	0.07	0.00	0.00	0.01	0.00	0.01	0.00	92.46	92.46	0.00	0.00	93.02
University/College (4Yr)	1,700,160	0.01	0.08	0.07	0.00	0.00	0.01	0.00	0.01	0.00	90.73	90.73	0.00	0.00	91.28
Total	315,386,172	1.71	15.01	9.83	0.09	0.00	1.16	0.00	1.16	0.00	16,830.22	16,830.22	0.30	0.29	16,932.65

5.3 Energy by Land Use - Electricity

Unmitigated

Land Use	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	kWh	tons/yr				Mt/yr			
Apartments High Rise	6,033,320					3,389.42	0.08	0.03	3,400.42
Apartments Low Rise	1,508,220					847.29	0.02	0.01	850.04
Apartments Mid Rise	9,354,230					5,255.05	0.12	0.05	5,272.10
Bank (with Drive-Through)	820,485					460.93	0.01	0.00	462.43
City Park	0					0.00	0.00	0.00	0.00
Condo/Townhouse	7,202,960					4,046.50	0.09	0.04	4,059.63
Condo/Townhouse High Rise	7,202,960					4,046.50	0.09	0.04	4,059.63
Congregate Care (Assisted Living)	907,577					509.96	0.01	0.00	511.52
Convenience Market (24 Hour)	277,611					155.96	0.00	0.00	156.46
Convenience Market With Gas Pumps	277,611					155.96	0.00	0.00	156.46
Day-Care Center	201,000					112.92	0.00	0.00	113.28
Discount Club	166,870					93.74	0.00	0.00	94.05
Electronic Superstore	83,283					46.79	0.00	0.00	46.94
Elementary School	160,800					90.33	0.00	0.00	90.63
Free-Standing Discount Store	194,328					109.17	0.00	0.00	109.52
Free-Standing Discount Superstore	194,328					109.17	0.00	0.00	109.52
Gasoline/Service Station	15,310					8.60	0.00	0.00	8.63
General Light Industry	39,594,300					22,243.39	0.52	0.20	22,315.57
General Office Building	6,183,100					3,473.56	0.08	0.03	3,484.83
Government Office Building	11,129,500					6,252.39	0.15	0.06	6,272.68
Hardware/Paint Store	694,179					389.98	0.01	0.00	391.24
Health Club	1,435,760					806.58	0.02	0.01	809.20
High School	120,600					67.75	0.00	0.00	67.97
High Turnover (Sit Down Restaurant)	6,678,110					3,751.65	0.09	0.03	3,763.82
Home Improvement Superstore	1,580,710					888.02	0.02	0.01	890.90
Hotel	8,553,010					4,804.94	0.11	0.04	4,820.53
Industrial Park	14,322,900					8,046.39	0.19	0.07	8,072.50
Junior High School	120,600					67.75	0.00	0.00	67.97
Manufacturing	19,797,100					11,121.66	0.26	0.10	11,157.75
Medical Office Building	1,236,650					694.73	0.02	0.01	696.98
Office Park	5,412,840					3,040.84	0.07	0.03	3,050.71
Pharmacy/Drugstore w/o Drive Thru	258,193					145.05	0.00	0.00	145.52
Place of Worship	482,000					270.78	0.01	0.00	271.66
Refrigerated Warehouse-No Rail	11,342,800					6,372.17	0.15	0.06	6,392.85
Regional Shopping Center	555,222					311.91	0.01	0.00	312.93
Retirement Community	0					0.00	0.00	0.00	0.00
Single Family Housing	564,300					317.01	0.01	0.00	318.04
Supermarket	3,226,040					1,812.34	0.04	0.02	1,818.22
University/College (4Yr)	781,200					438.87	0.01	0.00	440.29
Total	168,670,008					94,755.95	2.19	0.84	95,063.42

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments High Rise	3,467,980					1,948.25	0.05	0.02	1,954.57
Apartments Low Rise	13,514					7.59	0.00	0.00	7.62
Apartments Mid Rise	6,003,490					3,372.66	0.08	0.03	3,383.60
Bank (with Drive-Through)	-533,550					-299.74	-0.01	0.00	-300.71
City Park	-1,138,460					-639.57	-0.01	-0.01	-641.64
Condo/Townhouse	4,379,370					2,460.26	0.06	0.02	2,468.24
Condo/Townhouse High Rise	4,379,370					2,460.26	0.06	0.02	2,468.24
Congregate Care (Assisted Living)	-445,527					-250.29	-0.01	0.00	-251.10
Convenience Market (24 Hour)	-942,593					-529.53	-0.01	0.00	-531.25
Convenience Market With Gas Pumps	-942,593					-529.53	-0.01	0.00	-531.25
Day-Care Center	-986,058					-559.57	-0.01	0.00	-561.38
Discount Club	-1,020,730					-573.43	-0.01	-0.01	-575.29
Electronic Superstore	-1,079,700					-606.56	-0.01	-0.01	-608.53
Elementary School	-1,024,540					-575.57	-0.01	-0.01	-577.44
Free-Standing Discount Store	-1,001,350					-562.54	-0.01	0.00	-564.37
Free-Standing Discount Superstore	-1,001,350					-562.54	-0.01	0.00	-564.37
Gasoline/Service Station	-1,127,170					-633.23	-0.01	-0.01	-635.28
General Light Industry	28,052,900					15,759.62	0.37	0.14	15,810.76
General Office Building	3,301,960					1,854.99	0.04	0.02	1,861.01
Government Office Building	6,854,280					3,850.62	0.09	0.03	3,863.12
Hardware/Paint Store	-648,683					-364.42	-0.01	0.00	-365.60
Health Club	-79,933					-44.90	0.00	0.00	-45.05
High School	-1,053,020					-591.57	-0.01	-0.01	-593.49
High Turnover (Sit Down Restaurant)	3,883,710					2,181.81	0.05	0.02	2,188.89
Home Improvement Superstore	-23,188					-13.03	0.00	0.00	-13.07
Hotel	5,026,550					2,823.83	0.07	0.03	2,832.99
Industrial Park	9,147,640					5,138.99	0.12	0.05	5,155.67
Junior High School	-1,053,020					-591.57	-0.01	-0.01	-593.49
Manufacturing	13,457,200					7,560.00	0.18	0.07	7,584.53
Medical Office Building	-250,356					-140.65	0.00	0.00	-141.10
Office Park	2,737,950					1,538.13	0.04	0.01	1,543.12
Pharmacy/Drugstore w/o Drive Thru	-956,293					-537.23	-0.01	0.00	-538.97
Place of Worship	-783,102					-439.93	-0.01	0.00	-441.36
Refrigerated Warehouse-No Rail	7,647,900					4,296.46	0.10	0.04	4,310.40
Regional Shopping Center	-746,724					-419.50	-0.01	0.00	-420.86
Retirement Community	-1,138,460					-639.57	-0.01	-0.01	-641.64
Single Family Housing	-707,469					-397.44	-0.01	0.00	-398.73
Supermarket	1,311,020					736.51	0.02	0.01	738.90
University/College (4Yr)	-577,090					-324.20	-0.01	0.00	-325.25
Total	80,393,875					45,163.87	1.12	0.43	45,310.44

A4 SCAG Model Development Report

Southern California Association of Governments

2003 SCAG Model Validation and Summary Regional Transportation Model

January 2008

Resolving Regional Challenges



TABLE OF CONTENTS

PREFACE	1
CHAPTER 1 - OVERVIEW	2
Introduction	2
Technical Approach	2
New Model Highlight.....	4
Modeling Area.....	5
Zone System.....	9
Overview of Report.....	9
Overview of Model Results.....	10
CHAPTER 2 – SOCIOECONOMIC INPUT DATA	12
Introduction	12
Socioeconomic Input Variables	12
Methodology of 2003 Socioeconomic Variable Estimate	14
Input Data Summary.....	15
CHAPTER 3 – TRIP GENERATION	20
Introduction	20
Trip Purpose and Trip Type.....	20
Vehicle Availability Model	22
Trip Productions.....	25
Trip Attractions.....	26
Balancing of Trip Productions and Attractions	30
Trip Generation Results and Findings.....	30
CHAPTER 4 – TRANSPORTATION NETWORKS	33
Introduction	33
Highway Networks	34
Transit Networks.....	44
CHAPTER 5 – TRIP DISTRIBUTION	49
Introduction	49
Trip Purpose	49
Gravity Models	49
Intermediate Stops Model.....	52
Trip Distribution Results and Findings.....	57
CHAPTER 6 – MODE CHOICE	65
Introduction	65
Description of Mode Choice Model	65
Mode Choice Results and Findings.....	69

CHAPTER 7 – HEAVY DUTY TRUCK MODEL	82
Introduction	82
Description of Heavy Duty Truck Model.....	82
Post Model Adjustment of Speed of Heavy Duty Trucks.....	86
CHAPTER 8 – TRIP ASSIGNMENT	88
Introduction	88
Time of Day Factoring	88
External Trips.....	89
Description of Highway Assignment Procedures	91
Highway Assignment Summary	91
Description of Transit Assignment Procedures.....	105
Transit Assignment Summary	105
CHAPTER 9 – AIR QUALITY IMPACT ANALYSIS	106
Introduction	106
Regional Emission Analysis	107
APPENDICES	111
Appendix A – Regional Transportation Analysis Zone System	111
Appendix B – Regional Highway Network Coding Conventions	114
Appendix C – Specification of Trip Production Models.....	116
Appendix D – Auto Operating Cost	127
ACKNOWLEDGEMENT	128

LIST OF TABLES

Table 2-1	Year 2003 SCAG Model Socioeconomic Input Data	16
Table 3-1	Vehicle Availability Model	23
Table 3-2	Vehicle Availability Model Variable Definitions	23
Table 3-3	Trip Attraction Model Regression Coefficients	29
Table 3-4	Year 2003 Trip Generation Summary by Trip Purpose and by County	31
Table 3-5	Year 2003 Trip Generation Comparative Statistics	32
Table 4-1	Year 2003 Freeway/Expressway Free Flow Speed	35
Table 4-2	Year 2003 Arterial Free Flow Speed	36
Table 4-3	Year 2003 Arterial/Expressway Capacity (Signal Spacing<2miles)	37
Table 4-4	Year 2003 Arterial/Expressway Capacity (Signal Spacing>=2miles)	38
Table 4-5	Year 2003 Freeway Capacity	38
Table 4-6	Year 2003 Ramp Capacity	38
Table 4-7	Year 2003 Highway Network Summary	43
Table 4-8	Year 2003 Transit Boarding Fare by Mode	46
Table 4-9	Year 2003 Transit Transfer Fare by Mode	47
Table 4-10	Year 2003 Transit Network Summary	48
Table 5-1	Trip Distribution Gamma Function Parameters by Time Period	51
Table 5-2	Year 2003 Home-Based Work Person Trip Distribution	58
Table 5-3	Home-Based Work Person Trip Distribution (CTPP, Travel Survey, Model) ...	59
Table 5-4	Year 2003 Home-Based Non-Work Person Trip Distribution	60
Table 5-5	Year 2003 Non-Home Based Person Trip Distribution	61
Table 5-6	Year 2003 Total Person Trip Distribution	62
Table 5-7	Year 2003 Average Person Trip Lengths by County	63
Table 6-1	Year 2003 Mode Choice Model Travel Modes by Trip Purpose	67
Table 6-2	Year 2003 Mode Choice Models	75
Table 6-3	Year 2003 Mode Choice Summary Statistics (Home-Based Work)	76
Table 6-4	Year 2003 Mode Choice Summary Statistics (Home-Based Non-Work)	77
Table 6-5	Year 2003 Mode Choice Summary Statistics (Non-Home Based)	78
Table 6-6	Year 2003 Mode Choice Summary Statistics (All Trip Purposes)	79
Table 6-7	Year 2000 Mode Choice Summary - Model vs. Travel Survey	80
Table 7-1	Daily Trip Rates for Internal Truck Trip Generation	83
Table 7-2	Year 2003 Heavy-Duty Vehicle Internal Trip Generation by County and by Sector	85
Table 8-1	Year 2003 Vehicle Trips-In-Motion Factors	90
Table 8-2	Year 2003 Highway Assignment Statistics by Time Period	93
Table 8-3	Year 2003 VMT Comparison by County and by Air Basin	94
Table 8-4	Year 2003 Screenline Comparison of Model Weekday and Ground Counts....	95
Table 8-5	Year 2003 Screenline Comparison of Model Weekday ADT and Ground Counts by Volume Group	96
Table 8-6	Year 2003 Screenline Comparison of Model Weekday ADT and Ground Counts by Facility Type	97
Table 8-7	Year 2003 Screenline Comparison of Model ADT and Ground Counts by Area Type	98
Table 8-8	Year 2003 Daily Transit Boarding - Model vs Actual Counts	105
Table 9-1	Daily On-Road Motor Vehicle Emissions	110

Table A-1	Summary of TAZ statistics	113
Table C-1	Home-Based Work Direct Trip Production Model	117
Table C-2	Home-Based Work Strategic Trip Production Model	118
Table C-3	Home-Based Elementary/High School Trip Production Model	119
Table C-4	Home-Based College/University Trip Production Model	120
Table C-5	Home-Based Shopping Trip Production Model.....	121
Table C-6	Home-Based Social Recreation Trip Production Model	122
Table C-7	Home-Based Other Trip Production Model	123
Table C-8	Home-Based Serving Passengers Trip Production Model	124
Table C-9	Other-Based Other Trip Production Model	125
Table C-10	Work-Based Other Trip Production Model	126
Table D-1	Auto Operating Cost Calculation	127

LIST OF FIGURES

Figure 1-1	SCAG Regional Travel Modeling Process	3
Figure 1-2	SCAG Modeling Study Area	6
Figure 1-3	Transportation Analysis Zone System	7
Figure 1-4	Modeling Study Area Cordon Locations	8
Figure 2-1	Year 2003 Population Density	17
Figure 2-2	Year 2003 Employment Density	18
Figure 2-3	Year 2003 Median Household Income in 1999 Dollars	19
Figure 3-1	2000 Model Vehicle Estimate vs. 2000 Census (SCAG RSA)	24
Figure 3-2	2000 Model Trip Productions vs. 2001 Travel Survey (SCAG RSA)	27
Figure 3-3	2000 Model Trip Attractions vs. 2001 Travel Survey (SCAG RSA)	28
Figure 4-1	Year 2003 Network by Facility Type	40
Figure 4-2	Year 2003 Modeling Area by Area Type	41
Figure 4-3	Year 2003 Network by Area Type	42
Figure 5-1	Overview of Intermediate Stop Model Implementation Step	54
Figure 5-2	Home-Based Work Person Trip Distribution	55
Figure 5-3	Trip Length Frequency Distribution (Home-Based Work)	56
Figure 5-4	Average Travel Time to Downtown Los Angeles (Peak Period)	64
Figure 6-1	Mode Choice Model Nesting Structure (HBW Direct)	70
Figure 6-2	Mode Choice Model Nesting Structure (HBW Strategic)	71
Figure 6-3	Mode Choice Model Nesting Structure (HB School)	72
Figure 6-4	Mode Choice Model Nesting Structure (HBO, HBSH, HBCU, OBO, WBO)	73
Figure 6-5	Mode Choice Model Nesting Structure – Transit Submodel	74
Figure 6-6	Home-Based Work Trips Mode Share Comparison	81
Figure 8-1	Regional Screenline Locations	99
Figure 8-2	Year 2003 Screenline Link Volumes	100
Figure 8-3	Year 2003 AM Peak Period Congested Speed by Model	101
Figure 8-4	Year 2003 PM Peak Period Congested Speed by Model	102
Figure 8-5	PeMS Real Time AM Peak Period Congested Speed	103
Figure 8-6	PeMS Real Time AM Peak Period Congested Speed	104
Figure 9-1	Air Basin and Subareas in SCAG Region.....	108
Figure 9-2	Air District in SCAG Region.....	109

PREFACE

Questions about the content of this Report, as well as requests for more detailed information, should be directed to Dr. Deng Bang Lee, SCAG's Manager of Regional Transportation Modeling, at (213) 236-1855 or via e-mail at lee@scag.ca.gov.

The Southern California Association of Governments (SCAG) is a voluntary association of six counties (Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial) and of 187 cities within those counties. SCAG's organizational purpose is cooperative planning and governmental coordination at the regional level. SCAG is also mandated by State and federal law to plan and implement a Regional Transportation Plan (RTP), which is to be updated every three years, and to identify Transportation Control Measures (TCMs) for incorporation into the Air Quality Management Plan (AQMP) for the South Coast Air Basin.

This Report describes how SCAG forecasts travel behavior for the Southern California Region using computer-based software programs. The specific focus of this report is on the transportation modeling procedures that have been used to produce travel forecasts for the Year 2003. The Year 2003 model results have been compared to other independent sources of travel data within the Region, such as auto and truck traffic counts, transit boarding counts, Vehicle Miles of Travel (VMT) from Highway Performance Monitoring System (HPMS), speed data from Freeway Performance Measurement System (PeMS), and other travel survey data.

Year 2003 is the "base year" for the transportation planning period. This model base year is also being applied as part of the Regional Transportation Plan (RTP), the Air Quality Management Plan (AQMP) update, and in Congestion Management Programs (CMPs) prepared by individual counties within the Southern California Region.

The Regional Transportation Model provides a common foundation for transportation planning and decision making by SCAG and other agencies within the Region. The Year 2003 base year travel data contained in this report will be referenced by, and of interest to the general public, as well as local, State, and federal agencies involved in transportation planning and traffic engineering. A number of State, subregional, and local agencies in the SCAG Region also perform travel demand model forecasting for their own transportation planning and engineering purposes. These modeling programs require a high degree of coordination and cooperation with SCAG's Regional modeling program. State agencies involved in travel forecasting include the California Department of Transportation (Caltrans) Districts 07, 08, 11, and 12. Subregional agencies include the Los Angeles County Metropolitan Transportation Authority (LACMTA), the Orange County Transportation Authority (OCTA), the Riverside County Transportation Commission (RCTC), San Bernardino Associated Governments (SANBAG), the Ventura County Transportation Commission (VCTC), the County of Orange Environmental Management Agency, and others. Local agencies include cities and counties within the Region also maintain transportation modeling programs. Several of these agencies have contributed directly to preparation of SCAG's Year 2003 Model Validation.

CHAPTER 1 - OVERVIEW

INTRODUCTION

This report documents the results of the Year 2003 Model Validation process for SCAG's Regional Transportation Model. Model validation is defined as the process by which base year model results are compared to "known" sources of data such as traffic counts and transit ridership data. SCAG performs a validation of its transportation model at the beginning of each planning cycle for the Southern California Region. A planning cycle is typically three years, corresponding to the update of the Regional Transportation Plan. The "base year" for the current planning period is Year 2003, and Year 2035 is the "forecast year". Model validation is a regular and essential modeling process that supports development of the Regional Transportation Plan (RTP), the Regional Transportation Improvement Program (RTIP), and the Air Quality Management Plan (AQMP).

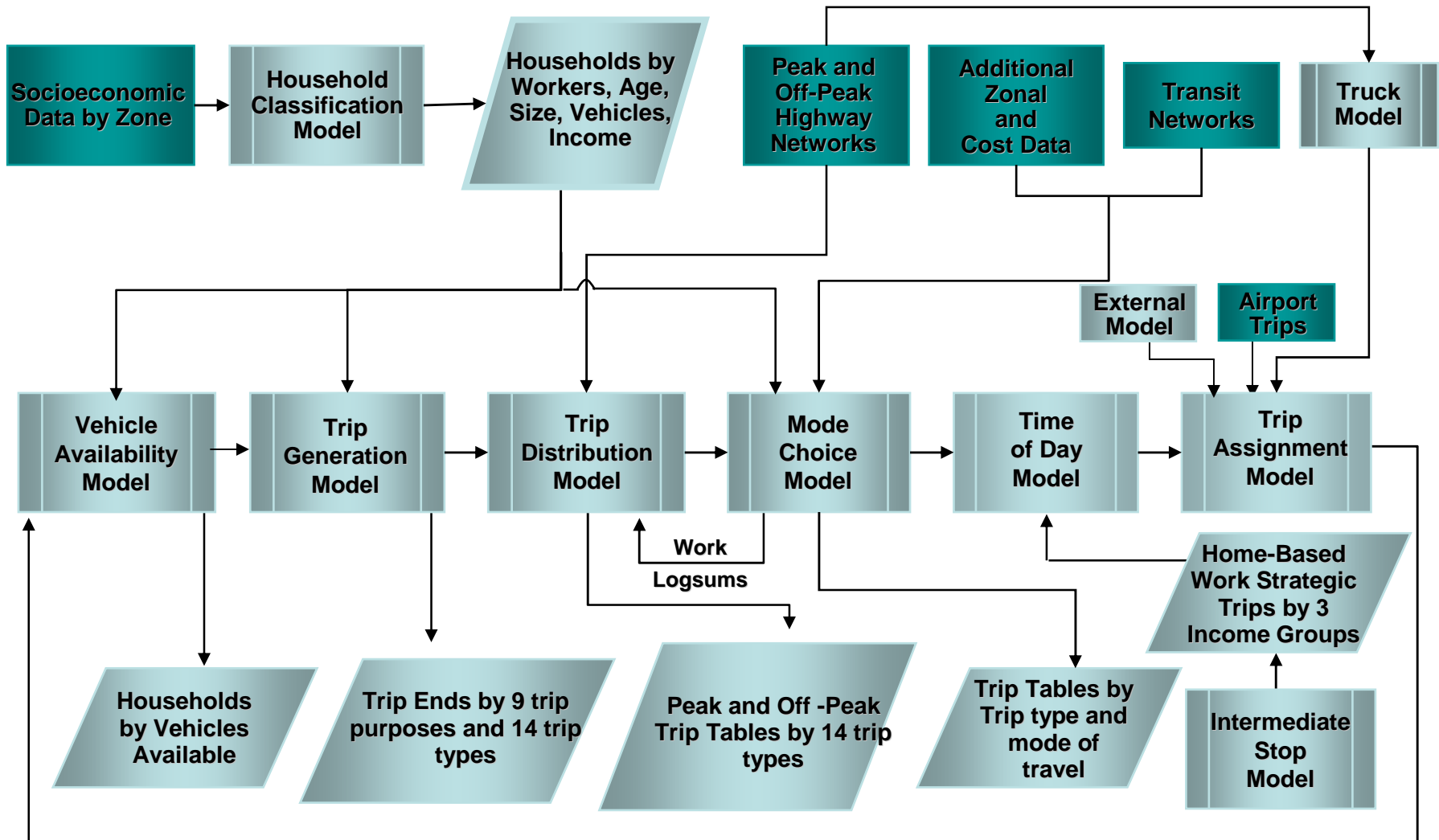
In the past, SCAG has prepared a model validation report for each of the previous planning cycle base years: 1980, 1984, 1987, 1990, 1994, 1997, and 2000. The base year of 2003 now replaces the previous base year of 2000. SCAG's new Regional Transportation Travel Demand model was used for the 2003 model validation, and will be applied during the analysis and evaluation of the Regional Transportation Plan (RTP).

The general objective of the Year 2003 Model Validation effort was to analyze the performance of the Regional Transportation Model compared to independent sources of travel data, such as traffic counts (ground counts taken along regional highways within the Region), transit ridership data, and vehicle miles traveled estimates.

TECHNICAL APPROACH

The Year 2003 Model Validation process ensures that the Regional Transportation Model accurately simulates traffic volumes and transit usage in the Year 2003. The enhancements to the transportation modeling process (see Figure 1-1) are described in greater detail in Chapters 2 through 8 of this report. Reports documenting the development and calibration of the trip generation, trip distribution, and mode choice models, as well as the Heavy-Duty Truck Model are referenced in the List of Bibliographies at the end of this report. Finally, the methods used to determine auto operating cost are presented in the appendix D to this report.

**FIGURE 1-1.
SCAG REGIONAL TRAVEL MODELING PROCESS**



Legend ■ Input Files ■ Updated Models ▱ Data Output Files

To assure a successful model validation, two key practices were followed:

1. The most recent socioeconomic input data was used in the Year 2003 Validation. It is crucial to the success of the Regional Transportation Model to use data from the most reliable source. Socio-economic data is the first input in the transportation modeling process. Because the modeling process is sequential, each step builds upon the last. Errors in the socioeconomic data will cause cumulative errors in the modeling process. Year 2003 data was used as the primary source for the socioeconomic variables, such as residential population, group quarters population, households, household income, workers, and employment by type.
2. Several measures were applied during the development of the Year 2003 Model to insure that the validation tests are objective. It is critical that the validation tests provide objective comparisons to the “real world” conditions and that the model demonstrates strong predictive capabilities.
 - An extensive effort was conducted to collect relevant travel data. It is important to review carefully alternative data sources and to analyze trends of the data. For example, traffic counts are subject to strong seasonally variations (day of the week, month of the year, etc.), PeMS speed data is subject to the working condition of detectors and speed imputation methods, and HPMS VMT estimation is subject to the reliability of sample data.
 - Consistent methods and assumptions were used in both Year 2000 and 2003 model validation efforts. This includes comparable input data such as socioeconomic data and highway and transit network assumptions. As an example, the mode choice model is particularly sensitive to assumptions used in developing transit walk access and auto access links. Consistency between these assumptions was necessary for an unbiased and objective comparison of model results with those of prior year models.

NEW MODEL HIGHLIGHTS

Year 2003 model validation was based on SCAG’s most recent Travel Demand Model (New Model). The New Model is a trip based convergence (see page 95 for a description of the convergence process) model which covers the entire SCAG Region. This model was developed on TransCAD software platform. The New Model uses an Integrated Highway and Transit Network system based on a GIS approach. It was calibrated to Year 2000 travel behavior and validated to Year 2003 travel statistics. Highlights of the New Model include the following:

Trip Generation Model

1. Detailed socioeconomic data
2. MNL vehicle availability model
3. Census household classification models

4. Cross-classification trip production models
5. Regression trip attraction models on household and NAICS employment data
6. Total person trips including non-motorized trips, stratified into 14 trip types

Trip Distribution Model

1. Gamma curves of covariant impedance
2. Intermediate Stops Model for HBWS
3. Calibrated friction factors by trip purpose, income group (for work trips), and time period (peak, off-peak), 28 curves in total.
4. Logsum from mode choice used in home-based work direct trips
5. Intermediate stop choice models allocate home-based work strategic trips to intermediate stops after mode choice

Mode Choice Model

1. Nested Logit models
2. Separate models for each trip purpose, stratified by peak and off-peak periods
3. Includes non-motorized trips
4. Model transit trips by mode and access/egress types

Assignment Model

1. External Trips Model
2. Volume Delay Functions
3. 4 time period equilibrium assignments
4. 3 auto classes (SOV, HOV2, HOV3+)
5. 3 classes of heavy-duty trucks
6. External trips from external model
7. Ports trips from LA and LB ports
8. Airport trips from airport demand model
9. Simultaneous assignments with transit vehicles
10. Transit assignments by access mode

MODELING AREA

The Regional Model's study area includes Imperial County, Los Angeles County, Orange County, Ventura Counties, Riverside County, and San Bernardino County. Figure 1-2 depicts the regional modeling area.

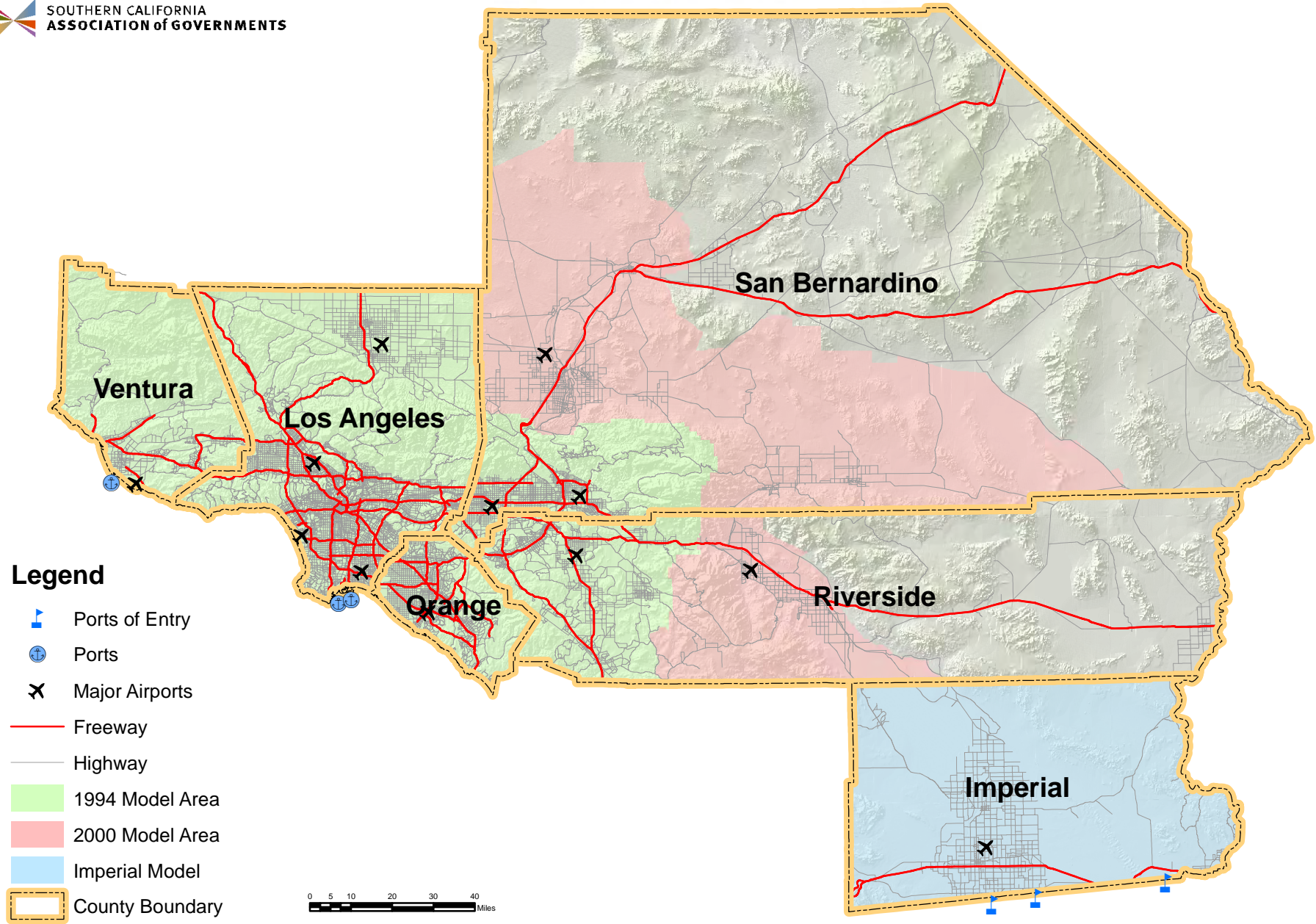
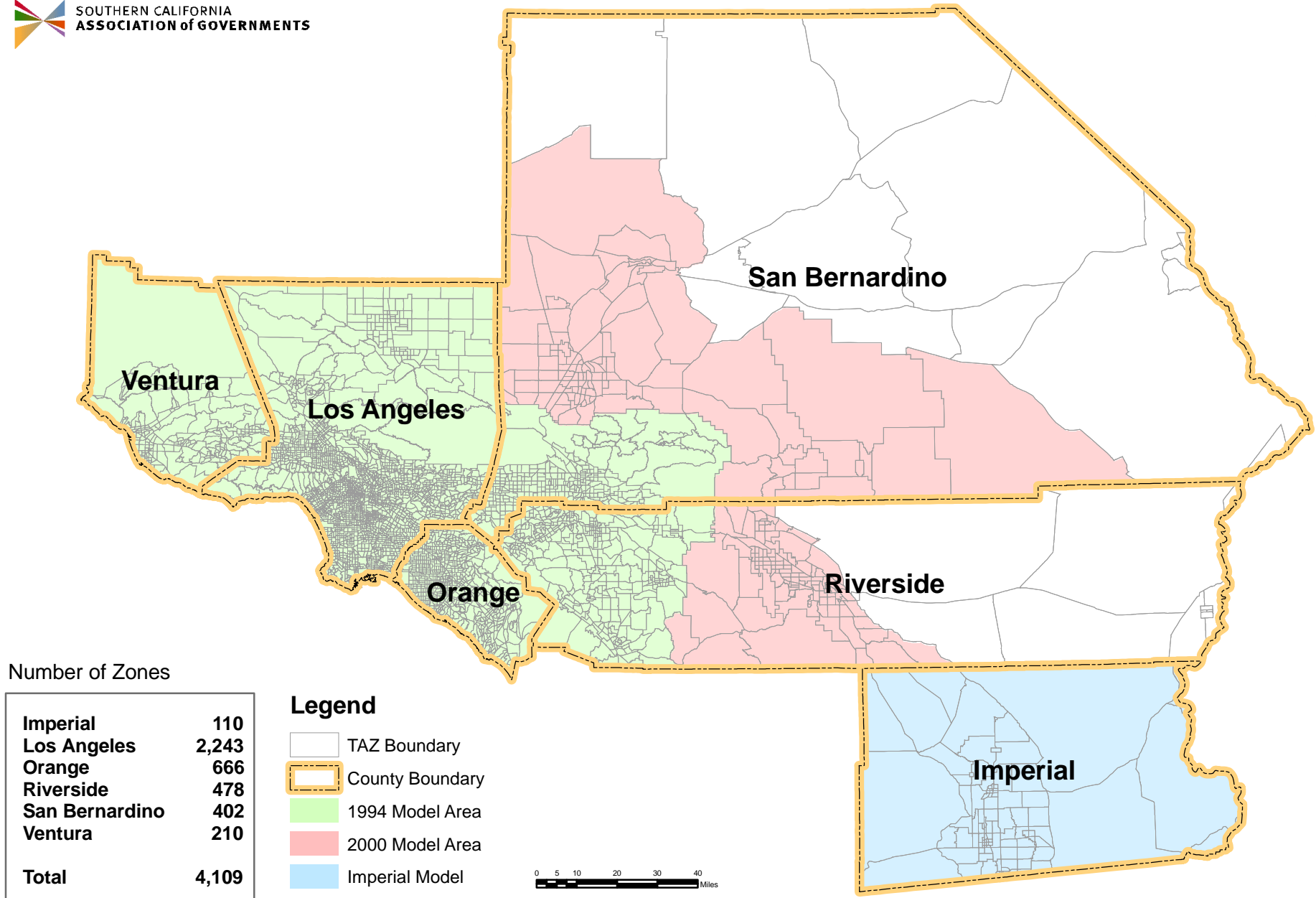


FIGURE 1-2
SCAG MODELING STUDY AREA



**FIGURE 1-3
TRAFFIC ANALYSIS ZONE SYSTEM**

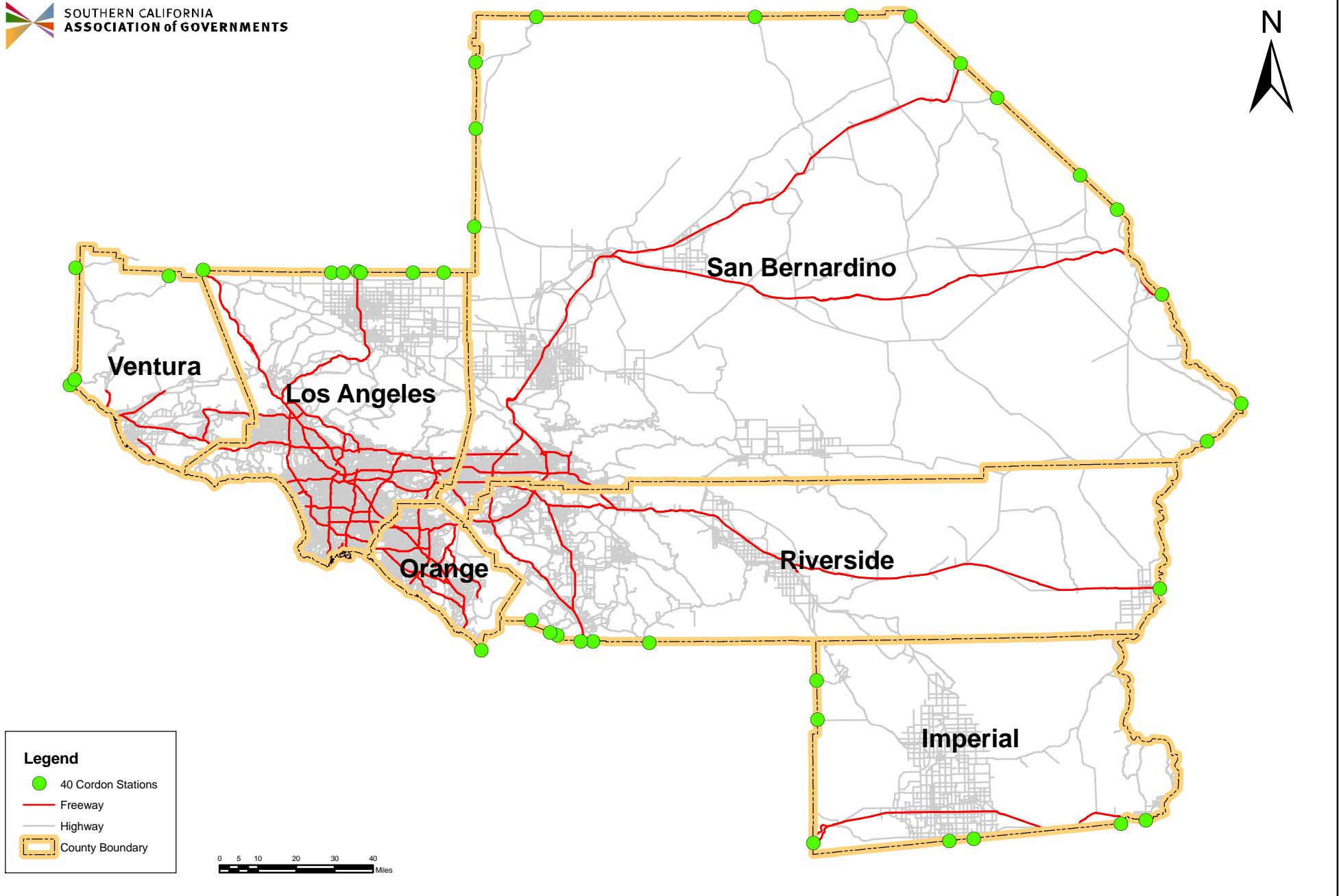


FIGURE 1-4
MODELING STUDY AREA CORDON LOCATIONS

ZONE SYSTEM

The Transportation Analysis Zones (TAZs) provide the spatial unit (or geographical area) within which travel behavior and traffic generation are estimated. Figure 1-3 provides a map of the TAZ system. The zone system includes 4,109 TAZs, 31 Port related TAZs, 12 Airport TAZs, and 40 Cordon Stations. Appendix A provides a detailed description of the methodology used to create the zone system and presents Table A-1 summarizing the zones by county.

The Regional Transportation Model uses 40 external stations (cordons) to account for external trip making. An external trip is a trip with at least one of its trip ends falling outside the modeling area. This includes the following types of trips: trips starting inside the modeling area to outside the area, trips from outside the area to inside the modeling area, and through trips which travel from one cordon to another cordon. Figure 1-4 depicts the 40 cordon stations, or points of entry and exit along streets and highways at the perimeter of the modeling area.

OVERVIEW OF REPORT

Performance of the Year 2003 Model, and key comparative statistics, are summarized in this section by major modeling component: trip generation, trip distribution, mode split, and trip assignment. Details of the various models, as well as the model inputs, are described in the following Chapters.

<i>Chapter 1</i>	<i>Overview</i>
<i>Chapter 2</i>	<i>Socioeconomic Data</i>
<i>Chapter 3</i>	<i>Trip Generation</i>
<i>Chapter 4</i>	<i>Transportation Networks</i>
<i>Chapter 5</i>	<i>Trip Distribution</i>
<i>Chapter 6</i>	<i>Mode Choice</i>
<i>Chapter 7</i>	<i>Heavy-Duty Truck Model</i>
<i>Chapter 8</i>	<i>Trip Assignment</i>
<i>Chapter 9</i>	<i>Air Quality Impact Analysis</i>

Additional technical details are included in Appendices A through D.

<i>Appendix A.</i>	<i>The Regional Transportation Analysis Zone (TAZ) System</i>
<i>Appendix B.</i>	<i>Regional Highway Network Coding Conventions</i>
<i>Appendix C.</i>	<i>Specification of Trip Production Models</i>
<i>Appendix D.</i>	<i>Auto Operating Costs</i>

OVERVIEW OF MODEL RESULTS

Trip Generation

The first step in the modeling process is to generate person trips by TAZ. Person trips are generated for each of the 14 trip types (9 trip purposes) based on the socioeconomic data described in Chapter 2. Results of this process include trip productions (primarily from residential land uses) and attractions (primarily related to employment) for each trip type. Details regarding the specific steps used to generate person trips are provided in Chapter 3.

Results of the trip generation model indicate that 58,089,196 person trips were generated on a typical Year 2003 weekday within the Regional modeling area depicted in Figure 1-2. It should be noted that the modeling area was expanded to include the urbanizing areas within the Region's mountain and desert areas. Table 3-5 provides summary statistics for trip generation. Table 3-5 also indicates that 11,249,349 or 19.4 percent of total daily trips in Year 2003 were home-based work trips.

Trip Distribution

Details regarding how trips were distributed are provided in Chapter 5. Before the trips can be distributed between zones, highway and transit networks must be developed. Chapter 4 provides a thorough explanation of the network coding process.

The results of the trip distribution model indicate that about 89.8 percent of the Year 2003 home-work trips generated in Los Angeles County had destinations within the County. Orange County retained approximately 79.6 percent of its Year 2003 estimated home-work trips. Ventura County retained about 74.3 percent of its home-work trips. San Bernardino County's estimated intra-county work trip percentage was 62.2 percent, while Riverside County's intra-county home-work trip percentage was 68.6.

Mode Choice

Chapter 6 provides details regarding the mode choice model. The procedures applied to estimate mode split produced 452,101 daily home-work transit trips in the expanded modeling area for Year 2003. The remaining (non-transit) home-work person trips were estimated at 9,196,505 vehicle trips. These trips were grouped considering vehicle occupancy, resulting in: 8,355,454 drive alone vehicle trips, 665,111 two-person vehicle trips, and 175,939 vehicle trips with three or more persons. Total weekday transit ridership in Year 2003 was estimated at 924,523. Total daily vehicle trips in Year 2003 resulted in an average vehicle occupancy of 1.39. The daily home-to-work average vehicle occupancy is 1.12.

Trip Assignment

Details regarding trip assignment for each mode are provided in Chapters 7 and 8. Once the highway trips were assigned to the network, the estimates were validated by comparing Average Weekday Traffic (AWT) volumes predicted by the Model, to "observed" traffic counts along the 23 regional screenlines. Screenlines are defined as imaginary lines that cross one or more freeways and/or major streets that are parallel to one another. Overall, the total model-predicted screenline volumes (across all screenlines) differed by less than 1.5 percent from the total observed daily counts along the same screenlines. On an individual screenline basis, 10 screenlines came within 5 percent of the observed counts, and 6 came within 10 percent. The remaining screenlines came within 18 percent. The Heavy-Duty Truck Model volumes across all screenlines were about 6 percent higher than observed truck counts. These screenline results were found to be within the tolerance level considered acceptable for a regional transportation model.

Results of the trip assignment process indicated there were 371,973,000 Vehicle Miles of Travel (VMT) on an average weekday in Year 2003 by light and medium duty vehicles (passenger cars, pick-ups, single unit trucks, and recreational vehicles). In addition, the Heavy-Duty Truck Model estimated 29,524,000 daily vehicle miles of travel by heavy-duty trucks within the Region. The heavy-duty truck volumes represent about 7.4 percent of the total regional vehicle mile traveled.

CHAPTER 2 – SOCIOECONOMIC INPUT DATA

INTRODUCTION

Socioeconomic data, which describes both demographic and economic characteristics of the region by transportation analysis zone (TAZ), is used as major input to SCAG's travel demand model. Travel demand analysis is based on the concept that travel is a derived demand of activity participation. Zonal demographic data, such as population, households, and income, is directly related to demand for activity participation of the area; economic characteristics, such as jobs by industry, are linked with supply of activity. This chapter provides definitions of the socioeconomic variables that are used by SCAG's Travel Demand Model, and the methodology used to estimate 2003 socioeconomic variables. The socioeconomic model inputs at the TAZ level were developed by SCAG's Growth Forecasting Staff. Summary statistics for each major variable by county are also provided.

SOCIOECONOMIC INPUT VARIABLES

This section describes the definition of socioeconomic data. SCAG's travel demand model uses 52 socioeconomic variables as model input. Those variables include population, households, school enrollments, household income, workers, and employment (or jobs). Each variable is provided by TAZ. The definition of each variable is described as follows:

Population (7 variables):

- Total Population: total number of people living within a zone, including all population types documented in the U.S. Census.
- Group Quarter Population: is primarily comprised of students residing in dormitories, military personnel living in barracks, and individuals staying in homeless shelters. Group quarter population does NOT include persons residing in institutions.
- Residential Population: the number of residents NOT living in "group quarters."
- Population by Age (4 variables): the number of population between 5 and 17 years old, 18 and 24, 25 and 64, and 65 or older.

Households (17 variables):

- Total Households: the number of total households.
- Households by Household Size (4 variables): the number of one-person households, two-person households, three-person households, and four or more person households.

- Households by Age of Household Head (4 variables): the number of households with age of household head between 18 and 24 years old, 25 and 44, 45 and 64, and 65 or older.
- Households by Number of Workers (4 variables): the number of households with no worker, with one worker, with two workers, and with three workers or more.
- Households by Household Income (4 variables): the number of households with annual household income (in 1999 dollars) below \$25K, \$25k-\$50k, \$50k-\$100K, and \$100K or more.

School Enrollment (2 variables):

- K-12 School Enrollment: the total number of K-12 (kindergarten through 12th grade) students enrolled in all public and private schools located within a zone. All elementary, middle (junior high), and high school students are included. This variable represents "students by place of attendance."
- College/University Enrollment: the total number of students enrolled in any public or private post-secondary school (college or university) that grant an associate degree or higher, located within a zone. This variable also represents "students by place of attendance."

Median Household Income (5 variables):

- Median Household Income is the median value of household income for all households within a zone. Household Income includes the income, from all sources, for all persons aged 15 years or older within a household. The median household income level is in "1999 dollars."
- Median Household Income by Income Categories (4 variables): median income for those households with median household income below \$25K, \$25k-\$50k, \$50k-\$100K, and \$100K or more.

Workers (4 variables):

- Total Workers: the total number of workers residing in a zone. Workers are counted by place of residence.
- Workers by Earnings (3 variables): the number of workers with earning below \$25K, \$25K-\$50K, and \$50K or more (in 1999 dollars).

Employment (17 variables):

The employment variables represent all jobs located within a zone (i.e., employment by place of work). Employment variable definitions are based upon North American Industry Classification System (NAICS) code definition.

- Total Employment: the total number of jobs within a zone.

- Employment by 13 Industries: the number of total jobs for 1) agriculture & mining, 2) construction, 3) manufacturing, 4) wholesale trade, 5) retail trade, 6) transportation, warehousing, and utility, 7) information, 8) financial activity, 9) professional and business services, 10) education and health services, 11) leisure and hospitality services, 12) other services, and 13) public administration.
- Employment by wage (3 variables): the number of employment with wage below \$25K, \$25K-\$50K, and \$50K or more (in 1999 dollars).

METHODOLOGY OF 2003 SOCIOECONOMIC VARIABLE ESTIMATE

The section summarizes the data sources and methodology for developing the three primary socioeconomic variables: population, households, and employment, at both local jurisdiction and small area levels. For more detailed information regarding socioeconomic variables estimation and forecast, please refer to the Technical Appendix of SCAG Regional Transportation Plan (Year 2004).

SCAG develops 2003 base year estimates of population and households at the local jurisdictional level based on California Department of Finance (DOF) E-5 Population and Housing Estimates. DOF local population and household estimates prepared for January 1st are adjusted to produce the mid-year population and household estimates. The local population and household estimates are derived using the housing unit method, which is the most commonly and widely used method in the nation. As a first step, administrative records of new housing construction and demolitions are used to estimate total housing unit changes during the base period. Then, the total housing units are converted to households (occupied housing units) using a vacancy rate. Households (occupied housing units) are converted to household population using average persons per household. Total population estimates are derived by adding group quarters population to estimated household population. Finally, the preliminary population and household estimates are finalized by controlling to the independently derived county estimates.

For 2003 employment estimates, SCAG estimates county-level total employment from two sources. First, wage and salary employment for each county is based on California Employment Development Department (EDD) 2005 Benchmark data. Second, SCAG staff calculates self-employment rates by each industry for each county by using 2000 Census Public Use Microdata Samples (PUMS) and Current Population Survey (CPS) Data.

To estimate employment at local jurisdiction level, SCAG uses 2000 Census for Transportation Planning Package (CTPP) part 2 data and SCAG population estimates. With the estimated county employment control for each industry, employment for local jurisdiction is calculated based on 2000-2003 population growth share of city to county for three population-serving industries (Education/Health Services, Other Services, and Public Administration), and 2000 city employment share to county (based on CTPP) for other industries.

The small area data at TAZ level is calculated based on the following input information:

- Jurisdiction level estimates describe above as control
- 2000 Census tract/block group data
- 2000 CTPP (Census for Transportation Planning Package) data
- Input and comments from local jurisdiction

INPUT DATA SUMMARY

The results presented in the following tables and figures summarize the socioeconomic data inputs to the Year 2003 Model Validation process. Table 2-1 presents a summary of socioeconomic data totals by county and for the SCAG Region. Figures 2-1 to 2-3 provides 2003 distribution for population density, employment density, and median household income.

Table 2-1

YEAR 2003 SCAG MODEL SOCIOECONOMIC INPUT DATA

POPULATION AND WORKERS				
COUNTY	RESIDENT POPULATION	GROUP QUARTERED POPULATION**	TOTAL POPULATION	RESIDENT WORKERS
Imperial	142,647	11,917	154,564	54,405
Los Angeles	9,846,198	183,786	10,029,984	4,024,830
Orange	2,951,175	44,495	2,995,670	1,385,731
Riverside	1,702,739	45,098	1,747,837	674,903
San Bernardino	1,828,843	47,264	1,876,107	717,695
Ventura	783,472	13,877	797,349	358,179
TOTAL	17,255,074	346,437	17,601,511	7,215,743

SCHOOL ENROLLMENT		
COUNTY	K THRU 12 ENROLLMENT	COLLEGE AND UNIVERSITY ENROLLMENT
Imperial	37,380	11,419
Los Angeles	2,104,364	747,161
Orange	582,863	248,703
Riverside	383,272	66,366
San Bernardino	440,633	123,473
Ventura	166,272	57,700
TOTAL	3,714,784	1,254,822

EMPLOYMENT				
COUNTY	RETAIL EMPLOYMENT	SERVICE EMPLOYMENT	OTHER EMPLOYMENT	TOTAL EMPLOYMENT
Imperial	7,173	16,016	32,365	55,554
Los Angeles	437,706	2,162,675	1,759,180	4,359,561
Orange	162,722	779,635	621,351	1,563,708
Riverside	75,147	282,496	231,796	589,439
San Bernardino	77,425	312,851	248,660	638,936
Ventura	37,721	146,287	150,481	334,489
TOTAL	797,894	3,699,960	3,043,833	7,541,687

HOUSEHOLDS					
COUNTY	LOW INCOME***	MEDIUM INCOME	HIGH INCOME	TOTAL	SIZE
Imperial	16,829	11,943	12,832	41,604	3.43
Los Angeles	942,654	863,624	1,369,727	3,176,005	3.10
Orange	166,020	234,648	562,732	963,400	3.06
Riverside	156,165	160,251	244,291	560,707	3.04
San Bernardino	157,411	161,524	234,639	553,574	3.30
Ventura	43,678	60,588	150,215	254,481	3.08
TOTAL	1,482,757	1,492,578	2,574,436	5,549,771	3.11

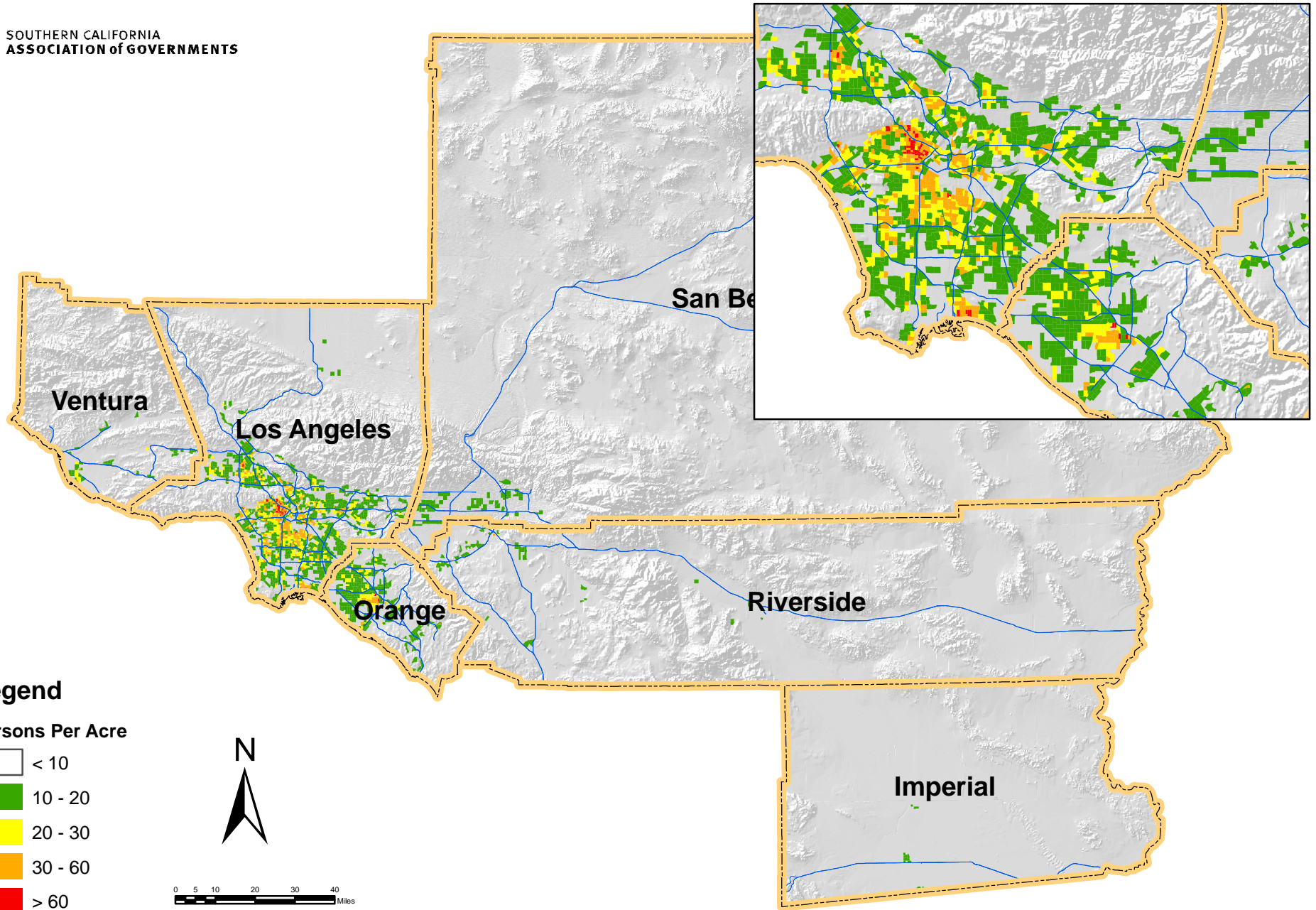


FIGURE 2-1
YEAR 2003 POPULATION DENSITY

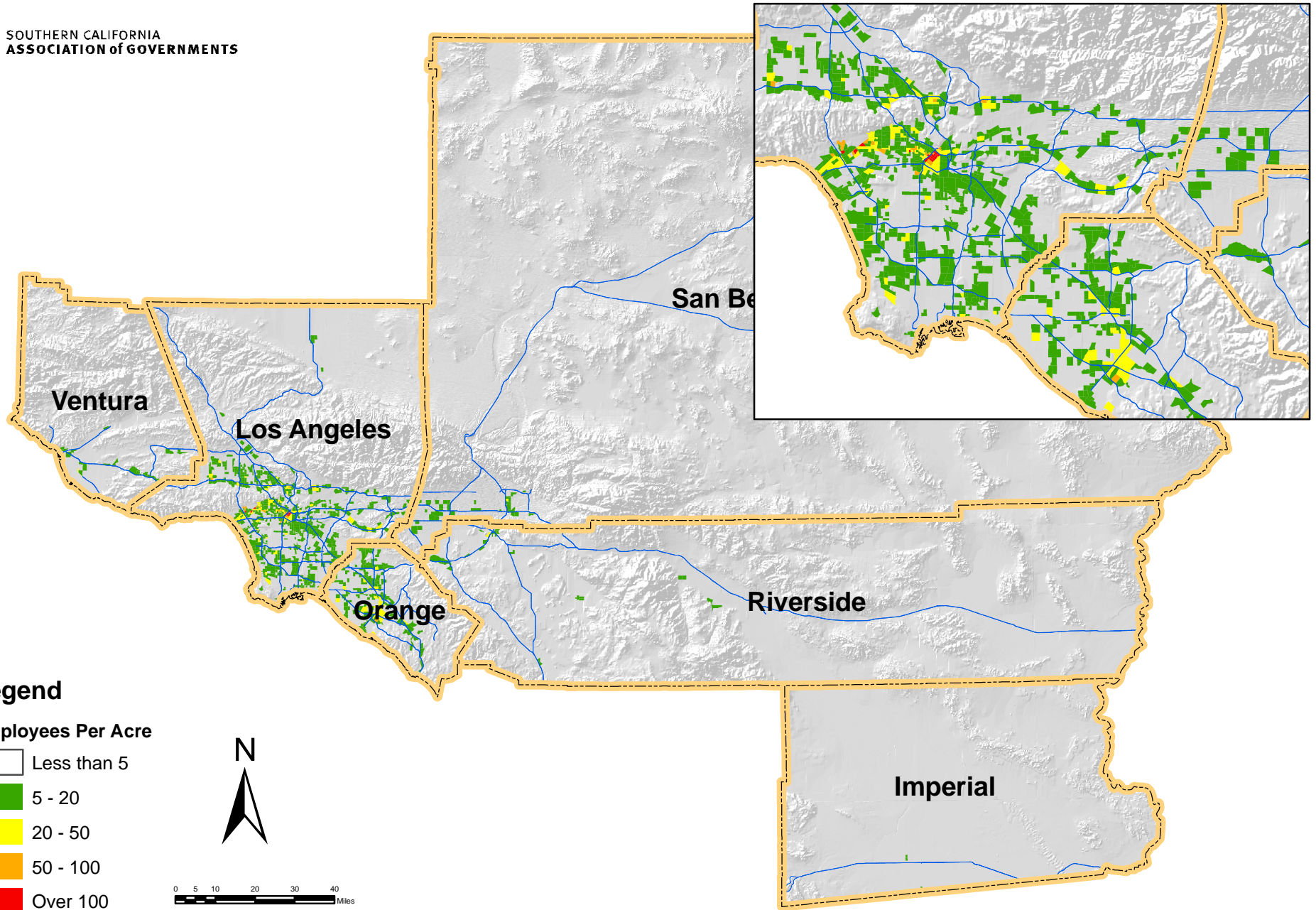


FIGURE 2-2
YEAR 2003 EMPLOYMENT DENSITY

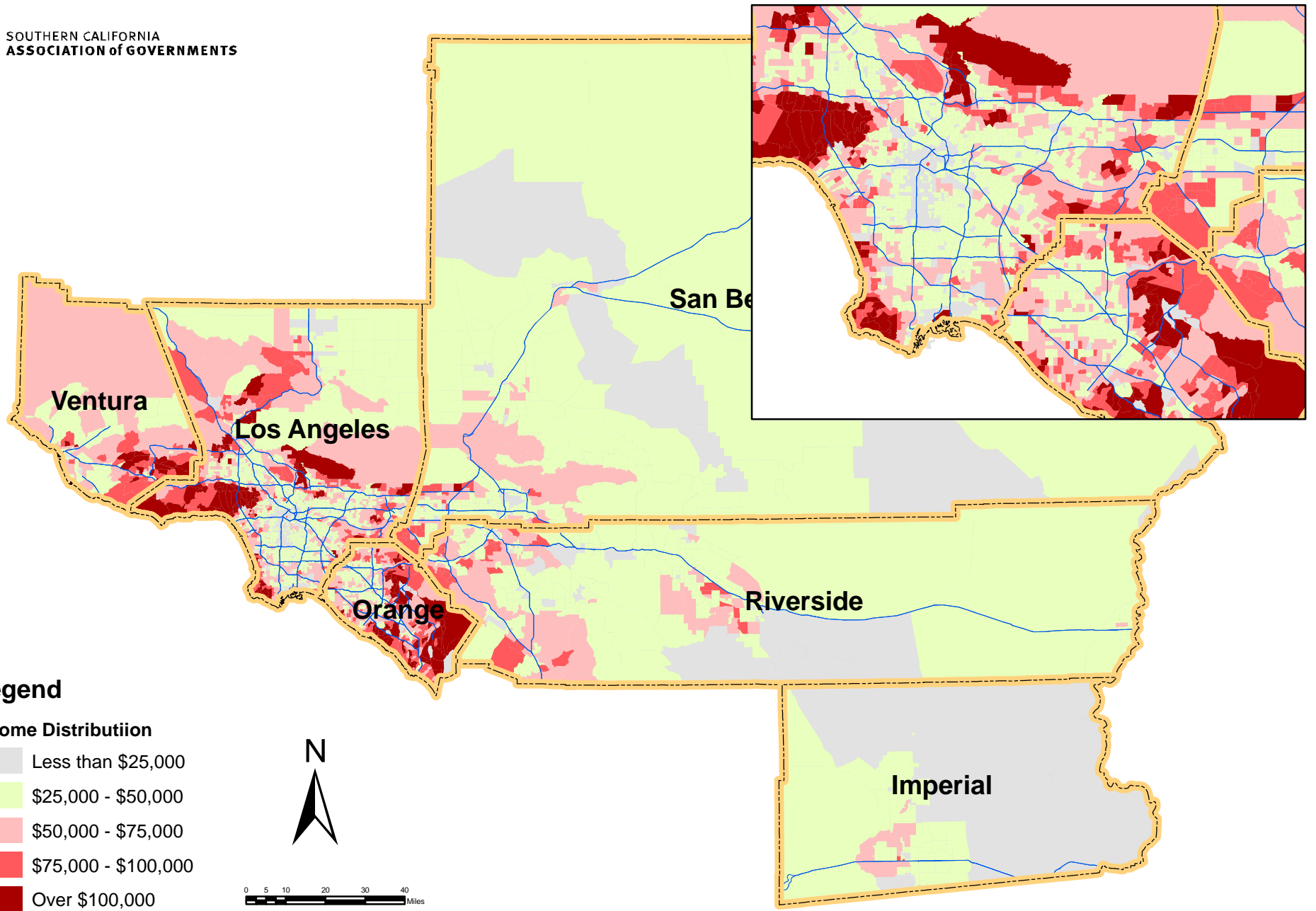


FIGURE 2-3
MEDIAN HOUSEHOLD INCOME IN 1999 DOLLAR

CHAPTER 3 – TRIP GENERATION

INTRODUCTION

Trip generation is the process of estimating daily person trips for an average weekday generated by households within each Transportation Analysis Zone (TAZ). The Year 2003 Model contains a series of models to estimate trip productions and trip attractions by trip type. The trip production models estimate the number of person trips generated in each TAZ, and trip attraction models estimate the number of person trips attracted to each TAZ.

This chapter provides descriptions of: a) definitions of trip purposes used by SCAG trip generation models, b) the estimation of vehicle availability model, c) trip production and trip attraction methodologies, and d) a summary of model results for the year 2000 as they are compared to the 2001 Travel Survey and for the Year 2003.

TRIP PURPOSE AND TRIP TYPE

The Year 2003 Model uses an expanded set of trip purposes. This was done to improve trip distribution and mode choice estimates, and to more accurately link trip productions and trip attractions. The model contains 9 trip purposes and 14 trip types. Total trips produced by TAZ were estimated for each of the following trip purposes/trip types:

1. Home-based Work

There are six trip types of the home-based work trip purpose: three types of "direct" home-based work trips and three types of "strategic" home-based work trips.

"Direct" home-based work trips are trips that go directly between home and work, without any intermediate stops. The trip generation model estimates these types of trips separately for each of three different personal income (earning by worker) categories:

- "Direct" home-based work trips, Low Income (less than \$25,000)
- "Direct" home-based work trips, Medium Income (\$25,000 to \$49,999)
- "Direct" home-based work trips, High Income (\$50,000 or greater)

"Strategic" home-based work trips are trips between home and work that include one or more intermediate stops, such as to drop off or pick up a passenger, to drop off or pick up a child at school, or for other reasons. The trip generation model estimates strategic home-based work trips separately for each of three income categories.

- "Strategic" home-based work trips, Low Income
- "Strategic" home-based work trips, Medium Income
- "Strategic" home-based work trips, High Income

2. Home-based School

Home-based school trips include all student trips with an at-home activity at one end of the trip and a K-12 (kindergarten through 12th grade) school activity at the other end. This purpose does not include trips in the college/university category, which follows.

3. Home-based College and University

Home-based college and university trips include all trips made by persons over the age of 18 with an at-home activity at one end of a trip and a college or university activity at the other end.

4. Home-based Shopping

Home-based shopping trips include all person trips made with a home activity at one end of a trip and a shopping activity at the other end.

5. Home-based Social-recreational

Home-based social-recreational trips include all person trips made with a home activity at one end of a trip and a visiting or recreational activity at the other end.

6. Home-based Serving-passenger

Home-based serving-passenger trips include all person trips made with a home activity at one end of a trip and a passenger serving activity, such as driving someone to somewhere, at the other end. Trips that serve passengers while on the way to work are classified as home based work strategic trips rather than serve passenger trips because they are part of a work trip chain.

7. Home-based Other

Home-based other trips include all other home-based (with a home activity at one end of a trip) trips that are not already accounted for in any of the home-based trips categories described above.

8. Work-based Other

Work-based other trips are non home-based trips where at least one end of a trip is from/to a work location. An example of such a trip would be, "running an errand during lunch hour" from one's place of employment.

9. Other-based Other

Other-based other trips are all other trips that do not begin or end at a trip-maker's home or place of work.

VEHICLE AVAILABILITY MODEL

The result of vehicle availability model estimation is presented in Table 3-1. This model is estimated using ALOGIT software and the 2001 Travel Survey data. Variables used in the model are listed in Table 3-2. Also, Figure 3-1 compares 2000 model vehicle estimates with 2000 census vehicles.

The auto and non-auto accessibility measures are calculated based on the following equation:

$$A_{ikt} = \ln\left(1 + \sum_j TotalEmployment_j \times \exp^{-2 \times T_{ij} / T_{ij}^*}\right)$$

Where, t is the time period (peak for work and off-peak for non-work); T_{ij} is the peak auto travel time for auto modes and best peak non-auto travel time for non-auto modes; and the T_{ij}^* is the observed mean travel time.

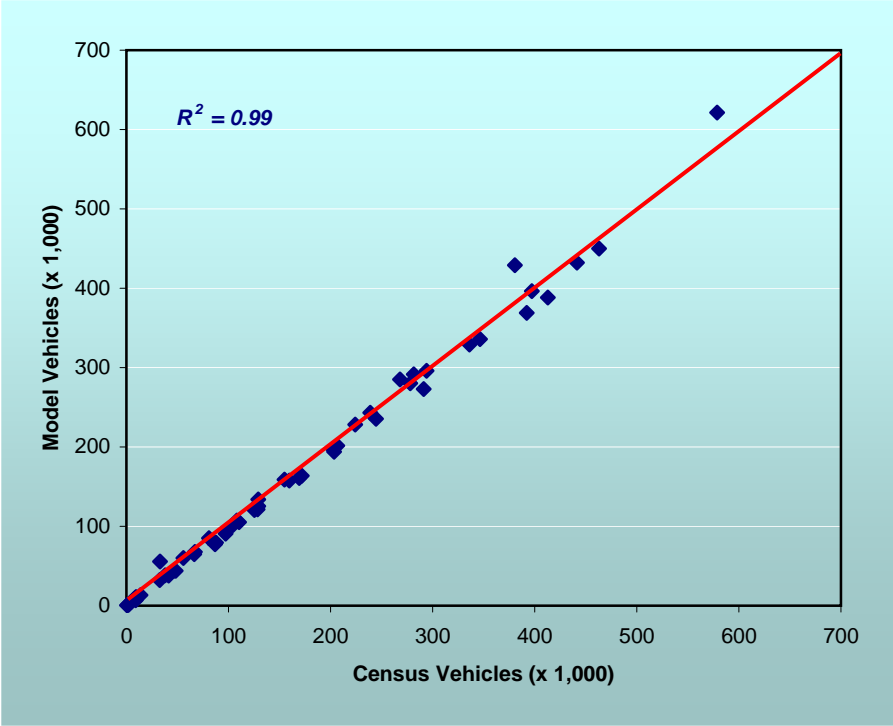
Table 3-1

VEHICLE AVAILABILITY MODEL					
Variable		Vehicle Availability Level			
		1	2	3	4+
Low Income	Coefficient	-2.59	-4.27	-5.2	-5.88
	(t-stat)	(-15.8)	(-25.5)	(-27.2)	(-23.7)
Medium Income	Coefficient	-1.12	-2.06	-2.46	-3.04
	(t-stat)	(-6.3)	(-11.5)	(-13.2)	(-14.6)
One Worker	Coefficient	0.91	0.91	0.97	0.93
	(t-stat)	(10.5)	(10.5)	(7.5)	(4.9)
Two Workers	Coefficient	0.48	1.29	1.43	1.4
	(t-stat)	(3.3)	(9)	(8.3)	(6.3)
Three Workers	Coefficient			1.21	1.34
	(t-stat)			(7.9)	(6.2)
Two-Member Household	Coefficient		1.68	1.12	
	(t-stat)		(22.6)	(9.3)	
Three-Member Household	Coefficient		1.43	1.31	
	(t-stat)		(15.2)	(9.4)	
Four or More-Member Household	Coefficient		1.63	1.05	
	(t-stat)		(17.1)	(7.1)	
Number of Persons Age 16-64	Coefficient		0.49	1.12	1.71
	(t-stat)		(9.2)	(16.8)	(26.6)
Age 65 and over	Coefficient	0.38	0.85	1.51	1.84
	(t-stat)	(5)	(9.3)	(14.6)	(15.7)
Non-auto/Auto Accessibility (work)	Coefficient	-0.6	-0.74	-0.91	-0.94
	(t-stat)	(-5.6)	(-6.5)	(-7.3)	(-6.5)
Number of Observations		14849			
Final Likelihood		-15131			
ρ^2 w.r.t. 0		0.367			

Table 3-2

VEHICLE AVAILABILITY MODEL VARIABLE DEFINITIONS	
Variable	Definition
Low Income	One if Household Income Less than \$25,000, zero otherwise.
Medium Income	One if Household Income between \$25,000 and \$50,000, zero otherwise.
High Income	One if Household Income greater than \$50,000, zero otherwise.
Zero Worker	One if there are zero Workers in the Household, zero otherwise.
One Worker	One if there is one Worker in the Household, zero otherwise.
Two Workers	One if there are two Workers in the Household, zero otherwise.
Two-Member Household	One if there are two members in the Household, zero otherwise.
Three-Member Household	One if there are three members in the Household, zero otherwise.
Four or More-Member Household	One if there are four or more members in the Household, zero otherwise.
Age 16-64	One if Age of Head of Household is 16 to 64 years of age, zero otherwise.
Age 65-plus	One if Age of Head of Household more than 65, zero otherwise.

FIGURE 3-1.
2000 MODEL VEHICLE ESTIMATES vs 2000 CENSUS (SCAG RSA)



TRIP PRODUCTIONS

The trip production models applied for the Year 2003 model are “cross-classification” models. By using 2001 SCAG Travel Survey data, trip rates per household are developed for each trip purpose. For example, trip rates for home-based work trip purpose are developed for households stratified by the number of workers, household size, and the age of household head. Trip productions in each zone are then calculated by applying trip rates to the number of households. Appendix C provides a list of trip rates tables (Tables C-1 through C-10). Figure 3-2 shows the comparison of trip production at RSA level between 2000 model result and 2001 travel survey.

The following section describes the independent variables used for cross-classification models for each trip purpose.

Home-Based Work Trip Productions

The household stratification used for the three-way cross-classification models for both home-based work “direct” trips and home-based work “strategic” trips is:

- Household size
- Number of workers in household
- Age group of the head of household

Home-Based Non-Work Trip Productions

Household stratification used for home-based shopping, home-based social recreational, home-based serving passengers, and home-based others trips is as follows:

- Household size
- Number of vehicles available to the household
- Annual household income

For home-based school trips, trip rates are estimated by:

- The number of household members with age between 5 and 17

For home-based college and university trips, a two-way cross-classification model is developed for households by:

- Annual household income
- The number of household members with age between 18 and 24

Non-Home Based Trip Productions

The following is a list of household stratification used for the three-way cross-classification models for non-home based trips.

For work-based other trips:

- Household size
- The number of household workers
- Annual household income

For other-based other trips

- Household size
- The number of household vehicles
- Annual household income

TRIP ATTRACTIONS

Trips attractions are estimated by a set of equations for each trip purpose and trip types defined in this chapter. The methodology of developing trip attraction models is based on multivariate linear regression analysis. The data for independent variable (person trips attracted to a zone) of the regression analysis for each trip purpose come from the expanded survey trips of the 2001 Travel Survey. The data for dependent variables (zonal household and employment data) are developed by SCAG for the year 2000. Figure 3-3 shows the comparison of trip attraction at RSA level between 2000 model result and 2001 travel survey.

Trip Attraction Models

Table 3-3 presents the regression coefficients for the trip attraction models employed in the Year 2003 SCAG Regional Model. Separate regression equations are estimated for each of the following trip purposes:

- Home-Based Work – Direct Trip Attractions
(Separate equations for low, medium, and high income)
- Home-Based Work – Strategic Trip Attractions
(Separate equations for low, medium, and high income)
- Home-Based Elementary-High School Trip Attractions
- Home-Based College/University Trip Attractions
- Home-Based Shopping Trip Attractions
- Home-Based Social-Recreation Trip Attractions
- Home-Based Other Trip Attractions
- Work-Based Other Trip "Allocations":
 - Production "Allocations"
 - Attraction "Allocations"
- Other-Based Other Trip Attractions

Figure 3-2

FIGURE 3-2.
2000 MODEL TRIP PRODUCTIONS vs 2001 TRAVEL SURVEY (SCAG RSA)

Purpose	R ²
Total	0.79
HBW	0.74
HBO	0.76
NHB	0.85
HBWD1	0.74
HBWD2	0.72
HBWD3	0.71
HBWS1	0.77
HBWS2	0.76
HBWS3	0.66
HBSC	0.72
HBCU	0.79
HBSH	0.76
HBSR	0.72
HBO	0.76
WBO	0.90
OBO	0.81
HBSP	0.76

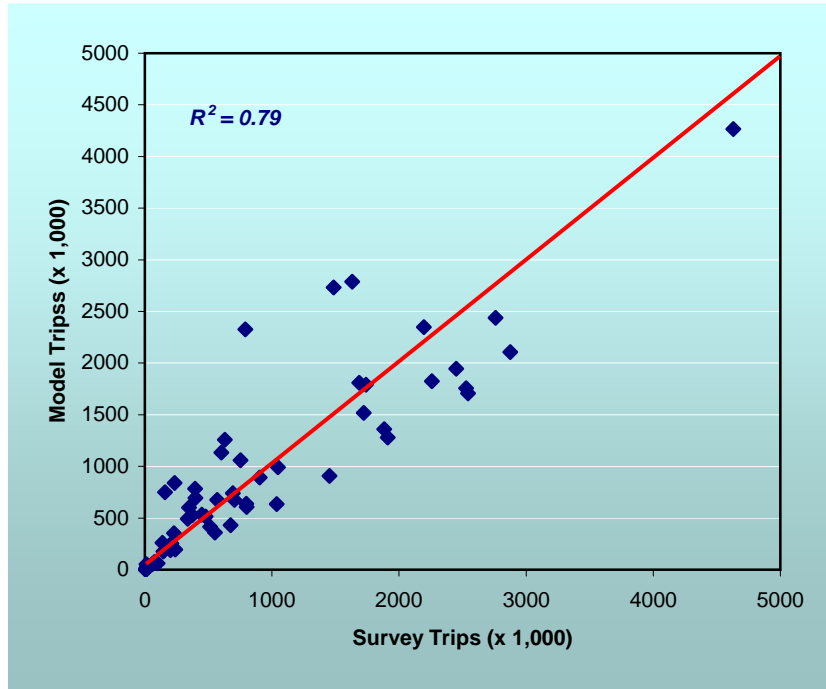


FIGURE 3-3.
2000 MODEL TRIP ATTRACTIONS vs 2001 TRAVEL SURVEY (SCAG RSA)

Purpose	R ²
Total	0.83
HBW	0.88
HBO	0.79
NHB	0.83
HBWD1	0.83
HBWD2	0.86
HBWD3	0.90
HBWS1	0.83
HBWS2	0.85
HBWS3	0.85
HBSC	0.76
HBCU	0.66
HBSH	0.77
HBSR	0.79
HBO	0.79
WBO	0.86
OBO	0.81
HBSP	0.76

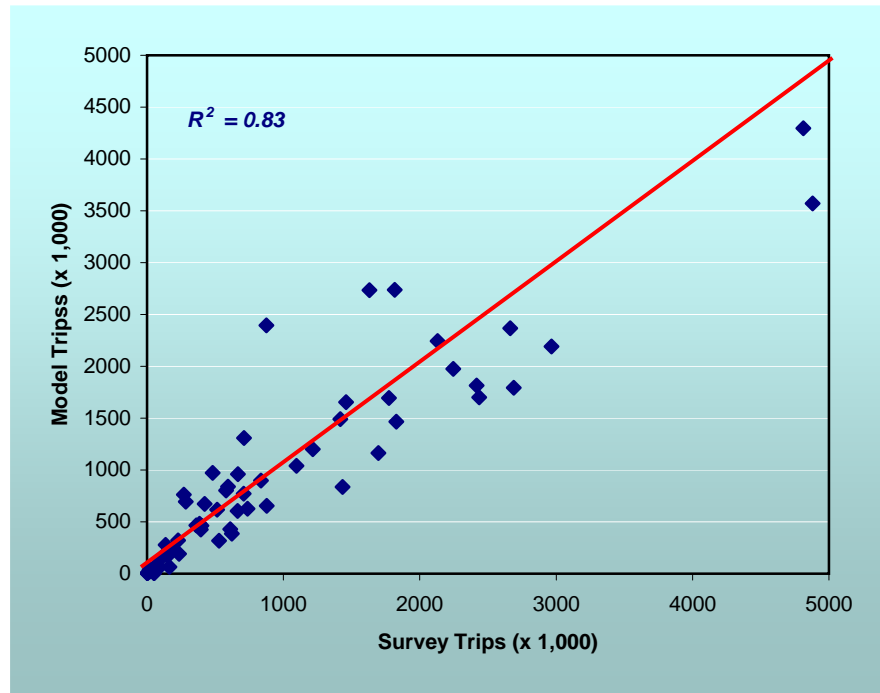


Table 3-3

TRIP ATTACTION MODEL REGRESSION COEFFICIENTS

Trip Purpose	R ² (CSA)	Households	Total Employment	Residential Population	Low-wage Employment	Medium-wage Employment	High-wage Employment	Retail	Information	Professional Service	Education & Health Service	Arts, Entertainments, Accommodation & Food Services	Other Services	Public Administration	K 12	College Enrollment
HBWD 1 (low income)	0.81				1.181											
HBWD 2 (medium income)	0.90					1.040										
HBWD 3 (high income)	0.90						1.040									
HBWS 1 (low income)	0.76				0.324											
HBWS 2 (medium income)	0.83					0.339										
HBWS 3 (high income)	0.81						0.347									
HBCU	0.77															0.549
HBSC	0.84														1.326	
HBO	0.78			0.270				0.993			0.544	0.993	0.993	3.439		
HBSR	0.75			0.166								2.126				
HBSP	0.72			0.357							0.703					
OBO (Attraction)	0.77	0.508	0.180					4.678			0.698	3.136	3.303			
WBO (Attraction)	0.84	0.036	0.202					0.513				1.147				
OBO (Production)	0.78	0.538	0.162					4.393			1.118	2.568	3.784			
WBO Production	0.85		0.137						0.227	0.250			5.743			

Home-base shop trip attractions are estimated by applying a trip rate R to the zonal retail employment. The Steps for calculating R are as follows:

- Step 1: Calculate regionwide resident population to retail employment ratio, r1.
- Step 2: Calculate the same ratio for each RSA, r2.
- Step 3: Calculate for each RSA the relative retail service index $rsi = r2/r1$.
- Step 4: Range bracket rsi to 0.5 - 1.5
- Step 5: Assign this rsi to each TAZ of that RSA.
- Step 6: Apply the equation $R = 2.105 + 4.108*rsi$ to estimate the attraction rate.

BALANCING OF TRIP PRODUCTIONS AND ATTRACTIONS

Trip production and trip attraction are balanced to ensure that the same number of trip productions and attractions are generated for each trip purpose. Trip balancing is determined based on the confidence one places in the relative accuracy of trip production model and attraction model for each trip purpose. Except for home-based school and home-based college/university trips which are balanced to trip attractions, all other trip types are balanced to trip productions.

TRIP GENERATION RESULTS AND FINDINGS

The Year 2003 trip generation model estimated that 58,089,196 person trips were generated for Year 2003 on a typical weekday in the Region's expanded modeling area. About 19.4 percent of total daily person trips are home-based work trips, 51.2 percent are home-based non-work trips, and 29.4 percent are non-home based trips. Table 3-4 identifies the person-trip summary of those trips broken down by county and by trip type.

The previous summary total from the 2000 SCAG model was 55,556,231 person trips for year 2000. It is noted that the 2000 SCAG model covers smaller modeling area and a different set of models.

Table 3-5 provides summary statistics for person trips, by county and for the Region. The Table identifies selected comparative statistics, such as trips per household, trips per vehicle, and trips per capita (person). Table 3-5 also identifies statistics for home-work trips, and total trips. Total trips for Year 2003 are estimated at 10.47 trips per household, 6 trips per vehicle, and 3.3 trips per person.

Table 3-4

YEAR 2003 TRIP GENERATION SUMMARY BY TRIP PURPOSE AND BY COUNTY

TRIP PURPOSE CATEGORY	PERSON TRIP PRODUCTIONS						MODELING AREA TOTAL
	Imperial	Los Angeles	Orange	Riverside	San Bernardino	Ventura	
HB Work: Direct - Low Income	37,521	2,409,719	681,462	380,116	402,414	182,385	4,093,616
HB Work: Direct - Middle Income	17,621	1,402,019	483,454	231,982	260,285	125,365	2,520,726
HB Work: Direct - High Income	8,877	1,057,571	468,315	153,826	156,117	117,204	1,961,910
HB Work: Strategic - Low Income	12,661	748,271	210,662	122,039	129,283	58,013	1,280,928
HB Work: Strategic - Middle Income	5,896	431,242	148,158	74,690	83,647	39,715	783,348
HB Work: Strategic - High Income	2,962	324,450	144,191	49,584	50,402	37,231	608,820
Total Home Based Work	85,537	6,373,271	2,136,243	1,012,238	1,082,147	559,912	11,249,349
HB School	49,542	2,789,294	772,569	508,005	584,044	220,395	4,923,849
HB College/University Trips	5,108	405,508	121,837	51,252	66,856	26,989	677,550
HB Shopping	39,233	2,793,958	857,083	504,447	514,901	229,876	4,939,498
HB Social-Recreational Person Trips	33,346	2,410,188	759,303	456,324	460,866	212,288	4,332,314
HB Other Purpose Person Trips	61,248	4,277,544	1,289,093	762,077	787,546	348,147	7,525,656
HB Serving Passengers	65,953	4,177,635	1,212,762	739,965	811,372	327,306	7,334,993
Total Home Based Non-Work	254,430	16,854,127	5,012,646	3,022,069	3,225,586	1,365,002	29,733,860
Work - Other Person Trips (NHB)	17,964	2,140,772	732,739	272,443	291,475	153,029	3,608,422
Other - Other Person Trips (NHB)	93,034	7,694,186	2,641,540	1,224,937	1,246,822	597,048	13,497,566
Total Non-Home Based	110,998	9,834,957	3,374,279	1,497,380	1,538,297	750,077	17,105,987
TOTAL PERSON TRIPS	450,966	33,062,356	10,523,168	5,531,687	5,846,030	2,674,991	58,089,196

Notes: HB = Home-based, NHB = Non-home Based

Table 3-5

YEAR 2003 TRIP GENERATION COMPARATIVE STATISTICS							
Home-Based Work Trips	Imperial	Los Angeles	Orange	Riverside	San Bernardino	Ventura	Total
TRIPS	85,537	6,373,271	2,136,243	1,012,238	1,082,147	559,912	11,249,349
TRIPS per HOUSEHOLD	2.06	2.01	2.22	1.81	1.95	2.20	2.03
TRIPS per VEHICLE	1.18	1.22	1.18	1.00	1.04	1.12	1.16
TRIPS per WORKER	1.57	1.58	1.54	1.50	1.51	1.56	1.56
% Home-Based Work Trips	19.0%	19.3%	20.3%	18.3%	18.5%	20.9%	19.4%
Home-Based Non-Work Trips	Imperial	Los Angeles	Orange	Riverside	San Bernardino	Ventura	Total
TRIPS	254,430	16,854,127	5,012,646	3,022,069	3,225,586	1,365,002	29,733,860
TRIPS per HOUSEHOLD	6.12	5.31	5.20	5.39	5.83	5.36	5.36
TRIPS per VEHICLE	3.52	3.22	2.77	2.98	3.11	2.73	3.07
TRIPS per Person	1.65	1.68	1.67	1.73	1.72	1.71	1.69
% Home-Based Non-Work Trips	56.4%	51.0%	47.6%	54.6%	55.2%	51.0%	51.2%
Non-Home-Based Trips	Imperial	Los Angeles	Orange	Riverside	San Bernardino	Ventura	Total
TRIPS	110,998	9,834,957	3,374,279	1,497,380	1,538,297	750,077	17,105,987
TRIPS per HOUSEHOLD	2.67	3.10	3.50	2.67	2.78	2.95	3.08
TRIPS per VEHICLE	1.54	1.88	1.86	1.48	1.49	1.50	1.77
TRIPS per Person	0.72	0.98	1.13	0.86	0.82	0.94	0.97
% Non-Home-Based Trips	24.6%	29.7%	32.1%	27.1%	26.3%	28.0%	29.4%
Total Trips	Imperial	Los Angeles	Orange	Riverside	San Bernardino	Ventura	Total
TRIPS	450,966	33,062,356	10,523,168	5,531,687	5,846,030	2,674,991	58,089,196
TRIPS per HOUSEHOLD	10.84	10.41	10.92	9.87	10.56	10.51	10.47
TRIPS per VEHICLE	6.24	6.31	5.81	5.46	5.64	5.34	6.00
TRIPS per PERSON	2.92	3.30	3.51	3.16	3.12	3.35	3.30

CHAPTER 4 - TRANSPORTATION NETWORKS

INTRODUCTION

This Chapter summarizes the highway, transit, toll, and heavy-duty truck networks used in the Year 2003 Model Validation. The software conversion to TransCAD facilitated a significant improvement to SCAG's Model networks. The traditional stick type networks have been abandoned for a new GIS based network approach. The highway networks used in the Year 2003 Model Validation were built from scratch using aerial photos and the TransCAD software. TransCAD provides enhanced capabilities for network coding, maintenance, and expanded graphic capabilities. In addition, the GIS based database structure allows for an almost unlimited number of attributes and is very flexible. The Year 2003 highway network went through an extensive review to examine network coding accuracy and to insure proper network connectivity. Once complete, the transit network was built directly off the highway network insuring an integrated network approach.

Attributes for the Year 2003 highway network were determined based on the Federal Highway Functional Classification system, SCAG's Highway Inventory and inputs from sub-regional/regional agencies. SCAG conducted an extensive review of the new Highway Network. The new highway network was distributed to interested transportation commissions and Caltrans districts for an extensive review. Several meetings of the Group were conducted to discuss coding conventions and to accept comments. SCAG Modeling staff also performed an extensive review of the highway network using aerial photos to confirm network coding and connectivity. Sensitivity model runs using the new networks were performed and loaded volumes plots were carefully examined to insure proper network flows and connectivity.

The free flow speed and roadway capacity used by trip distribution and assignment were assigned to the network using speed/capacity lookup tables (see Tables 4-1 through 4-6). A summary of the number of links, roadway centerline miles, and number of lane miles in the highway network is provided (see Table 4-7). This information is summarized by county and for the Region as a whole. The four model time periods are defined later in this Chapter.

The transit network is a key input to the mode choice model and is used in the transit trip assignment process. For the transit network, all elements that are used to determine level of service for the mode choice calculations are identified and defined in this Chapter. The various modes (Metrolink, MTA local bus, etc.) in the transit network are also identified. Finally, a summary of the number of transit lines, route miles, and vehicle miles and hours of service represented in the regional transit network, by mode, is presented (see Table 4-10).

HIGHWAY NETWORKS

The highway network was developed and coded utilizing the TransCAD Software system. TransCAD uses a GIS based network approach which insures geographic accuracy and provides greatly enhanced editing capabilities. Appendix B contains a listing of the variables contained in the TransCAD highway network.

The Year 2003 highway network includes detailed coding of the region's freeway system (mixed-flow lane, auxiliary lane, HOV lane, toll lane, truck lane, etc.) and as well as arterials, major collectors, and some minor collectors. To simulate roadside parking restrictions and to facilitate other lane changes during the day, separate networks were developed for each of the following four modeling time periods:

- A.M peak period (6:00 A.M. to 9:00 A.M.)
- P.M peak period (3:00 P.M. to 7:00 P.M.)
- Midday period (9:00 A.M. to 3:00 P.M.)
- Night period (7:00 P.M. to 6:00 A.M.)

Facility Types

Facility type (FT) definitions used in SCAG's Year 2003 highway networks are generally consistent with the Federal Functional Highway Classification system. Listed below are the major categories used for defining Facility Type. Appendix B has the full listing of facility types used in coding the detailed TransCAD Network.

Facility Types (see Appendix B for complete listing of Facility Types):

- FT 10 - Freeways
- FT 20 - HOV
- FT 30 - Expressway/Parkway
- FT 40 - Principal Arterial
- FT 50 - Minor Arterial
- FT 60 - Major Collector
- FT 70 - Minor Collector
- FT 80 - Ramps
- FT 90 - Truck lanes
- FT 100 - Centroid connector

Area Types

Area type (AT) used in the highway networks were prepared based on development density (population and employment density) and land use characteristics.

- AT 1 - Core
- AT 2 - Central Business District
- AT 3 - Urban Business District

- AT 4 - Urban
- AT 5 - Suburban
- AT 6 - Rural
- AT 7 - Mountain

Free Flow Speeds and Capacities

Free-flow speeds and capacities assigned to each link in the network are presented in Table 4-1 through Table 4-6, considering the posted speed, facility type and area type of each link.

Table 4-1

YEAR 2003 FREEWAY/EXPRESSWAY FREE FLOW SPEED							
	AT1	AT2	AT3	AT4	AT5	AT6	AT7
Freeway	PS	PS	PS	PS	PS	PS	PS
HOV	PS	PS	PS	PS	PS	PS	PS
Expressway (Limited Access)	PS	PS	PS	PS	PS	PS	PS
Fwy-Fwy Connector	45	45	50	50	55	55	55
On-Ramp (peak)	15	15	20	20	30	35	35
On-Ramp (off-peak)	25	25	30	30	35	35	35
Off-Ramp	25	25	30	30	35	35	35

Notes:

AT1: Core

AT2: Central Business District

AT3: Urban Business District

AT4: Urban

AT5: Suburban

AT6: Rural

AT7: Mountain

PS = Posted Speed

Table 4-2

YEAR 2003 ARTERIAL FREE FLOW SPEED							
Posted Speed	AT1	AT2	AT3	AT4	AT5	AT6	AT7
-- Principal Arterial --							
20	21	22	22	24	25	27	27
25	23	24	25	27	28	31	31
30	25	26	27	29	31	34	34
35	27	28	29	32	35	38	38
40	28	30	32	34	37	41	41
45	30	32	34	37	40	45	45
50	33	35	37	41	45	51	51
55	34	38	39	44	49	56	56
-- Minor Arterial --							
20	19	20	21	23	24	27	27
25	21	22	23	25	27	30	30
30	22	24	25	28	30	34	34
35	24	26	27	30	33	37	37
40	25	28	29	32	36	41	41
45	27	29	31	34	38	44	44
50	29	32	33	38	43	50	50
55	30	33	35	40	46	55	55
-- Major Collector --							
20	17	18	19	21	23	26	26
25	18	20	21	23	26	30	30
30	19	21	22	25	28	33	33
35	20	22	24	27	31	36	36
40	21	24	25	28	33	39	39
45	22	25	26	30	35	43	43
50	23	27	28	33	39	48	48
55	24	28	30	35	42	52	52

Notes: Add 4% for divided streets

AT1: Core

AT2: Central Business District

AT3: Urban Business District

AT4: Urban

AT5: Suburban

AT6: Rural

AT7: Mountain

Table 4-3

YEAR 2003 ARTERIAL/EXPRESSWAY CAPACITY (Signal Spacing < 2 miles)

On\Crossing	2-Lane	4-Lane	6-Lane	8-Lane
-- AT1_Core --				
2-Lane	475	425	375	375
4-Lane	650	600	500	500
6-Lane	825	700	600	550
8-Lane	825	700	650	600
-- AT2_Central Business District --				
2-Lane	500	450	400	400
4-Lane	675	625	500	500
6-Lane	850	725	625	575
8-Lane	850	725	675	625
-- AT3_Urban Business District --				
2-Lane	525	450	400	400
4-Lane	700	625	525	525
6-Lane	875	750	650	600
8-Lane	875	750	700	650
-- AT4_Urban --				
2-Lane	550	475	425	425
4-Lane	750	675	550	550
6-Lane	925	800	675	625
8-Lane	925	800	750	675
-- AT5_Suburban --				
2-Lane	575	500	425	425
4-Lane	750	675	550	550
6-Lane	925	800	700	625
8-Lane	925	800	750	700
-- AT6_Rural --				
2-Lane	575	500	425	425
4-Lane	750	675	550	550
6-Lane	925	800	700	625
8-Lane	925	800	750	700
-- AT7_Mountain --				
2-Lane	575	500	425	425
4-Lane	750	675	550	550
6-Lane	925	800	700	625
8-Lane	925	800	750	700

Notes: Capacities are in passenger car per lane per hour (pcplph).
 Lanes are mid-block 2-way lanes.
 Add 20% for one-way streets.
 Add 5% for divided streets.

Table4-4

YEAR 2003 ARTERIAL/EXPRESSWAY CAPACITY (Signal Spacing >=2 miles)		
TYPE	POSTED SPEED	CAPACITY (PER LANE)
Multilane Highway	45	1,600
	50	1,700
	55	1,800
	60	1,900
2-lane Highway		1,400

Table 4-5

YEAR 2003 FREEWAY CAPACITY		
Type	Posted Speed (mile per hour)	Capacity (passenger car per lane per hour)
Freeway/HOV	55 and below	1,900
	60 and 65	2,000
	70 and above	2,100
Freeway-Freeway Connector	40 and below	1,400
	45	1,600
	50	1,700
	55	1,800
	60 and above	1,900
Auxiliary Lane		1,000

Table 4-6

YEAR 2003 RAMP CAPACITY							
	AT1	AT2	AT3	AT4	AT5	AT6	AT7
On-Ramp (first lane)	720	720	720	720	1,400	1,400	1,400
On-Ramp (additional lane)	480	480	480	480	600	1,400	1,400
On-Ramp (off-peak)	1,300	1,300	1,300	1,300	1,400	1,400	1,400

Notes: Use arterial/expressway capacity estimation procedure for Off-ramps.

AT1: Core

AT4: Urban

AT7: Mountain

AT2: Central Business District

AT5: Suburban

AT3: Urban Business District

AT6: Rural

Toll Roads

The Year 2003 highway network includes all toll facilities. Toll facilities include the SR-91 Express Lanes and the San Joaquin Eastern and Foothill Toll Roads developed by the Transportation Corridor Agency (TCA). All toll facilities are located in Orange County.

Heavy Duty Truck Designation

The Year 2003 highway network incorporates special network coding that allows for heavy-duty trucks to be converted into Passenger Car Equivalents (PCEs). This enables the Model to account for the effects of trucks on link capacity in the mixed flow vehicle traffic stream. The highway network also includes coding to identify truck only lanes and truck climbing lanes.

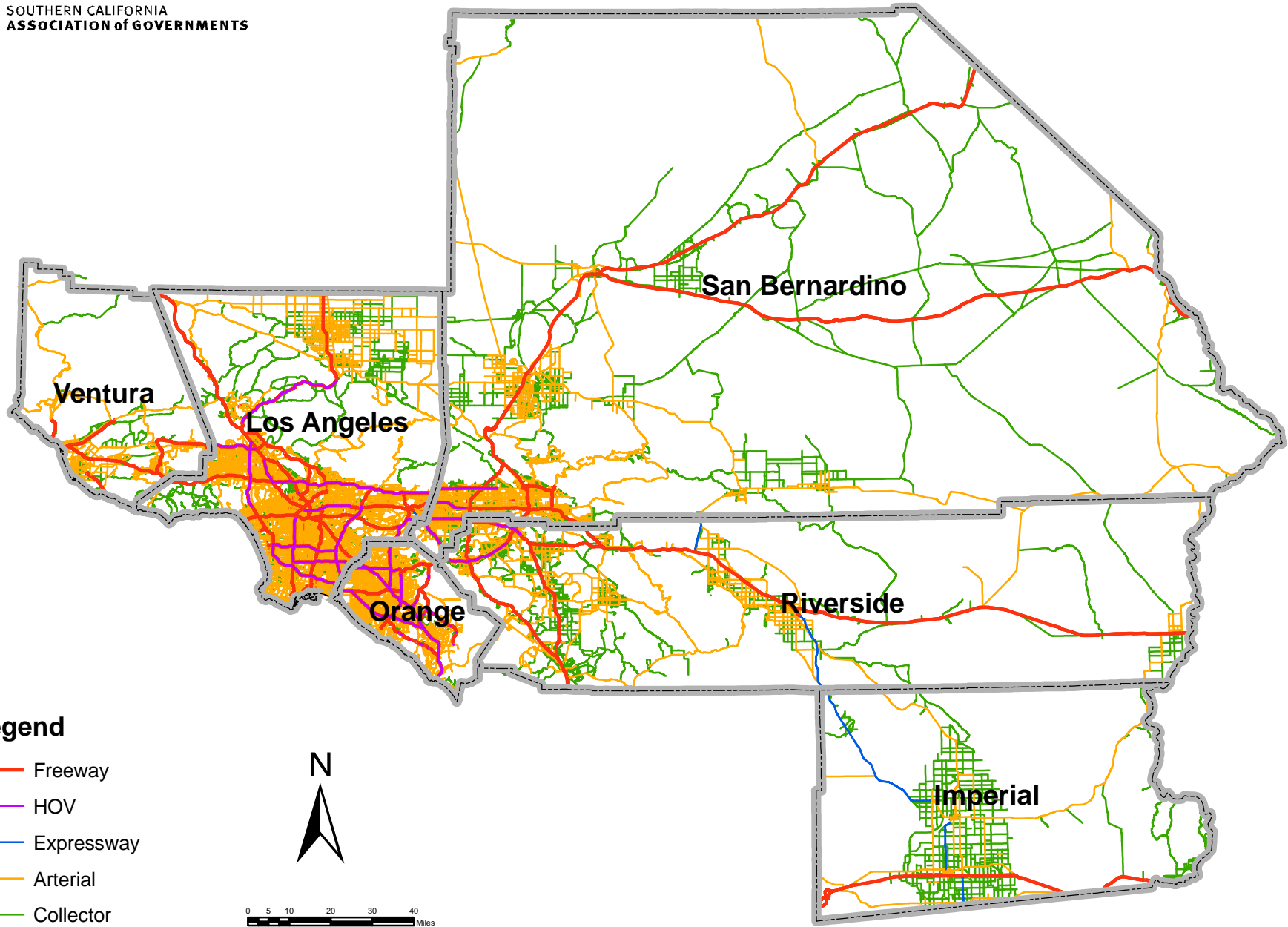
Freeway Lane Type

For the Regional Transportation Modeling purpose, the Year 2003 Model includes a detail coding of the region's freeway system. Freeway lanes are identified according to the following 3 lane types:






- Type 1 Lane (Through Lane) includes continuous freeway lanes that extend more than 2 miles and that pass through at least one interchange,
- Type 2 Lane (Auxiliary lane of Capacity Significance) includes auxiliary freeway lanes that extend more than one mile or that extend from interchange to interchange,
- Type 3 Lane (Other Freeway Lane) includes all types of acceleration and deceleration lanes or freeway widening that do not satisfy the conditions for Type 1 and Type 2 lane classification.

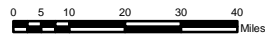
Year 2003 Highway Network Summary

Figures 4-1 through 4-3 depict the Year 2003 highway network by facility types and area types. Additionally, Table 4-7 summarizes the Year 2003 Highway Network. The network summary is accomplished by tallying the number of highway facility route and lane-miles represented in the network, for each county and facility type. A route mile summary (see Table 4-7) includes both directions of travel, even if the section of roadway is represented by two separate one-way links in the coded network.



Legend

-  Freeway
-  HOV
-  Expressway
-  Arterial
-  Collector



**FIGURE 4-1
YEAR 2003 NETWORK BY FACILITY TYPE**

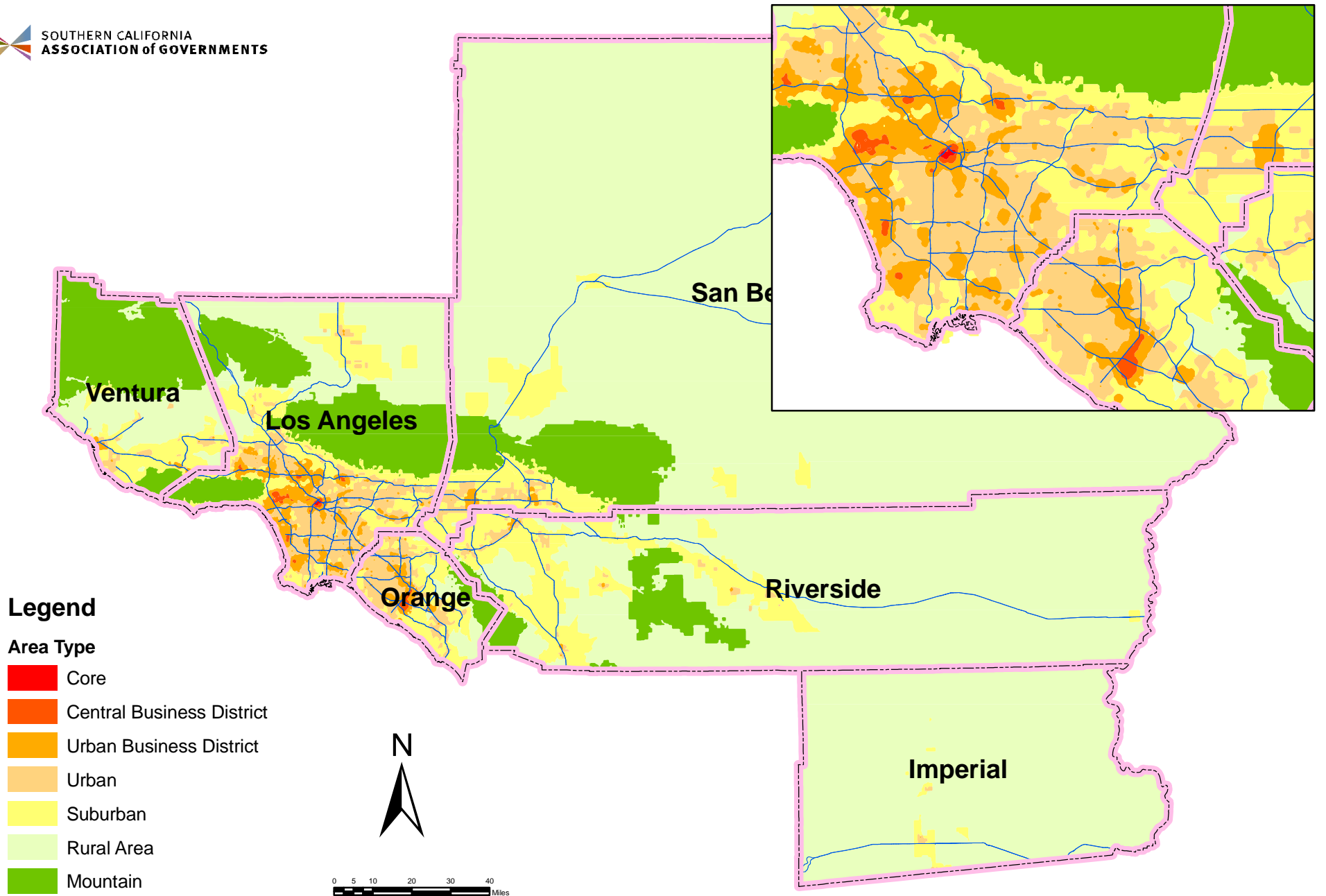


FIGURE 4-2
YEAR 2003 MODELING AREA BY AREA TYPE

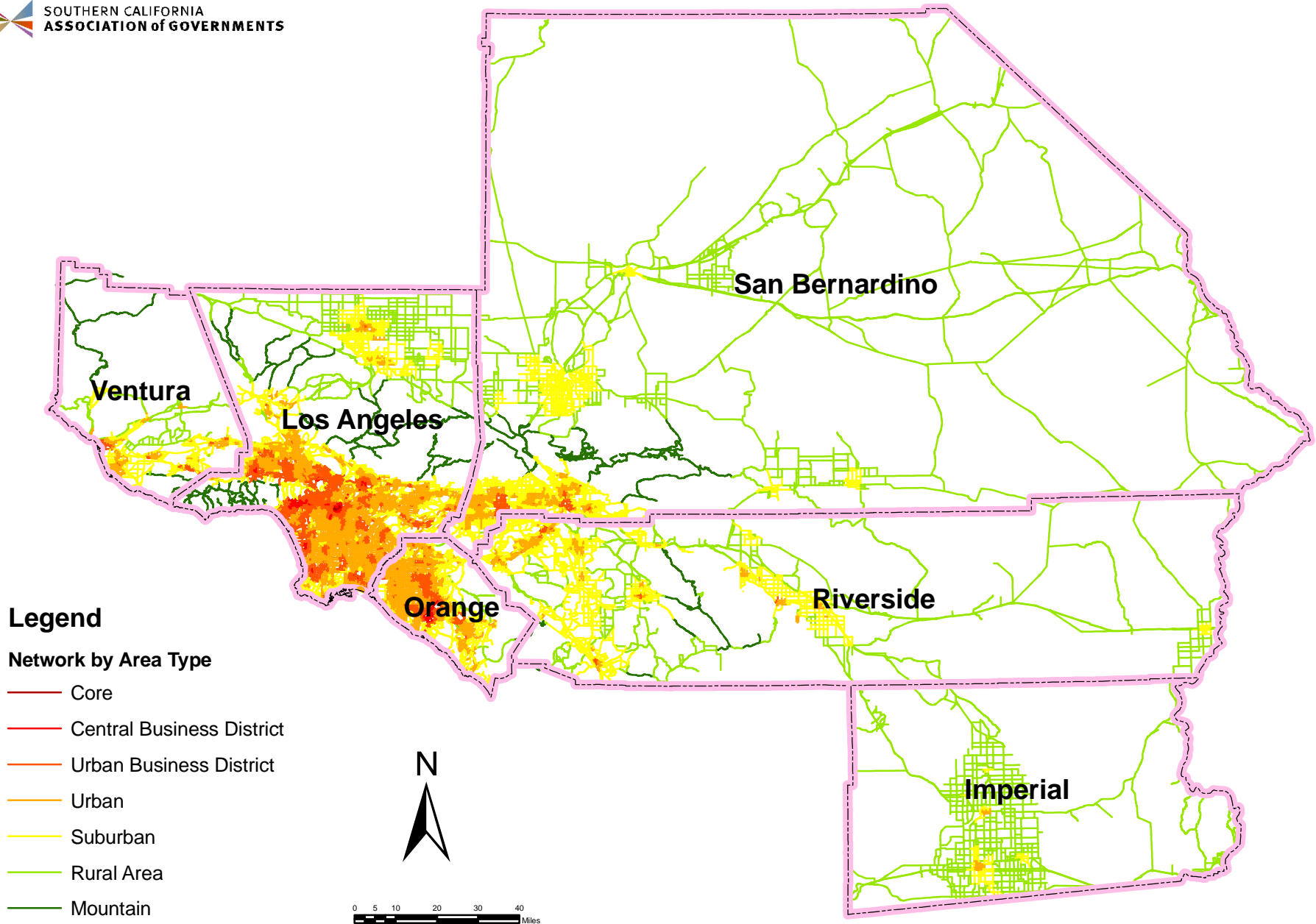


FIGURE 4-3
YEAR 2003 NETWORK BY AREA TYPE

Table 4-7

YEAR 2003 HIGHWAY NETWORK SUMMARY

AM PEAK PERIOD

FACILITY	COUNTY						TOTAL
	Imperial	Los Angeles	Orange	Riverside	San Bernardino	Ventura	
FREEWAY:							
Centerline Miles	93	536	143	300	447	91	1,610
Lane Miles (AM Peak Period)	375	4,240	1,161	1,651	2,226	509	10,162
Lane Miles (Midday Period)	375	4,240	1,161	1,651	2,226	509	10,162
Lane Miles (PM Peak Period)	375	4,240	1,161	1,651	2,226	509	10,162
Lane Miles (Night Period)	375	4,240	1,161	1,651	2,226	509	10,162
MAJOR ARTERIAL:							
Centerline Miles	89	2,290	664	355	579	266	4,243
Lane Miles (AM Peak Period)	329	8,656	3,136	1,315	1,821	883	16,140
Lane Miles (Midday Period)	329	8,562	3,135	1,315	1,821	883	16,045
Lane Miles (PM Peak Period)	329	8,677	3,135	1,315	1,821	883	16,160
Lane Miles (Night Period)	329	8,565	3,135	1,315	1,821	883	16,048
MINOR ARTERIAL:							
Centerline Miles	343	2,951	871	1,103	1,591	356	7,215
Lane Miles (AM Peak Period)	673	9,226	3,130	3,293	4,289	983	21,594
Lane Miles (Midday Period)	673	9,171	3,133	3,293	4,289	983	21,542
Lane Miles (PM Peak Period)	673	9,218	3,130	3,293	4,289	983	21,586
Lane Miles (Night Period)	673	9,166	3,130	3,293	4,289	983	21,534
COLLECTOR							
Centerline Miles	1,175	1,497	150	1,479	2,699	267	7,267
Lane Miles (AM Peak Period)	2,374	3,359	449	3,612	5,977	623	16,394
Lane Miles (Midday Period)	2,374	3,359	449	3,612	5,977	623	16,394
Lane Miles (PM Peak Period)	2,374	3,359	449	3,612	5,977	623	16,394
Lane Miles (Night Period)	2,374	3,359	449	3,612	5,977	623	16,394
HOV							
Centerline Miles	0	201	93	26	39	0	359
Lane Miles (AM Peak Period)	0	415	191	54	78	0	738
Lane Miles (Midday Period)	0	415	191	54	78	0	738
Lane Miles (PM Peak Period)	0	415	191	54	78	0	738
Lane Miles (Night Period)	0	415	191	54	78	0	738
TOTALS							
Centerline Miles	1,700	7,475	1,921	3,263	5,355	980	20,335
Lane Miles (AM Peak Period)	3,751	25,896	8,067	9,925	14,391	2,998	64,649
Lane Miles (Midday Period)	3,751	25,747	8,069	9,925	14,391	2,998	64,881
Lane Miles (PM Peak Period)	3,751	25,909	8,066	9,925	14,391	2,998	65,040
Lane Miles (Night Period)	3,751	25,745	8,066	9,925	14,391	2,998	64,876

TRANSIT NETWORKS

Consistent with the Regional Model highway networks, the Year 2003 transit networks cover the entire SCAG Region, with approximately 1600 transit routes for more than 40 transit carriers. Separate transit networks are initially developed for A.M. peak period (6:00 A.M. to 9:00 A.M.) and mid-day period (9:00 A.M. to 3:00 P.M.), based on the transit service information contained in TranStar itinerary database for the year 2000, and then updated to Year 2003 condition. Through common geography and link attributes, these transit networks are related to the highway networks of the same duration to maintain consistency in level-of-service estimation. For the Year 2003 modeling purpose, transit services in the SCAG region are grouped into twelve transit modes and four non-transit modes, according to their service characteristics and fare structures. Additional modes, such as High Speed Rail and special shuttle services, will be added to future year transit networks. The Year 2003 transit network covers only the fixed-route transit services. It does not include dial-a-ride, charter services, airport shuttles and limousines, and taxicabs. Transit routes in each transit network are characterized by attributes such as route ID, route name, route head sign, peak headway, off-peak headway, transit operator, route distance, direction, and transit types. Stops are also placed along the route with information such as route ID, stop coordinates, milepost, and corresponding highway node ID. For rail transit, station-to-station rail time, rail station information, and Metrolink's fare zone are also coded in the network.

Transit Modes

The following is a list of transit modes included in the Year 2003 transit networks:

- Mode 10: Commuter Rail
 - Metrolink
 - Amtrak
- Mode 11: MTA Local Bus
- Mode 12: MTA Express Bus
- Mode 13: MTA Urban Rail (subway and light rail)
- Mode 14: LA County non-MTA Express Bus
 - Antelope Valley Transit Authority
 - Foothill Transit
 - LADOT Commuter Express
 - Santa Clarita Transit
 - Montebello Bus Lines
- Mode 15: LA County non-MTA Local Bus (Fare 1)
 - Antelope Valley Transit Authority
 - Foothill Transit
 - Montebello Bus Lines
 - Palos Verdes Peninsula Transit Authority
- Mode 16: LA County non-MTA Local Bus (Fare 2)
 - Carson Circuit
 - Culver City Transit

- El Monte Transit
- Gardena Transit
- Long Beach Transit
- Norwalk Transit
- Santa Clarita Transit
- Santa Monica Big Blue Bus
- Torrance Transit
- Whittier Transit
- Mode 17: LA County non-MTA Local Bus (Fare 3)
 - Alhambra Community Transit
 - Cerritos on Wheels
 - Glendale Beeline
 - LADOT Dash
 - West Covina
- Mode 18: LA County non-MTA Local Bus (Fare 4)
 - Commerce Municipal Bus
 - Santa Fe Springs
- Mode 19: All Other County Local Bus
 - Imperial Valley Transit
 - Omnitrans
 - Orange County Transit Authority
 - Riverside Transit Agency
 - South Coast Area Transit
 - Sunline Transit
 - Victor Valley Transit Authority
- Mode 20: All Other County Express Bus
 - Orange County Transit Authority
 - Riverside Transit Agency
- Mode 22: MTA Rapid Bus

Non-Transit Modes

There are four types of transit access links coded in the Year 2003 transit networks, as defined here:

- Mode 1: Auto and shuttle access links, coded as one-way links from a zone centroid to a park-and-ride lot.
- Mode 2: Walk access, egress, and transfer links, coded as two-way links between a zone centroid and a transit stop location.
- Mode 3: Auto and shuttle egress links from commuter rail stations, coded as one-way links from a park-and-ride lot to a zone centroid.
- Mode 4: Park-and-ride lot to transit links, coded as two-way walk links between a park-and-ride lot and a transit stop location.

Transit Fares

The Year 2003 model includes three types of transit fares: boarding fare, zones fares, and transfer fare. These fares are estimated from the boarding and revenue data provided by transit operators in the SCAG region. All boarding fares are calculated as a weighted average of Year 2003 fare rates in 1999 dollars, considering the revenue composition of different fare types such as monthly passes, weekly passes, senior and disabled citizen discount, student fares, etc. Table 4-8 shows the weighted average boarding fare for each mode in the 2003 transit networks. Fares for Mode 10 (Metrolink commuter rail) are included as a station-to-station fare matrix and thus not listed here.

Transit zone fares are implemented through the use of fare links. For example, a fare link table is developed for Mode 12 (MTA Express Bus) to simulate the additional “add fare” charge of \$0.25 on freeway routes such as Harbor Transitway, El Monte Busway, I-10, and I-605. The transit transfer fares assumed for the Year 2003 Model are shown in Table 4-9.

Table 4-8

YEAR 2003 TRANSIT BOARDING FARE BY MODE		
TRANSIT MODE	DESCRIPTION	BOARDING FARE
11	MTA Local Bus	\$0.75
12	MTA Express Bus	\$0.75
13	Urban Rail (MTA Metrorail)	\$0.75
14	Los Angeles County Express Bus	\$1.03
15	Los Angeles County Local Bus (Group 1)	\$0.69
16	Los Angeles County Local Bus (Group 2)	\$0.40
17	Los Angeles County Local Bus (Group 3)	\$0.19
18	Los Angeles County Local Bus (Group 4)	\$0.00
19	All Other Local Bus	\$0.75
20	All Other Express Bus	\$0.75
22	MTA Rapid Bus	\$0.75

Note: Transit boarding fares are in 1999 constant dollars.

Transit Network Summary

Table 4-10 summarizes the number of transit patterns/routes represented in the peak and off-peak transit networks, by “transit mode” as defined above.

Table 4-9

YEAR 2003 TRANSIT TRANSFER FARE BY MODE

TRANSIT MODE (From/To)	DESCRIPTION	10	11	12	13	14	15	16	17	18	19	20	22
10	Commute Rail	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
11	MTA Local Bus	\$2.96	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.00	\$0.75	\$0.75	\$0.25
12	MTA Express Bus	\$2.96	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.00	\$0.75	\$0.75	\$0.25
13	Urban Rail (MTA Metrorail)	\$2.96	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.00	\$0.75	\$0.75	\$0.25
14	Los Angeles County Express Bus	\$2.96	\$0.25	\$0.25	\$0.25	\$0.00	\$0.69	\$0.40	\$0.19	\$0.00	\$0.75	\$0.75	\$0.25
15	Los Angeles County Local Bus (Group 1)	\$2.96	\$0.25	\$0.25	\$0.25	\$0.69	\$0.25	\$0.40	\$0.19	\$0.00	\$0.75	\$0.75	\$0.25
16	Los Angeles County Local Bus (Group 2)	\$2.96	\$0.25	\$0.25	\$0.25	\$0.69	\$0.69	\$0.19	\$0.19	\$0.00	\$0.75	\$0.75	\$0.25
17	Los Angeles County Local Bus (Group 3)	\$2.96	\$0.25	\$0.25	\$0.25	\$0.69	\$0.69	\$0.40	\$0.00	\$0.00	\$0.75	\$0.75	\$0.25
18	Los Angeles County Local Bus (Group 4)	\$2.96	\$0.75	\$0.75	\$0.75	\$0.69	\$0.69	\$0.40	\$0.19	\$0.00	\$0.75	\$0.75	\$0.75
19	All Other Local Bus	\$2.96	\$0.75	\$0.75	\$0.75	\$0.69	\$0.69	\$0.40	\$0.19	\$0.00	\$0.25	\$0.75	\$0.25
20	All Other Express Bus	\$2.96	\$0.75	\$0.75	\$0.75	\$0.69	\$0.69	\$0.40	\$0.19	\$0.00	\$0.75	\$0.25	\$0.25
22	MTA Rapid Bus	\$2.96	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.00	\$0.75	\$0.75	\$0.25

Note: Transit boarding fares are in 1999 constant dollars.

Table 4-10

YEAR 2003 TRANSIT NETWORK ROUTE PATTERNS, ROUTE MILES, AND SERVICE MILES

TRANSIT MODE NUMBER	DESCRIPTION	ROUTES PATTERNS		ROADWAY ROUTE MILES		DAILY SERVICE MILES	
		Peak	Off Peak	Peak	Off Peak	Peak	Off Peak
10	Commuter Rail	30	19	1,711	1,201	7,831	3,473
11	MTA Local Bus	377	393	6,430	6,488	129,851	132,360
12	MTA Express Bus	37	25	990	747	18,500	13,597
13	Urban Rail (MTA Metrorail)	12	10	187	150	8,428	7,368
14	Los Angeles County Express Bus	100	65	2,805	1,881	29,182	14,094
15	Los Angeles County Local Bus (Group 1)	76	73	1,217	1,153	12,120	15,425
16	Los Angeles County Local Bus (Group 2)	226	217	2,581	2,508	31,631	38,679
17	Los Angeles County Local Bus (Group 3)	57	54	473	455	13,902	18,382
18	Los Angeles County Local Bus (Group 4)	4	4	54	42	326	408
19	All Other Local Bus	418	383	7,093	6,601	72,411	82,165
20	All Other Express Bus	14	10	246	139	1,484	731
22	MTA Rapid Bus	12	12	193	193	9,316	8,448
TOTAL		1,363	1,265	23,981	21,558	334,982	335,130

CHAPTER 5 – TRIP DISTRIBUTION

INTRODUCTION

The trip distribution models estimate the number of trips from each traffic analysis zone (TAZ) to each other TAZ. The trip distribution model is the second of the four primary model components identified as part of the four-step modeling process. The trips are estimated as a function of the travel impedance from one zone to another. For all trip purposes of the Regional Model, gravity models were applied for both peak and off-peak conditions. These models were developed using the 2001 SCAG Household Travel Survey data.

This Chapter summarizes the process for creating the trip tables by trip type for the Year 2003 Model Validation, and presents statistics reporting trip making within and between the six counties in the SCAG region.

TRIP PURPOSE

The trip distribution models were applied for the same trip purposes used in trip generation for both peak and off-peak conditions:

- Home Based Work Direct (HBWD);
- Home Based Work Strategic (HBWS);
- Home Based School (HBSc);
- Home Based University/College (HBU);
- Home Based Shopping (HBSh);
- Home Based Social Recreational (HBSR);
- Home Based Other (HBO);
- Home Based Serve Passenger (HBSP);
- Work-Based Other (WBO); and
- Other-Based Other (OBO).

For the home based work direct and home based work strategic trips, separate gravity models were applied for trips in each of the three income categories.

GRAVITY MODELS

The gravity model is used to distribute trips from origin zone to each destination zone in the region. It is based on Newton's law of gravity, which describes the gravitational force between two bodies. The number of trips between zones in transportation models is a function of the attractiveness of a zone and the travel impedance between zones:

$$T_{ij} = \frac{P_i * (A_j * F(I_{ij}) * K_{ij})}{\sum_j (A_j * F(I_{ij}) * K_{ij})}$$

where, T_{ij} is the number of trips produced in zone i and attracted to zone j ;
 P_i is the number of trips produced in zone i ;
 A_j is the number of trips attracted to zone j ;
 I_{ij} is a measure of impedance of travel from i to j ;
 F is a friction factor, which is a function of the impedance that represents the disutility of travel between i and j ; and
 K_{ij} is the zone-to-zone adjustment factor, which takes into account the effect of undefined socioeconomic linkages not otherwise incorporated in the gravity model.

The gravity model in this application will apportion the trips produced at each production zone among attraction zones according to the attractiveness of each zone and the disutility of travel for each trip interchange. This application is doubly constrained, which means that the program will iterate until the trips produced from and attracted to each zone are consistent with the input assumptions on trips.

The friction factors for all trip purposes were derived by fitting the trip length frequency distributions to the observed distributions for each trip purpose and time period (peak and off-peak). For the two home based work trip purposes (direct and strategic), the friction factors are estimated for each of three income groups as well (low, medium, and high). The basic functional formula for the friction factors (except for the HBWD purpose) is given by the gamma function as follows:

$$f(x) = ax^{-b}e^{-cx}$$

where, parameters a , b , and c are to be calibrated; and x is the impedance.

The gamma function of HBWD trips is as follows:

$$f(x) = at^{-b}e^{-cx}$$

where: t is the travel time and x is the logsum from mode choice.

The coefficients in the friction factor equations are provided in Table 5-1 by trip purpose.

Table 5-1

TRIP DISTRIBUTION GAMMA FUNCTION PARAMETERS BY TIME PERIOD

PURPOSE	TIME PERIOD	GAMMA_A	GAMMA_B	GAMMA_C1	GAMMA_C2	CURVE_CHAN
HBWD1	Peak	500,000	1.5700	0.0400	0.0275	20.00
	Off-peak	500,000	1.5700	0.0400	0.0325	20.00
HBWD2	Peak	500,000	1.5700	0.0400	0.0275	20.00
	Off-peak	500,000	1.5700	0.0400	0.0313	20.00
HBWD3	Peak	500,000	1.5700	0.0400	0.3250	20.00
	Off-peak	500,000	1.5700	0.0400	0.0313	20.00
HBWS1	Peak	500,000	0.8050	0.0550	0.0900	28.00
	Off-peak	500,000	0.7500	0.0850	0.0500	20.00
HBWS2	Peak	500,000	0.5100	0.0880	0.0680	24.00
	Off-peak	500,000	0.4300	0.1230	0.0700	20.00
HBWS3	Peak	500,000	0.6750	0.0570	0.0760	24.00
	Off-peak	500,000	0.6650	0.0600	0.0710	22.00
HBSP	Peak	500,000	1.4400	0.1320	0.0360	15.00
	Off-peak	500,000	1.2400	0.1950	0.0250	15.00
HBSC	Peak	650,000	1.1100	0.1700	0.0500	15.00
	Off-peak	6,500,000	1.5300	0.1600	0.0500	13.00
HBCU	Peak	500,000	1.4700	0.1200	0.0510	15.00
	Off-peak	500,000	2.3500	0.1400	0.0390	15.00
HBSH	Peak	500,000	0.6850	0.4200	0.0550	9.00
	Off-peak	500,000	0.6100	0.6000	0.0450	9.00
HBSR	Peak	300,000	0.6050	0.2600	0.0460	12.00
	Off-peak	300,000	0.3900	0.3200	0.0450	12.00
HBO	Peak	500,000	0.8650	0.1900	0.0350	14.00
	Off-peak	500,000	0.9100	0.2300	0.0340	14.00
OBO	Peak	500,000	0.2010	0.2060	0.0500	20.00
	Off-peak	500,000	0.0900	0.2600	0.0340	22.00
WBO	Peak	500,000	0.4700	0.0940	0.0390	26.00
	Off-peak	500,000	0.3970	0.1920	0.0530	16.00
HBWD1Logsum	Peak	500,000	0.8000	-0.6300	-0.5200	-4.00
	Off-peak	500,000	0.9800	-0.5700	-0.5000	-4.00
HBWD2Logsum	Peak	500,000	0.4150	-1.0500	-0.9800	-2.30
	Off-peak	500,000	0.5700	-1.0500	-0.7000	-2.20
HBWD3Logsum	Peak	500,000	0.6000	-1.2500	-1.1100	-2.00
	Off-peak	500,000	0.7800	-1.1800	-0.9650	-1.80

INTERMEDIATE STOPS MODEL

The purpose of the intermediate stop model is to redistribute the home based work strategic trips from the direct origin-destination path to a path that goes from the origin to the intermediate stop to the destination. The home-based work strategic trips include, by definition, an intermediate stop between the origin and destination of the trip.

This intermediate stop model identifies the location of the intermediate stop as a function of the location of the home end of the trip. The goal of this model is to capture the extended trip length of these home-based work strategic trips, which will result in higher vehicle miles traveled than if the home-based work strategic trips were distributed directly from the origin to the destination. As a matter of simplification, the model assumes that there is only one stop on the strategic trip and then determines the location of this stop in manner that will match the overall trip length of the strategic trip. For the small portion of strategic trips that have more than one stop, this model will approximate the overall trip length reasonably well, even though only one stop is represented.

The intermediate stop model is a two-step process, as follows:

1. Estimate the distance from the home to the intermediate stop
2. Estimate the location of the intermediate stop

The intermediate stop model was estimated using the SCAG household travel survey. There were 5,329 total home-based work strategic trips for model estimation. These two steps are described further below.

Intermediate Stop Distance from Home

This first step is a regression model with the log-linear distance decay function between the number of home-based work strategic trips and the distance between home and the first intermediate stop, as follows:

$$\ln(\text{TripNumber}) = 6.806 - 0.026 * \text{Distance}$$

where, TripNumber is the number of home-based work strategic trips; and
Distance is the distance between home and the intermediate stop.

This regression model has an R-squared of 0.14.

The IS model uses 5 distance categories: 0-2, 2-5, 5-10, 10-20 and 20-50 and that distance category weights are computed by the formula above, resulting in 0.274, 0.253, 0.222, 0.171 and 0.079. The observed mean travel distance for all travel segments (from home to destination) is 12.1 miles, and the observed mean travel distance between home and the first intermediate stop is 5.6 miles. The application of the distance decay model to the estimation data set produces the estimated travel distance from home to the destination of 31.19 miles, so the model is calibrated to match the observed distance between home and destination. This results in a calibrated distance decay function, as follows:

$$\ln(\text{TripNumber}) = 6.009 - 0.026 * \text{Distance}$$

The calibrated model results in an estimated distance from home to the destination of 12.1 miles and an estimated travel distance from home to the intermediate stop of 6.5 miles. The primary reason that this value from home to the intermediate stop is longer than observed is because of the simplification that there is only one stop on the strategic trip, when a portion of these strategic trips in the household survey have more than one stop (20 percent). Since the objective of this model is to provide better estimates of vehicle miles traveled in trip assignment, we match the overall trip length for these trips rather than the trip length from the home to the intermediate stop.

Intermediate Stop Location

The second step in the process is to identify the location of the intermediate stop based on the attractiveness of the potential intermediate stop locations. This model is a standard regression model, as follows:

$$\text{Number of Trips To Intermediate Stops} = 0.375 * \text{retail} + 0.120 * \text{eduhealth} + 4.651 * \text{otherserv} + 0.281 * \text{totschenroll} - 0.388 * \text{profmanag} + 0.232 * \text{pubadmin}$$

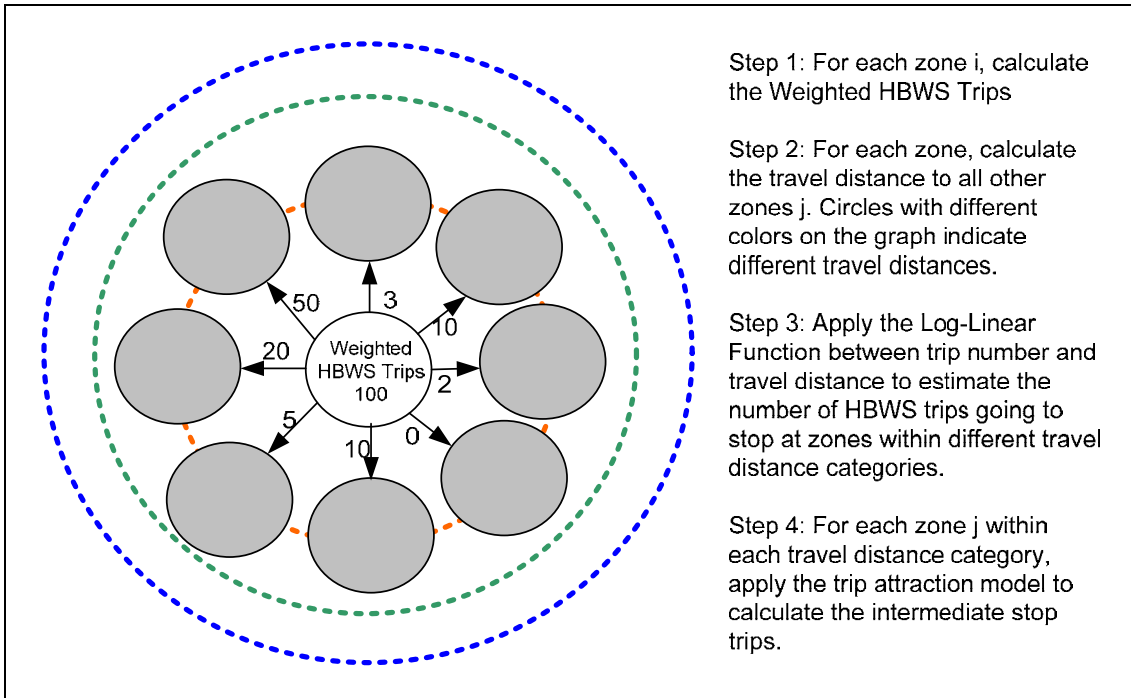
where, retail = number of retail employees;
eduhealth = number of education and health employees;
otherserv = number of other service employees;
totschenroll = K-12 and preschool students enrollment;
profmanag = the number of professional and management employees; and
pubadmin = the number of public administration employees.

The R-square of this model is 0.30. All independent variables are significant to the 95 percent confidence level.

Intermediate Stop Model Application

Figure 5-1 presents an overview of the model implementation plan, with a four-step process to identify the location of the intermediate stops. These steps are described in more detail below:

Figure 5-1. OVERVIEW OF INTERMEDIATE STOP MODEL IMPLEMENTATION STEP



- Step 1: Input the total number of home-based work strategic trips. This is the control total of home-based work strategic trips. There are about 2.5 million total home-based work strategic trips in the SCAG region.
- Step 2: Categorize travel distances. Travel distances are input from the distance matrices developed in the primary trip distribution models.
- Step 3: Apply the log-linear home-based work strategic trip model to estimate the number of trips that will make stops at zones with each travel distance category. For each zone pair (origin and the intermediate stop), calculate the number of home-based work strategic trips using the log-linear distance decay function. Zones that are closer to the origin zone will have more intermediate stops.
- Step 4: Within each travel distance category, apply the home-based work strategic attraction model to allocate the home-based work strategic trips to specific locations.

FIGURE 5-2
HOME-BASED WORK PERSON TRIP DISTRIBUTION (RSA TO RSA)
(2000 MODEL VS 2000 CTPP)

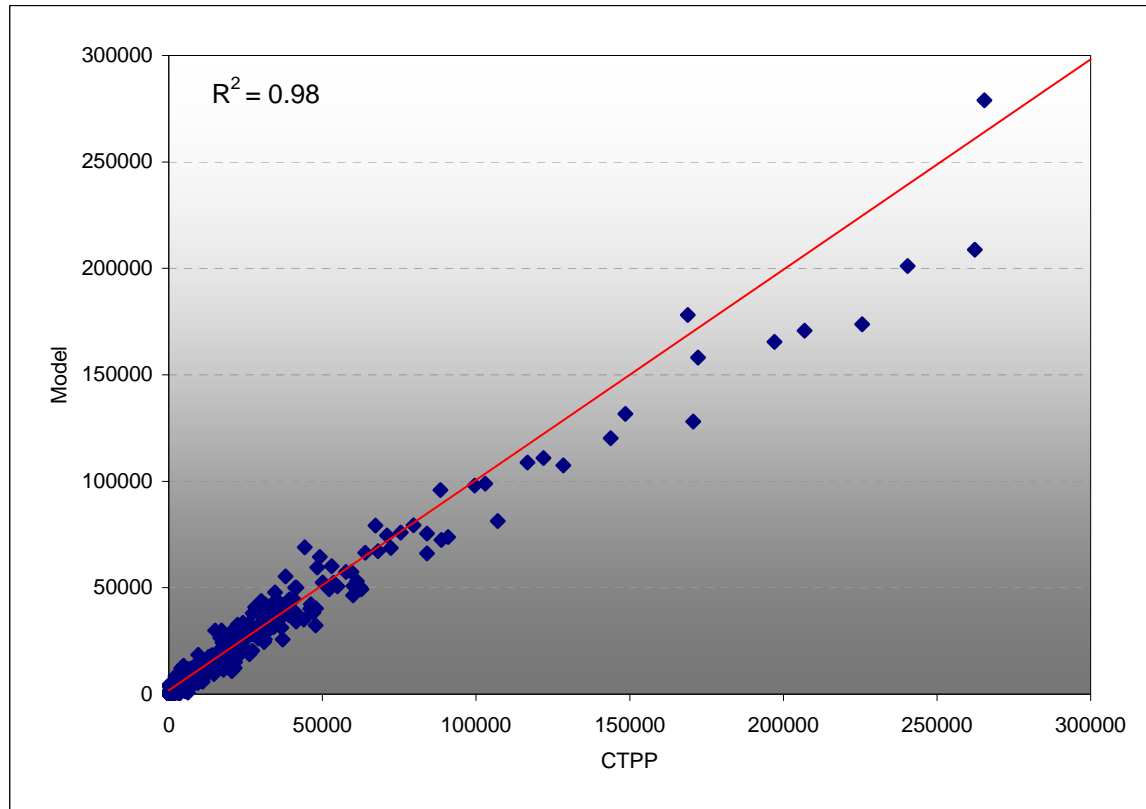
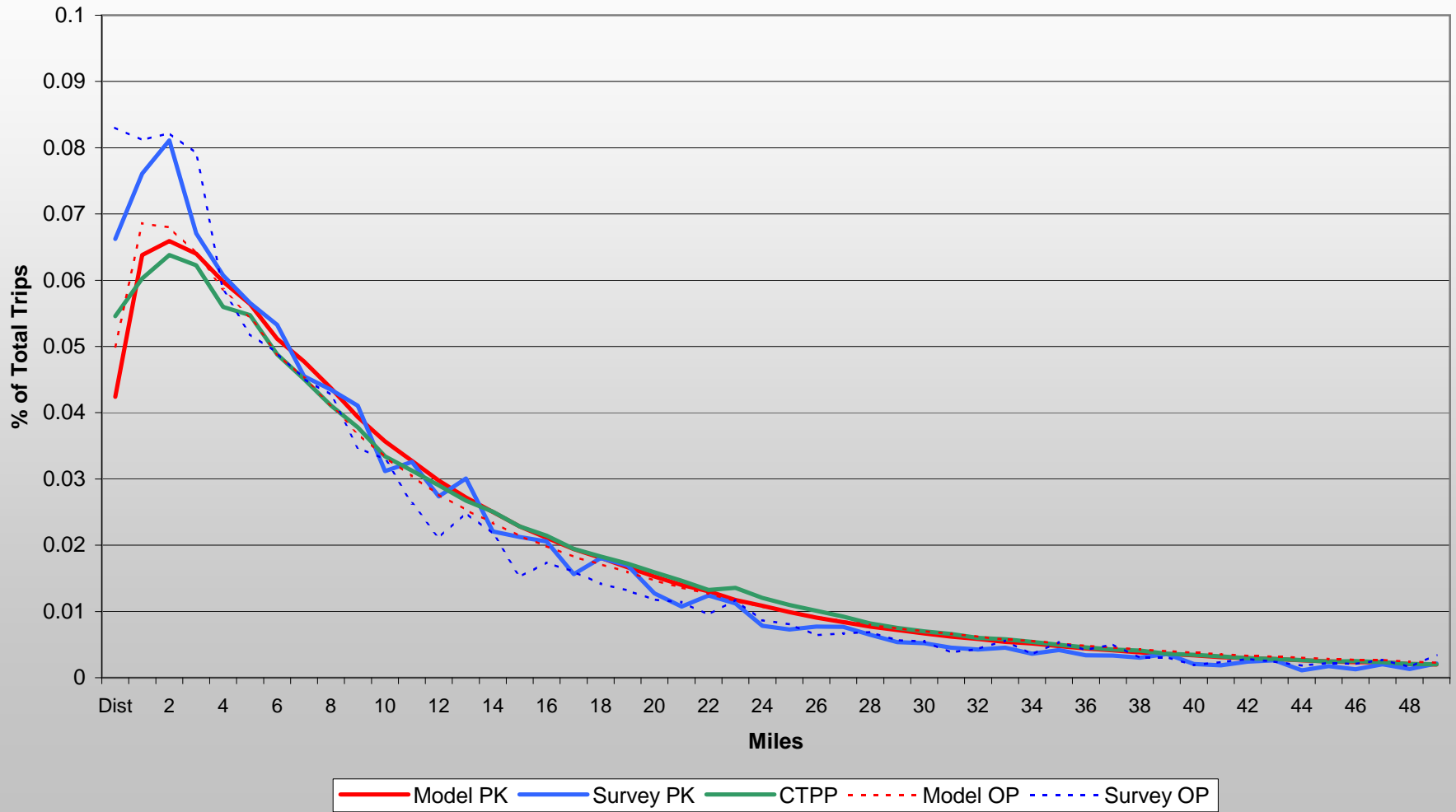


FIGURE 5-3
TRIP LENGTH FREQUENCY DISTRIBUTION - HOME-BASE WORK TRIPS
(MODEL, SURVEY, AND CTPP)



TRIP DISTRIBUTION RESULTS AND FINDINGS

Figure 5-2 compares home-based work person trip distribution between 2000 model and 2000 CTPP. Figure 5-3 shows the comparison of trip length frequency distribution for home-based work trips between model, survey and CTPP.

Tables 5-2 through 5-6 present summary statistics resulting from the trip distribution process for the Year 2003 Model Validation run. The Tables are summaries of trip tables in Production-Attraction (P&A) format. P&A format differs from origin-destination format in that the return trips, such as those from work-to-home, are actually credited as home-to-work trips. On a daily basis, half of the trips in those tables move from the zone of production to the zone of attraction and the other half of the trips move from the zone of attraction to the zone of production. Table 5-2 presents distribution results for home-based work trips, and Table 5-6 presents a summary of all trips.

The Year 2003 person-trip distribution model estimated inter-county travel patterns consistent with validations of previous Regional Transportation Models. The Year 2003 Model estimated that approximately 89.8 percent of the home-work trips generated in Los Angeles County had destinations within the Los Angeles County. Orange County retained 79.6 percent of its Year 2003 estimated home-work trips and Ventura County's estimated intra-county home-work trip percentage was 74.3 percent. San Bernardino County's estimated intra-county work trip percentage was 62.2 percent, while Riverside County's intra-county home-work trip percentage was estimated at 68.6 percent.

Table 5-7 presents average travel time statistics for the distribution of trips in the Year 2003 Model. The overall average AM peak period home-based work trip time from the Year 2003 Model is 27.8 minutes. The overall average mid-day home-based work trip time from the Year 2003 Model is 24.2 minutes. Figure 5-4 displays the average travel time to downtown Los Angeles from 6:00 A.M. to 9:00 A.M.

Table 5-2

YEAR 2003 HOME-BASED WORK PERSON TRIP DISTRIBUTION

From\To	Imperial	Los Angeles	Orange	Riverside	San Bernardino	Ventura	Total Productions
Imperial	83,846 98.02%	31 0.04%	18 0.02%	1,577 1.84%	64 0.07%	1 0.00%	85,537 100.00%
Los Angeles	73 0.00%	5,721,749 89.78%	437,270 6.86%	30,437 0.48%	103,564 1.62%	80,179 1.26%	6,373,271 100.00%
Orange	44 0.00%	382,879 17.92%	1,699,960 79.58%	25,971 1.22%	25,894 1.21%	1,494 0.07%	2,136,243 100.00%
Riverside	2,527 0.25%	80,273 7.93%	92,129 9.10%	694,147 68.58%	142,529 14.08%	633 0.06%	1,012,238 100.00%
San Bernardino	429 0.04%	201,533 18.62%	75,220 6.95%	130,165 12.03%	673,013 62.19%	1,788 0.17%	1,082,147 100.00%
Ventura	2 0.00%	139,856 24.98%	3,023 0.54%	367 0.07%	939 0.17%	415,725 74.25%	559,912 100.00%
Total Attractions	86,922 0.77%	6,526,321 58.02%	2,307,621 20.51%	882,664 7.85%	946,002 8.41%	499,819 4.44%	11,249,349 100.00%

Table 5-3

HOME-BASED WORK PERSON TRIP DISTRIBUTION (CTPP, TRAVEL SURVEY AND MODEL)

From\To	Source	Imperial	Los Angeles	Orange	Riverside	San Bernardino	Ventura
Imperial	CTPP (2000)	97.98%	0.17%	0.05%	1.66%	0.14%	0.00%
	Travel Survey (2001)	96.91%	0.49%	0.51%	1.89%	0.19%	0.00%
	Model (2003)	99.59%	0.01%	0.01%	0.39%	0.01%	0.00%
Los Angeles	CTPP (2000)	0.01%	93.74%	4.12%	0.24%	1.07%	0.82%
	Travel Survey (2001)	0.18%	92.93%	4.90%	0.34%	0.82%	0.82%
	Model (2003)	0.00%	91.02%	6.20%	0.33%	1.23%	1.21%
Orange	CTPP (2000)	0.01%	13.85%	84.52%	0.85%	0.71%	0.05%
	Travel Survey (2001)	0.02%	18.85%	78.87%	1.23%	0.97%	0.06%
	Model (2003)	0.01%	19.90%	78.01%	0.95%	1.03%	0.09%
Riverside	CTPP (2000)	0.08%	6.37%	9.01%	73.91%	10.59%	0.04%
	Travel Survey (2001)	0.02%	5.94%	11.67%	72.26%	9.82%	0.29%
	Model (2003)	1.10%	10.48%	10.55%	63.63%	14.15%	0.09%
San Bernardino	CTPP (2000)	0.03%	16.91%	4.42%	7.89%	70.65%	0.09%
	Travel Survey (2001)	0.00%	16.60%	4.71%	7.72%	70.98%	0.00%
	Model (2003)	0.19%	20.71%	7.76%	11.11%	60.08%	0.16%
Ventura	CTPP (2000)	0.00%	20.17%	0.24%	0.05%	0.09%	79.44%
	Travel Survey (2001)	0.04%	17.74%	0.39%	0.09%	0.17%	81.57%
	Model (2003)	0.00%	25.85%	0.46%	0.05%	0.11%	73.54%
SCAG REGION	CTPP (2000)	0.63%	59.03%	19.90%	7.39%	8.58%	4.48%
	Travel Survey (2001)	0.78%	59.52%	19.01%	7.83%	8.60%	4.27%
	Model (2003)	0.74%	59.95%	20.18%	6.94%	7.85%	4.36%

Table 5-4

YEAR 2003 HOME-BASED NON-WORK PERSON TRIP DISTRIBUTION

From\To	Imperial	Los Angeles	Orange	Riverside	San Bernardino	Ventura	Total Productions
Imperial	250,603 <i>98.50%</i>	143 <i>0.06%</i>	80 <i>0.03%</i>	3,295 <i>1.30%</i>	305 <i>0.12%</i>	4 <i>0.00%</i>	254,430 <i>100.00%</i>
Los Angeles	828 <i>0.00%</i>	15,974,361 94.78%	514,821 <i>3.05%</i>	57,577 <i>0.34%</i>	178,772 <i>1.06%</i>	127,772 <i>0.76%</i>	16,854,131 <i>100.00%</i>
Orange	712 <i>0.01%</i>	479,521 <i>9.57%</i>	4,437,350 88.52%	45,877 <i>0.92%</i>	43,865 <i>0.88%</i>	5,320 <i>0.11%</i>	5,012,645 <i>100.00%</i>
Riverside	8,791 <i>0.29%</i>	126,643 <i>4.19%</i>	105,352 <i>3.49%</i>	2,581,281 85.41%	197,900 <i>6.55%</i>	2,104 <i>0.07%</i>	3,022,069 <i>100.00%</i>
San Bernardino	1,593 <i>0.05%</i>	273,738 <i>8.49%</i>	82,460 <i>2.56%</i>	170,181 <i>5.28%</i>	2,693,733 83.51%	3,881 <i>0.12%</i>	3,225,586 <i>100.00%</i>
Ventura	49 <i>0.00%</i>	141,269 <i>10.35%</i>	6,174 <i>0.45%</i>	1,389 <i>0.10%</i>	2,834 <i>0.21%</i>	1,213,287 88.89%	1,365,001 <i>100.00%</i>
Total Attractions	262,575 0.88%	16,995,675 57.16%	5,146,236 17.31%	2,859,600 9.62%	3,117,409 10.48%	1,352,368 4.55%	29,733,863 100.00%

Table 5-5

YEAR 2003 NON-HOME BASED PERSON TRIP DISTRIBUTION							
From\To	Imperial	Los Angeles	Orange	Riverside	San Bernardino	Ventura	Total Productions
Imperial	109,612 98.75%	43 <i>0.04%</i>	24 <i>0.02%</i>	1,184 <i>1.07%</i>	135 <i>0.12%</i>	1 <i>0.00%</i>	110,998 <i>100.00%</i>
Los Angeles	96 <i>0.00%</i>	9,179,368 93.33%	365,459 <i>3.72%</i>	52,218 <i>0.53%</i>	144,201 <i>1.47%</i>	93,608 <i>0.95%</i>	9,834,952 <i>100.00%</i>
Orange	54 <i>0.00%</i>	362,951 <i>10.76%</i>	2,919,988 86.54%	47,685 <i>1.41%</i>	41,917 <i>1.24%</i>	1,683 <i>0.05%</i>	3,374,279 <i>100.00%</i>
Riverside	2,474 <i>0.17%</i>	49,617 <i>3.31%</i>	44,901 <i>3.00%</i>	1,276,600 85.26%	123,326 <i>8.24%</i>	461 <i>0.03%</i>	1,497,380 <i>100.00%</i>
San Bernardino	299 <i>0.02%</i>	138,937 <i>9.03%</i>	41,827 <i>2.72%</i>	125,245 <i>8.14%</i>	1,230,898 80.02%	1,090 <i>0.07%</i>	1,538,297 <i>100.00%</i>
Ventura	1 <i>0.00%</i>	93,675 <i>12.49%</i>	1,659 <i>0.22%</i>	484 <i>0.06%</i>	1,125 <i>0.15%</i>	653,133 87.08%	750,077 <i>100.00%</i>
Total Attractions	112,537 0.66%	9,824,591 57.43%	3,373,859 19.72%	1,503,416 8.79%	1,541,603 9.01%	749,976 4.38%	17,105,982 100.00%

Table 5-6

YEAR 2003 TOTAL PERSON TRIP DISTRIBUTION

From\To	Imperial	Los Angeles	Orange	Riverside	San Bernardino	Ventura	Total Productions
Imperial	444,061 98.47%	217 <i>0.05%</i>	122 <i>0.03%</i>	6,056 <i>1.34%</i>	504 <i>0.11%</i>	5 <i>0.00%</i>	450,965 <i>100.00%</i>
Los Angeles	998 <i>0.00%</i>	30,875,478 93.39%	1,317,551 <i>3.99%</i>	140,232 <i>0.42%</i>	426,536 <i>1.29%</i>	301,559 <i>0.91%</i>	33,062,354 <i>100.00%</i>
Orange	810 <i>0.01%</i>	1,225,351 <i>11.64%</i>	9,057,299 86.07%	119,533 <i>1.14%</i>	111,676 <i>1.06%</i>	8,498 <i>0.08%</i>	10,523,166 <i>100.00%</i>
Riverside	13,792 <i>0.25%</i>	256,533 <i>4.64%</i>	242,381 <i>4.38%</i>	4,552,028 82.29%	463,754 <i>8.38%</i>	3,198 <i>0.06%</i>	5,531,686 <i>100.00%</i>
San Bernardino	2,321 <i>0.04%</i>	614,208 <i>10.51%</i>	199,507 <i>3.41%</i>	425,591 <i>7.28%</i>	4,597,644 78.65%	6,758 <i>0.12%</i>	5,846,030 <i>100.00%</i>
Ventura	52 <i>0.00%</i>	374,800 <i>14.01%</i>	10,856 <i>0.41%</i>	2,240 <i>0.08%</i>	4,898 <i>0.18%</i>	2,282,145 85.31%	2,674,991 <i>100.00%</i>
Total Attractions	462,034 0.80%	33,346,587 57.41%	10,827,716 18.64%	5,245,680 9.03%	5,605,014 9.65%	2,602,162 4.48%	58,089,193 100.00%

Table 5-7

YEAR 2003 AVERAGE PERSON TRIP LENGTHS BY COUNTY

AM-Peak Period:

County	Trip Purpose	Home-Based Work	Home-Based Non-Work	Home-Based School	Other-Based Others	Work-Based Others
Imperial	Time (Minutes)	13.57	8.80	5.96	7.45	12.37
	Distance (miles)	9.39	6.11	3.85	4.82	8.55
Los Angeles	Time (Minutes)	27.54	16.16	9.39	15.60	22.27
	Distance (miles)	12.48	7.49	4.23	7.12	10.34
Orange	Time (Minutes)	23.85	15.43	8.08	14.55	20.47
	Distance (miles)	11.86	7.82	3.95	7.30	10.47
Riverside	Time (Minutes)	32.55	21.74	9.34	16.38	25.17
	Distance (miles)	18.22	12.55	5.38	9.60	15.01
San Bernardino	Time (Minutes)	34.79	20.78	8.42	17.39	26.82
	Distance (miles)	19.93	12.05	4.78	10.15	15.95
Ventura	Time (Minutes)	25.86	16.14	6.68	13.47	21.34
	Distance (miles)	14.46	8.97	3.58	7.57	12.23
All	Time (Minutes)	27.80	17.03	8.91	15.48	22.40
	Distance (miles)	13.67	8.60	4.33	7.67	11.24

Midday Period:

County	Trip Purpose	Home-Based Work	Home-Based Non-Work	Home-Based School	Other-Based Others	Work-Based Others
Imperial	Time (Minutes)	12.98	8.83	5.36	7.62	9.14
	Distance (miles)	9.23	6.29	3.51	5.23	6.17
Los Angeles	Time (Minutes)	23.64	13.79	7.50	13.74	17.28
	Distance (miles)	12.79	7.34	3.73	7.28	9.08
Orange	Time (Minutes)	21.79	13.82	6.50	13.43	16.18
	Distance (miles)	12.49	7.83	3.45	7.54	9.14
Riverside	Time (Minutes)	28.34	19.03	7.99	16.50	17.78
	Distance (miles)	19.10	12.72	4.76	10.99	11.75
San Bernardino	Time (Minutes)	30.10	18.38	7.09	17.77	19.57
	Distance (miles)	20.59	12.23	4.16	11.83	12.90
Ventura	Time (Minutes)	23.16	14.66	5.65	13.59	15.21
	Distance (miles)	15.06	9.26	3.17	8.54	9.71
All	Time (Minutes)	24.24	14.81	7.24	14.25	17.15
	Distance (miles)	14.14	8.57	3.82	8.13	9.61

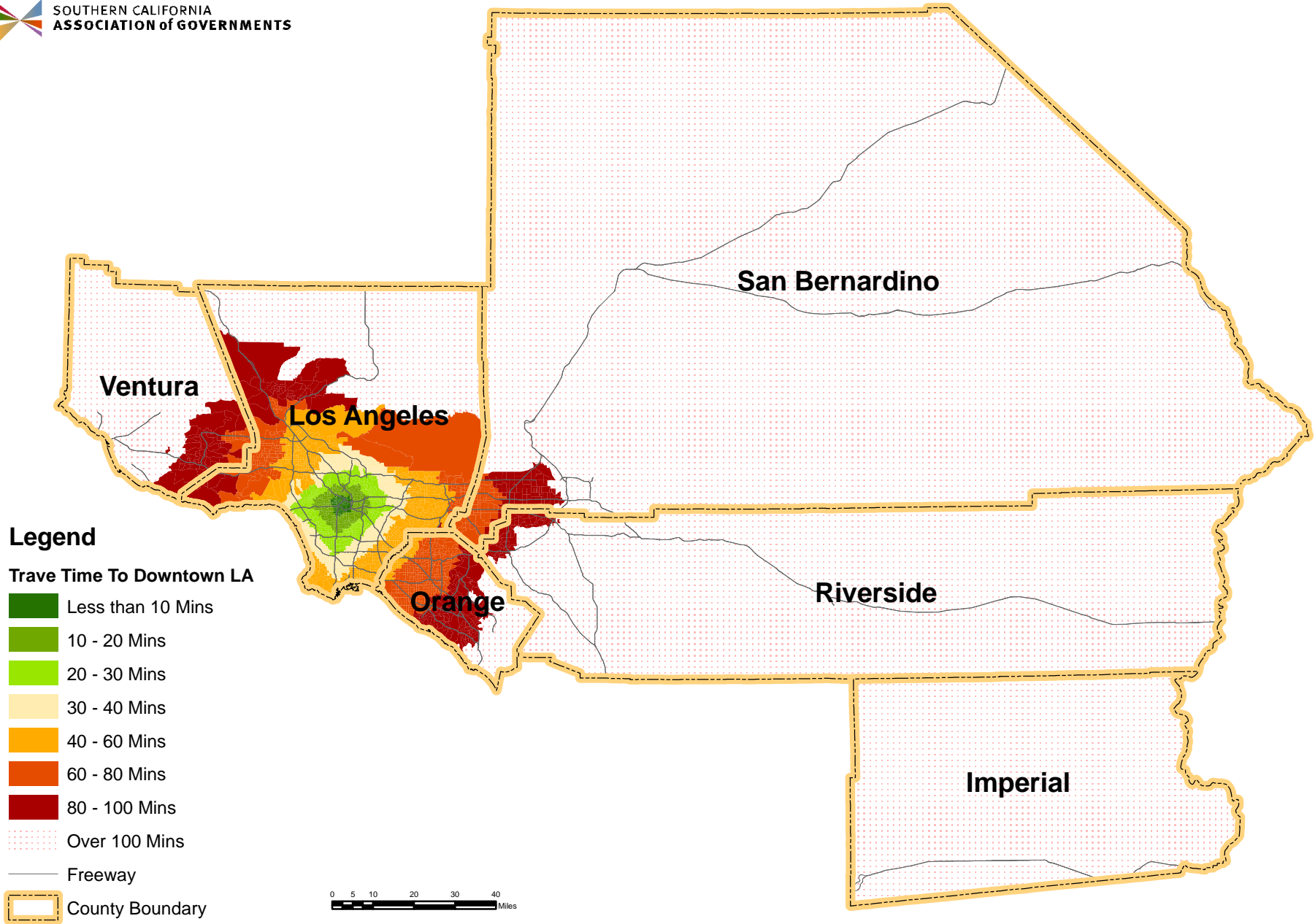


FIGURE 5-4
AVERAGE TRAVEL TIME TO DOWNTOWN LOS ANGELES (PEAK PERIOD)

CHAPTER 6 – MODE CHOICE

INTRODUCTION

Mode choice is the process of taking the zone-to-zone person trips by trip purpose from the trip distribution model, and determining how many of those person-trips are made by the various travel modes: non-motorized modes (walk and bike), auto modes (driver alone or carpool), and transit modes (drive or walk access and drive or walk egress).

The Year 2003 Regional Transportation Model incorporates a new set of calibrated and validated mode choice models for the Region. The model set was developed, calibrated, and validated based on the Year 2001 Southern California Origin-Destination Travel Survey, which was supplemented by transit on-board survey data.

This Chapter presents a description of the mode choice model, and presents summary statistics from its application in the Year 2003 Model Validation run. The various travel modes estimated by the model are also summarized and explained.

DESCRIPTION OF MODE CHOICE MODEL

There were a total of eight separate mode choice models applied during the development of the Year 2003 model. Each of the models is applied for both the peak and off-peak periods. The model structure and coefficients for each mode choice model are presented in the following sections.

Mode Choice Models and Market Segmentation

Separate models were developed for each trip purpose, including:

- Home based Work-Strategic (HBWS)
- Home based Work-Direct (HBWD)
- Home based College/University (HBU)
- Home based School (K-12) (HBSc)
- Home based Shop (HBSh)
- Home based Other (HBO) (includes Home based Social / Recreational)
- Work based Other (WBO)
- Other based Other (OBO)
- Home based Serve Passenger

The variable “Income” was used as the market segmentation variable for home based work trips in the mode choice model. The following income categories are the ones common among the various surveys used as the sources of data:

- Income Group 1 – (Less than \$25,000 depending on the survey)
- Income Group 2 – (\$25,000-\$50,000 depending on the survey)
- Income Group 3 – (\$50,000 and above)

One set of common variables and coefficients was developed for all income categories. A separate cost coefficient was estimated for each income group. Separate mode-specific constants were calibrated for each income level. Table 6-1 provides a summary of modes included in each category of mode choice models.

Table 6-1

YEAR 2003 MODE CHOICE MODEL TRAVEL MODES BY TRIP PURPOSE

TRAVEL MODE CATEGORY	MODE	HOME-BASED WORK	HOME-BASED SCHOOL	HOME-BASED NON-WORK	WORK-OTHER	OTHER-OTHER
Auto Modes	Drive Alone	◆	◆	◆	◆	◆
	2 Person Carpool	◆	◆	◆	◆	◆
	3+ Person Carpool	◆	◆	◆	◆	◆
Transit Modes:	Local Bus	Walk Access	◆	◆	◆	◆
		Auto Access	◆			
	Express Bus	Walk Access	◆			
		Auto Access	◆			
	Urban Rail	Walk Access	◆			
		Auto Access	◆			
	Commuter Rail	Walk/Auto Access	◆			
	School Bus			◆		
Nonmotorized Modes	Walk trips	◆	◆	◆	◆	◆
	Bike trips	◆	◆	◆	◆	◆

Mode Choice Model Variables

The variables used in the model are:

- In-vehicle time (IVT) – all auto and transit modes, includes auto access time (minutes)
- HOV time saved – difference between HOV and SOV time for all shared ride modes (minutes)
- Distance - bike, walk (miles)
- Out-of-vehicle time (OVT) – all shared ride modes (minutes)
- Walk access time – all transit modes (minutes)
- Wait time – all transit modes (minutes)
- Transfer time – all transit modes (minutes)
- CBD dummy – 1 if trip is to CBD, 0 otherwise for all transit and shared ride modes
- Peak dummy – 1 if trip occurs during peak, 0 otherwise for all transit and shared ride modes
- Vehicles/Person Missing – 1 if trip record is missing the number of vehicles or persons in household, 0 otherwise for all modes (not used in application)
- Veh/Pers 0-0.5 – Ratio of vehicles to persons in household between 0 and 0.5 for all modes
- Veh/Pers 0.5-1 – Ratio of vehicles to persons in household between 0.5 and 1 for all modes
- Veh/Pers 1-1.5 – Ratio of vehicles to persons in household between 1 and 1.5 for all modes
- Veh/Pers >1.5 – Ratio of vehicles to persons in household greater than 1.5 for all modes
- Cost Missing Income – travel cost for all modes (dollars) times 1 if trip record is missing the income variable, 0 otherwise (not used in application)
- Cost Low Inc – travel cost for all modes (dollars) times 1 if household is low income, 0 otherwise
- Cost Med Inc – travel cost for all modes (dollars) times 1 if household is medium income, 0 otherwise
- Cost High Inc – travel cost for all modes (dollars) times 1 if household is high income, 0 otherwise

Model Estimation and Calibration

The initial round of model estimation was completed in July 2005. Several nesting structures were tested, but it was impossible to estimate reasonable model parameters, in terms of both coefficients of level of service variables and nesting coefficients. At that point, SCAG and Cambridge Systematics decided to use a pre-specified nesting structure.

This nesting structure is shown in Figures 6.1 through 6.5. With this structure, it was still necessary to constrain many model parameters, including level of service variable coefficients and nesting coefficients. This constrained model was used in conjunction with a trip assignment process developed by SCAG to produce a new set of congested skims in August 2005. These skims were validated by SCAG and constituted the basis for the final

mode choice model estimation. Table 6.2 shows the constrained nested logit model estimation results, and Table 6-7 shows the comparison of mode shares between target value and model results for the year 2000.

MODE CHOICE RESULTS AND FINDINGS

Table 6-6 presents a comprehensive overview of mode choice modeling results for the Year 2003 Model Validation run, by county and for the modeling area as a whole. Table 6-3 shows results of the home-base work and university trips mode choice. Table 6-6 identifies the estimated number of vehicle trips, vehicle passengers, transit trips, non-motorized trips, and school bus trips made for all trip purposes. The results are tallied separately for peak period travel, off-peak period travel, and total daily travel. Estimated vehicle occupancy by county and by time period is also included in Table 6-6.

The mode choice model produced an estimated 452,101 daily home-work transit trips in the expanded model area. The remaining (non-transit vehicle) home-work trips were estimated at 9,196,505 vehicle trips and subdivided by vehicle occupancy as follows:

- 8,355,454 “drive alone” vehicle trips
- 665,111 two-person vehicle trips
- 175,939 vehicle trips carrying three or more persons

Total weekday transit ridership was 924,523. Daily vehicle trips totaled 35,828,231 resulting in an average vehicle occupancy of 1.39 persons per vehicle.

FIGURE 6-1
MODE CHOICE MODEL NESTING STRUCTURE
(HOME-BASED WORK DIRECT TRIPS)

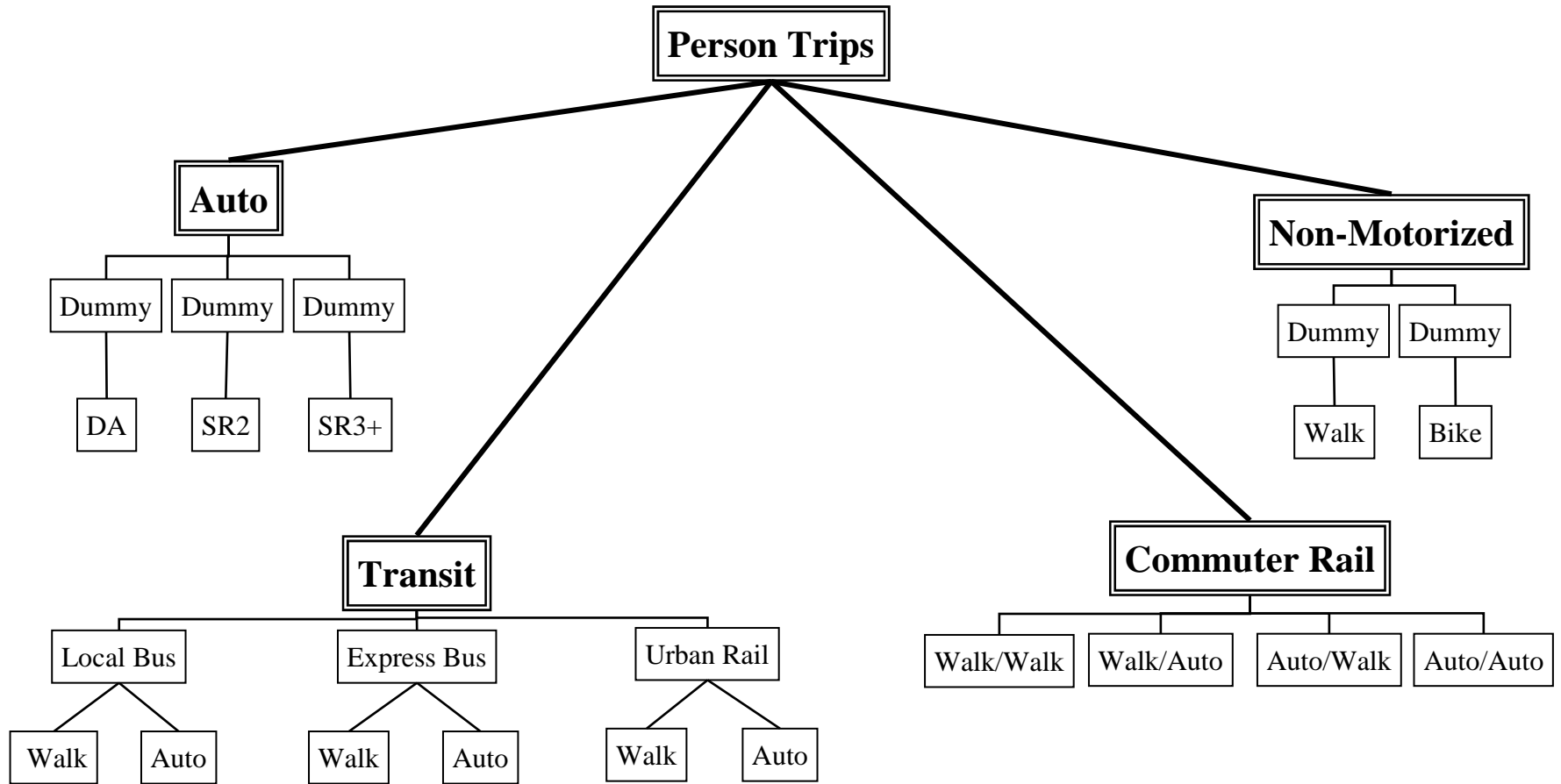


FIGURE 6-2
MODE CHOICE MODEL NESTING STRUCTURE
(HOME-BASED WORK STRATEGIC TRIPS)

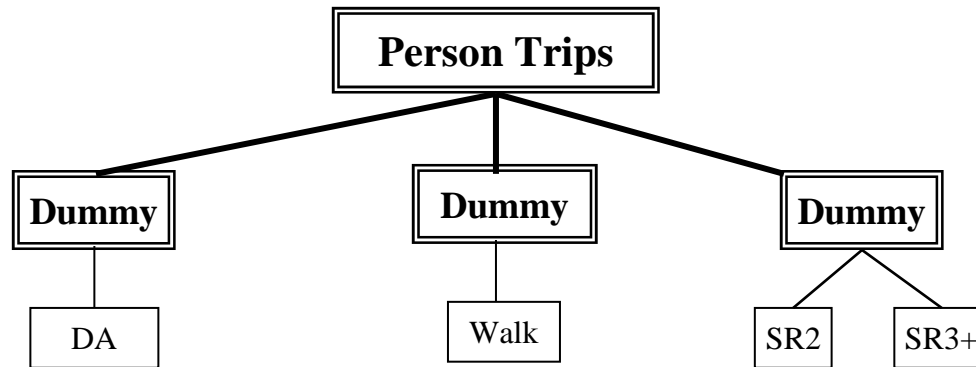


FIGURE 6-3
MODE CHOICE MODEL NESTING STRUCTURE – MAIN MODEL
(HOME-BASED SCHOOL TRIPS)

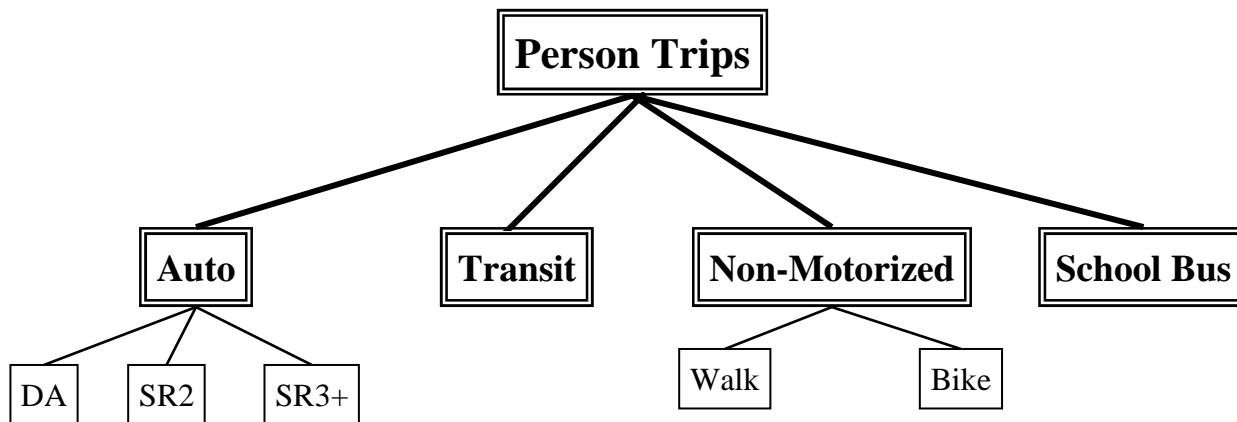


FIGURE 6-4
MODE CHOICE MODEL NESTING STRUCTURE - MAIN MODEL
(HBO, HBSH, HBCU, OBO, AND WBO)

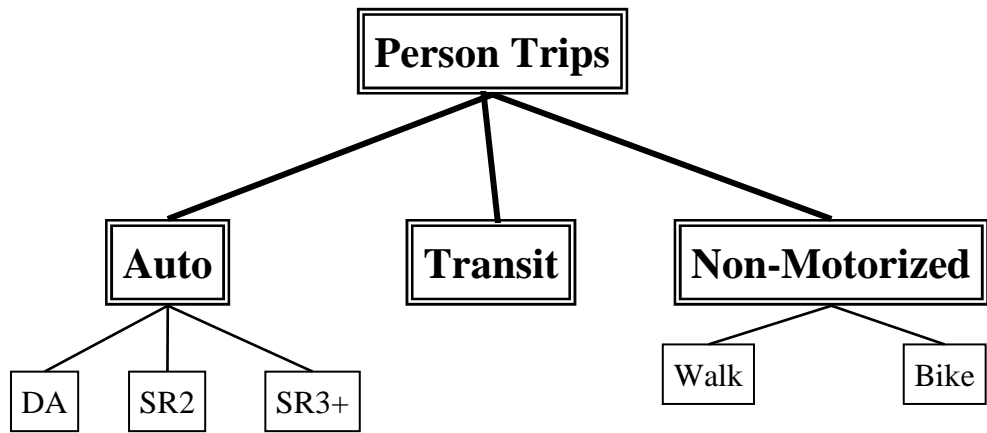


FIGURE 6-5
MODE CHOICE MODEL NESTING STRUCTURE - TRANSIT SUBMODEL
(HBO, HBSH, HBCU, HBSC, OBO, AND WBO)

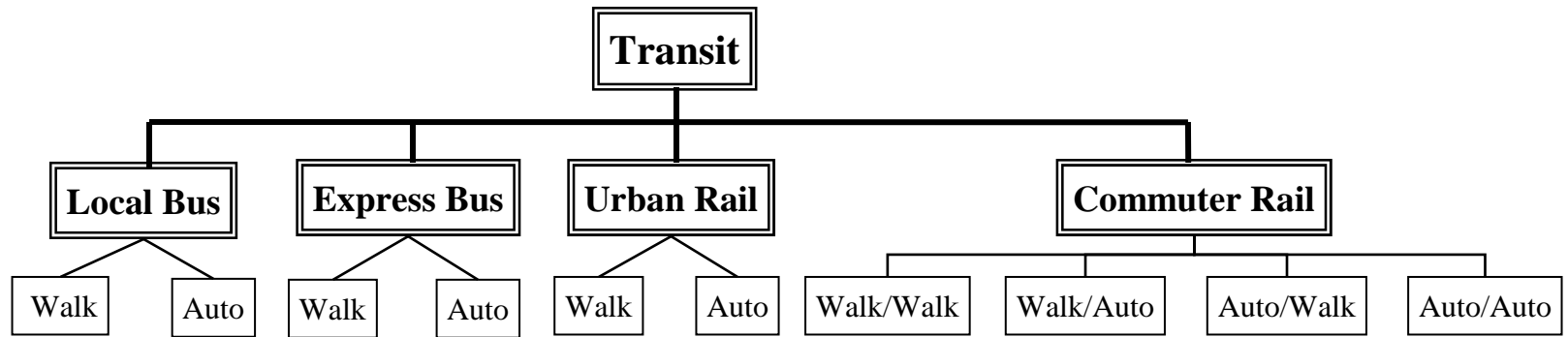


Table 6-3

YEAR 2003 MODE CHOICE SUMMARY STATISTICS (HOME-BASED WORK)

MODE CHOICE	IMPERIAL		LOS ANGELES		ORANGE		RIVERSIDE		SAN BERNARDINO		VENTURA		TOTAL	
Vehicle Trips	71,749	83.88%	5,050,489	79.24%	1,835,841	85.94%	853,652	84.33%	895,062	82.71%	489,713	87.46%	9,196,505	81.75%
Drive Alone	64,835	75.80%	4,552,609	71.43%	1,702,740	79.71%	774,784	76.54%	803,228	74.23%	457,257	81.67%	8,355,454	74.27%
2 Person Carpool	5,550	6.49%	398,205	6.25%	106,252	4.97%	60,433	5.97%	69,374	6.41%	25,297	4.52%	665,111	5.91%
3+ Person Carpool	1,363	1.59%	99,674	1.56%	26,848	1.26%	18,435	1.82%	22,459	2.08%	7,159	1.28%	175,939	1.56%
Auto Passenger Trips	8,868	10.37%	640,885	10.06%	171,533	8.03%	105,708	10.44%	124,672	11.52%	42,726	7.63%	1,094,391	9.73%
Vehicle Occupancy	1.12		1.13		1.09		1.12		1.14		1.09		1.12	
Transit Trips	212	0.25%	383,516	6.02%	38,945	1.82%	7,748	0.77%	17,279	1.60%	4,401	0.79%	452,101	4.02%
Non-Motorized Person Trips	4,708	5.50%	298,382	4.68%	89,925	4.21%	45,130	4.46%	45,135	4.17%	23,073	4.12%	506,352	4.50%
Total Person Trips	85,537	100%	6,373,271	100%	2,136,243	100%	1,012,238	100%	1,082,147	100%	559,912	100%	11,249,349	100%

Table 6-4

YEAR 2003 MODE CHOICE SUMMARY STATISTICS (HOME-BASED NON-WORK)

MODE CHOICE	IMPERIAL		LOS ANGELES		ORANGE		RIVERSIDE		SAN BERNARDINO		VENTURA		TOTAL	
Vehicle Trips	121,703	47.83%	8,079,021	47.93%	2,557,977	51.03%	1,490,526	49.32%	1,560,674	48.38%	703,407	51.53%	14,513,308	48.81%
Drive Alone	65,211	25.63%	4,542,638	26.95%	1,595,336	31.83%	865,280	28.63%	882,092	27.35%	443,691	32.50%	8,394,249	28.23%
2 Person Carpool	35,163	13.82%	2,179,701	12.93%	586,126	11.69%	362,083	11.98%	396,243	12.28%	154,597	11.33%	3,713,912	12.49%
3+ Person Carpool	21,329	8.38%	1,356,682	8.05%	376,515	7.51%	263,162	8.71%	282,340	8.75%	105,118	7.70%	2,405,147	8.09%
Auto Passenger Trips	87,098	34.23%	5,508,625	32.68%	1,509,456	30.11%	1,008,246	33.36%	1,087,723	33.72%	412,110	30.19%	9,613,258	32.33%
Vehicle Occupancy	1.72		1.68		1.59		1.68		1.70		1.59		1.66	
Transit Trips	532	0.21%	273,067	1.62%	44,968	0.90%	10,158	0.34%	15,896	0.49%	6,141	0.45%	350,763	1.18%
School Bus	5,837	2.29%	322,173	1.91%	91,184	1.82%	62,411	2.07%	70,406	2.18%	25,961	1.90%	577,972	1.94%
Non-Motorized Person Trips	39,260	15.43%	2,671,241	15.85%	809,061	16.14%	450,727	14.91%	490,886	15.22%	217,383	15.93%	4,678,559	15.73%
Total Person Trips	254,430	100%	16,854,127	100%	5,012,646	100%	3,022,069	100%	3,225,586	100%	1,365,002	100%	29,733,860	100%

Table 6-5

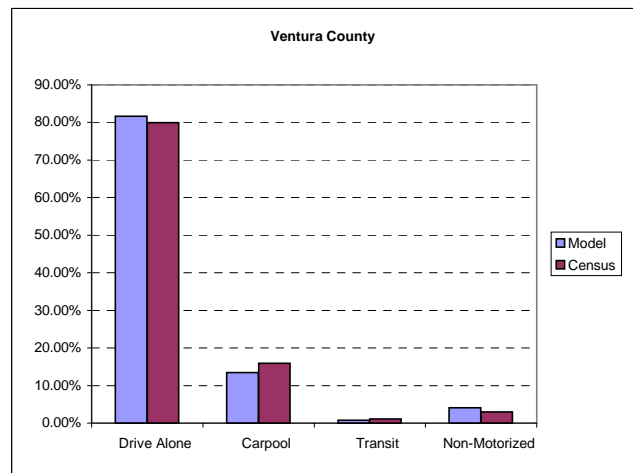
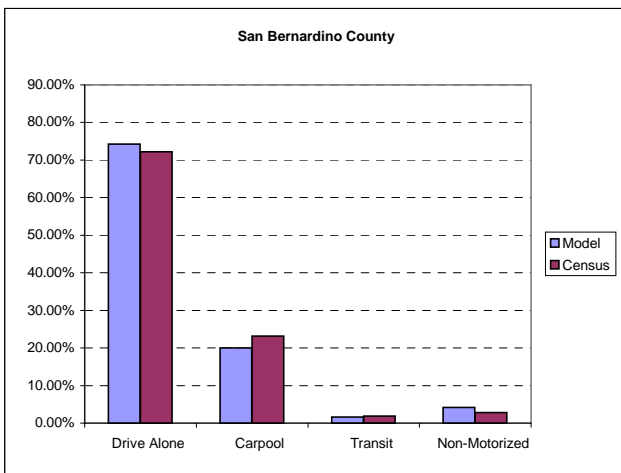
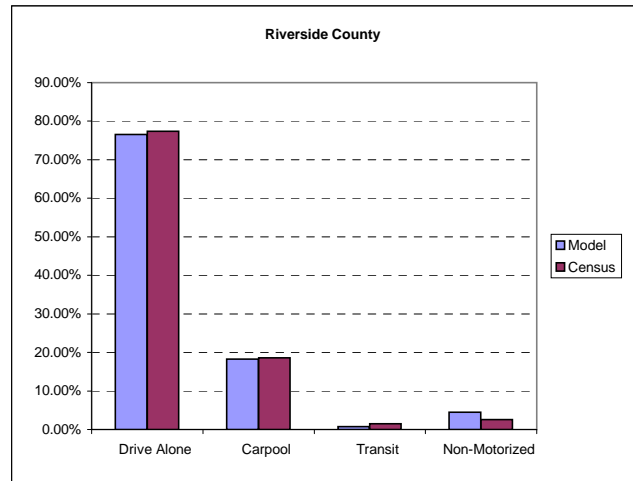
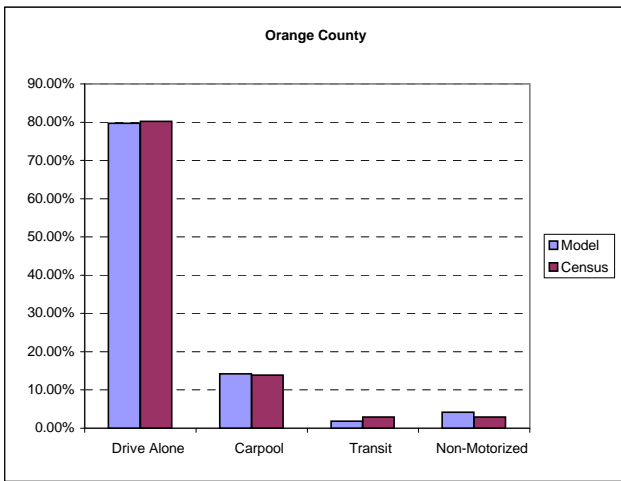
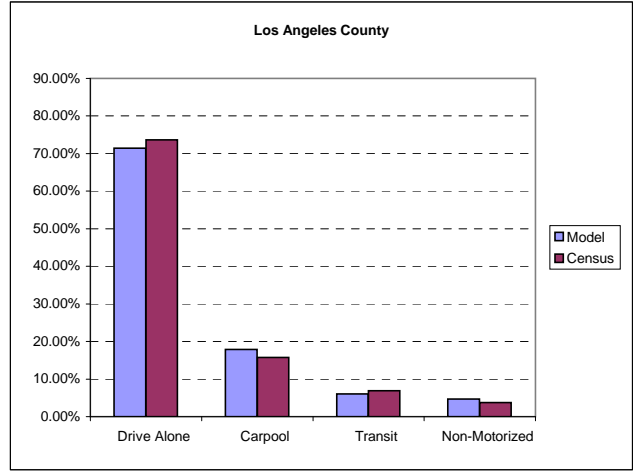
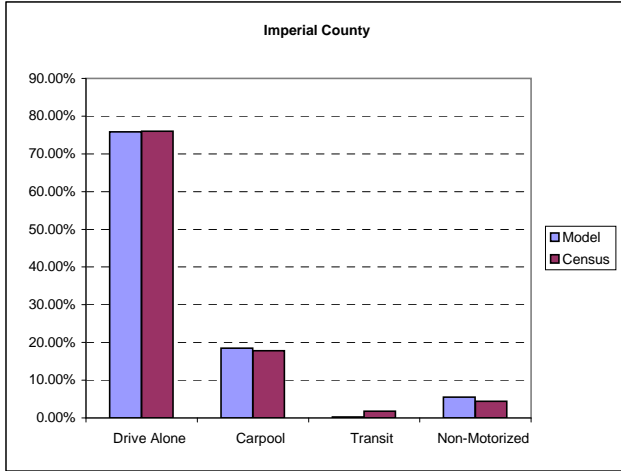
YEAR 2003 MODE CHOICE SUMMARY STATISTICS (NON-HOME-BASED)

MODE CHOICE	IMPERIAL		LOS ANGELES		ORANGE		RIVERSIDE		SAN BERNARDINO		VENTURA		TOTAL	
Vehicle Trips	66,877	60.25%	6,088,470	61.91%	2,122,394	62.90%	905,268	60.46%	948,319	61.65%	462,029	61.60%	10,593,357	61.93%
Drive Alone	49,269	44.39%	4,368,993	44.42%	1,519,762	45.04%	623,200	41.62%	647,780	42.11%	328,943	43.85%	7,537,948	44.07%
2 Person Carpool	11,971	10.78%	1,141,224	11.60%	399,831	11.85%	178,436	11.92%	189,352	12.31%	86,761	11.57%	2,007,575	11.74%
3+ Person Carpool	5,637	5.08%	578,254	5.88%	202,801	6.01%	103,632	6.92%	111,187	7.23%	46,324	6.18%	1,047,834	6.13%
Auto Passenger Trips	26,870	24.21%	2,669,148	27.14%	935,695	27.73%	452,235	30.20%	483,087	31.40%	209,152	27.88%	4,776,187	27.92%
Vehicle Occupancy	1.40		1.44		1.44		1.50		1.51		1.45		1.45	
Transit Trips	103	0.09%	92,335	0.94%	19,387	0.57%	3,276	0.22%	4,653	0.30%	1,905	0.25%	121,659	0.71%
Non-Motorized Person Trips	17,148	15.45%	985,004	10.02%	296,802	8.80%	136,601	9.12%	102,239	6.65%	76,991	10.26%	1,614,785	9.44%
Total Person Trips	110,998	100%	9,834,957	100%	3,374,279	100%	1,497,380	100%	1,538,297	100%	750,077	100%	17,105,988	100%

Table 6-6

YEAR 2003 MODE CHOICE SUMMARY STATISTICS (ALL TRIP PURPOSES)														
PEAK PERIODS	IMPERIAL		LOS ANGELES		ORANGE		RIVERSIDE		SAN BERNARDINO		VENTURA		TOTAL	
Vehicle Trips	146,023	60.03%	10,523,860	59.97%	3,534,459	63.64%	1,782,244	60.86%	1,885,809	60.39%	905,476	63.73%	18,777,871	60.93%
Drive Alone	93,264	38.34%	6,955,935	39.64%	2,490,904	44.85%	1,157,080	39.51%	1,201,480	38.48%	637,141	44.85%	12,535,805	40.68%
2 Person Carpool	27,189	11.18%	1,877,372	10.70%	549,416	9.89%	309,024	10.55%	338,512	10.84%	136,494	9.61%	3,238,005	10.51%
3+ Person Carpool	25,570	10.51%	1,690,554	9.63%	494,139	8.90%	316,140	10.79%	345,817	11.07%	131,841	9.28%	3,004,061	9.75%
Auto Passenger Trips	57,525	23.65%	4,128,383	23.53%	1,229,355	22.14%	731,915	24.99%	795,335	25.47%	311,142	21.90%	7,253,656	23.54%
Vehicle Occupancy	1.39		1.39		1.35		1.41		1.42		1.34		1.39	
Transit Trips	480	0.20%	458,460	2.61%	64,282	1.16%	13,200	0.45%	25,140	0.81%	8,419	0.59%	569,980	1.85%
School Bus	4,037	1.66%	221,357	1.26%	62,893	1.13%	43,025	1.47%	48,629	1.56%	17,953	1.26%	397,892	1.29%
Non-Motorized Person Trips	35,180	14.46%	2,215,786	12.63%	662,672	11.93%	358,225	12.23%	367,728	11.78%	177,699	12.51%	3,817,291	12.39%
Total Person Trips	243,244	100%	17,547,846	100%	5,553,661	100%	2,928,609	100%	3,122,640	100%	1,420,690	100%	30,816,690	100%
OFF-PEAK PERIODS	IMPERIAL		LOS ANGELES		ORANGE		RIVERSIDE		SAN BERNARDINO		VENTURA		TOTAL	
Vehicle Trips	128,726	61.97%	9,557,991	61.61%	3,223,969	64.88%	1,627,708	62.53%	1,695,247	62.25%	816,719	65.11%	17,050,360	62.52%
Drive Alone	86,052	41.43%	6,508,305	41.95%	2,326,933	46.82%	1,106,184	42.50%	1,131,621	41.55%	592,751	47.26%	11,751,846	43.09%
2 Person Carpool	25,495	12.27%	1,841,759	11.87%	542,793	10.92%	291,928	11.21%	316,456	11.62%	130,162	10.38%	3,148,594	11.54%
3+ Person Carpool	17,179	8.27%	1,207,927	7.79%	354,242	7.13%	229,596	8.82%	247,170	9.08%	93,807	7.48%	2,149,921	7.88%
Auto Passenger Trips	50,891	24.50%	3,826,403	24.66%	1,145,113	23.04%	673,768	25.88%	723,145	26.55%	285,798	22.79%	6,705,118	24.59%
Vehicle Occupancy	1.40		1.40		1.36		1.41		1.43		1.35		1.39	
Transit Trips	367	0.18%	290,458	1.87%	39,018	0.79%	7,983	0.31%	12,689	0.47%	4,028	0.32%	354,543	1.30%
School Bus	1,800	0.87%	100,816	0.65%	28,291	0.57%	19,386	0.74%	21,777	0.80%	8,009	0.64%	180,079	0.66%
Non-Motorized Person Trips	25,936	12.49%	1,738,841	11.21%	533,116	10.73%	274,233	10.53%	270,531	9.93%	139,747	11.14%	2,982,405	10.94%
Total Person Trips	207,722	100%	15,514,510	100%	4,969,506	100%	2,603,078	100%	2,723,389	100%	1,254,301	100%	27,272,506	100%
ALL TIME PERIOD COMBINED	IMPERIAL		LOS ANGELES		ORANGE		RIVERSIDE		SAN BERNARDINO		VENTURA		TOTAL	
Vehicle Trips	274,749	60.92%	20,081,851	60.74%	6,758,428	64.22%	3,409,952	61.64%	3,581,055	61.26%	1,722,196	64.38%	35,828,231	61.68%
Drive Alone	179,316	39.76%	13,464,240	40.72%	4,817,838	45.78%	2,263,264	40.91%	2,333,101	39.91%	1,229,892	45.98%	24,287,650	41.81%
2 Person Carpool	52,684	11.68%	3,719,130	11.25%	1,092,209	10.38%	600,952	10.86%	654,968	11.20%	266,655	9.97%	6,386,599	10.99%
3+ Person Carpool	42,750	9.48%	2,898,481	8.77%	848,381	8.06%	545,736	9.87%	592,987	10.14%	225,648	8.44%	5,153,982	8.87%
Auto Passenger Trips	108,416	24.04%	7,954,786	24.06%	2,374,468	22.56%	1,405,683	25.41%	1,518,481	25.97%	596,940	22.32%	13,958,774	24.03%
Vehicle Occupancy	1.39		1.40		1.35		1.41		1.42		1.35		1.39	
Transit Trips	847	0.19%	748,918	2.27%	103,300	0.98%	21,183	0.38%	37,828	0.65%	12,447	0.47%	924,523	1.59%
School Bus	5,837	1.29%	322,173	0.97%	91,184	0.87%	62,411	1.13%	70,406	1.20%	25,961	0.97%	577,972	0.99%
Non-Motorized Person Trips	61,116	13.55%	3,954,628	11.96%	1,195,788	11.36%	632,458	11.43%	638,259	10.92%	317,447	11.87%	6,799,696	11.71%
Total Person Trips	450,965	100%	33,062,356	100%	10,523,168	100%	5,531,687	100%	5,846,030	100%	2,674,991	100%	58,089,196	100%

FIGURE 6-6
HOME-BASED WORK TRIPS MODE SHARE COMPARISON
(2003 MODEL VS 2000 CENSUS)



* Census 2000 Summary Files 3 (SF3), P.30

CHAPTER 7 – HEAVY DUTY TRUCK MODEL

INTRODUCTION

The SCAG Year 2003 Regional Model incorporates a computerized truck model, which estimates trip generation, distribution, and traffic assignment for Heavy-Duty Trucks (HDT). According to the California Air Resources Board (CARB), a heavy-duty truck is defined as a truck with a gross vehicle weight of 8,500 pounds or more. The HDT Model is fully integrated with the SCAG Regional Transportation Model. It employs truck trip generation rates, and uses a network of regional highway facilities for truck traffic assignment. The truck traffic assignment process is integrated with the assignment process for light-and-medium duty vehicles in the Regional Model, so that the effects of congestion on truck route choice are represented. The integration of the trip assignment process for both models is necessary so that the effects of truck activity on light-and-medium duty vehicles in the traffic stream are also represented.

A primary objective is to improve the current internal trip generation model by re-estimating the truck trip production and attraction rates for certain land use/employment sectors. The re-estimation of trip productions and attractions will be at the new zone system (4109 internal TAZs).

The HDT Model is extensively documented in a separate report recently prepared for SCAG. The contents of this Chapter is limited to a brief overview of the Model, and a discussion of how the HDT Model was used to generate and distribute heavy-duty truck trips for the Year 2003 Model Validation Run. The assignment and Vehicle Miles Traveled (VMT) results for the HDT traffic component of the Model are presented in Chapter 8.

DESCRIPTION OF HEAVY DUTY TRUCK MODEL

The HDT Model is designed to develop forecasts of heavy-duty trucks in the following three Gross Vehicle Weight (GVW) categories:

- Light-Heavy Trucks: 8,500 to 14,000 pounds GVW
- Medium-Heavy Trucks: 14,000 to 33,000 pounds GVW
- Heavy-Heavy Trucks: over 33,000 pounds GVW

The Model is specifically designed to forecast truck movements in the Region for air quality conformity determinations. As such, it produces VMT estimates for the three truck weight classifications identified above. The HDT Model employs socioeconomic data by Traffic Analysis Zone (TAZ), with employment data broken down into further detail by North American Industry Classification System (NAICS) code to better estimate commodity flow demand that correspond to truck travel demand.

External truck trips, trips with a trip end outside of the SCAG Region were developed from estimated incoming and outgoing commodity flows. The internal ending points of those trips are allocated to TAZs within the SCAG Region. Truck trips “internal” to the Region are estimated from shipping and receiving daily truck trip generation rates corresponding to the number of employees in various employment sectors in each zone, and in certain cases, with the number of households in each zone. Special truck activity trip tables were developed for special truck trip generators, such as ports and airports. Truck specific time period factors, derived from California Weigh In Motion (WIM) truck data, were applied to allocate daily truck activity into the four model time periods (A.M. peak, Midday, P.M. peak, and Night). Trucks are converted into passenger car equivalents during the assignment phase. The trip assignment process simultaneously loads both heavy-duty trucks and light-and-medium duty autos/trucks so that all vehicle types are accounted for in the traffic stream.

Internal Truck Trip Generation Rates

As indicated in the previous section, the current model trip rates are retained for all the sectors. The internal model trip rates used in the interim version of the model are shown in Table 7-1.

Table 7-1

DAILY TRIP RATES FOR INTERNAL TRUCK TRIP GENERATION			
EMPLOYMENT CATEGORY	LIGHT HDV	MEDIUM HDV	HEAVY HDV
Households	0.0390	0.0087	0.0023
Agriculture/Mining/Construction	0.0513	0.0836	0.0569
Retail	0.0605	0.0962	0.0359
Government	0.0080	0.0022	0.0430
Manufacturing	0.0353	0.0575	0.0391
Transportation/Utility	0.2043	0.0457	0.1578
Wholesale	0.0393	0.0650	0.0633
Other	0.0091	0.0141	0.0030

Notes: Rates are per household or per employee in each category.

Truck Trip Generation and Distribution

The internal truck trip generation model uses a cross classification methodology using 1-digit employment categories by truck weight class. The internal truck trip generation summary is provided in Table 7-2.

The external truck trips are generated and distributed using a combination of commodity flow data at the county level and 2-digit employment data for allocating county data to

TAZs. External to external truck trips were developed based on observed traffic counts at the external stations and the commodity flow data.

Port related truck trips were developed by using Port of Long Beach's quick trip models for trip generation and the new gate surveys that provided the distribution information of these trips. Air cargo trip tables for Year 2003 were developed by another consultant with the proprietary RADAM model.

The average internal truck trip length in miles for all is 5.92 for Light, 13.06 for Medium, and 24.11 for Heavy.

Table 7-2

YEAR 2003 HEAVY-DUTY VEHICLE INTERNAL TRIP GENERATION BY COUNTY AND BY SECTOR

COUNTY	Light HDV	Medium HDV	Heavy HDV	TOTAL
Imperial	3,789	2,743	3,326	9,859
Los Angeles	247,792	161,873	198,060	607,724
Orange	77,059	59,087	68,905	205,051
Riverside*	39,890	28,049	24,796	92,735
San Bernardino*	43,858	27,401	31,772	103,032
Ventura	19,215	14,547	14,406	48,169
ALL COUNTIES	431,604	293,700	341,265	1,066,569
SECTOR	Light HDV	Medium HDV	Heavy HDV	TOTAL
Households	216,441	48,283	12,764	277,488
Ag/Mining/Const	24,667	40,199	27,360	92,226
Retail	48,273	76,757	28,644	153,674
Governments	1,861	512	10,004	12,377
Manufacturing	30,509	49,697	33,794	114,000
Transportation/Utility	69,363	15,516	53,575	138,454
Wholesale	0	0	161,775	161,775
Other	40,490	62,737	13,348	116,575
ALL SECTORS	431,604	293,701	341,264	1,066,569

Truck Trip Assignment

Truck specific time period factors, derived from California Weigh In Motion (WIM) truck data, were applied to allocate daily truck activity into the four model time periods (A.M. peak, Midday, P.M. peak, and Night). Trucks are converted into passenger car equivalents during the assignment phase.

The trip assignment process simultaneously loads both heavy-duty trucks and light-and-medium duty autos/trucks so that all vehicle types are accounted for in the traffic stream.

Truck PCE is estimated for each link by the product of a grade factor and a congestion factor. The grade factors range from 1.2 to 3.6 for Light, 1.5 to 4.5 for Medium, and 2.0 to 6.0 for Heavy HDV. The congestion factors range between 1.0 and 1.3.

The HDT model (developed using 1994 data) was carefully validated against a number of specific parameters including:

- The model estimated Year 2003 truck movements across 23 regional screenlines to within 5.8 percent of the corresponding truck traffic counts (all screenlines combined).
- All differences on individual screenlines were well within allowable tolerances established for regional modeling processes.
- Finally, Year 2003 daily truck VMT was estimated by the HDT Model. The estimate was compared to truck VMT estimates from other statistical sources as part of the model validation process. See Table 8-3.

The truck traffic assignment results are documented in the SCAG regional screenline summaries and in the assignment VMT summaries tabulated and presented in Chapter 8.

POST MODEL ADJUSTMENT OF THE SPEED OF THE HEAVY DUTY TRUCKS

The Year 2003 Model assumes shared lanes for both passenger cars and heavy-duty trucks (HDTs) except for HOV lanes, truck only lanes, and where trucks are prohibited such as the section of Pasadena Freeway north of downtown LA. Both passenger car and trucks are loaded on the same segment of the roadway irregardless of which lanes the HDTs can travel. Therefore, both HDTs and passenger cars would have the same model speed on the same roadway segment. In order to reflect slower speeds that most trucks are traveling, a post model adjustment of the speeds for the trucks was made using the available Freeway Performance Measurement System (PeMS) data. The hypothesis is that heavy-duty trucks travel slower than the passenger cars due to the following:

1. Heavy-duty trucks can only travel on the outside lanes. HDT's choice of travel is relatively limited.
2. The speeds on outside lanes are interfered and thus slowed by incoming and

- outgoing vehicles.
3. The acceleration and deceleration of the HDT are much slower than the passenger vehicle.

A linear regression was developed through the analysis of the PeMS database to build the relationship between the speeds of vehicles traveling on the outer freeway lanes and the speeds of vehicles traveling on the inner freeway lanes. This analysis resulted in the following equation:

$$\text{HDT speed} = 0.31 + 0.9657* \text{ average freeway speed}$$

The regression R-Square value of the equation is 0.98 and the t statistics for the independent variable is 417.95.

There is no reliable data to derive the speeds of HDT's on arterials. For Year 2003 model, a similar equation is applied to adjust HDT speeds on arterials.

CHAPTER 8 – TRIP ASSIGNMENT

INTRODUCTION

This Chapter describes the various trip assignment methodologies and findings. Assignments used in the Year 2003 Model Validation include: a highway assignment to the street and highway network, a transit assignment to the transit network, a heavy-duty truck assignment integrated with the highway assignment for light-and-medium duty vehicles, and a toll assignment procedure to assign toll trips.

Highway assignment is the process of loading vehicle trips onto the appropriate highway network to produce traffic volumes, congested speeds, Vehicle Miles Traveled (VMT), and Vehicle Hours Traveled (VHT) estimates, for each of the four travel periods. Link or segment assignments by time period are added to produce average daily traffic volumes for the model network.

Highway assignment validation is one of the crucial steps in the modeling process. The ability for the model to produce current volume estimates within acceptable ranges of tolerance compared to actual ground counts is essential. The screenline analysis for the Year 2003 Model Validation run is presented in this Chapter. Also, key to assignment validation is the comparison of VMT estimated by the model, to estimates from the Highway Performance Monitoring System (HPMS). An acceptable tolerance level is mandatory for regional air quality planning and conformity purposes. Specifics regarding the comparative analysis are summarized in this Chapter and assignment statistics for the Region are also presented.

The SCAG Year 2003 Regional Transportation Model includes a complete Heavy-Duty Truck Model component, providing assignment results for heavy-duty trucks, as well as for light-and-medium duty vehicles. This Chapter presents the results of the truck traffic assignment combined with the results from the light-and-medium duty vehicle assignment. A description of the Heavy-Duty Truck Model is presented in Chapter 7.

This Chapter also briefly summarizes the results of the transit trip assignment. Transit trips are estimated by the mode choice model, and are assigned to transit routes to produce transit network loadings.

TIME OF DAY FACTORING

In the highway assignment, vehicle trips for all trip purposes are assigned, or loaded, onto each of the four time period (am peak, mid-day, pm peak, and night) highway networks. Before this can be done, the trips in each of the vehicle trip tables in production-attraction format (except for other-other trips), from the mode choice model, must be converted to Origin-Destination (O-D) format by time of day. This conversion is accomplished using a set of trip-in-motion factors derived from SCAG's 2001 Household

Travel Survey. The time-of-day factors allocate the P & A formatted trips by trip purpose to each of the four time periods. Table 8-1 identifies the factors that were used in this process.

There are two sets of factors. The first is applied at the end of trip generation to subdivide trips by purpose into "peak" and "off-peak" subcategories for input into the trip distribution models. The second is applied prior to trip assignment to allocate peak trips into the A.M. and P.M. peak periods by direction of travel. It also allocates off-peak trips into midday and night-time periods by direction of travel. Both of these sets of factors are displayed in Table 8-1. Table 8-1 also includes similar factors used to subdivide and stratify internal-external and external-internal trips (trips from within the Region with destinations outside of the Region and vice-versa). The Truck Model has unique factors to manipulate truck trips into directional O-D trip tables for each of the four time periods. Once all of the factors are applied, O-D trip tables are summed for all trip purposes and then assigned by time period.

EXTERNAL TRIPS

External trips (cordon trips) are trips with one or both ends outside the modeling area. External trips for the light-and-medium duty vehicles are estimated independently from heavy-duty vehicles (trucks). The following provides a brief description of the methodology used to estimate light-and-medium duty (auto) vehicle external trips. The external trip methodology used to develop truck cordon trips is described in the Heavy-Duty Truck Model Report.

Traffic counts were obtained for each cordon location to estimate Year 2003 cordon volumes. Previous cordon survey results were then used to split total external trips into: 1) through trips - External-to-External (E-E), and 2) External-to-Internal (E-I) and Internal-to-External (I-E). The resulting through trip table (E-E) and the I-E/E-I trip table were combined with trip tables from previous steps to form final O-D vehicle trip tables for highway assignment.

Table 8-1

YEAR 2003 VEHICLE TRIPS-IN-MOTION FACTORS

HOME-BASED WORK DIRECT TRIPS			
	P → A	A → P	Total
AM Peak (6am - 9am)	29.92	0.93	30.85
PM Peak (3pm - 7pm)	2.24	33.44	35.68
"Peak"	32.16	34.37	66.53
Midday (9am - 3pm)	9.21	6.10	15.30
Night (19pm - 6am)	8.52	9.64	18.16
"Off-Peak"	17.73	15.73	33.47
TOTAL	49.90	50.10	100.00
HOME-BASED WORK STRATEGIC TRIPS			
	P → A	A → P	Total
AM Peak (6am - 9am)	18.63	0.54	19.18
PM Peak (3pm - 7pm)	2.20	29.17	31.37
"Peak"	20.83	29.72	50.55
Midday (9am - 3pm)	26.41	9.39	35.81
Night (19pm - 6am)	2.76	10.89	13.65
"Off-Peak"	29.17	20.28	49.45
TOTAL	50.00	50.00	100.00
HOME-BASED COLLEGE TRIPS			
	P → A	A → P	Total
AM Peak (6am - 9am)	24.73	0.62	25.35
PM Peak (3pm - 7pm)	9.43	16.82	26.24
"Peak"	34.16	17.44	51.59
Midday (9am - 3pm)	16.59	15.17	31.76
Night (19pm - 6am)	1.00	15.64	16.64
"Off-Peak"	17.59	30.81	48.41
TOTAL	51.75	48.25	100.00
HOME-BASED SCHOOL TRIPS			
	P → A	A → P	Total
AM Peak (6am - 9am)	50.28	0.00	50.28
PM Peak (3pm - 7pm)	0.72	22.08	22.80
"Peak"	50.99	22.08	73.07
Midday (9am - 3pm)	2.41	22.68	25.08
Night (19pm - 6am)	0.59	1.25	1.84
"Off-Peak"	3.00	23.93	26.93
TOTAL	53.99	46.01	100.00
HOME-BASED SHOPPING TRIPS			
	P → A	A → P	Total
AM Peak (6am - 9am)	5.16	1.14	6.30
PM Peak (3pm - 7pm)	9.82	25.11	34.93
"Peak"	14.98	26.25	41.23
Midday (9am - 3pm)	21.01	20.60	41.61
Night (19pm - 6am)	5.18	11.97	17.15
"Off-Peak"	26.19	32.57	58.76
TOTAL	41.17	58.82	99.99
HOME-BASED OTHER TRIPS			
	P → A	A → P	Total
AM Peak (6am - 9am)	9.48	1.11	10.59
PM Peak (3pm - 7pm)	11.81	16.51	28.32
"Peak"	21.29	17.62	38.91
Midday (9am - 3pm)	21.63	14.37	36.00
Night (19pm - 6am)	6.65	18.44	25.10
"Off-Peak"	28.28	32.81	61.09
TOTAL	49.57	50.43	100.00
HOME-BASED SERVING PASSENGER TRIPS			
	P → A	A → P	Total
AM Peak (6am - 9am)	23.79	9.06	32.85
PM Peak (3pm - 7pm)	10.98	20.76	31.74
"Peak"	34.77	29.82	64.59
Midday (9am - 3pm)	13.74	10.49	24.23
Night (19pm - 6am)	4.00	7.18	11.18
"Off-Peak"	17.74	17.67	35.41
TOTAL	52.51	47.49	100.00
WORK-BASED OTHER TRIPS			
	P → A	A → P	Total
AM Peak (6am - 9am)	2.88	14.72	17.60
PM Peak (3pm - 7pm)	34.34	2.81	37.15
"Peak"	37.22	17.53	54.75
Midday (9am - 3pm)	27.33	12.01	39.34
Night (19pm - 6am)	3.77	2.14	5.91
"Off-Peak"	31.10	14.15	45.25
TOTAL	68.32	31.68	100.00
OTHER-BASED OTHER TRIPS			
	P → A	A → P	Total
AM Peak (6am - 9am)	4.71	4.71	9.41
PM Peak (3pm - 7pm)	15.72	15.72	31.44
"Peak"	20.42	20.42	40.85
Midday (9am - 3pm)	23.88	23.88	47.75
Night (19pm - 6am)	5.70	5.70	11.40
"Off-Peak"	29.58	29.58	59.15
TOTAL	50.00	50.00	100.00

DESCRIPTION OF HIGHWAY ASSIGNMENT PROCEDURES

Vehicle trip assignment is the process of loading vehicle trips onto the appropriate highway network. This process produces traffic volumes and resulting congested speeds on each road segment represented in the network for the four time period. The Year 2003 Model Validation model runs consist of series of multi-class simultaneous equilibrium assignments for six classes of vehicles (drive alone, 2-person carpool, 3+ person carpool, light HDT, medium HDT, and heavy HDT) and for each of the four time periods. During this assignment process, trucks are converted to PCE for each link based on 1) percentage of trucks, 2) percentage of grade, 3) length of the link, and 4) level of congestion (v/c ratios). Transit vehicles are also included in the highway assignment.

To achieve convergence of model results, a 5-loop feedback procedure was incorporated in the Year 2003 model. The following is a brief description of the process:

- Step 1: The trip generation, trip distribution, and the mode choice models were run using the initial speeds coded on the input highway networks to develop the initial AM peak period and mid-day period trip tables. This set of initial trip tables for each time period and for each vehicle class was assigned to the corresponding highway networks. This process produced the first pass (loop) highway assignments and yielded model-estimated congested speeds for the highway networks.
- Step 2: The congested speeds were then fed back into the trip generation, trip distribution, and mode choice models to produce a second set of congested speeds for the AM and mid-day highway networks. An averaging process was utilized to smooth the volume variation between the first pass (loop) of the trip assignment and the second pass of the trip assignment step. A new set of congested speeds was then created and fed to trip generation, trip distribution, and mode choice models to produce a new set of trip tables for the third pass of trip assignment. This process was repeated one more time to produce a set of reasonably converged AM peak and mid-day networks.
- Step 3: The new set of congested speeds were then fed back into the trip generation, trip distribution, and mode choice models to produce trip tables for assignments for each scenario. The final assignment of trips was performed for all four time periods (AM, mid-day, PM, and night period).

HIGHWAY ASSIGNMENT SUMMARY

Table 8-2 presents an overview of the highway assignment statistics for each model time period and daily total. The Regional Transportation Model forecasts 371,973,000 VMT on an average weekday in Year 2003 within the expanded model area for both light and medium duty vehicles. In addition, the Regional Model forecasts 29,524,000 VMT for

heavy-duty vehicles in the expanded model area. The total for all vehicle types combined is 401,497,000 VMT.

Travel summaries have been compiled to report VMT, VHT, and vehicle hours of delay by county, facility type, and air basin. Table 8-3 presents VMT comparisons of the SCAG-modeled VMT to VMT estimates from the HPMS by county and by air basin. The results for total VMT are very consistent. Specifically, the L&M VMT results within the South Coast Air Basin are 2.7 percent below the corresponding results derived from HPMS data for all vehicles. Further, the L&M VMT results from the Ventura County portion of the SCAG modeling area are within 6.5 percent of the corresponding HPMS statistical data.

Vehicle trip assignment is validated by comparing modeled total daily traffic volumes to actual Average Daily Traffic (ADT) counts or "ground counts", across a set of screenlines. A screenline is an imaginary line drawn across the highway network at strategic locations in the modeling area, which capture the total traffic flow across that line.

For the Year 2003 Model Validation, the highway assignments were validated using a screenline analysis performed on 23 regional screenlines, including three new screenlines in developing areas. The screenline locations are depicted in Figure 8-1, and the results are presented in Table 8-4. Overall, the model volumes across all screenlines combined, differed by less than 1.5 percent from the same total of the "observed" or ground counts. On an individual screenline basis, of the 23 screenlines, 10 came within 5 percent of the "observed" count, 6 came within 5-10 percent, 4 came within 10-15 percent, and the remaining 3 screenlines fell within 15-18 percent of the count. These results are within tolerance levels considered acceptable for regional transportation modeling.

Figure 8-2 presents a scatter plot of screenline directional link volumes between 2003 model volumes and actual traffic counts. Overall the model shows good fit with ground counts. Regression R-squared value is 0.932, and the RMSE is 29.42. The comparison of model speed with PeMS speed data is presented in Figures 8-3 through 8-6.

Table 8-2

YEAR 2003 HIGHWAY ASSIGNMENT STATISTICS BY TIME PERIOD					
Light and Medium Duty Vehicles	AM PEAK	PM PEAK	MIDDAY	NIGHT	TOTAL
Average Speed (mph)	30.9	26.6	35.2	43.1	31.7
Vehicle Miles Traveled (^000)	77,515	128,557	108,137	57,765	371,973
Vehicle Hours Traveled (^000)	2,508	4,826	3,075	1,341	11,751
Vehicle Hours Delay (^000)	723	1,778	583	82	3,167
Heavy Duty Vehicles	AM PEAK	PM PEAK	MIDDAY	NIGHT	TOTAL
Average Speed (mph)	35.7	31.0	40.5	52.4	40.0
Vehicle Miles Traveled (^000)	3,833	6,266	10,322	9,103	29,524
Vehicle Hours Traveled (^000)	107	202	255	174	739
Vehicle Hours Delay (^000)	33	79	56	12	180
All Vehicles Combined	AM PEAK	PM PEAK	MIDDAY	NIGHT	TOTAL
Average Speed (mph)	31.1	26.8	35.6	44.1	32.1
Vehicle Miles Traveled (^000)	81,347	134,823	118,459	66,868	401,497
Vehicle Hours Traveled (^000)	2,616	5,028	3,330	1,515	12,490
Vehicle Hours Delay (^000)	756	1,857	639	94	3,346

Table 8-3

YEAR 2003 VMT COMPARISON BY COUNTY AND BY AIR BASIN (IN THOUSANDS)

COUNTY		VC SCCAB		SCAB		MDAB		SSAB		TOTAL		COUNTY TOTAL
		Auto	Truck	Auto	Truck	Auto	Truck	Auto	Truck	Auto	Truck	
IMPERIAL	Model HPMS	-	-	-	-	-	-	4,343	737	4,343	737	5,080 4,941
		-	-	-	-	-	-	4,335	607	4,335	607	
LOS ANGELES	Model HPMS	-	-	185,519	13,064	6,114	408	-	-	191,633	13,471	205,104 216,676
		-	-	197,363	11,656	7,268	389	-	-	204,631	12,045	
ORANGE	Model HPMS	-	-	65,391	3,573	-	-	-	-	65,391	3,573	68,964 70,283
		-	-	66,509	3,774	-	-	-	-	66,509	3,774	
RIVERSIDE	Model HPMS	-	-	35,553	2,842	1,626	692	8,175	1,396	45,355	4,931	50,285 43,854
		-	-	28,577	2,516	1,484	520	9,288	1,469	39,349	4,505	
SAN BERNARDINO	Model HPMS	-	-	28,544	2,067	20,424	3,728	-	-	48,968	5,795	54,763 54,253
		-	-	31,191	3,159	17,094	2,809	-	-	48,285	5,968	
VENTURA	Model HPMS	16,283	1,017	-	-	-	-	-	-	16,283	1,017	17,301 18,627
		17,414	1,214	-	-	-	-	-	-	17,414	1,214	
TOTAL	Model HPMS	16,283	1,017	315,008	21,546	28,164	4,827	12,518	2,134	371,973	29,524	401,497 408,634
		17,414	1,214	323,641	21,105	25,845	3,717	13,622	2,076	380,522	28,112	
	Ratio	0.935	0.838	0.973	1.021	1.090	1.299	0.919	1.028	0.978	1.050	0.983

Table 8-4

YEAR 2003 SCREENLINE COMPARISON OF MODEL WEEKDAY ADT AND GROUND COUNTS

Screenline	Location	Direction	Daily Vehicle Volumes			
			Model	Count	Ratio	RMSE
1	Ventura / Los Angeles	EW	1,478,103	1,475,361	1.002	18.25
2	Los Angeles	NS	2,567,037	2,468,539	1.040	21.65
3	Los Angeles	EW	1,307,292	1,462,303	0.894	36.31
4	Orange	NS	1,714,901	1,701,072	1.008	35.06
5	Los Angeles / Orange	NS	1,538,663	1,321,967	1.164	32.84
6	San Bernardino / Riverside	NS	1,024,777	994,195	1.031	52.85
7	San Bernardino	EW	738,172	786,550	0.938	45.34
8	Los Angeles / Orange	NS	1,187,848	1,220,265	0.973	16.92
9	San Bernardino / Riverside	NS	468,094	472,748	0.990	45.68
10	Ventura / Los Angeles	NS	449,082	434,119	1.034	34.53
11	Ventura	NS	263,868	235,150	1.122	32.50
12	Riverside	NS	176,362	164,486	1.072	47.77
13	San Bernardino	EW	206,378	174,994	1.179	60.64
14	Riverside	EW	269,766	253,920	1.062	25.48
15	Orange	NS	646,018	670,570	0.963	42.27
16	Los Angeles	EW	1,462,218	1,290,971	1.133	24.00
17	Los Angeles	NS	2,354,706	2,437,178	0.966	29.69
18	Los Angeles	EW	374,748	407,512	0.920	29.89
19	Los Angeles	EW	174,828	211,090	0.828	35.10
20	San Bernardino	EW	94,461	82,342	1.147	52.61
21	Riverside	EW	153,449	161,106	0.952	38.45
22	Riverside / Imperial	EW	21,473	19,698	1.090	24.51
23	Imperial	EW	44,408	41,930	1.059	34.93
Total			18,716,650	18,488,066	1.012	29.42

Table 8-5

YEAR 2003 SCREENLINE COMPARISON OF MODEL WEEKDAY ADT AND GROUND COUNTS BY VOLUME GROUP

	VOLUME GROUP BY FACILITY	OBS	DAILY VEHICLE VOLUMES			
			Model	Count	Ratio	RMSE
1	0 - 4,999	58	219,239	142,649	1.54	121.32
2	5,000 - 24,999	181	2,741,946	2,620,454	1.05	47.50
3	25,000 - 49,999	121	3,692,413	3,702,827	1.00	35.70
4	50,000 - 99,999	22	926,673	956,722	0.97	26.72
5	100,000 - 199,999	26	1,975,327	1,824,360	1.08	19.78
6	200,000 or More	110	9,161,052	9,241,054	0.99	18.39
Total		518	18,716,650	18,488,066	1.01	29.42

Note: RMSE - root mean square error, OBS - number of roadway facility in the group.

Table 8-6

YEAR 2003 SCREENLINE COMPARISON OF MODEL WEEKDAY ADT AND GROUND COUNTS BY FACILITY TYPE

	FACILITY TYPE	OBS	Daily Vehicle Volumes			
			Model	Count	Ratio	RMSE
1	Freeway	114	11,229,968	11,150,274	1.01	16.71
2	HOV	42	593,131	508,770	1.17	52.82
3	Major Arterial	156	4,516,902	4,257,202	1.06	38.39
4	Minor Arterial	155	2,121,198	2,296,827	0.92	47.41
5	Collector	48	229,492	251,217	0.91	64.41
6	Ramps	3	25,959	23,776	1.09	13.20
Total		518	18,716,650	18,488,066	1.01	29.42

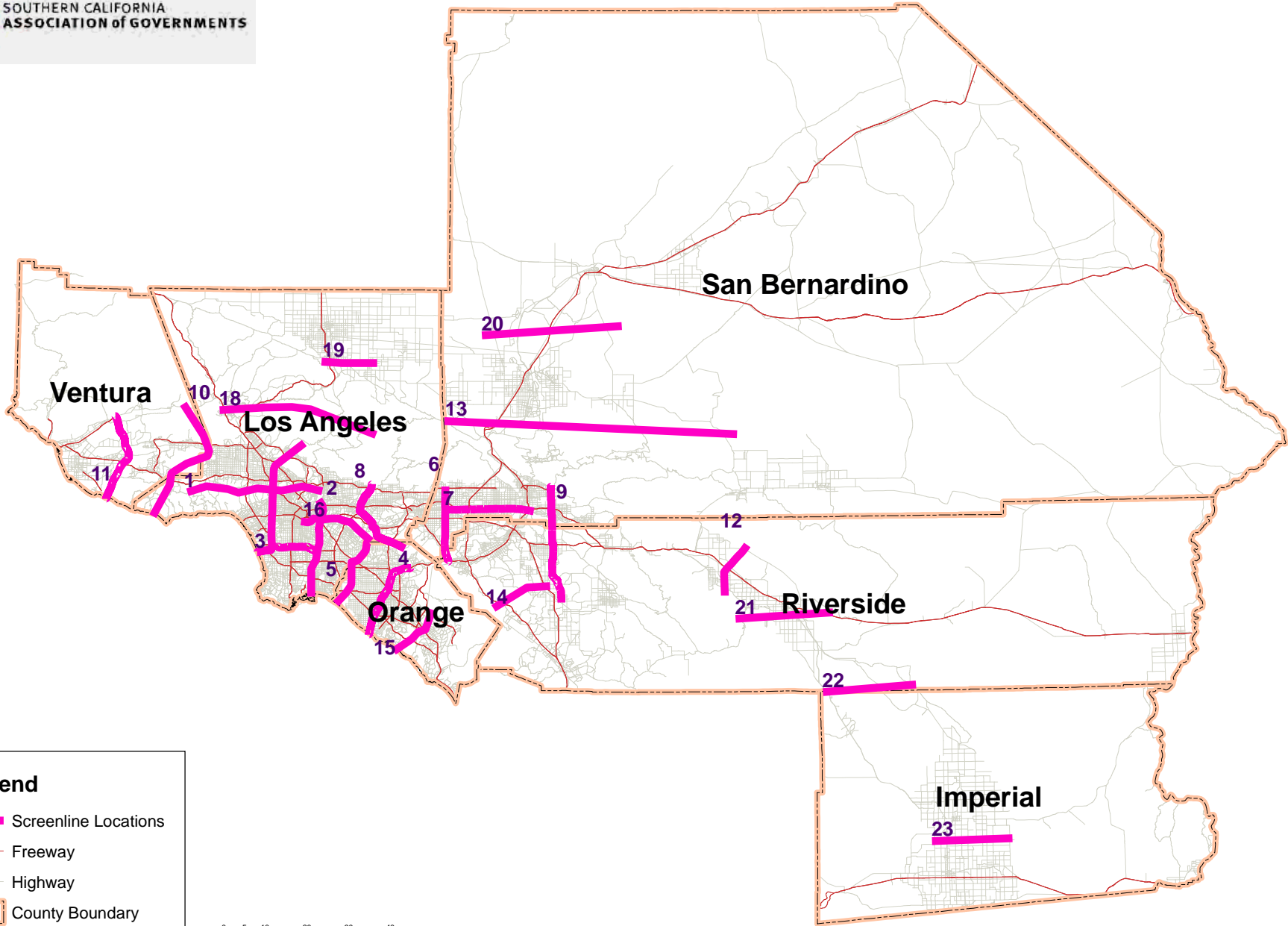
Note: RMSE - root mean square error, OBS - number of roadway facility in the group.

Table 8-7

YEAR 2003 SCREENLINE COMPARISON OF MODEL WEEKDAY ADT AND GROUND COUNTS BY AREA TYPE

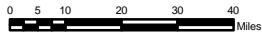
	AREA TYPE	OBS	Daily Vehicle Volumes			
			Model	Count	Ratio	RMSE
1	Core	0	-	-	-	-
2	Central Business District	3	71,260	74,509	0.96	18.27
3	Urban Business District	111	4,875,221	5,104,260	0.96	26.93
4	Urban	200	7,886,413	7,838,873	1.01	25.13
5	Suburban	143	4,689,205	4,319,296	1.09	34.36
6	Rural	50	951,662	943,472	1.01	52.02
7	Mountain	11	242,888	207,656	1.17	46.63
Total		518	18,716,650	18,488,066	1.01	29.42

Note: RMSE - root mean square error, OBS - number of roadway facility in the group.



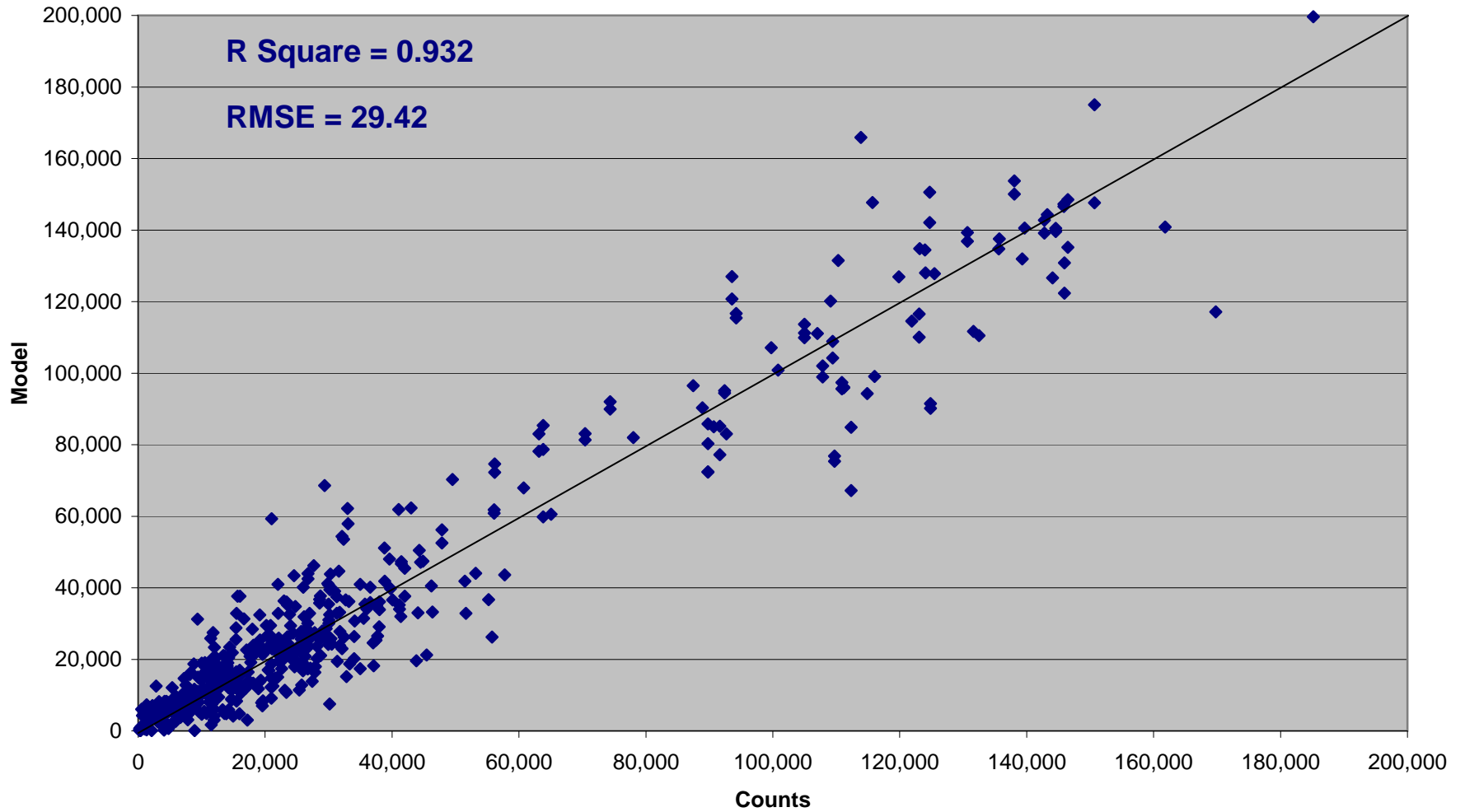
Legend

- Screenline Locations
- Freeway
- Highway
- County Boundary



**FIGURE 8-1
REGIONAL SCREENLINE LOCATIONS**

FIGURE 8-2
YEAR 2003 SCREENLINE LINK VOLUMES
(MODEL VS COUNTS)



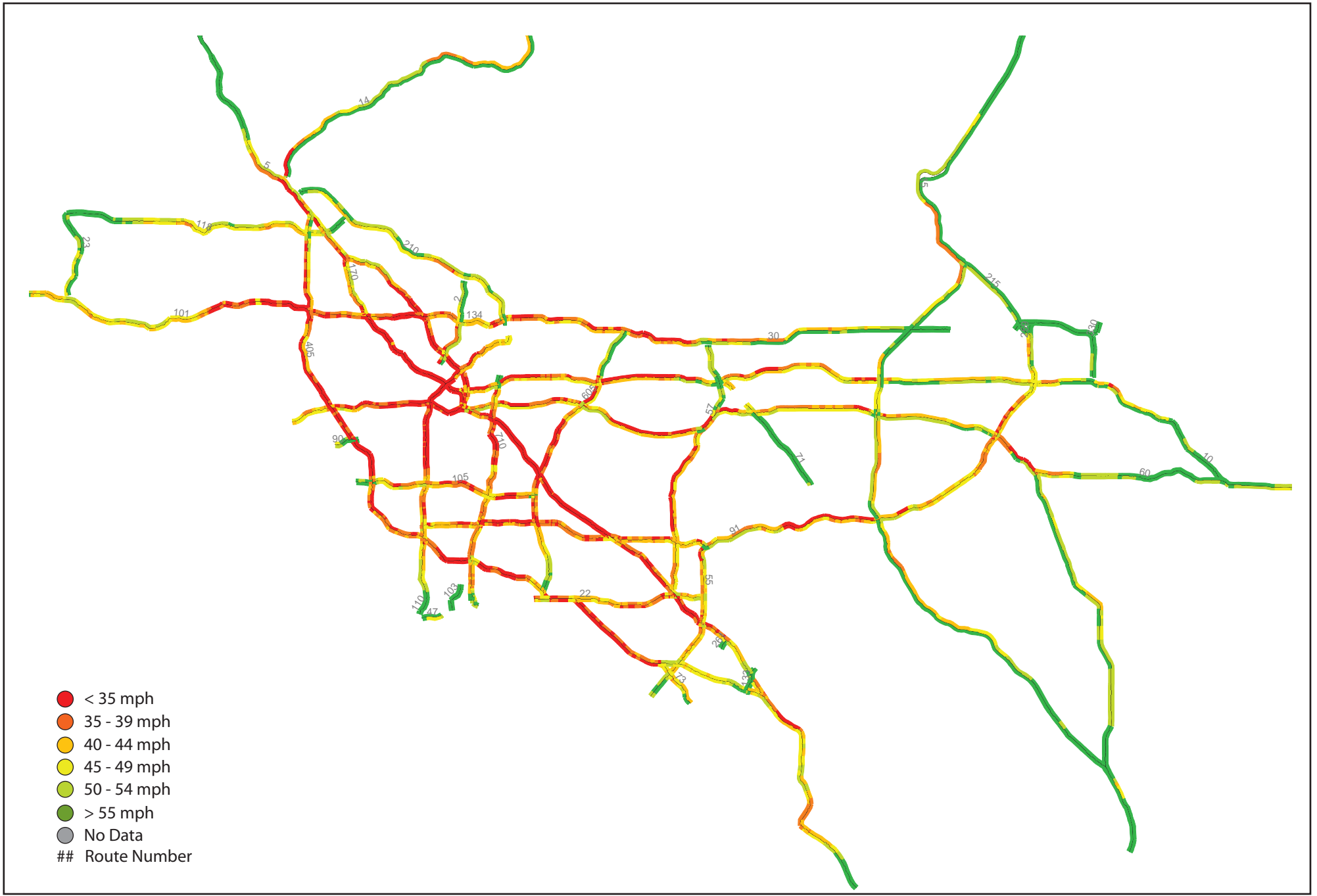


FIGURE 8-3

YEAR 2003 AM PEAK PERIOD CONGESTED SPEED BY MODEL

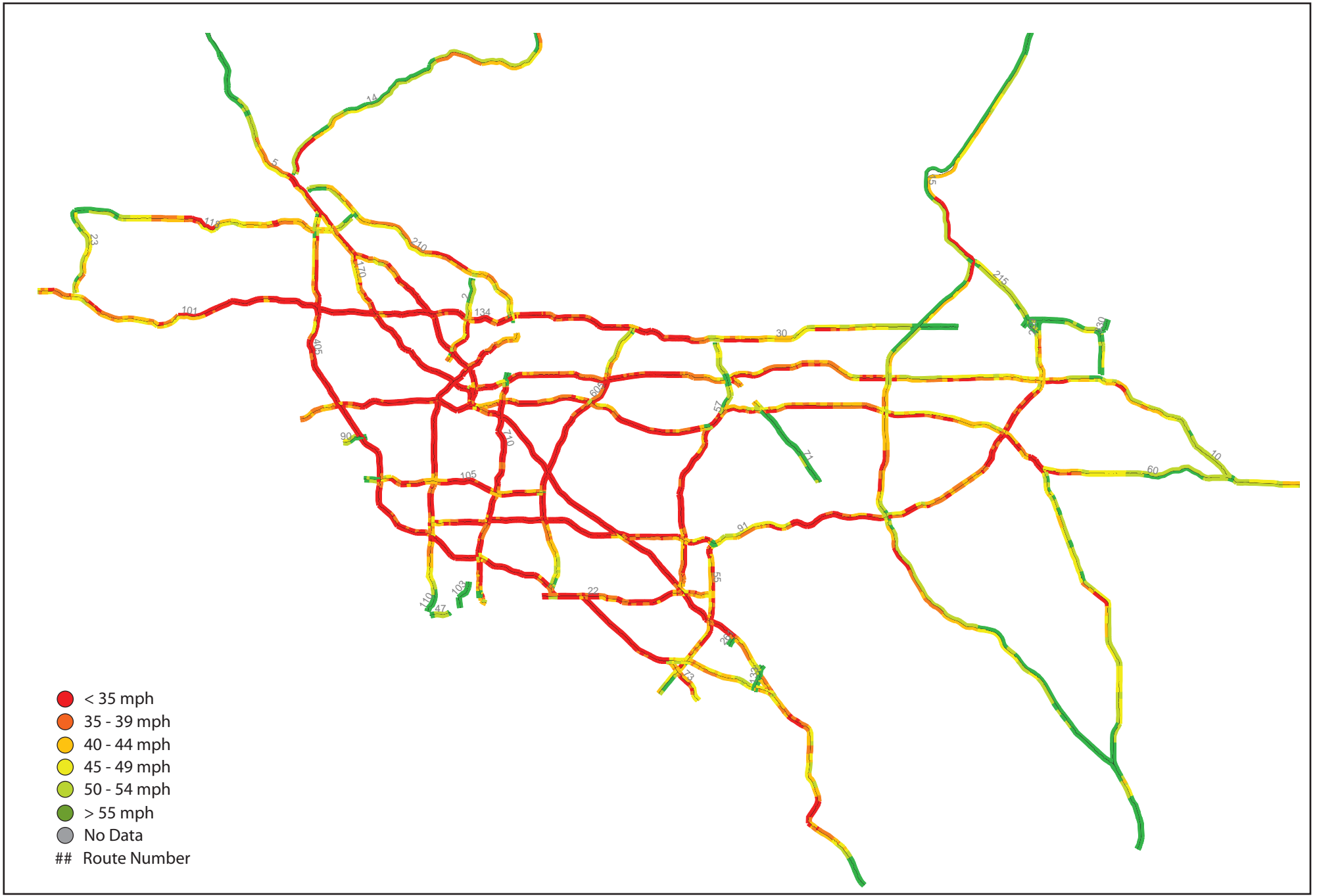


FIGURE 8-4

YEAR 2003 PM PEAK PERIOD CONGESTED SPEED BY MODEL

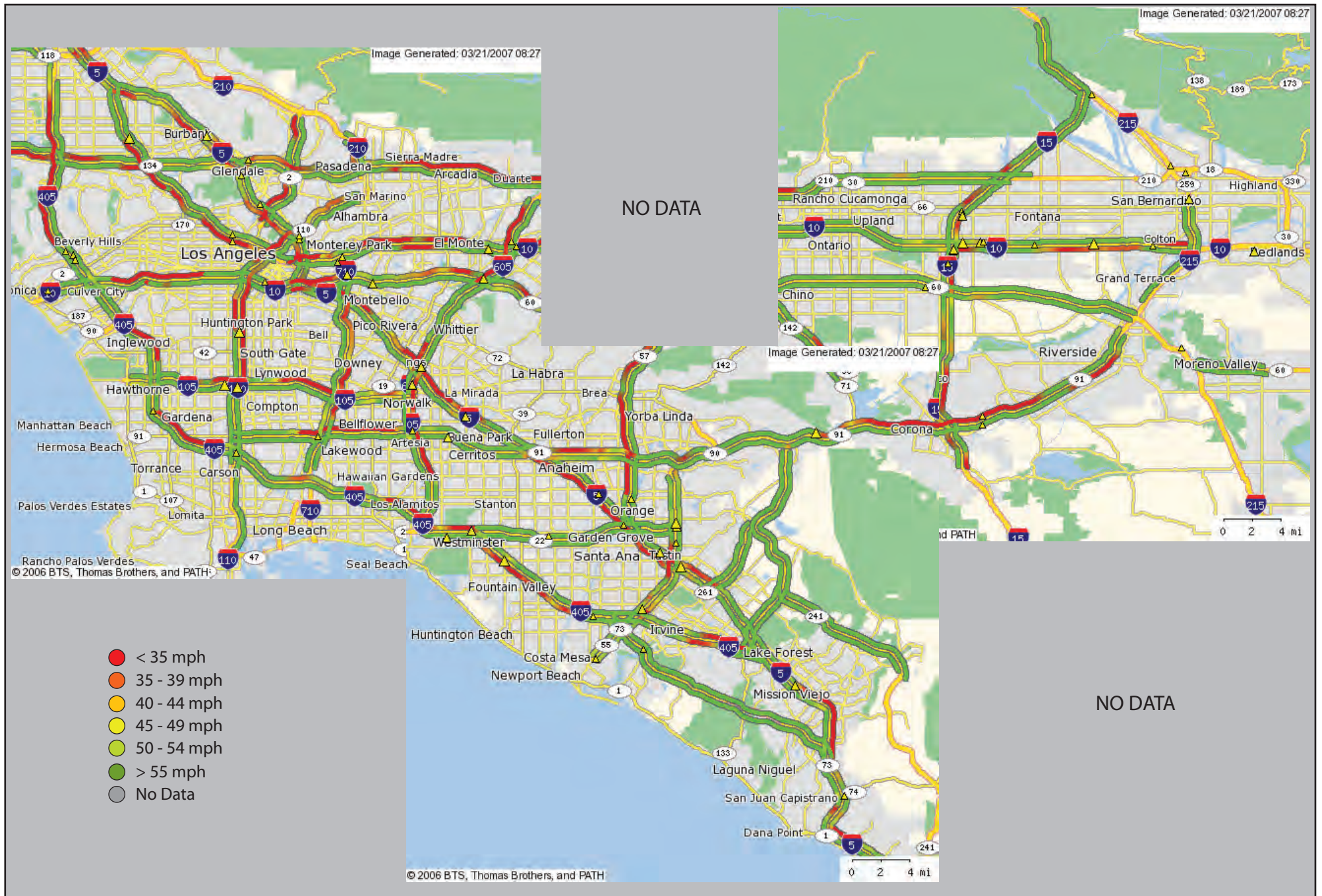


FIGURE 8-5

PEMS REAL TIME AM PEAK CONGESTED SPEED (8:30 a.m. on Wednesday, 03/21/2007)

DESCRIPTION OF TRANSIT ASSIGNMENT PROCEDURES

The final transit trips from the last loop mode choice models are aggregated by access mode and time period, resulting in four transit trip tables (peak period auto access, peak period walk access, off-peak period auto access, and off-peak period walk access) for transit network assignment.

Each of these four trip tables is assigned separately to the peak and off-peak transit network. The resulting loaded transit network files are then aggregated to create a new loaded network containing total daily transit trips. The results of the transit assignment process are summarized below.

TRANSIT ASSIGNMENT SUMMARY

The Year 2003 transit assignment loaded 2,185,927 unlinked passenger trips on the Year 2003 transit network. Table 8-8 presents the model estimated daily transit boardings for the four predominant transit mode categories, compared to actual transit boarding statistics for Year 2003. As Table 8-8 indicates the model estimates came within 4 percent of the actual regional total transit boardings. By mode category, the model came within 1 percent of the commuter rail boardings, 2 percent for the Metropolitan Transportation Authority (MTA) Bus boardings, and 2 percent for MTA Urban Rail boardings. The model's transit assignment over-estimated total boardings for non-MTA local transit services (other local transit operators within the Region) by approximately 8 percent.

Table 8-8

YEAR 2003 DAILY TRANSIT BOARDINGS - MODEL VS ACTUAL COUNTS			
TRANSIT MODE	MODEL ESTIMATED BOARDING	ACTUAL BOARDING	RATIO
Commuter Rail	34,612	34,600	1.00
Urban Rail	222,626	218,500	1.02
MTA Bus	1,118,573	1,095,800	1.02
Other Transit	810,116	749,900	1.08
Total Boardings	2,185,927	2,098,800	1.04

CHAPTER 9 – AIR QUALITY IMPACT ANALYSIS

INTRODUCTION

Transportation conformity analyses are conducted for non-attainment areas in each of the air basins or air districts within the SCAG Region. Prior to January 1, 1977, there were three air basins and four air districts in the SCAG region. Effectively January 1, 1977, under AB 421, the Southeast Desert Air Basin (SEDAB) was divided into two new air basins: the Mojave Desert Air Basin (MDAB) and the Salton Sea Air Basin (SSAB). Effective January 1, 1977. Under AB 2666, a new air district – the Antelope Valley Air Pollution Control District (AVAPCD) – was established in the desert portion of Los Angeles County. The boundaries of the air basins and the air districts in the region are illustrated in Figure 9.1 and Figure 9-2. A summary of the air basins and five districts in the SCAG region are presented as follows:

Air Basins:

1. South Coast Air Basin (SCAB) covers the urbanized portions of the Los Angeles, Orange, Riverside, and San Bernardino counties and is within the jurisdiction of the South Coast Air Quality Management District (SCAQMD).
2. The Ventura County portion of the South Central Coast Air Basin (SCCAB) covers the entire Ventura County and is within the jurisdiction of the Ventura County Air Pollution Control District (VCAPCD).
3. Mojave Desert Air Basin (MDAB) covers the desert portions of the Los Angeles, Riverside, and San Bernardino counties. A small portion of this air basin is in Kern County and outside of the SCAG region. The SCAG portion of this air basin is under the jurisdiction of three air districts including:
 - a. Mohave Desert Air Quality Management District (MDAQMD) administers portions of the MDAB situated in the San Bernardino County and eastern part of the Riverside County. The Riverside County portion is known as the Palo Verde Valley area.
 - b. South Coast Air Quality Management District (SCAQMD) administers a portion of the MDAB in Riverside County that is situated between the SSAB and the Palo Verde Valley area.
 - c. Antelope Valley Air Pollution Control District (Antelope Valley APCD) administers the Los Angeles County portion of the MDAB.
4. Salton Sea Air Basin (SSAB) covers the entire County of Imperial and the eastern desert portion of Riverside County. This air basin is under jurisdiction of two air districts including:

- a. Imperial County Air Pollution Control District (ICAPCD) administers the Imperial County portion of the SSAB.
- b. South Coast Air Quality Management District (SCAQMD) administers the Riverside County portion of the SSAB situated between SCAB and the MDAB.

REGIONAL EMISSIONS ANALYSIS

The EMFAC model developed by California Air Resources Board (ARB) is used to calculate on-road motor vehicle emissions and transportation conformity process. Emfac2007 is the most recent version of the model. In the EMFAC model, the emission rates from each of the motor vehicle types are multiplied with vehicle activity data developed from SCAG's transportation model to calculate on-road motor vehicle emissions. Pollutants include reactive organic gases (ROG), carbon monoxide (CO), nitrogen oxides (NOx), and carbon dioxide (CO₂), particulate matter 10 microns or less in diameter (PM₁₀), particulate matter 2.5 microns or less in diameter (PM_{2.5}), lead and oxides of sulfur (SO_x). Fuel consumption is also calculated although it is not a pollutant.

Type of emissions consists of exhaust emissions from running, idling or starting the engine of a vehicle. Reactive organic gases also include evaporation emissions from hot soak, resting loss, running loss, and diurnal emission from a vehicle sitting throughout the day. Particulate matters include emissions from exhaust, tire wear and brake wear.

The transportation activity data used in the EMFAC model are VMT by speed ranges for light and medium-duty vehicles and heavy-duty trucks by air basins. The light and medium-duty vehicles, by ARB's definition of vehicle class, are passenger cars, light-duty trucks, medium-duty trucks, and motorcycles. The activity data are based on the following output from the transportation model:

- 1) Highway link information such as volumes, distance, and congested speed.
- 2) Intra-zonal trips, average travel time and distance.

Table 9.1 shows daily on-road motor vehicle emissions by air basin resulting from the EMFAC model run for the Year 2003. SCAG's transportation model does not include line-haul vehicles, urban buses, school buses, and motor homes. Emissions for these types of vehicles were taken from the default values of the EMFAC model and shown as "others" in the table.

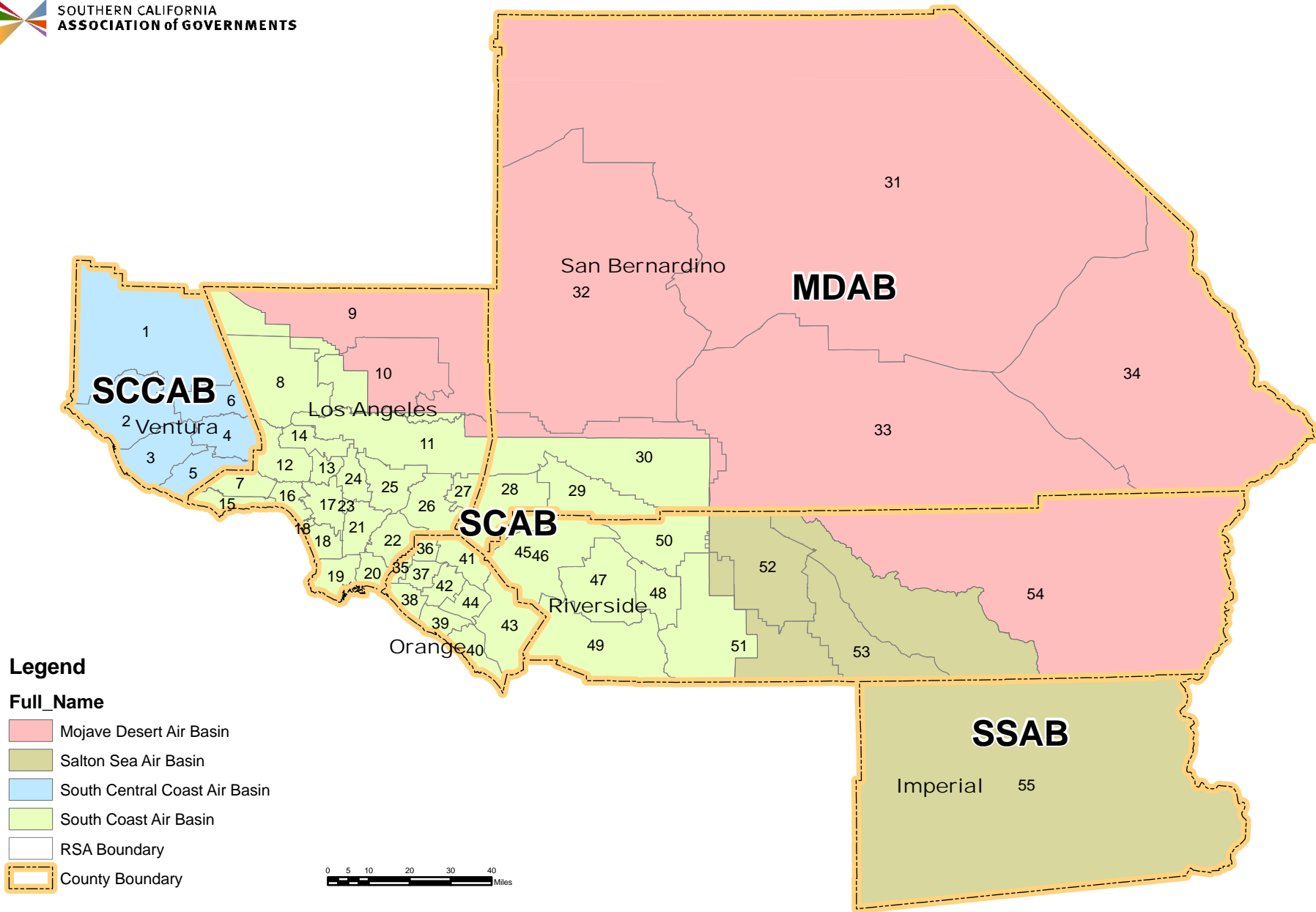


FIGURE 9-1
AIR BASIN AND SUBAREAS IN SCAG REGION

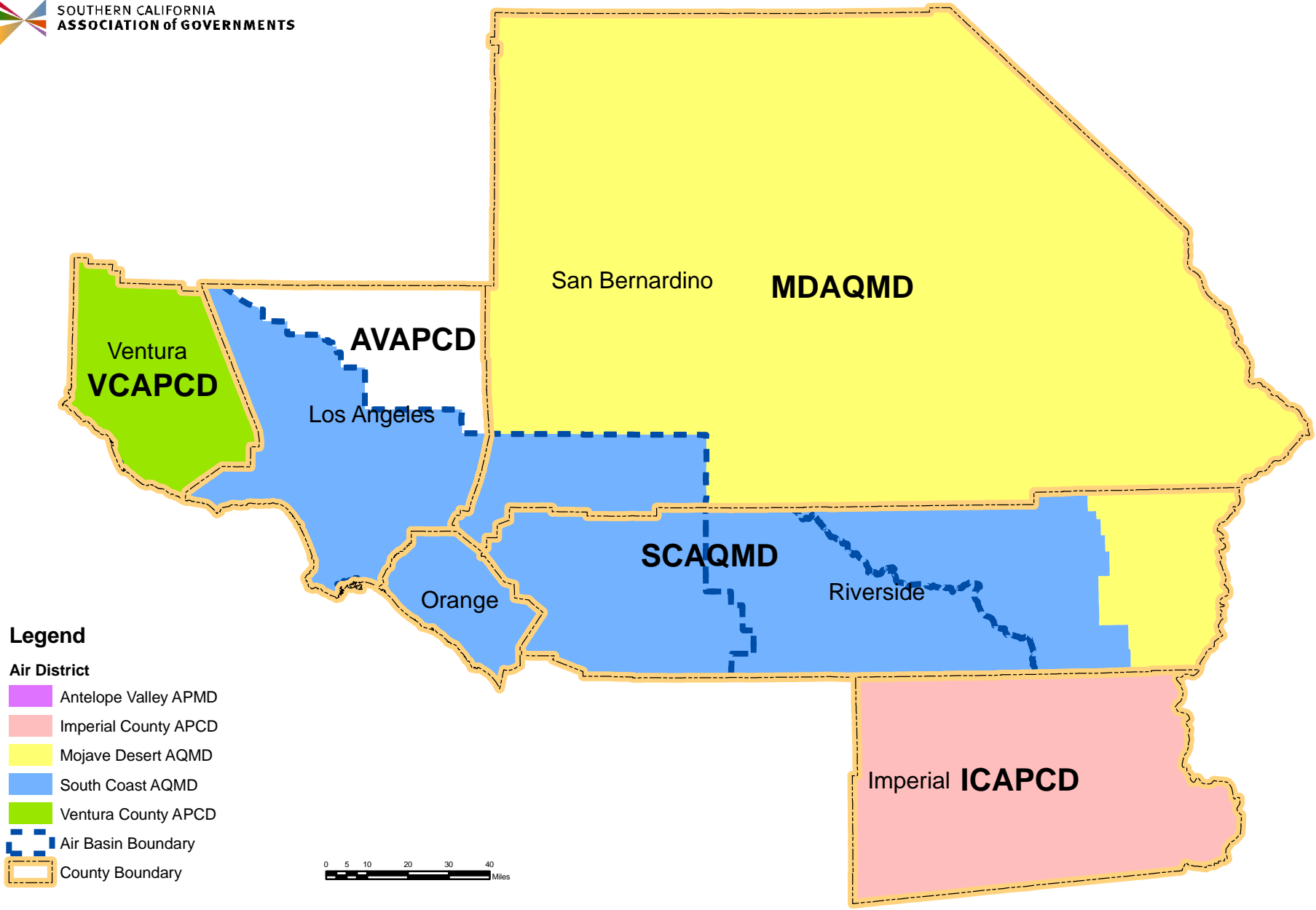


FIGURE 9-2
AIR DISTRICT IN SCAG REGION

Table 9-1

DAILY ON-ROAD MOTOR VEHICLE EMISSIONS (EMISSIONS IN TONS/DAY)											
AIR BASIN	SUBAREA	VEHICLE TYPE	ROG	CO	NOx	CO2	PM10	PM2.5	SOx	Gasoline	Diesel
SCAB	Los Angeles	L+MDV	172.545	1,724.885	169.191	104,476.790	7.975	4.829	1.066	10,959.6	41.6
		HDT	26.548	231.257	156.536	15,195.060	5.755	5.021	0.972	441.0	1,012.0
		Other	2.046	34.314	16.998	2,162.460	0.327	0.281	0.140	61.0	145.9
		Sum	201.140	1,990.455	342.726	121,834.320	14.057	10.132	2.177	11,461.6	1,199.5
	Orange	L+MDV	48.460	484.394	50.122	33,964.160	2.562	1.513	0.348	3,544.7	17.2
		HDT	6.638	59.747	40.896	4,363.640	1.132	0.965	0.260	153.2	266.7
		Other	0.564	9.822	4.174	565.650	0.084	0.071	0.034	19.2	35.5
		Sum	55.662	553.962	95.192	38,893.450	3.777	2.550	0.642	3,717.1	319.3
	Riverside	L+MDV	25.770	269.617	25.854	15,074.260	1.176	0.718	0.162	1,574.2	15.2
		HDT	4.782	36.788	38.650	3,438.210	1.402	1.223	0.235	76.0	247.4
		Other	0.324	7.418	1.884	266.150	0.038	0.031	0.012	15.6	11.3
		Sum	30.876	313.824	66.388	18,778.630	2.616	1.972	0.408	1,665.8	273.9
	San Bernardino	L+MDV	27.615	283.570	27.437	16,361.810	1.210	0.717	0.171	1,713.2	11.0
		HDT	5.333	43.677	45.639	4,229.410	1.702	1.486	0.288	93.2	304.3
		Other	0.254	5.641	1.688	234.800	0.035	0.029	0.012	11.5	11.9
		Sum	33.203	332.888	74.764	20,826.010	2.947	2.231	0.471	1,817.8	327.3
	Total	L+MDV	274.390	2,762.466	272.605	169,877.020	12.923	7.777	1.747	17,791.7	85.0
		HDT	43.301	371.468	281.721	27,226.320	9.991	8.696	1.755	763.4	1,830.4
		Other	3.189	57.194	24.744	3,229.060	0.484	0.412	0.198	107.3	204.6
		Sum	320.881	3,191.128	579.070	200,332.410	23.397	16.885	3.698	18,662.3	2,120.0
SCCAB	Ventura	L+MDV	15.584	139.539	14.688	8,759.450			0.092	914.0	6.9
		HDT	2.336	21.319	12.462	1,271.600			0.070	53.8	70.3
		Other	0.160	4.129	0.774	117.360			0.004	8.2	4.0
		Sum	18.080	164.986	27.923	10,148.420			0.166	976.0	81.2
MDAB	Los Angeles	L+MDV	7.879	77.298	6.997	3,783.160	0.274		0.041	397.1	3.5
		HDT	1.020	7.163	6.062	536.780	0.233		0.040	11.6	39.1
		Other	0.075	1.758	0.524	67.620	0.014		0.004	3.2	3.6
		Sum	8.974	86.219	13.583	4,387.560	0.521		0.084	411.8	46.2
	Riverside/SCAQMD	L+MDV	0.671	14.605	1.286	430.940	0.035		0.005	45.6	1.0
		HDT	0.573	1.645	7.535	586.700	0.397		7.618	0.0	52.7
		Other	0.001	0.022	0.005	0.660	0.000		0.000	0.0	0.0
		Sum	1.245	16.271	8.826	1,018.300	0.433		7.623	45.6	53.8
	Riverside/MDAQMD	L+MDV	0.811	10.111	0.842	329.260	0.025		0.004	34.7	0.7
		HDT	0.490	1.764	5.862	456.630	0.302		0.040	9.9	40.5
		Other	0.012	0.187	0.043	5.470	0.001		6.916	0.2	0.3
		Sum	1.312	12.062	6.747	791.350	0.328		6.960	44.8	41.5
	San Bernardino	L+MDV	16.303	245.619	21.148	9,085.370	0.760		0.101	960.9	11.2
		HDT	5.571	24.530	66.889	5,252.590	3.322		0.453	21.5	455.6
		Other	0.146	3.844	0.962	122.720	0.025		0.007	6.3	6.1
		Sum	22.020	273.993	88.999	14,460.670	4.106		0.561	988.6	472.9
	Total	L+MDV	25.664	347.633	30.274	13,628.730	1.094		0.151	1,438.3	16.4
		HDT	7.654	35.102	86.347	6,832.700	4.254		8.151	43.0	587.9
		Other	0.233	5.811	1.534	196.470	0.040		6.927	9.7	10.0
		Sum	33.551	388.546	118.155	20,657.880	5.388		15.228	1,490.8	614.4
SSAB	Riverside	L+MDV	7.221	80.111	7.623	5,082.880	0.339		0.053	530.6	3.5
		HDT	2.992	15.408	33.413	2,634.600	1.611		0.220	20.1	220.8
		Other	0.074	1.714	0.604	72.630	0.010		0.004	3.2	4.0
		Sum	10.287	97.232	41.640	7,790.110	1.960		0.278	553.9	228.2
	Imperial	L+MDV	6.485	64.787	6.032	2,058.460	0.168		0.023	219.3	2.7
		HDT	1.379	7.903	13.720	1,094.780	0.638		0.094	5.3	94.7
		Other	0.109	1.742	0.244	29.190	0.006		0.001	1.8	1.3
		Sum	7.972	74.431	19.996	3,182.430	0.812		0.119	226.3	98.7
	Total	L+MDV	13.706	144.898	13.655	7,141.340	0.508		0.076	749.9	6.2
		HDT	4.371	23.311	47.133	3,729.380	2.249		0.314	25.4	315.5
		Other	0.182	3.455	0.848	101.820	0.016		0.005	5.0	5.3
		Sum	18.259	171.664	61.636	10,972.540	2.772		0.397	780.2	326.9

Notes:

- (1) Emissions are summer emissions except PM10 and PM2.5 are based on annual average.
(2) Fuel consumption of gasoline and diesel are in thousands of gallons, and VMT are in thousands.

Appendix A

The Regional Transportation Analysis Zone System

Introduction

The Regional Model's study area includes Los Angeles County, Orange County, Ventura County, Riverside County, San Bernardino County and Imperial County. Recent additions to the modeling area included the desert portions of Riverside and San Bernardino Counties and Imperial County.

The redefinition of the Regional Transportation Analysis Zone (TAZ) System is an important aspect of SCAG's model improvement program. The transportation analysis zones are essential components in the transportation model. The TAZs provide the spatial unit (or geographical area) within which travel behavior and traffic generation are estimated. The zone size varies depending on the density and nature of the urban development. The Regional Model includes 4109 internal zones. (see Table A-1 for a description of the TAZ system). In addition to the internal zones there are 31 port zones, 12 airport zones, and 40 cordon zones. See Table A-1 for the TAZ summary.

Methodology

The TAZ system is consistent with both the 2000 census geography and existing subregional TAZs. Within the urban areas the zonal detail will be similar to the census tract. Commercial / industrial areas within the urban area will require further subdividing and large census tracts in developing areas will be split to account for future growth.

The following provides a description of the principles that guided the development of the Regional zone system. The principles were developed using standard modeling practice:

Consistency with Existing Subregional Models - To maintain the zonal hierarchy, the Regional Model TAZs were based directly on existing subregional model TAZs. Subregional TAZs were available for most of the Regional Modeling area. Where subregional zones existed, the Regional TAZs are either a single subregional TAZ or an aggregation of several subregional TAZs.

Consistency with 2000 Census Tract Boundaries - The subregional models' TAZ systems are consistent with 2000 Census geography. All Subregional TAZs are either entire census tracts or are wholly contained within a census tract. Where subregional TAZs did not exist, the Regional TAZs were created respecting census tract boundaries.

Consistency with Census Block Boundaries - The finest level of geography in both the 1990 Census and Subregional Models is the Census Block. To ease data collection and creation, zonal boundaries generally do not break Census Blocks. There are several subregional TAZs in developing rural areas where the TAZs boundaries do split census blocks.

Complement the Transportation System - A critical step in developing the TAZ system is defining the level of roadway facilities for which accurate forecasts are desired. To ensure accurate distribution and traffic assignments, existing and future freeways and principal arterials are generally represented as Regional TAZ boundaries. This effort was balanced against honoring the other zonal creation criteria.

Homogeneous Land Use - Land use maps and general plan maps were used to identify existing and future land use. Ideally, it is best to limit the number of different land uses contained within a zone. However, given the geographic size of the Regional TAZs and mixed use development patterns within the urban area, it was often difficult to create zones with uniform land uses.

Similar Population/Employment Size - Zones were developed to represent similar levels of future development (population and employment). This parameter was not strictly enforced given the sparse development of some areas, the intensity of non-residential land uses within urban areas, and consideration for special generators (example - universities and airports).

Other Considerations - Natural and man made boundaries are also considered in the definition of the zone system. Political jurisdictions, railroad lines, rivers, mountain ranges and other topographical barriers were considered in the development of both the subregional and Regional TAZs.

GIS coverages of subregional TAZ systems were gathered for all the existing subregional models. Draft zonal maps were developed by applying the above principles. The Regional zonal boundaries were manually drafted onto census tract and block maps by comparing overlays of the highway system, land uses, and existing subregional TAZs. Using these highlighted maps, a technician entered the boundaries into a digital file using ARC-INFO. Several editing steps were undertaken to ensure that all subregional TAZs and census blocks were assigned to the proper Regional TAZ. Once a clean zonal boundary file was created, final zone numbers were assigned to the draft TAZ system.

Table A-1

SUMMARY OF TAZ STATISTICS

Modeling Area	Census Tract	RSA	CSA	Total TAZ	TAZ (Internal)		TAZ (Codon Stations)		TAZ (Airport)		TAZ (Port Zone)	
					#	Seq	#	Seq	#	Seq	#	Seq
Imperial County	29	1	15	118	110	4000-4109	7	4136-4142	1	4155		
Los Angeles County	2,067	22	155	2,285	2,243	211-2453	7	4114-4120	4	4151-4154	31	4162-4192
Orange County	577	10	43	668	666	2454-3119	1	4149	1	4156		
Riverside County	400	10	38	487	478	3120-3597	7	4135, 4143-4148	2	4157-4158		
San Bernardino County	244	7	34	419	402	3598-3999	14	4121-4134	3	4159-4161		
Ventura County	157	6	17	215	210	1-210	4	4110-4113	1	4150		
Total	3,474	56	302	4,192	4,109		40		12		31	

Appendix B Regional Highway Network Coding Conventions

SCAG – Functional Class Coding <<Facility Type>>

- 1 - Freeways
 - 10 – Freeway

- 2 - HOV
 - 20 – HOV 2
 - 21 – HOV 3+
 - 22 – HOV – HOV Connector
 - 23 – HOV Slip ramp OUT (Slip ramp from HOV to MF)
 - 24 – HOV Slip ramp IN (Slip Ramp from MF to HOV)
 - 25 – HOV-MF dummy links

- 3 - Expressway/Parkway
 - 30 – Undivided
 - 31 – Divided, Interrupted
 - 32 – Divided, Uninterrupted

- 4 - Principal Arterial
 - 40 – Undivided
 - 41 – Divided
 - 42 – Continuous Left Turn

- 5 - Minor Arterial
 - 50 – Undivided
 - 51 – Divided
 - 52 – Continuous Left Turn

- 6 - Major Collector
 - 60 – Undivided
 - 61 – Divided
 - 62 – Continuous Left Turn

- 7 - Minor Collector
 - 70 – Undivided
 - 71 – Divided
 - 72 – Continuous Left Turn

- 8 - Ramps
 - 80 – Freeway to Freeway Connector
 - 81 – Freeway to arterial
 - 82 – Arterial to freeway
 - 83 – Ramp Distributor

- 84 – Ramp from Arterial to HOV
- 85 – Ramp from HOV to Arterial
- 86 – Collector distributor
- 89 – Truck only

- 9 - Trucks
- 90 – Truck only

100 - Centroid connector

Flag fields:

- Type1_Thru Lane – Through Freeway Lanes
- Type2_AUX_ Lane – Auxiliary Lane of Capacity Significance
- Type3_Other Fwy Lane – Other Freeway Lane

Truck Climbing Lanes flag:

- 0 – None
- 1 – 1 Truck Climbing Lane
- 2 – 2 Truck Climbing Lane
- 3 – 3 + Truck Climbing Lane

Toll flag:

- 0 – None
- 1 – Toll road
- 2 – HOT Road

Signals flag:

- 0 – None
- 1 – Signal and progression optimized streets
- 2 – Divided and signal optimized
- 3 – Continuous left-turn Lanes

HOV Operation flag:

- 0 – Standard HOV
- 1 – HOV AM Peak Only
- 2 – HOV PM Peak Only
- 3 – HOV AM & PM Peak Only

Truck Prohibition flag:

- 0 – Truck Not Prohibited
- 1 – Trucks Prohibited

Appendix C

Specification of Trip Production Models

Tables C-1 through C-10 in this Appendix present the cross-classification trip production models employed in the Year 2003 SCAG Regional Model. Listed below are the trip production models presented in this Appendix, by trip purpose:

Table C-1	Home-Based Work – Direct Trip Productions
Table C-2	Home-Based Work – Strategic Trip Productions
Table C-3	Home-Based Elementary-High School Trip Productions
Table C-4	Home-Based College/University Trip Productions
Table C-5	Home-Based Shopping Trip Productions
Table C-6	Home-Based Social-Recreation Trip Productions
Table C-7	Home-Based Other Trip Productions
Table C-8	Home-Based Serving Passengers Trip Productions
Table C-9	Other-Based Other Trip Productions
Table C-10	Work-Based Other Trip Productions

Table C-1

HOME-BASED WORK-DIRECT TRIP PRODUCTION MODEL					
Number of Workers in Household	Household Size	Age of Head of Household			
		18-24	25-44	45-65	66+
1	1	1.416	1.431	1.367	1.045
1	2	1.543	1.560	1.490	1.139
1	3	1.287	1.301	1.242	0.950
1	4+	1.260	1.274	1.217	0.930
2	1				
2	2	2.619	2.631	2.576	2.267
2	3	2.402	2.413	2.363	2.079
2	4+	2.385	2.397	2.347	2.065
3+	1				
3+	2				
3+	3	3.866	3.866	3.865	3.571
3+	4+	4.465	4.259	4.288	3.629

Table C-2

HOME-BASED WORK-STRATEGIC TRIP PRODUCTION MODEL					
Number of Workers in Household	Household Size	Age of Head of Household			
		18-24	25-44	45-65	> 65
1	1	0.261	0.245	0.310	0.632
1	2	0.134	0.116	0.187	0.538
1	3	0.390	0.376	0.434	0.727
1	4+	0.416	0.402	0.460	0.747
2	1				
2	2	0.683	0.670	0.725	0.988
2	3	0.900	0.888	0.939	1.176
2	4+	0.916	0.905	0.955	1.191
3+	1				
3+	2				
3+	3	1.008	1.008	1.009	1.257
3+	4+	1.171	1.117	1.125	1.282

Table C-3

HOME-BASED ELEMENTARY/HIGH SCHOOL TRIP PRODUCTION MODEL

Number of Household Members with Age 5-17	Trip Rates
0	0.0379349
1	1.2521514
2	2.4662221
3	4.0275804

Table C-4

HOME-BASED COLLEGE/UNIVERSITY TRIP PRODUCTION MODEL

Household Income	Number of Household Members with Age 18-24		
	0	1	2
<\$25K	0.0761822	0.357	0.686
\$25-50K	0.0683866	0.266	0.469
\$50-100K	0.0562337	0.246	0.487
>\$100K	0.0316451	0.284	0.782

Table C-5

HOME-BASED SHOPPING TRIP PRODUCTION MODEL					
Household Size	Household Vehicle	Household Income			
		<\$25K	\$25-50K	\$50-100K	>\$100K
1	0	0.340	0.306	0.299	0.295
1	1	0.560	0.504	0.491	0.484
1	2	0.588	0.529	0.517	0.509
1	3+	0.599	0.539	0.526	0.518
2	0	0.664	0.616	0.604	0.593
2	1	0.888	0.824	0.809	0.804
2	2	0.931	0.863	0.847	0.842
2	3+	0.940	0.871	0.855	0.850
3	0	0.782	0.735	0.717	0.699
3	1	0.996	0.936	0.912	0.906
3	2	1.042	0.980	0.955	0.948
3	3+	1.058	0.994	0.969	0.962
4+	0	0.960	0.911	0.894	0.890
4+	1	1.164	1.106	1.085	1.080
4+	2	1.214	1.153	1.131	1.125
4+	3+	1.230	1.168	1.145	1.140

Table C-6

HOME-BASED SOCIAL-RECREATION TRIP PRODUCTION MODEL					
Household Size	Household Vehicle	Household Income			
		<\$25K	\$25-50K	\$50-100K	>\$100K
1	0	0.202	0.224	0.232	0.241
1	1	0.379	0.420	0.435	0.452
1	2	0.442	0.490	0.508	0.528
1	3+	0.533	0.590	0.611	0.635
2	0	0.452	0.463	0.466	0.461
2	1	0.649	0.665	0.668	0.686
2	2	0.717	0.734	0.738	0.759
2	3+	0.819	0.839	0.843	0.866
3	0	0.606	0.611	0.599	0.602
3	1	0.815	0.821	0.805	0.814
3	2	0.897	0.904	0.886	0.896
3	3+	1.007	1.015	0.995	1.006
4+	0	0.863	0.866	0.855	0.868
4+	1	1.070	1.075	1.060	1.077
4+	2	1.152	1.157	1.141	1.159
4+	3+	1.261	1.266	1.249	1.269

Table C-7

HOME-BASED OTHER TRIP PRODUCTION MODEL

Household Size	Household Vehicle	Household Income			
		<\$25K	\$25-50K	\$50-100K	>\$100K
1	0	0.584	0.584	0.584	0.584
1	1	0.584	0.584	0.584	0.584
1	2	0.584	0.584	0.584	0.584
1	3+	0.584	0.584	0.584	0.584
2	0	1.037	1.037	1.037	1.037
2	1	1.037	1.037	1.037	1.037
2	2	1.037	1.037	1.037	1.037
2	3+	1.037	1.037	1.037	1.037
3	0	1.397	1.397	1.397	1.397
3	1	1.397	1.397	1.397	1.397
3	2	1.397	1.397	1.397	1.397
3	3+	1.397	1.397	1.397	1.397
4+	0	2.057	2.057	2.057	2.057
4+	1	2.057	2.057	2.057	2.057
4+	2	2.057	2.057	2.057	2.057
4+	3+	2.057	2.057	2.057	2.057

Table C-8

HOME-BASED SERVING PASSENGERS TRIP PRODUCTION MODEL					
Household Size	Household Vehicle	Household Income			
		<\$25K	\$25-50K	\$50-100K	>\$100K
1	0	0.059	0.033	0.009	0.002
1	1	0.501	0.279	0.080	0.018
1	2	0.260	0.144	0.041	0.009
1	3+	0.158	0.088	0.025	0.006
2	0	0.112	0.079	0.058	0.052
2	1	0.784	0.558	0.407	0.368
2	2	0.714	0.508	0.371	0.335
2	3+	0.191	0.136	0.099	0.090
3	0	0.850	0.758	0.691	0.688
3	1	1.416	1.263	1.151	1.146
3	2	1.333	1.189	1.083	1.079
3	3+	0.993	0.885	0.807	0.803
4+	0	2.489	2.387	2.313	2.296
4+	1	3.009	2.886	2.796	2.776
4+	2	2.930	2.810	2.722	2.703
4+	3+	2.629	2.522	2.443	2.425

Table C-9

OTHER-BASED OTHER TRIP PRODUCTION MODEL

Household Size	Household Vehicle	Household Income			
		<\$25K	\$25-50K	\$50-100K	>\$100K
1	0	0.415	0.453	0.437	0.444
1	1	1.297	1.414	1.363	1.387
1	2	1.355	1.478	1.425	1.449
1	3+	1.399	1.525	1.470	1.495
2	0	0.989	1.049	1.030	1.052
2	1	1.870	1.984	1.948	1.989
2	2	1.913	2.029	1.992	2.035
2	3+	1.958	2.078	2.039	2.083
3	0	1.422	1.499	1.461	1.481
3	1	2.317	2.443	2.380	2.413
3	2	2.367	2.495	2.431	2.465
3	3+	2.412	2.543	2.478	2.512
4+	0	2.586	2.690	2.656	2.687
4+	1	3.482	3.622	3.576	3.617
4+	2	3.513	3.654	3.607	3.649
4+	3+	3.553	3.696	3.649	3.691

Table C-10

WORK-BASED OTHER TRIP PRODUCTION MODEL

Number of Workers in Household	Household Size	Household Income			
		<\$25K	\$25-50K	\$50-100K	>\$100K
1	1	0.381	0.715	0.919	1.316
1	2	0.354	0.665	0.855	1.224
1	3	0.241	0.453	0.582	0.834
1	4+	0.203	0.381	0.489	0.701
2	1				
2	2	0.732	1.072	1.252	1.577
2	3	0.607	0.889	1.038	1.308
2	4+	0.574	0.840	0.981	1.237
3+	1				
3+	2				
3+	3	0.672	0.999	1.189	1.541
3+	4+	0.629	0.934	1.112	1.442

Appendix D Auto Operating Costs

Auto operating cost (in cents/mile) is a key parameter in the calculation of the marginal utility cost functions used in mode choice. In the current mode split model, auto operating cost is defined as an out-of-pocket expense consisting of fuel (primarily gasoline) cost and “other” costs. Other costs include repairs, maintenance, tires, and accessories.

The table below summarizes the Year 2003 auto operation cost calculation and gives the values of the intermediate parameters. The calculation of the fuel cost per mile requires the composite fuel economy for the fleet and an average motor fuel price. Historical U.S. fuel efficiency data from 1980 to 2006 collected and compiled by the U.S. DOT National Highway Safety Administration was used by SCAG staff to calculate the average miles per gallon. The average price of a gallon of motor vehicle fuel was calculated as the sum of the prices of each grade sold, weighted by its fractional share of the market. The average fuel cost, including all taxes, for 2003 was 189.5 cents per gallon, which equates to 130 cents per gallon in 1989 constant dollars. Thus the fuel costs for 2003 in terms of cents/mile can be derived from dividing fuel costs (130 cents/gallon) by average fuel efficiency (22.3 miles/gallon). As a result, the 5.83 cents-per-mile fuel costs (in 1989 cents) was estimated and used for the 2003 model validation.

Table D-1

AUTO OPERATING COST CALCULATION		
Description	Value	Based on
2003 On-road miles/gallon	22.30	MPG for SCAG Region
Avg. Year 2003 cents/gallon	189.50	Price & volume sold by fuel grade
Converted to 1989_cents*/gallon	130.00	
Fuel Cost (1989_cents/mile)	5.83	Gallon/mile * cents/gallon
Other Costs (1989_cents/mile)	4.80	Repairs, maint., tires, accessories
Total Cost/Mile (1989 cents)	10.63	
Total Cost/Mile (1999 cents)	13.76	

Note: *1989/2003 CPI = 128.3/187 = 0.686

The Year 2003 Model Validation uses the value of 4.8 cents per mile (in 1989 dollars) for “other costs” as calculated by SCAG’s Economic Analysis/Forecasting Section using data compiled by the General Services Administration and the National/Southern California AAA. Adding 4.8 cents per mile for “other” costs to the fuel costs per mile (5.83 cents/mile), yields a total auto operating cost of 10.63 cents per mile for 2003 in 1989 dollars or 13.76 cents per mile in 1999 dollars.

Acknowledgement

SCAG Management:

Mark Pisano, Executive Director
Jim Gosnell, Deputy Executive Director
Wayne Moore, Chief Financial Officer
Hasan Ikhmeta, Director of Planning and Policy
Sylvia Patsaouras, Director of Government and Public Affairs
Keith Killough, Director of Information Services
Joann Africa, Director of Legal Services (acting)
Basil Panas, Manager of Accounting
Lynn Harris, Manager of Community Development
Jacqueline Bobo, Manager of Budgets and Grants
Jacob Lieb, Manager of Environmental Planning (acting)
Don Rhodes, Manager of Legislative Affairs
Huasha Liu, Manager of Data and Monitoring
Leyton Morgan, Manager of Contracts
Rich Macias, Manager of Transportation Planning and Programming
Bev Perry, Manager of Members Relations
Catherine Chavez, Manager of Information Technology
Deng Bang Lee, Manager of Modeling
Debbie Dillon, Manager of Human Resources
Cheryl Collier, Communication Supervisor
Bonnie Verdin, Business Operation Supervisor
Richard Howard, Internal Auditor

SCAG Modeling Staff

Deng Bang Lee
Guoxiong Huang
Teresa Wang
Mike Ainsworth
Hsi-Hwa Hu
Julie Zhu
Sreedharan Nambisan
KiHong Kim

Other SCAG Staff:

Community Development Department (Socio-Economic Data)

Frank Wen
Ying Zhou
Simon Choi

Data and Monitoring Department (GIS Support)

Demitris Poulakidas
Ping Wang

Environmental Planning Department (Emissions Model & Conformity)

Jonathan Nadler
Arnie Sherwood

Business Operations (Report Formatting and Production)

Wilma Fu

Modeling Task Force, Participating Agencies:

California State Department of Transportation – Caltrans Districts 7, 8, 11, & 12
California Air Resources Board
South Coast Air Quality Management District
The Ventura Air Pollution Control District
The Mojave Desert Air Quality Management District
The Imperial County Air Pollution Control District
The Antelope Valley Air Pollution Control District
The Los Angeles County Metropolitan Transportation Authority
Orange County Transportation Commission
Riverside County Transportation Commission
San Bernardino Associated Governments
Ventura County Transportation Commission
Imperial Valley Associated of Governments
Federal Highway Administration.
The Federal Transit Administration
The Environmental Protection Agency

Consultant Team:

NuStats – Year 2001 Travel Survey
Cambridge Systematics – Model development & model calibration
Caliper Corp. – Software conversion & model validation **
Dowling Associates – Model's speed function
Vanasse Hangen Brustlin – Peer reviews
Hong Kim – Survey interpretation and model calibration
** Special thanks to Jim Lam (Caliper) for all of your long hours and extra efforts

Reviewed by:

Frank Spielberg - Vanasse Hangen Brustlin

List of Bibliography

Summary Report of the Third Peer Review Panel for SCAG's Travel Model Improvement Effort
Travel Model Improvement Program, FHWA
January 2006

SCAG Travel Model Improvement Program, Technical Report
Cambridge Systematics, Inc.
July 2005

Arterial Speed Study, Final Report
Dowling Associates, Inc
April 2005

Year 2000 Post Census, Regional Travel Survey, Final Report
NuStats
Fall 2003

Year 2003 Traffic Volumes on California State Highways
State of California Department of Transportation
June 2003

Year 2003 Annual Average Daily Truck Traffic on the California State Highway System
State of California Department of Transportation
June 2003

US Census 2000 Data
U.S Department of Commerce
Year 2000

Heavy Duty Truck Model and VMT Estimation
Meyer, Mohaddes Associates, Inc.
October 1999

1991 Southern California Origin-Destination Survey
Applied Management & Planning Group
February 1993

A5 August 6, 2012 Draft Cornfield Arroyo Seco Specific Plan (Draft CASP)

CORNFIELD ARROYO SECO

SPECIFIC PLAN

DRAFT August 6, 2012

Acknowledgements

MAYOR

Antonio Villaraigosa

CITY COUNCIL DISTRICT ONE

Ed P. Reyes, Councilperson
Jill Sourial, Environmental Deputy
Susan Wong, Planning Deputy
Michael Fong, Former Field Deputy

DEPARTMENT OF CITY PLANNING (DCP)

Executive Office

Michael LoGrande, Director
S. Gail Goldberg, AICP, (Retired) Director
Alan Bell, AICP, Deputy Director
Jane Blumenfeld, (Retired) Acting Deputy Director
Eva Yuan-McDaniel, Deputy Director
Lisa Webber, Deputy Director

City Planning Commission

William Roschen, President
Regina M. Freer, Vice President
Barbara Romero
Diego Cardoso
George Hovaguimian
Justin Kim
Robert Lessin
Michael Woo
Sean Burton

Project Staff

Ken Bernstein, Principal Planner
John Butcher, GIS Chief
Kevin Keller, Senior City Planner
Faisal Roble, Senior City Planner
Ly Lam, Senior Management Analyst I
Elvia Hernandez, Graphics Designer III
Michael Uhlenkott, (Retired) Graphic Designer III
Claire Bowin, AICP, City Planner
Patricia Diefenderfer, City Planner
Simon Pastucha, City Planner
David Somers, Planning Assistant
Maria Ortiz, Management Analyst II
Nekpen Aimiwu, Management Analyst
Joyce Odell, (Retired) Cartographer
Shakeh Boghoskhanian, Graphic Designer II
Louisa Ranick, Graphic Designer II

Interns

Alex Campbell
Diana Fox Pangetsu
Laura Kwak
Brian Lobel
Kyung Mi Park
Avani Sheth
Ting Wang
Alycia Witzling
Jennifer Wong
Ryan Lue

CONSULTANT TEAM**Arup, Inc.**

Jim Jordan, Project Director
Mark Shorett, Project Manager – Specific Plan
Mayra Madriz, Deputy Project Manager
Angus Deuchars, Senior Acoustical Consultant
Joseph Digerness, Acoustical Consultant
Jake Levitas, LEED® AP, Graduate Sustainability Consultant
Alex Mitchell, Project Manager -- EIR
Yolanda Owens, Project Administrator
Rowan Roderick-Jones, Senior Consultant
Michael Whiteman, Acoustical Consultant
Tom Berry, Senior Geotechnical Engineer
Gary Hsueh, Senior Transportation Planner
Kimberly Seigel, Master of Environmental Management, Duke University
Marlene Wong, Geotechnical Engineer

Fehr and Peers

John Muggridge, AICP, Associate
Kevin Johnson, Engineer/ Planner

Baloffet International, LLC

Armando Baloffet, Ph.D. Colorado State University

Ninyo & Moore

James Barton, Senior Geologist
Carol Price, Principal Geologist
Jalal Vakili, Principal Engineer

Terence O'Hare Associates

Terence O'Hare, Principal Urban Planner

Ultra Systems

Paul Brenner, Senior Scientist

VFL Planning Consulting

Viviana Franco Lua, Planner

COMMUNITY REDEVELOPMENT AGENCY (CRA)

Cecilia Estolano, Former Chief Executive Officer
Christine Essel, Chief Executive Officer
Don Spivack, Retired Deputy Chief of Operations and Policy (retired)
David Riccitiello, Regional Administrator
Lillian Burkenheim, Retired Project Manager (retired)
Karen Yamamoto, Senior Planner (retired)
Ed Huang, Retired Senior Planner (retired)
Bibiana Yung, Assistant Project Manager (retired)
Jason Neville, Associate Planner

DEPARTMENT OF TRANSPORTATION (DOT)

Jay Kim, Principal Transportation Engineer
Tomas Carranza, Senior Transportation Engineer
Michelle Mowery, Bikeways Coordinator

DEPARTMENT OF PUBLIC WORKS (DPW)

Bureau of Engineering's (BOE) River Project Office

Deborah Weintraub, Deputy City Engineer II
Carol Armstrong, Environmental Supervisor II
Lawrence Hsu, Senior Civil Engineer

Green Streets Committee

Paula Daniels-Former Board of Public Works Commissioner
Jane Adrian- DPW/BOE
Melinda Bartlett- DPW/Bureau of Sanitation (BOS)
Michael Brown- DPW/BOE
Tomas Carranza- DOT
Johanna Chang- Los Angeles Department of Water and Power (LADWP)
Steven Chen-DPW/BOE
Robert Espinoza-CRA
Jose Gutierrez- DPW/BOS
Robert Gutierrez- DPW/Bureau of Street Services (BSS)
Eric Yoshida- LADWP
Edward Huang- CRA
Steven Naikaido-DPW/BOSS
Andy Niknafs- LADWP
Lance Oishi- DPW/BSS
Ron Olive-DPW/BSS
Jeong Park- DPW/BOE
Simon Pastucha-DCP
Majid Sadeghi-DPW/BOS
J. Shih-CRA
Susan Shu-DPW/BOE
Wing Tam-DPW/BOS

Aldo Ubau- Department of Building and Safety (DBS)

Bureau of Street Lighting

Kerney Marine

Bureau of Urban Forestry

Ron Lorenzen, Street Tree Superintendent I

DEPARTMENT OF WATER AND POWER

Tom Erb, Director of Water Resources

David Pettijohn, Managing Water Utility Engineer

Natali Kassis, Civil Engineering Associate

Terrence McCarthy, Civil Engineering Associate

Imudiase Aimiuwu, Operations & Statistical Research Analyst

CALIFORNIA STATE PARKS

Ruth Coleman, Director

Jeff Brown, Sr. Landscape Architect

Ron Schafer, Superintendent - Los Angeles District

Sean Woods, Superintendent – Los Angeles Sector

Randy Novack, Project Manager

Stephanie Campbell, Associate Park & Recreation Specialist

NEIGHBORHOOD COUNCILS

Arroyo Seco Neighborhood Council

Chinatown-Alpine Hill Neighborhood Association

Eagle Rock Neighborhood Council

Elysian Valley Riverside Neighborhood Council

Glassell Park Neighborhood Council

Greater Cypress Park Neighborhood Council

Historic Cultural Neighborhood Council

Lincoln Heights Neighborhood Council

Silver Lake Neighborhood Council

Solano Canyon Neighborhood Council

BUSINESSES AND ORGANIZATIONS

Alpine Recreation Center

American Institute for Architects

Arroyo Seco Foundation

Audubon Society

California Endowment's Center for Healthy Communities

Center for Sustainable Cities

Chinatown Advisory Committee

Chinatown Redevelopment Commission

Chinatown Service Center

Chinese American Citizens Alliance

Chinese Chamber of Commerce

Creative Environments

Cypress Park Recreation
Cypress Park Youth & Family Center
Downey Recreation Center
El Pueblo de Los Angeles
Farm Lab
Friends of Los Angeles River (FoLAR)
Goodwill Industries
Homeboys Industries
Lincoln Park Recreation Center
Los Angeles & San Gabriel Watershed Council
Natural Resources Defense Council
North East Trees
Puerta del Sol
San Antonio Winery
Santa Monica Mountains Conservancy
The City Project
Tree People
Tujunga Watershed Stakeholders
William Mead Residents Association
Young Nak Church

SCHOOLS

Albion Street Elementary
Ann Street Elementary School
Cal State University, Northridge
Cathedral High School
Cal Poly Pomona
Franklin High School
Occidental College- Urban Environmental Policy Institute
University of California, Los Angeles
University of Southern California
Woodbury University

NATIONAL PARK SERVICE

Barbara Rice
Ann Cole
Patrick Johnston

TABLE OF CONTENTS

1. PROCESS.....11

2. ZONING AND STANDARDS.....31

3. STREETS.....75

4. MAPS.....83

APPENDICES

- A1. MITIGATION MONITORING PLAN
 - A. HISTORIC RESOURCES SURVEY
 - B. POTENTIAL HAZARDOUS PROPERTY INVENTORY

- A2. MODIFIED STREET CROSS-SECTIONS

- A3. STREET TREE LIST

1

PROCESS

1.1 ADMINISTRATION.....13
1.2 APPLICATION.....23

1.1

ADMINISTRATION

- A. ESTABLISHMENT
- B. PURPOSES
- C. DEFINITIONS
- D. NON-CONFORMANCE
- E. INTERPRETATION
- F. SEVERABILITY

An ordinance establishing a Specific Plan, known as the Cornfield Arroyo Seco Specific Plan, for a portion of the Central City North, Northeast, and Silverlake-Echo Park Community Plan areas.

THE PEOPLE OF THE CITY OF LOS ANGELES DO ORDAIN AS FOLLOWS:

A. ESTABLISHMENT

The City Council establishes the Cornfield Arroyo Seco Specific Plan for the area within the lines on the Plan Boundary Map.

B. PURPOSES

This Specific Plan is intended to:

1. Implement the Central City North, Northeast LA and Silverlake/Echo Park/Elysian Valley Community Plans.
2. Transform an underserved and neglected vehicular-oriented industrial and public facility area into a cluster of mixed-use, pedestrian-oriented and aesthetically pleasing neighborhoods.
3. Increase access to open space.
4. Provide economic growth opportunities for emerging clean technologies.
5. Re-connect historical communities.
6. Maintain and enhance the concentration of jobs, in both the public and private sectors.
7. Provide a range of housing types and price levels that offer a full range of choices, including affordable housing opportunities, for people of diverse ages, ethnicity, household sizes and incomes.
8. Provide shops and services for everyday needs, including groceries, day care, cafes and restaurants, banks and drug stores, within an easy walk from home or work.
9. Facilitate pedestrian mobility, encourage bicycle use, provide shared and unbundled parking spaces, provide access to a variety of transit options including frequent light rail and bus connections, shared vehicles and bicycles, and taxis.
10. Lessen dependence on automobiles, and thereby vehicle emissions, while enhancing the personal health of residents, employees and visitors.

- A. Provide “eyes on the street” to create a safe and stable community and to encourage interaction and identity.
- B. Respect historically significant buildings, including massing and scale, while at the same time, encouraging innovative architectural design that expresses the identity of contemporary urban Los Angeles.
- C. Reduce the use of energy and potable water, improve the ecology surrounding the Los Angeles River Watershed and Arroyo Seco, create connections from the community to the River and Arroyo Seco, and support the Los Angeles River Revitalization Master Plan (LARRMP).
- D. Provide places for people to socialize, including parks, sidewalks, courtyards and plazas that are combined with shops and services.
- E. Provide adequate public recreational open space within walking distance of residents and employees, and to integrate public art and contribute to the civic and cultural life of the City.

C. DEFINITIONS.

Whenever the following terms are used in this Specific Plan, they shall be construed as defined in this section. Words and phrases not defined here shall be construed as defined in LAMC Sections 12.03, or 91.201-227.

Project. The construction, erection, alteration, or addition to any building, sign or structure, on a lot located in whole or in part within the areas shown in Plan Boundary Map which requires the issuance of a demolition, grading, foundation, sign or building permit, or use of land permit.

Active Street. A street where retail, cultural, office, and/or residential uses are encouraged at the ground floor level where adjacent to street frontage.

Active Industrial Street. A street where retail, office, lobby, meeting rooms or sales areas are encouraged at the ground floor level where adjacent to street frontage.

Affordable Housing. Rental Housing that includes units restricted to households earning Extremely Low, Very Low or Low, Incomes or For-Sale Housing that includes units restricted to households earning Moderate Income or less.

Affordable Housing Floor Area Bonus. An increase in floor area greater than the otherwise maximum allowable floor area.

Allocation Plan. A plan that describes the amount of additional Floor Area that a project is seeking through either the bonus or transfer FAR Program.

Ancillary. A permitted use that is limited to 10% of the FAR of the on-site principal use. May be located in a standalone building or structure separate from the principal use. More than one ancillary use may be permitted on a single site but in no case shall the combined maximum floor area of all ancillary uses exceed a floor area ratio of 1.0. Uses designated as Ancillary are intended specifically for the use and benefit of the employees and families, residents, or patrons of the nearby industrial/ commercial/recreational/transit/residential/educational facilities such as food and beverage stores, health and personal care, recreational facilities, book stores, or similar uses.

Animal Clinic / Kennels. Uses where animals or pets are given medical or surgical treatment by an authorized licensing agent to treat injuries, illnesses and diseases of animals, including uses

where small, domesticated animals and pets are cared for and boarded overnight for a limited amount of time.

Architectural Feature. Those purely aesthetic elements of the building, designed internal to the overall style of architecture, that are not habitable or otherwise to be counted toward floor area. \

Area Median Income (AMI). The median income in Los Angeles County as determined annually by the California Department of Housing and Community Development (HCD) or any successor agency, adjusted for household size.

Automobile Fueling and Service Stations. Uses for fueling stations and car washes.

Average Building Height. The average building height is calculated by dividing the roof area of each building section by the total roof area and multiplying the height of each building or building section by its associated area percentage. The sum of each of these calculations represents the average building height.

Base FAR. The base floor area ratio (FAR) established for each district within the Plan area.

Block. A block is a tract of land bounded on all sides by streets or by a combination of streets, public parks, railroad rights-of-way, pier head lines or airport boundaries.

Building Frontage Facade. Those portions of the exterior of a building or structure that are closest to the frontage of the property.

Brownfield. Abandoned or under used industrial or commercial facilities (including older gas stations and auto repair yards located on smaller sites adjacent to residential neighborhoods) that may be contaminated by low concentrations of hazardous waste or pollution and have the potential to be redeveloped into other uses once environmental remediation has been performed.

Central Parking. A parking structure or surface lot accessible and available for use by the public.

Commercial Office. Uses that provide space for professional services.

Community Serving Uses. Uses may include, but are not limited to, child care and other educational services, public library, fire station, medical services, or other non-profit whose services directly benefit the community.

Conservation, Environmental, and Social Service Organizations. Organizations engaged in conservation, environmental, and social service activities.

Cornfield Arroyo Seco Specific Plan Floor Area Payment Trust Fund means that certain interest-bearing Trust Account administered by the City Clerk's Office designated as Cornfield Arroyo Seco Specific Plan Floor Area Payment Fund XXXX, from which funds may be distributed as set forth in Sub-Section 6.E.4 of this Plan.

Designated Historical Resource. A building, structure, landscape element or natural feature listed in or formally determined to be eligible for the National Register of Historic Places, California Register of Historical Resources, or the City's list of Historic-Cultural Monuments, or a Contributing Element in a City Historic Preservation Overlay Zone.

Dual Pipe. A system of plumbing installations used to supply both potable and reclaimed water to a home or business through separate pipes. Under this system, two completely separate water piping systems are used to deliver water to the user.

Doner Site. A site from which Floor Area Rights are transferred pursuant to the provisions of this Plan.

Eligible Historical Resource. A building, structure, landscape element, or natural feature identified through a completed historic survey or assessment to be eligible for recognition as historically or architecturally significant either individually or as part of a district at the local, State or national level.

Entertainment, Exhibits and Multi-Purpose Cultural Facilities. Uses designed to host public or private gatherings for cultural activities , exhibits, or entertainment.

Floor Area Payment means that dollar sum established by the application of the formula set forth in Section 2 of this Plan.

Floor Area Rights means the right to construct additional floor area within a Project, pursuant to an approved Transfer Plan, in excess of the amount of floor area such Project would be allowed based on its lot area.

Free-Standing Fast Food Establishment. A single or multiple tenant free-standing structure designed solely for restaurant use which dispenses prepared food over a counter or by way of drive through service for consumption on or off the premises. This definition does not include cafeterias.

Greenway. A new zoning district established by this Plan that provides for open space.

Heavy Manufacturing. Uses that fabricate, assemble, process, extract or treat predominantly raw materials; uses that require explosive or petroleum materials; or uses that produce noise, odor, dust, hazardous materials or other pollutants/nuisances that cannot be contained on site.

Hospitals, Nursing and Residential Care Facilities. Uses involved in providing medical, surgical, or assisted living care to patients and offering short and long-term overnight care.

Holiday Lighting. Seasonal displays of 60 days or less within one calendar year, using multiple low wattage bulbs (approximately 15 lumens or less) provided they do not constitute a fire hazard, create a nuisance, and are maintained in a safe condition.

Hotels. Housing built to accommodate the general and traveling public for a typical fee, generally limited to stays of less than 31 days.

Identification Sign. A wall sign that is limited to a company logo, generic type of business, or the name of a business or building.

Illuminated Architectural Canopy Sign. An exposed illuminated structure that is attached to the wall of a building with the face of the sign approximately parallel to the wall and with the message integrated into its surface.

Income, Very, Very, Very Low (35% AMI), Very Very Low (45% AMI), Very Low (50%), Lower (60%), Low (80%) Moderate (120% AMI), or Workforce (150% AMI). Annual income of a household that does not exceed amounts designated for each income category as determined by HUD, or any successor agency.

Inflatable Device. A sign that is a cold air inflated object, which may be of various shapes, made of flexible fabric, resting on the ground or structure and equipped with a portable blower motor that provides a constant flow of air into the device. Inflatable devices are restrained, attached, or held in place by a cord, rope, cable or similar method. The term inflatable device shall not include any object that contains helium, hot air or a lighter-than-air substance.

Information Sign. A sign that is limited to a message giving directions, instructions, menus, or selections.

Light Manufacturing and Assembly. Uses that process, fabricate, assemble, treat, or package finished parts or products and/or whose noise, odor, dust, hazardous materials or other pollutants/nuisances capable of harming or disrupting adjacent uses can be contained on site.

Light Trespass. Light from any outdoor lighting onto neighboring property or property that is within a direct line from the light source that interferes with viewing of night sky, eliminates the ability to have darkness on the property or shines on any area on these properties or structures.

Los Angeles River Revitalization Master Plan (LARRMP). Plan approved in 2007 by the Los Angeles City Council, which describes a vision for the revitalization of the 32 miles of the Los Angeles River that are within the City boundaries of the City of Los Angeles.

Lot Coverage. Lot coverage is that portion of a zoning lot which, when viewed from above, is covered by a building.

Maximum FAR. The maximum floor area ratio (FAR) established for each district within the Plan area.

Monument Sign. A sign that is erected directly upon the existing or artificially created grade, or that is raised no more than 12 inches from the existing or artificially created grade to the bottom of the sign.

Mural Sign. A sign that is painted on or applied to and integral with a wall, the written message of which does not exceed three percent of the total area of the wall.

North Facade. North facades are defined as these facades between -22.5 and +22.5°N.

Off-Site Sign. A sign that displays any message directing attention to a business, product, service, profession, commodity, activity, event, person, institution or any other commercial message, which is generally conducted, sold, manufactured, produced, offered or occurs elsewhere other than on the premises where the sign is located.

On-Site Sign. A sign that is other than an off-site sign.

Parking "Cash-Out". A program that allows employees to opt out of a parking space, instead receive compensation. The employer who leases (or owns) a space pays the employee not park.

Partially Shielded Fixture. A fixture employing a top shield to reduce upward light, but otherwise does not shield the lamp from view.

Paseo or Pedestrian Walkway. Walkway that is open to the sky and that provides pedestrian passage between structures, or through landscaping, or parking lots, which is distinguished by ground surface treatments that provide for pedestrian safety and ease of movement.

Pedestrian Amenities. Uses, services, or features typically available within, or adjacent to, a public right-of-way that assist and enhance the pedestrian experience. Amenities may include but are not limited to street furniture, wayfinding signage, kiosks, street lighting, street trees, coffee shops, and bookstores.

Pedestrian Lighting. Freestanding lighting fixtures that illuminate the sidewalk or other pedestrian path of travel.

Personal Services. Uses involved in personal service-oriented sales to the general public.

Pole Sign. A freestanding sign that is erected or affixed to one or more poles or posts and that does not meet the requirements of a monument sign.

Projecting Sign. A sign, other than a wall sign, that is attached to a building and projects outward from the building with one or more sign faces approximately perpendicular to the face of the building.

Projection. The distance by which a sign extends beyond the building line.

Publishing, Motion picture, and Broadcasting Industries. Uses engaged in film, video, audio, and other media production; but excluding movie houses and theatres.

Public Benefit. Serves a public purpose benefitting the Plan area, such as: providing infrastructure or amenities to the public including, but not limited to, open space, pedestrian walkways, historic preservation, recreational, cultural, community and public facilities, new infrastructure, maintenance and improvement of existing infrastructure, job training and outreach programs, affordable housing, affordable child care, streetscape improvements, public arts programs, homeless services programs, or public transportation improvements.

Publicly Accessible Open Space. Active or passive open space that is accessible to the public for a minimum of 10 hours per day or during all daylight hours, whichever is more.

Publicly Funded Affordable Housing. Residential development or substantial rehabilitation project-including mixed-use projects that receives a grant, loan, or other financial subsidy from any Federal, State or local agency requiring at least 20% of its units to be affordable to and occupied by low, very low, or extremely low-income households.

Public Service Facilities. Uses that provide government services to the public (except health-related services; See Hospitals, Nursing and Residential Care Facilities).

Receiver Site. A Receiver Site is a site that receives additional Floor Area Rights from a Donor Site pursuant to the provisions of this Plan.

Repair and Maintenance Facilities. Uses engaged in the repair or servicing of industrial, business or consumer machinery, equipment, products or by-products. Repair and service of consumer goods falls into the Personal Services category.

Research and Development. Uses engaged in scientific and technical research leading to the development of new products and processes, including development/testing activities and prototype fabrication.

Restricted Affordable Units. A residential unit for which rental or mortgage amounts are restricted so as to be affordable to, and occupied by, Very Low, Low, Moderate or Workforce Income households, as determined by the Los Angeles Housing Department.

Retail Street. A street where retail and community serving uses are encouraged at the ground floor level where adjacent to street frontage.

Recreation Facilities. Uses engaged with both indoor and outdoor recreational activity for the general public.

Religious Institutions. Uses identified as Religious institutions or organizations by the IRS.

Residential-Multi-Family. Structures containing more than one dwelling unit located on a single lot. A structure that provides multiple living units that may have separate sleeping areas and some

combination of shared bath or toilet facilities. In addition, the structure may or may not have separate cooking facilities for each unit. Single Room Occupancy (SRO) residential structures, residential hotels, homeless shelters and rooming houses are also included in this category.

Residential-Single Family. Dwelling units where no more than one dwelling unit is located on a lot, usually detached, and occupied by a single household unit. An accessory unit ("granny flat") or servant quarters may also be provided.

Restaurants and Bars. Uses involved in food, beverage and entertainment-oriented retail sales to the general public. Adult entertainment is not included in this category.

Retail. Uses involved with the sale or lease of new or used products to the general public.

River Buffer Area. A 300 feet buffer area adjacent to the Los Angeles River and Arroyo Seco. The 300 liner foot distance is calculated horizontally from the bottom of the channel perimeter.

River Public Benefits means amenities provided to the public such as affordable housing; public open space; historic preservation; recreational, cultural, community and public facilities; storm water management; watershed protection and preservation; habitat restoration; flood control; streetscape improvements; public arts programs; or public transportation improvements with a demonstrable connection to improvements to the Los Angeles River and its environs.

Roof Sign. A sign erected upon a roof of a building.

Schools, Colleges, Tutoring, and Technical Training Programs. Uses that includes public and private schools as well as institutions offering courses of general or specialized study leading to a degree or certificate.

Server Farms. Centers established for the exclusive purpose of storing computer and internet data.

Setback/Street Line. A setback is the portion of a building that is set back above the base height (or street wall or perimeter wall) before the total height of the building is achieved. The position of building setback in height factor districts is controlled by sky exposure planes and, in contextual districts, by specified distances from street walls.

Street Frontage. The length of a lot line separating a lot from one street.

Streetwall (or street edge). The vertical face of one or more buildings adjacent within setback area and parallel to the public right-of-way.

Supergraphic Sign. A sign, consisting of an image projected onto a wall or printed on vinyl, or mesh or other material with or without written text, supported and attached to a wall by an adhesive and/or by using stranded cable and eye-bolts and/or other materials or methods, and which does not comply with the following provisions of L.A.M.C. Sections: 14.4.10, 14.4.16, 14.4.17, 14.4.18; and/or 14.4.20.

Transfer. Means the conveyance of unused allowable Floor Area of a lot from a Donor Site to a Receiver Site, which is approved in accordance with the requirements of this Plan.

Transfer Plan means a plan which identifies and describes the Donor Site(s), Receiver Site(s), amount of Floor Area Rights to be transferred and the River Public Benefit Payment.

Transportation Amenities. Bus shelters, bus benches, bicycle lockers, showers, public restrooms, café, restaurant, or community serving retail located adjacent to, or within 150' of a bus and/or rail station,

Trucking and Transportation Terminals. Uses engaged in the dispatching , maintenance and long-term or short-term storage of large vehicles such as tractor-trailers, catering trucks, shipping vessels, helicopters, locomotives, and airplanes, among others.

Urban Center. A zoning district established by this Plan that permits the integration of residential and employment uses within a single site. The inclusion of residential activities is limited as a proportion of the overall employment areas.

Unused FAR. FAR that a Donor Site does not need and has elected to transfer to a Receiver Site.

Urban Agriculture. An activity that produces, processes, and markets food and other food products, applying intensive production methods, and (re)using natural resources and urban wastes, to yield a diversity of crops and livestock.

Urban Village. A zoning district established by this Plan that permits the integration of commercial, residential and industrial uses within a single site.

Urban Innovation. A zoning district established by this Plan that permits a variety of industrial employment uses. The inclusion of commercial and residential activities are limited as a proportion of the overall employment area.

Use. Any activity, business or operation, listed in Table 8.2, which is conducted in a building or on a tract of land.

Utilities. Uses that provide the transfer or delivery of power, water, natural gas, sewage, stormwater runoff, telephone and related communication services.

Wall Sign. Any sign attached to, painted on or erected against the wall of a building or structure, with the exposed face of the sign in a plane approximately parallel to the plane of the wall.

Warehousing and Storage. Uses that provide, hold, and distribute goods in large quantities, especially to retail sales establishments. Long-term and short-term storage of commercial goods and personal items are included.

Waste Management and Remediation Services. Uses that receive solid or liquid wastes (including hazardous wastes) for on-site disposal, recycling, or transfer to another location, including uses that manufacture or produce goods or energy from the biological decomposition of organic material.

Wholesale. Uses engaged in the sale, lease, or rental of products primarily intended for industrial, institutional, or commercial businesses (not individual customers). The uses emphasize on-site sales or order taking and often include display areas. Businesses may or may not be open to the general public, but sales to the general public are limited.

Window Sign. Any sign, except for a supergraphic sign, that is attached to, affixed to, leaning against, or otherwise placed within six feet of a window or door in a manner so that the sign is visible from the outside of the building.

D. USES AND BUILDINGS MADE NON-CONFORMING BY THIS PLAN

Any legally existing uses, buildings or structures which are made nonconforming by establishment of this Specific Plan shall be deemed to be legal, non-conforming uses and may continue to exist without termination. Legal, nonconforming uses may not be expanded.

E. INTERPRETATION

Whenever any ambiguity or uncertainty exists related to this Specific Plan or the application of this Specific Plan so that it is difficult to determine the precise application of these provisions, the Director shall, upon application by an owner, operator or lessee, issue written interpretations on the requirements of the Specific Plan consistent with the purpose and intent of this Specific Plan.

F. SEVERABILITY

If any provision of this Specific Plan or its application to any person or circumstance is held to be unconstitutional or otherwise invalid by any court of competent jurisdiction, the invalidity shall not affect other Specific Plan provisions, clauses or applications which can be implemented without the invalid provision, clause or application, and to this end the provisions and clauses of this Specific Plan are declared to be severable.

1.2 APPLICATION PROCESS

- A. RELATIONSHIP TO PROVISIONS OF THE LAMC
- B. PROHIBITIONS
- C. DEVELOPMENT REVIEW PROCEDURES
- D. ADMINISTRATIVE PROCEDURES FOR ALLOCATION OF FLOOR AREA RIGHTS

A. RELATIONSHIP TO THE LOS ANGELES MUNICIPAL CODE

1. The regulations of this Specific Plan are in addition to those set forth in the planning and zoning provisions of the Los Angeles Municipal Code (LAMC) Chapter 1, as amended, and any other relevant ordinance, and do not convey any rights not otherwise granted under the provisions and procedures contained in the LAMC or other ordinances, except as specifically provided for here.
2. Wherever this Specific Plan contains provisions which establish regulations (including, but not limited to, standards such as densities, heights, uses, parking, signage, open space, and landscape requirements), which are different from, more restrictive or more permissive than would be allowed or required pursuant to the provisions contained in the LAMC, this Specific Plan shall prevail and supersede the applicable provisions of the LAMC and those relevant ordinances.
3. **Site Plan Review Ordinance.** Approvals pursuant to LAMC Sections 16.05 and 12.24 U 14 are not required for Projects within this Specific Plan area, because the Specific Plan supersedes those sections.
4. **Commercial Corner and Mini-Shopping Centers Ordinance.** Approvals pursuant to LAMC Sections 12.22 A 23, and 12.24 W 27 are not required for Projects within this Specific Plan area, because the Specific Plan supersedes those sections.
5. **Development Combining Residential and Commercial Uses.** Approvals pursuant to LAMC Sections 12.22 A 18 and 12.24 V 2 are not required for Projects within this Specific Plan area, because the Specific Plan supersedes those sections.
6. **Hotels.** Approvals pursuant to LAMC Section 12. 24 W 24 are not required for Projects within this Specific Plan area, because the Specific Plan supersedes that section.
7. **Landscape Ordinance.** Compliance with the provisions of this Specific Plan shall be considered compliance with the requirements of LAMC Sections 12.40, 12.41, 12.42 and 12.43.

B. PROHIBITIONS

1. No demolition permit, grading permit, foundation permit, building permit, or use of land permit shall be issued for any Project on any lot located in whole or in part within this Specific Plan area, unless the Project complies with all applicable provisions of this Specific Plan, as determined by the Director.
2. The provisions of this Specific Plan shall not apply to:
 - a. Any Project that has obtained a still-valid discretionary land use approval from the City prior to the operative date of this Specific Plan,
 - b. Underground tank removal/remediation, and/or seismic reinforcement/retrofitting,
 - c. Any Project where plans were accepted by the Department of Building and Safety for plan check prior to the effective date of this Specific Plan,
 - d. Any Project complying with an order issued by the Department of Building and Safety for the repair of an unsafe or substandard condition,
 - e. The interior remodeling of any existing building.
3. Land area subject to easements granted pursuant to this Specific Plan shall be counted as buildable area for the purposes of determining maximum floor area ratio.

C. DEVELOPMENT REVIEW PROCEDURES

1. Application.

- a. All or a portion of the provisions of this Specific Plan shall apply to all Projects located on any lot located in whole or in part within this Specific Plan area as illustrated in the Project Table.
- b. All Projects proposed with the Plan area shall be submitted with an application to be filed with the Department of City Planning on a form provided by the Department, and include all information required by the instructions on the application and the guidelines adopted by the Director of Planning. Prior to deeming the application complete, the Director shall determine, and if necessary, advise the applicant of the processes to be followed, materials to be submitted, and fees to be paid.

PROJECT TABLE

Section No.	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	3	Appendix
Standards	Zoning	Building Mass	Urban Design	Open Space	Parking	Conservation	Performance	Sign	Streets	MMP
Project Type										
Building										
Change of Use	x			x-4	x-1		x	x		
Use of Land	x			x			x	x	x	x
New Construction	x	x	x	x	x	x	x	x	x	x
Addition >50% building value	x	x	x		x	x	x	x		x
Exterior Alteration >50% building value										x
• Street Facing Façade			x-2			x-5				
• River-Arroyo Facing Façade			x-2			x-5				
• Plaza or park facing Façade			x-2			x-5				
Interior Alteration >50% building value						x-5				
Eligible or Designated Historic Resource	x			x-4	x	x-3	x	x	x	x-6
Demolition*										x
Pool/Spa										
Signs-New/Alterations								x		
Site Grading										x
Fences and Block Walls										
Underground Tank Removal/Remediation										
Seismic Reinforcement/Retrofit										
Division of Land										
Parcel Map	x	x	x	x	x	x	x	x	x	
Tract Map	x	x	x	x	x	x	x	x	x	
Public Works Permit										
A Permit						x		x	x	
B Permit								x	x	

PROJECT TABLE FOOTNOTES:

- Existing parking located along a street frontage is not required to be relocated although the design of the parking area shall be modified to conform to the applicable design and parking standards.
- Existing ground floor space is not required to be redesigned to accommodate active uses; however, entrance location and transparency standards apply
- Projects identified as potential historic resources will need to comply with Section 2.6.C
- Applied to extent feasible.
- Applicable only to area being altered and to applicable construction activities.
- Subject to only Historic Resource Mitigations.

* Eligible or Designated Historic Resources seeking a demolition permit shall contact the Office of Historic Resources. See Section 1.2.C.2.b.

2. **Administrative Clearance.** When the Director determines that a Project complies with the requirements of this Specific Plan, a permit may be issued with an Administrative Clearance from the Director for the following types of Projects:
 - a. Demolition of an existing building or structure not identified as an historic resource or potential historic resource;
 - b. A project identified as a historic resource, or potential historic resource with less than 50 dwelling units and/or 50,000 gross square feet that has met the Secretary of the Interior's Standards as determined by the Office of Historic Resources;
 - c. Exterior Remodeling that does not result in an increase in floor area beyond the Base FAR prescribed in Section 2.1.G
 - d. Change of use;
 - e. Signs;
 - f. Projects that provide Affordable Housing for at least 20% of the residential portion of their project and are not identified as an historic resource or potential historic resource;
 - g. Projects with less than 50 dwelling units or guest rooms, or combination thereof, that conform to the provisions contained in Sections 2.1-2.8 of this Plan and that do not require an Allocation of Floor Area Rights and are not located on a block identified in the Maximum Block Length Map that requires the introduction of a paseo;
 - h. Projects with less than 50,000 gross square feet of nonresidential floor area, that conform to the provisions contained in Sections 2.1-2.8 of this Plan and that do not require an Allocation of Floor Area Rights and are not located on a block identified in the Maximum Block Length Map that requires the introduction of a paseo.
 3. **Project Permit Compliance.** No permit shall be issued for any Project other than those identified above in Section 1.2 above, unless the Director has issued a Project Permit Compliance approval pursuant to the procedures set forth in L.A.M.C. Section 11.5.7, and for Projects requesting an Allocation of Floor Area Rights, the additional requirements specified in Section 1.2.C.5. of this Plan. Projects that fail to demonstrate compliance with the provisions of Section 2.2 of this Plan shall follow additional procedures set for in Section 1.2.C.4.
 4. **Director's Determination of Alternative Design.** If a proposed Project fails to meet the urban design regulations contained in Section 2.3 of this Plan, the applicant may apply to the Director of Planning for a Director's Determination. Such application shall be processed in accordance with the procedures specified in LAMC 11.5.7 E.1. The limitations specified in LAMC 11.5.7 E.2 shall not apply. The Director shall approve a Project upon a written finding that the Project satisfies each of the following requirements, in addition to any other required specific plan findings that may pertain to the Project Permit Compliance:
 - a. That the project conforms with the intent of the Urban Design Regulations required by Section 9 of this Specific Plan;
-

- b. That there are special circumstances applicable to the project or project site which make strict application of the urban design regulation(s) impractical;
- c. That in granting the request, the Director has imposed project requirements and/or decided that the proposed project will substantially comply with all other applicable specific plan regulations; and
- d. In granting the request, the Director has considered and found no detrimental effects of the proposed project on surrounding properties and public rights-of-way.

5. Allocation of Floor Area Rights for Transfer FAR.

- a. **Application for Transfer of FAR.** An Applicant seeking an Allocation of Floor Area Rights for a Transfer FAR shall file a Project Permit Compliance Application along with a request for approval of an Allocation with the Department on a form prescribed by the Director. The request shall be accompanied by a proposed Allocation Plan. The Allocation Plan shall be the only mechanism for approving the Allocation for any Project involving an Allocation of Floor Area Rights, pursuant to this subsection.
- b. **Action by Director.** After reviewing the Application, the Director may approve, approve with conditions or disapprove the request for Allocation, including the Floor Area Payment to be provided, based upon whether the proposed Project meets the findings required by Section 11.5.7 C.2 of the L.A.M.C. and, additionally, the following findings and conditions:
 - i. Findings.
 - a) The increase in Floor Area generated by the proposed Allocation is appropriate with respect to location and access to the circulation system, compatible with other existing and proposed developments and the City's supporting infrastructure, or otherwise determined to be appropriate for the long-term development of the Central City; and
 - b) The Floor Area Payment is used for Public Benefits, as defined herein.
 - ii. Conditions of Approval.
 - a) The Allocation shall provide a Floor Area Payment in conformance with the requirements of this Plan; and
 - b) The Project receiving an Allocation must comply with the urban design standards contained in this Plan; and
 - c) The Director may require additional conditions for the Allocation, as he or she deems necessary to accomplish the purposes and objectives of this Plan.

c. **Floor Area Payment.** A Floor Area Payment shall be provided as part of an approved Allocation Plan when a Project receives density from a site owned either by the City of Los Angeles or the River Revitalization Corporation (Corporation). Prior to approving an Allocation Plan, the Director shall make a finding that the Floor Area Payment proposed by the Applicant in the Allocation Plan will result in public benefits or improvements with an economic value consistent with the sum of the Floor Area Payment set forth in Subsection (1.2.C.5.c.iii) below.

- i. A Floor Area Payment may be provided by any combination of the payment of monies to the River Public Benefit Trust Fund or by the direct provision of Public Benefits by the Applicant; provided, at least 50% of the Floor Area Payment must consist of cash payment made by the Applicant to the Cornfield Arroyo Seco Floor Area Payment Trust Fund.
- ii. The Payment under any Allocation Plan when a Project receives density from a site owned either by the City of Los Angeles or the River Revitalization Corporation shall equal (a) the sale price of the Receiver Site, if it has been purchased through an unrelated third-party transaction within 18 months of the date of submission of the request for approval of the Transfer, or the value of an Appraisal, if it has not, (b) divided by the Lot Area (prior to any dedications) of the Receiver Site, (c) further divided by the Base Floor Area Ratio Factor, (d) multiplied by 40%, and (e) further multiplied by the number of square feet of Floor Area Rights to be transferred to the Receiver Site.
- iii. Example: If Receiver Site with a Lot Area of 50,000 square feet (before any dedications) was purchased for \$2,500,000 (through an unrelated third-party transaction within 18 months of the date of submission of the request for approval of the Transfer), the Floor Area Payment under an Allocation Plan transferring 25,000 square feet of Floor Area Rights would equal: (a) \$2,500,000 (the purchase price), (b) divided by 50,000 (the Lot Area of the Receiver Site), (c) divided by the base FAR, for example, 3 (the Floor Area Ratio Factor), (d) multiplied by 40%, and (e) multiplied by 25,000 (the number of square feet of Floor Area Rights to be transferred) = \$166,666.67 (or \$6.66 for each square foot of transferred Floor Area Rights).
- iv. For sites owned by the Corporation, the Corporation shall receive 100% of the cash portion of the Payment, and for sites owned by the City of Los Angeles, the Corporation shall receive 50% of the cash portion of the Payment. The Payment may be used by the Corporation for any purpose which the Corporation is authorized to undertake. The cash payment may be used to fund the operating costs of the Corporation.
- v. The non-cash portion of the Payment, which shall not exceed 50% of the overall Payment, shall be provided as set forth in the Allocation Plan to the satisfaction of the Director.

d. **Payments and Vesting.** Any Floor Area Payment (when applicable) shall be provided as set forth in the Allocation Plan and as set forth below in this subsection:

- i. If the Project Permit Compliance Application specifies a single-phase Project on the Receiver Site, then the owner of the Receiver Site shall

pay the Administrative Fee together with the Floor Area Payment (when applicable) on or before the earlier of

- a) The issuance of the building permit for the Project; or,
 - b) Twenty-four months after the final Project Permit Compliance approval of the Allocation, the expiration of any appeals or appeals periods and recordation of the document running with the land described below in Paragraph A.2 of subsection 1.6.7 of this Plan, unless extended by the Director in accordance with LAMC 11.5.7 C.4(e).
- ii. If the approved Project Permit Compliance Application specifies a multi-phased Project on the Receiver Site, then the owner of the Receiver Site may elect to pay the Administrative Fee together with the Floor Area Payment (when applicable) in any one of the three manners set forth below, unless extended by the Director in accordance with LAMC 11.5.7 C.4 (e).
- a) In total for all phases of the Project, on or before the earlier of (i) the issuance of the building permit for the first phase of the Project or (ii) 24 months after the final approval of the Allocation, the expiration of any appeals or appeals period for all phases of the Project and recordation of the document running with the land described below in Paragraph A.2 of subsection 1.6.7 of this Plan; or
 - b) Incrementally by each phase of the Project, proportionate to the Floor Area Rights utilized in each such phase, on or before the issuance of the building permit for each such phase, with the amount of each payment being recalculated as of the date that the building permit for each phase is issued in accordance with an Appraisal establishing the fair market value of the Receiver Site within six months prior to the issuance of the building permit for that phase.
 - c) Upon the Applicant's payment to the City of all of the Floor Area Payment (when applicable) together with all of the Administrative Fee Payment required under an approved Allocation, all Floor Area Rights allocated to the Receiver Site pursuant to the Allocation Plan shall vest in the Receiver Site and thereafter run with the land. Need to include info about what happens when transaction is between private parties.
- e. Any Transfer approved pursuant to this Section shall be evidenced by a recorded document, signed by the owner of the Donor Site and the owner of the Receiver Site and in a form designed to run with the land and satisfactory to the City Attorney. This document shall clearly set forth the amount of Floor Area Rights transferred, restrict the allowable Floor Area remaining on the Donor Site, and transfer Floor Area Rights to the Receiver Site.

D. ADMINISTRATIVE PROCEDURES FOR ALLOCATION OF FLOOR AREA RIGHTS.

1. General Requirements.

- a. The Department shall establish an accounting of all Allocations and Floor Area Payments in the Cornfield Arroyo Seco Specific Plan Area.

- i. The Department shall maintain a record of the available Floor Area Rights in the Cornfield Arroyo Seco Specific Plan Area, and any Allocations and other records as may be necessary or desirable to provide an up-to-date account of the Floor Area Rights available for use in the Cornfield Arroyo Seco Specific Plan Area. The records shall be available for public inspection.
 - ii. The Department shall maintain an accounting of all Floor Area Payments received from an Allocation, and an accounting of all expenditures made from Floor Area Payments. The records shall be available for public inspection.
 - b. Any Allocation of Floor Area Rights approved pursuant to this Specific Plan shall be recorded by covenant, or similar instrument, to the satisfaction of the Director of Planning. This document shall clearly set forth the amount of Floor Area Rights allocated to the Receiver Site.
- 2. **Cornfield Arroyo Seco Specific Plan Floor Area Payment Trust Fund.** Funds held in the Cornfield Arroyo Seco Specific Plan Floor Area Payment Trust Fund (exclusive of funds paid to the Corporation) shall be disbursed in accordance with the provisions of Los Angeles Administrative Code **Section 5.566**; and
 - a. As determined by a committee comprised of one representative from each of the following: the City Council Office for the City Council District in which the Receiver Site is located, the Chair of the Ad Hoc Committee on the Los Angeles River (unless they are the same), the City Engineer, the Mayor's Office, the Chief Administrative Officer and the Chief Legislative Analyst, the Department of City Planning, and the Corporation Board in accordance with the procedure previously established for the Public Benefit Trust Fund,
 - b. Within five years after receipt, and
 - c. For use on projects or programs providing a Public Benefit, as set forth in this Section. The above notwithstanding, the Corporation shall, as noted above, receive 50% of cash contributions to the Cornfield Arroyo Seco Specific Plan Floor Area Payment Trust Fund as set forth in Sub-Section 6.E.4, which funds may be used for any purpose the Corporation may legally perform.

2

ZONING AND STANDARDS

2.1 ZONING.....	33
2.2 BUILDING FORM AND MASSING.....	45
2.3 URBAN DESIGN	49
2.4 OPEN SPACE.....	55
2.5 PARKING AND ACCESS.....	61
2.6 CONSERVATION.....	67
2.7 PERFORMANCE.....	69
2.8 SIGNS.....	73

2.1 ZONING

- A. PURPOSE
- B. LAND USE
- C. ZONING DISTRICTS
- D. PERMITTED USES
- E. USE LIMITATIONS
- F. LOT AREA
- G. FLOOR AREA
- H. BONUS FLOOR AREA
 - 1. DENSITY BONUS
 - 2. COMMUNITY BENEFIT
- I. TRANSFER OF FLOOR AREA

A. PURPOSE

1. To protect existing light industrial areas from residential encroachment.
2. To provide areas where residential, commercial, and light industrial uses can co-locate both horizontally and/or vertically.
3. To facilitate the development of mixed-use and affordable housing projects.

B. LAND USE.

1. In order to regulate the use of property in the Plan the area is divided into four land use categories known as:
 - a. Public Facility
 - b. Open Space
 - c. Residential Multi-Family
 - d. Hybrid Industrial
2. The boundaries of each land use area are illustrated on the Generalized Land Use Map.

C. ZONING DISTRICTS.

1. In order to regulate the use of property in the Plan, the Plan, as set forth in Section 12.04 of the LAMC, is divided into four zones to be known as:
 - a. Greenway (CASP)
 - b. Urban Village (CASP)
 - c. Urban Innovation (CASP)
 - d. Urban Center (CASP)
2. The boundaries of each zone are indicated on the Zoning District Map.

- D. **PERMITTED USES.** The permitted uses of the underlying zoning, as specified in the Use Classification Table on the next page, shall apply, as applicable, to all lots with the Plan. In addition, the following uses shall be permitted:
- a. **Accessory Uses** that are customarily incidental to that of the main building/use of the land/ and on the same lot with a main building or main use are implicitly allowed although not directly identified as permitted in the Use Classification Table.
 - b. **Outdoor Eating Areas.** Notwithstanding LAMC Section 12.24 A1(a)(10), outdoor eating areas on all floors of buildings, sidewalk easements and on public sidewalk areas, when in compliance with all other applicable local, state and federal code requirements, shall be permitted. Outdoor eating areas shall be designed in accordance with the applicable urban design standards.

USE CLASSIFICATION TABLE

Use Classifications	Greenway	Urban Village	Urban Innovation	Urban Center
Heavy Manufacturing	No	No	No	No
Light Manufacturing and Assembly	No	Yes	Yes	Yes
Repair and Maintenance Facilities	No	Yes ²	Yes	Yes
Research and Development	No	Yes	Yes	Yes
Publishing, Motion Picture, Broadcasting	No	Yes	Yes	Yes
Trucking and Transportation Terminals	No	No	No	No
Urban Agriculture	No	Yes	Yes	Yes
Utilities	Yes	Yes	Yes	Yes
Warehousing and Storage	No	Ancillary ⁴	Ancillary ⁴	Ancillary ⁴
Waste Management and Remediation	No	CUP	CUP	CUP
Wholesale	No	Ancillary	Ancillary	Ancillary
Automobile Fueling and Service Station	No	CUP	CUP	CUP
Commercial Office	No	Yes-1	Ancillary	Yes-1
Parking	No	CUP ⁶	CUP ⁶	CUP ⁶
Restaurants and Bars	Yes	Ancillary ^{1,3}	Ancillary ^{1,3}	Ancillary ^{1,3}
Retail	Ancillary	Ancillary ¹	Ancillary ¹	Ancillary ¹
Personal Services	No	Ancillary	Ancillary	Ancillary
Server Farms	No	Ancillary	No	Ancillary
Residential-Multi-Family	No	Yes-1	Yes-1	Yes-1
Residential-Single Family	No	No	No	No
Hospitals, and Nursing and Residential Care Facilities	No	CUP	No	No
Hotels	No	Yes ^{1,7}	Yes ^{1,8}	Yes ^{1,7}
Entertainment, Exhibit & Cultural	Yes	Yes	Ancillary-11	<u>Yes Ancillary</u>
Recreation Facilities and Spectator	Yes	Yes	Ancillary	Yes
Religious Institutions	No	Yes	Yes-12	Ancillary
Conservation, Environmental and Social Service Organizations	Yes-10	Yes	<u>Ancillary Yes</u>	Yes
Schools, Colleges, Tutoring, and Training Programs	No	Yes	Yes ⁵	Yes

FOOTNOTES FOR USE CLASSIFICATION TABLE

Yes. Allowable Use but often with footnotes to denote some constraint.

No. Use is not permitted

1. See Limits Table ~~8-3~~ for limits on area FAR or square footage limits
2. Excludes truck repair
3. Free Standing Fast food establishments permitted with a Conditional Use Permit.
4. Excludes personal storage
5. Limited to Technical Training Schools or Programs
6. Subject to area Parking Cap
7. Residential hotels or rooming houses permitted with a Project Permit Compliance
8. Residential hotels or rooming houses not permitted.
9. Permitted with a Conditional Use Permit
10. Limited to Block 70
11. Limited to Block 52
12. Limited to Blocks 50/51

E. USE LIMITATIONS

1. The following uses shall be prohibited within the Plan area:
 - a. Auto-oriented uses, except as an accessory use.
 - b. Drive-through establishments.
2. Certain uses are further limited as to their overall percentage, square footage, or number of rooms as described in the Limits Table.

LIMITS TABLE

Use Classifications	Greenway	Urban Village	Urban Innovation	Urban Center
Commercial Office	N/A	65% ¹	10% ¹	65% ¹
Retail	1,200 sf ²	15,000 ² sf	5,000 ² sf	100,000 ²
Residential Multi-Family	N/A	90% ³	15% ^{3,4}	15% ^{3,4}
Hotels	N/A	150 rooms	100 rooms	<u>200 rooms</u>

FOOTNOTE FOR LIMITS TABLE

1. Floor area of Commercial Office shall not exceed the allowable percentage of the total gross floor area of all principal and ancillary uses combined.
2. Limited square footage permitted for each establishment
3. Floor area of Residential Multi-Family shall not exceed the allowable percentage of the total gross floor area of all principal and ancillary uses combined.
4. Construction shall only be permitted if built after or concurrent with on-site non-residential uses.

- A. LOT AREA. The maximum number of dwelling units or guest rooms permitted shall not be limited by the lot area provisions of the L.A.M.C.
- G. FLOOR AREA RATIO.
1. A Base Floor Area Ratio (Base FAR) and Maximum Floor Area Ratio (Max-FAR) is established for each parcel as set forth in the FAR Table Below and further illustrated in the FAR Map.
 2. Where applicable, additional FAR, up to the Max FAR, can be added to the Base FAR through the Bonus FAR and/or Transfer of Floor Area (TFAR) Programs described in Section 2.1.I of this Plan.
 3. Residential projects with more than 15 units will need to utilize the Bonus FAR Program in order to be eligible for the TFAR Program.
 4. Where applicable, non-residential projects may pursue either the Bonus FAR and/or TFAR Programs up to the allowable Max FAR.

FAR TABLE

Density	Greenway	Urban Village	Urban Innovation	Urban Center
Base FAR	1.5	3.0*	3.0	3.0
Base FAR within River Buffer Areas	1.5	1.5	1.5	1.5
Max FAR**	1.5	3 to 5	3 to 4	3 to 6
Max FAR within River Buffer Areas	1.5	1.5	1.5	1.5
Max FAR within River Buffer Areas with Density Bonus	NA	2	1.8	1.8

FAR TABLE FOOTNOTES

* Projects with more than 15 units of residential are limited to a Base FAR of 2.5 unless the residential portion of the project is equal to or less than 75% of the FAR.

** Varies- see FAR Map

H. BONUS FAR. Projects may obtain additional FAR through complying with the Density Bonus Option and/or Community Benefit Bonus Options as described below.

1. **Density Bonus Option.** A Project in the Urban Village, Urban Innovation, or Urban Center District that includes Residential uses may participate in the Density Bonus Option. Projects are either defined as Publicly Funded or Not Publicly Funded and shall utilize the appropriate Density Bonus strategy.
 - a. **Publicly Funded.** Projects that meet the definition of a Publicly Funded Affordable Housing Project may add, depending upon the District it is located in, and its location in, or, outside of, the River Buffer Area, additional FAR, in exchange for providing the proscribed percentage of restricted affordable units, based upon the table below :

DENSITY BONUS FAR-PUBLICLY FUNDED PROJECTS TABLE

Affordability Level/Location	Greenway	Urban Village	Urban Innovation	Urban Center
20% Affordable	NA	3.375:1	3.15:1 (max of .6:1 FAR Residential)	3.15:1 (max of .6:1 FAR Residential)
100% Affordable	NA	4:1*	3.45:1 (max of .9:1 FAR Residential)	3.45:1 (max of .9:1 FAR Residential)
20% Affordable River Buffer	NA	2:1	1.6:1 (max of .3:1 residential)	1.6:1 (max of .3:1 residential)
100% Affordable River Buffer	NA	2:1	1.8:1 (max of .525:1 residential)	1.8:1 (max of .525:1 residential)

DENSITY BONUS FAR-PUBLICLY FUNDED PROJECTS FOOTNOTE

*Projects in an area with a Max FAR of 3:1 shall be limited to a 3.375:1 Density Bonus FAR

b. **Not Publicly Funded.** Projects that are not Publicly Funded may add Density Bonus square footage, up to the permitted Bonus Square Footage, by including affordable units as described in the tables below.

i. **Bonus Square Footage.** Projects may add Density Bonus square footage by including affordable units. The amount of bonus square footage is proportionally tied to the square footage of, and level of affordability of, each of the affordable units. The affordable unit square footage, plus the bonus market square footage shall be added together to determine the total amount of bonus square footage permitted as described in the table below:

BONUS SQUARE FOOTAGE TABLE

Affordability	Affordable SF	Market SF	Total Bonus SF
Extremely-Low	1	6	7
Very Low	1	4	5
Low	1	2	3
Moderate (for-sale only)	1	3	4

ii. **Bonus FAR.** Projects may add, depending upon the District it is located in, and its location in, or, outside of, the River Buffer Area, additional FAR, up to the limits in the table below:

DENSITY BONUS FAR-NOT PUBLICLY FUNDED PROJECTS TABLE

Location	Greenway	Urban Village	Urban Innovation	Urban Center
Not River Buffer	NA	4:1	3.45:1 (max of .9:1 FAR Residential)	3.45:1 (max of .9:1 FAR Residential)
River Buffer	NA	2:1	1.8:1 (max of .525:1 residential)	1.8:1 (max of .525:1 residential)

DENSITY BONUS FAR-NOT PUBLICLY FUNDED PROJECTS FOOTNOTE

*Projects in an area with a Max FAR of 3:1 shall be limited to a 3.375:1 Density Bonus FAR

- c. **Incentives.** Up to three, on or off-menu, incentives are offered to both Publicly Funded and Not Publicly Funded Projects that participate in the Density Bonus Program.
 - i. **Publicly Funded.** A publicly funded project:
 - a) With at least 20% affordable units is eligible for two incentives.
 - b) With 100% affordable units is eligible for three incentives.
 - ii. **Not Publicly Funded.** A project that is not publicly funded that achieves:
 - a) A 3.0 FAR shall be eligible for one incentive
 - b) A 3.5 FAR shall be eligible for two incentives
 - c) A 4.0 FAR shall be eligible for three incentives.
 - iii. **On-Menu Incentives.**
 - a) Project may increase the proportion of residential from 90% to 95% of the overall FAR.
 - b) Projects that have used the previous incentive may request an increase of residential FAR from 95 to 100% FAR.
 - c) Project may increase their maximum height by 15'
 - d) Projects may exclude any public areas, accessible to all residents, including public common areas that serve both residential and commercial uses, and any unenclosed architectural features and areas of a building from the total floor area calculation.
 - iv. **Off-Menu Incentives.** Project may request a waiver or modification from any development standard. Project shall provide a pro forma or other documentation to show that the waiver or modification is necessary in order to make the Restricted Affordable Units economically feasible.
 - v. **Covenant.** Prior to issuance of a Building Department, the following shall apply:
 - a) **Rental Units.** For any applicant that receives an Affordability Bonus, in exchange for providing restricted rental units, a covenant acceptable to the Los Angeles Housing Department (LAHD) shall be recorded with the Los Angeles County Recorder, guaranteeing that the occupancy restriction will be observed for at least 30 years from the issuance of the Certificate of Occupancy or a longer period of time if required by the construction or mortgage financing assistance program, mortgage assistance program, or rental subsidy program.
 - b) **For-Sale Units.** For any applicant that receives an Affordability Bonus, in exchange for providing restricted for-sale units, a covenant acceptable to the Los Angeles Housing Department and consistent with the for-sale requirements of California Government Code Section 65915(c)(2) shall be recorded with the Los Angeles County Recorder guaranteeing that the

affordability criteria will be observed for at least ten years from the issuance of the Certificate of Occupancy.

- c) If the duration of affordability covenants provided for in this section conflicts with the duration of any other government requirement, the longest duration shall control.
- d) Any covenant described in this section must provide for a private right of enforcement by the City, any tenant, or owner of any building to which a covenant and agreement applies.

2. Community Benefit Option.

- a. **A Residential and/or Mixed-Use Project** with a Base FAR of 2.5:1 that has obtained a 3.375:1 by utilizing the Density Bonus Option may up to an additional .625 FAR in locations where the Max FAR Is 4 or more.
- b. Projects that include more than 15 residential units will need to comply with the Density Bonus Option in order to be eligible for the Community Benefit Option. Such projects will also need to utilize the Bonus FAR Program in order to be eligible for the TFAR Program.
- c. **A Non-Residential Project** with a Base FAR of 3:1 may add up to an additional 1 FAR (where permitted) by providing one of the following Community Benefits and submitting, as part of the Project Permit Compliance Application, an Allocation Plan as described in Section 6.G of this plan.
- d. **Open Space.** A Project may add 3 square feet of Floor Area for each square foot of publicly accessible open space.
- e. **Community Facility.** A Project may add 6 square feet of Floor Area for each square foot of area provided for a community facility (including access and loading/unloading), which may include but is not limited to child care and other educational services, public library, fire station, transportation amenities, medical services, or non-profit whose services directly benefit the community.
- f. Public benefits may be provided on the same site as the Project or on a site within the Specific Plan Area.
- g. The owner or owners of said property which is the recipient of the Community Benefit Bonus SF shall record an agreement in the Office of the County Recorder of Los Angeles County, California, as a covenant running with the land for the benefit of the City of Los Angeles, providing that such owner or owners shall continue to provide said public benefit (or a substitute benefit approved by the director) so long as the building or use the public benefit is intended to serve is maintained.

I. Transfer of FAR (TFAR) Program

1. Where applicable, non-residential projects may pursue either the Bonus FAR and/or TFAR Programs up to the allowable Max FAR.
2. Receiving Sites that participate in the Bonus FAR Program may also participate in the TFAR Program.
3. An existing parcel which has a total FAR that is less than the Base FAR may transfer its Unused FAR to a Receiver Site that is located within the same District.
4. An existing parcel within the Greenway District which has a total FAR that is less than the Base FAR may transfer its Unused FAR to a Receiver Site that is located within the Specific Plan.
5. Properties within the River Buffer Area may transfer any portion of their Unused FAR to another property within the same district but may not be a Receiver Site.
6. The Unused FAR shall henceforth be referred to as the TFAR.
7. The value of the TFAR shall be determined between the participants of the Transfer unless the Donor Site is owned by either the City of Los Angeles or the Los Angeles River Revitalization (Corporation) in which case the Floor Area Payment described in Section 1.2.D. will be used to establish the value and payment method.

2.2 BUILDING FORM

- A. PURPOSE
- B. YARD AND SETBACKS
- C. STREET WALL AND MASSING
- D. MAXIMUM LOT COVERAGE
- E. HEIGHT
- F. BUFFERS
- G. BLOCK LENGTH

A. PURPOSE.

1. To provide spatial and proportional standards that reinforce the street as a large public outdoor room.
2. To emphasize the public realm (streets and public open spaces) more than individual buildings.
3. To ensure that development is designed with a pedestrian orientation.
4. To reinforce the street wall with well-scaled elements or structures that are sensitive to the neighborhood context.
5. To respect the smaller scale of adjacent low-density buildings

B. YARD AND SETBACK REGULATIONS

1. Yard Requirements. No yard requirements shall apply except as required by the applicable urban design standards. Where required by the Street Standards established in Section 3 of this Plan, a Project shall be required to provide a Sidewalk Easement.

2. Setbacks.

- a. The building setback along any lot line that abuts a street, flood control channel, rail corridor or an adjacent side rear lot shall be as defined in the Building Setback Table below. The setback area for the building portion adjacent to the front lot line shall be further governed by the building’s ground floor use.
- b. The ground floor street wall (including entries and display windows) may be set back farther than the specified range, provided that structural columns and building walls above the ground floor are located within the specified range.

SETBACK TABLE

Setback	Greenways	Urban Village	Urban Innovation	Urban Center
Front Yard/Ground Floor Use				
- Retail	N/A	0'-5' max	0'-10' max	0'-3' max
- Professional Office/Live Work	N/A	0'-10' max	0'-15' max	0'-5' max
- Industrial	N/A	0'-10' max	0'-15' max	0'-10' max
- Residential	N/A	0'-15' max	N/A	0'-10' max
Alley, Side or Rear Yard	0' min	0' min	0' min	0' min
Public Parks	30' min	30' min	30' min	30' min
River or Arroyo Seco	50' min	50' min	50' min	50' min
Rail Tracks	30' min	30' min	30' min	30' min

B. Street Wall & Massing.

1. **Street Wall.** A minimum percentage of the Street Wall shall be built to the property line or anywhere within the allowable setback area (pursuant to the Setback Table on the previous page. See Street Wall Table below.

STREET WALL TABLE

Minimum Percent of Building Street Wall at Setback	Greenways	Urban Village	Urban Innovation	Urban Center
Facing River or Arroyo Seco	NA	0%	0%	0%
Secondary Modified	NA	85%	80%	90%
Collector Modified	NA	75%	70%	80%
Local Modified	NA	65%	60%	70%

2. **Massing.** Break the facade of large projects into a series of appropriately scaled buildings so that no building shall be more than 300 feet in length at the base.

C. Maximum Lot Coverage. Projects shall limit the percentage of building footprint relative to the overall site area as defined in the Maximum Lot.

MAXIMUM LOT COVERAGE TABLE

Max Lot Coverage	Greenways	Urban Village	Urban Innovation	Urban Center
Maximum Buildable Lot Coverage*	25%	85%	85%	85%
Maximum Buildable Lot Coverage for projects within 300 linear feet of the bottom of adjacent edge of the River or Arroyo (River Buffer Area)*	25%	50%	50%	50%

MAXIMUM LOT COVERAGE TABLE FOOTNOTES

*Existing buildings are exempt from this limitation

D. HEIGHT.

1. 90% of a Street Wall shall comply with the minimum height as defined on the Building Heights Map.
2. The average height of the Project shall not exceed the maximum height established in the Building Heights Map.
3. Parapet walls and other guard rails utilized to enclose roof terraces, gardens or green roofs shall be permitted to exceed the maximum allowable height by no more than 42 inches.
4. Building shall be designed such that there is no more than 1.5 hours of shadow projection on any parks, open spaces, and/or rooftop areas of abutting properties between 10am and 2pm on December 21.

E. BUFFERS. Projects located adjacent to the RD 1.5 and RD 2 zones in Sub-Area 2 or other low-density residential uses outside, but immediately abutting the Specific Plan boundaries, shall:

1. Provide an open space buffer of no less than 30' between the edge of the building and the property line of the low density use; and,
2. At the buffer line and for a distance of 20' back from the buffer line, no building shall exceed a height of 125% of the buffer distance plus the side or rear yard setback (B) required by the zoning of the abutting property.
3. Additional height is permitted within a 50 degree envelope.

F. Block Length. The block length in the three urban districts shall not exceed:

1. Urban Village 450 linear feet.
2. Urban Innovation 600 linear feet.
3. Urban Center 500 feet.
4. See the Maximum Block Length Map for identification of blocks that are known to exceed the block length.
5. A Project that is in a block that is longer than the allowable block distances, as defined in Sections 2.2F.1-3 above, that is located on either a thru lot, a lot abutting an alley or the Los Angeles State Historic Park, and has a street frontage in excess of 300 linear feet shall provide a through passageway that extends from the street to the nearest public right-of-way.
 - a. The owner or owners of said lot on which the paseo or pedestrian passage is to be provided shall record an agreement in the Office of the County Recorder of Los Angeles County, California, as a covenant running with the land for the benefit of the City of Los Angeles, providing that such owner or owners shall continue to provide said paseo as a publicly accessible pedestrian passageway so long as the building or use the paseo is intended to serve is maintained.
 - b. Such a passageway shall permit unlimited 24 hour public access to pedestrians, bicyclists, and emergency vehicles where feasible.
 - c. Passageways shall be designed in conformance with Section 2.4.J.3.

2.3 URBAN DESIGN

- A. PURPOSES
- B. ENTRANCE
- C. GROUND FLOOR
- D. WINDOWS AND GLAZING
- E. EXTERIOR LIGHTING
- F. MINIMIZE IMPACTS ON NEIGHBORS

A. PURPOSES

1. Maximize the advantage of the area's moderate climate by emphasizing the public realm-streets and public spaces-more so than individual buildings.
2. Promote pedestrian-scaled architecture along the street.
3. Promote fine-grained and well articulated development while enabling desired development intensities to be achieved.
4. Orient buildings to the street to promote sidewalk activity and reinforce the pedestrian environment along the sidewalk.
5. Vary the horizontal plane of a building to provide visual interest and enrich the pedestrian experience, while contributing to the quality and definition of the street wall.
6. Incorporate glazing that contributes to a warm, inviting environment while also reducing bird collisions by minimizing the reflection of surrounding habitat or sky.
7. Provide well-designed, energy efficient, architectural and landscape lighting that contributes to a safe and inviting atmosphere without casting light into the night sky, adjacent properties, or sensitive habitat areas.
8. Integrate all exterior lighting (building, landscape, and security) with the building design to be of a character and scale that relates to the pedestrian and accentuates major architectural and special landscape features.
9. Respect neighboring properties, and design major mechanical systems, trash and recycling, antennas, glare lighting, and reflective materials to limit adverse impacts.
10. Balance the need for security doors and windows with the need to create an attractive, inviting environment.

B. ENTRANCE.

1. Primary entrances shall be located on a public street or on a courtyard, plaza or paseo that is connected to and visible from a public street.
2. At least one functional pedestrian building entrance, which may be either a building or tenant/resident entrance, shall be provided every 75 feet, on average along all street frontages except on Local Industrial Modified Streets. (See the Active Streets Map)
3. The primary entrance to each street or sidewalk-level tenant space that has its frontage along a public street shall be provided from that street.
4. The primary entrance to each street-level tenant that does not have its frontage along a public street shall be provided from a pedestrian paseo, courtyard or plaza, which is connected to a public street.
5. Primary entrances shall not be permitted from a parking area.
6. Ground floor residential units with individual entries shall include windows on the ground floor that look out onto the street.

C. GROUND FLOOR

1. Frontage Uses

- a) At least 75% of the ground floor frontage of a building located on a Retail Street identified on the Active Streets Map shall be designed specifically for and occupied by retail and community serving uses.
 - b) At least 50% of the ground floor frontage of a building located on an Active Street shall be designed to accommodate the following uses: retail, cultural, professional office, live/work units, residential units with individual entries along the street, and/or other active space such as recreation and meeting rooms, lobby or sales areas, or common rooms. (See the Active Streets Map)
 - c) At least 25% of the ground floor frontage of a building located on an Active Industrial Street shall be designed to accommodate the following uses: lobby or sales areas, retail, professional office, and/or other active space such as meeting rooms. (See the Active Streets Map)
 - d) The owner or owners of said lot on which the ground-floor uses are to be provided shall record an agreement in the Office of the County Recorder of Los Angeles County, California, as a covenant running with the land for the benefit of the City of Los Angeles, providing that such owner or owners shall continue to provide said ground-floor uses as long as the building or use the ground-floor uses are intended to serve is maintained.
2. **Transit Information.** All Projects shall provide information about local transit service at a primary entry point to the site or building. The information shall be prominently displayed, updated quarterly, and shall include phone numbers for transit, paratransit, and taxis as well as brochures and maps for local bus and rail service.

3. Ground Floor Transparency.

- a) Along Retail Streets, transparent wall openings, such as storefront windows and doors, shall comprise at least 50% of a building's street level façade that is between 2 feet to 8 feet from the ground.
- b) Along Active Streets and Paseos, transparent wall openings, such as storefront windows and doors shall comprise at least 35% of the street level façade that is between 2 feet to 8 feet from the ground.
- c) An exception shall be made for older structures that are being renovated if the transparency requirement would render the building structurally infeasible or would compromise the historical integrity or original character of the building.

4. Ground Floor Façade. To avoid blank walls that would detract from the experience and appearance of an active streetscape there shall be no blank walls (without doors or windows) longer than 50 feet along sidewalks on Active or Retail Streets. Walls with public art installations such as murals shall be exempt.

5. Ground Floor Retail.

- a) All ground floor retail space shall be located either along the street wall or along a courtyard or plaza, provided the retail frontage is not more than 60 feet from the back of sidewalk and is visible from the sidewalk.
- b) Ground floor retail space shall be provided to a depth of at least 25 feet from the front façade and shall include an average 14 feet - 20 feet floor to ceiling height.
- c) Where Retail streets intersect other streets, the ground floor retail space shall wrap the corner onto the other streets.

D. WINDOWS AND GLAZING.

1. Windows

- a) To reduce interior heat gain and improve energy performance the window to wall ratio (exclusive of the ground floor) shall not exceed 40% on the E, W, SW, NW, SE and NE facades unless an alternative façade design can demonstrate through building specific analysis that it provides the same or greater reduction in cooling loads of the building.
- b) All windows on the aforementioned facades shall be shaded by 1' fins or overhangs or other architectural feature that provides the equivalent shading value unless an alternative design solution can be demonstrated through building specific analysis that it provides the same or greater reduction in cooling loads of the building.

2. Glazing.

- a) All ground-floor window and door glazing shall be transparent and have a 0-10% reflectivity rating.
- b) Glazing on the upper floors shall include one or more of the following: 0-10% reflectivity, etching, sandblasted patterns, fretting, or low-e patterning, shading devices, screen and other barriers to reduce birds' access to glass, and/or angle the glass between 20-40 degrees from vertical.

E. EXTERIOR LIGHTING.

1. General Requirements

- a) Light levels shall be measured with a photoelectric photometer, following the standard spectral luminous efficiency curve adopted by the International Commission on Illumination.
 - b) All projects in the Urban Center, Innovation, and Village Districts shall design all site and building mounted lighting such that it produces a maximum initial illuminance value no greater than 0.20 horizontal and vertical foot candles at the site boundary and no greater than 0.01 horizontal foot candles 15 feet beyond the site. No more than 5.0% of the total initial designed lumens shall be emitted at an angle of 90 degrees or higher from nadir (straight down).
 - c) All projects in the Greenway District shall design all site and building mounted lighting such that it produces a maximum initial illuminance value no greater than 0.01 horizontal and vertical foot candles at the site boundary and beyond. None of the total initial designed lumens shall be emitted at an angle of 90 degrees or higher from nadir (straight down).
 - d) Provide lighting along all vehicular access ways and pedestrian walkways.
 - e) All low pressure sodium, high pressure sodium, metal halide, fluorescent, quartz, incandescent greater than 60 watts, mercury vapor, and halogen fixtures shall be fully shielded in such a manner as to preclude light pollution or light trespass on any of the following; an abutting residential land use district; a lot zoned for residential use; public right of way, park, or open space.
 - f) Lighting (exterior building and landscape) shall be directed away from properties and roadways, and shielded as necessary. In particular no lighting shall be directed at the window of a residential unit either within or adjacent to a project.
2. **Exemptions:** The following outdoor lighting fixtures and activities are exempt from the requirements of this section:
- a) Fixtures producing light directly by the combustion of fossil fuels, such as kerosene lanterns or gas lamps.
 - b) All neon, argon or krypton outdoor lighting fixtures.
 - c) Emergency lighting operated by a public utility or agency during the course of repairing or replacing damaged facilities.
 - d) Emergency lighting and fixtures necessary to conduct rescue operations, provide emergency medical treatment or address any other emergency situation.
 - e) Lighting fixtures within five feet of an entrance or exit door and/or alcove of a dwelling unit, not exceeding a height of eight feet and a wattage not exceeding 75 watts provided there is no light pollution, or light trespass, or when the lighting fixtures are regulated by a motion detector.
 - f) Internally illuminated signs.
 - g) Holiday lighting fixtures or displays.
 - h) Architectural lighting whether it is freestanding or attached to a building which does not exceed an intensity of 60 watts.
 - i) Pedestrian lighting that does not have an intensity greater than 60 watts.
 - j) Vertical lighting for proper display of U.S. And State of California flags which does not exceed an intensity of 140 watts.

F. MINIMIZING IMPACTS ON NEIGHBORS.

1. Mechanical Systems and Trash enclosures

- a) Mechanical units shall be either screened from public view or the equipment itself shall be integrated into the architectural design of the building.
- b) Ventilation intakes/exhausts shall be located at least 20' vertically and horizontally from a sidewalk and air flow shall be directed away from the public realm.
- c) Recycling and trash facilities shall be screened from public view.
- d) Exterior trash enclosures shall:
 - i. Be designed to complement the primary building with a wall height that exceeds the disposal unit it is designed to contain by 18 inches,
 - ii. Have a solid roof to deter birds and to block views from adjacent properties,
 - iii. Be comprised of solid metal doors that accommodate a lock and shall remain closed when not in use, and
 - iv. Not be constructed of chain link or wood.

2. Ground Floor Utilitarian Uses.

- a) "Back of house" uses shall not be located within the first 20' depth of the ground floor street wall.
- b) Electrical transformers, mechanical equipment, water meters and other equipment shall not be located along the ground floor street wall unless screened from public view.
- c) Electrical transformers, mechanical equipment, other equipment, enclosed stairs, storage spaces, blank walls, and other elements that are not pedestrian-oriented shall not be located within 100' of a corner.

3. Security Grills and Roll-Down Doors and Windows.

- a) Exterior roll-down doors and security grills are not permitted unless they are designed to be 75% transparent (open), or retractable and designed to be fully screened from view during business hours.
- b) Any ground-level retail storefront windows must be kept open and visible (unshuttered) at night. A covenant shall be recorded binding future owners to comply with this provision.
- c) Windows with security features shall not block out more than 30% of the natural light to the interior, and shall be designed as an architectural feature compatible with the building's style.

2.4 OPEN SPACE

- A. PURPOSE
- B. TYPOLOGIES
- C. AREA REQUIREMENTS
- D. PERMITTED USES
- E. ACCESS
- F. DIMENSIONS AND BOUNDARIES
- G. LANDSCAPE
- H. OPERATIONS AND MAINTENANCE
- I. SPECIALTY DESIGN REQUIREMENTS

A. PURPOSES

1. Provide inviting, safe and accessible public open space.
2. Increase recreational opportunities for residents, employees, and visitors.
3. Provide pedestrian linkages throughout the Plan area.
4. Provide parks and open space that minimizes demand for potable water resources.
5. Encourage areas for community-based and local food production.
6. Provide open space areas that provide for native habitat and facilitate the migration of local species.
7. Provide adequate lighting to create a park environment where residents feel safe.
8. Generate visual interest by creating focal points and meeting places to enhance the area's image.
9. Support an easy transition between indoors and outdoors.
10. Include permanent and temporary seating that is placed with consideration to sun and shade, and other factors contributing to human comfort.

B. OPEN SPACE TYPOLOGIES

Alleys. Alleys provide access to service activities and while not typically the most visible of public spaces they can facilitate physical connections between traditional open spaces.

Balconies. Balconies, are typically private open space areas generally available exclusively to a unit's occupants and their visitors.

Community Gardens. Community Gardens provide community members with local opportunities to tend individual plots and grow their own food.

Courtyards. Courtyards are common open space areas of a scale and enclosure that is conducive to social interaction at a smaller scale. A courtyard is typically contained on three sides by building and/or architectural features.

Entry forecourts. Entry forecourts announce the function and importance of primary building entrances. They should provide a clear comfortable transition between exterior and interior space. An entry forecourt is typically contained on two sides by building and/or architectural features.

Parks. Parks provide a wide range of passive, active recreational, and picnic opportunities for multiple users.

Paseos. Paseos are extensions of the street grid located on private property. As outdoor passages devoted exclusively to pedestrians, they establish clear connections between streets, plazas and courtyards, building entrances, parking and transit facilities. A paseo is typically contained on two sides by building and/or architectural features.

Patios. Similar to Balconies, Patios are typically private open space areas generally available exclusively to a unit's occupants and their visitors

Plazas. Plazas are common open space areas typically amenable to larger public gatherings. They are readily accessible from the street, as well as active building uses. A courtyard is typically contained on only one side by building and/or architectural features.

Promenade. A public area set aside as a pedestrian walkway.

Residential Setbacks. Building setbacks adjacent to residential buildings provide a transition between the public and private realm, allowing residents to have private spaces with visual access to the public realm.

Roof Terrace. Roof terraces and gardens can augment open space and are especially encouraged in conjunction with hotels or residential uses.

Streets. Streets are the most public of all open spaces. Streets communicate the quality of the public environment and the care a city has for its residents.

Trails. Trails provide opportunities for walking and hiking without the interruption of vehicular traffic.

C. AREA REQUIREMENTS

1. All Projects in the Greenway District shall provide 25% of the lot area as publicly accessible open space.
2. All Projects in the Urban Village, Urban Center and Urban Innovation Districts shall provide:
 - a. One square foot of common open space per every 16 square feet of residential space; and
 - b. One square foot of common open space for every 48 square feet of non-residential space.
3. Projects subject to Quimby Fees as described in either 17.12 or 17.58 may utilize the 2.4.C.2 requirements above towards their Quimby contribution.
4. All common open space areas shall be designed to meet L.A.M.C. Section 12.21. G. 2 (a).
5. Projects may provide up to 25% less common open space if the open space is publicly accessible and is maintained at no public expense.
6. Up to one-half of the required common open space area can be provided as private open space and shall be designed to meet the standards outlined in L.A.M.C. 12.21 G. 2 (b).
7. Any common area or publicly accessible open spaces shall be located within 900 feet of the Project.
8. Individual Projects may combine the open space requirement of each Project into a single open space equal to no less than the sum of the requirement of each parcel as long as the combined spaces remain accessible to all of the residents, employees or visitors of the respective Projects.
9. In the case of a Transfer of Floor Area Rights, a Project may comply with the provisions of this Section by providing the required open space on either the recipient or the Donor Site.
10. All or a portion of a parking area, including access aisles, and driveways may qualify as usable common or publicly accessible open space to the extent that the area complies with the following design standards:
 - a. Traffic design speed is 5 mph or less; and
 - b. Parking Lot Design Standards in Section 2.5. D. 3. of this Plan.
11. Public alleyways, paseos, or new streets that are added to a Project site shall qualify as public accessible open space and may contribute to the open space requirement.

D. PERMITTED USES. Publicly Accessible Open Spaces shall be designed to serve at least one functional use listed below that includes but is not limited to:

Basketball Courts

Bicycle Rental Center

Community amenities

Community garden space

Farmers' Market

Information or newstand kiosk (as long as it does not exceed 1.5% of the open space area).

Off-leash Dog Park

Open air cafe (as long as it occupies no more than 20% of the open space).

Picnic Area or other seating

Soccer Field

Softball Field

Tennis Courts

Trails, Alleys, Streets, Paseos for walking and bicycling

Transit Hub Amenities

Exercise Areas, Yoga, Pilates, and Tai Chi

E. ACCESS

1. All paths of travel shall conform to the standards of the Americans with Disabilities Act (ADA).
2. Publicly accessible open spaces shall:
 - a. Be at the same level as the public sidewalk for at least one half of its frontage and a depth of 10 feet, and may not be more than three feet above or below the street curb level.
 - b. Be visible from an adjoining street(s) or adjacent parks.

F. DIMENSIONS AND BOUNDARIES.

1. All publicly accessible open space shall have a minimum area of 650 square feet with no horizontal dimension less than 15 feet when measured perpendicular from any point on each of the boundaries.
2. Blank walls longer than 100 feet are not permitted adjacent to common or publicly accessible open space areas.

G. SEATING. Provide one linear foot of seating for every 500 square feet of common or publicly accessible open space area. The flat top of walls and ledges may count as seating as long as they are no less than 15 inches in depth, between 15 inches and 20 inches in height, and have smooth surfaces to ensure comfort.

H. LANDSCAPE

1. **Trees.**
 - a. Install deciduous trees at a minimum of one tree per 600 square feet of publicly accessible open space area.
 - b. Trees in common and/or publicly accessible open space areas must have a minimum caliper size of 4 inches at planting and have a canopy of at least 10 feet at maturity.

- c. A permeable surface shall be maintained below each tree for a distance of 2 feet from the trunk for every 1 inches of caliper. A tree with an expected 10 inches caliper at maturity would be required to have a 20 feet radial permeable surface below it.

2. Irrigation

- a. Irrigation systems shall be equipped with a Weather Based Irrigation Controller such that the system does not turn on during a storm event or when the soil has moisture level sufficient to support the plant species.
- b. Irrigation systems shall be designed to the water needs of different parts of the landscape. This is referred to as Zoned Irrigation.
- c. Any irrigation system shall be plumbed with a purple pipe to enable a connection to a recycled or gray water system once it is available.
- d. All irrigation systems shall be either drip, microspray, or subsurface where appropriate.

3. Hardscape and Materials

- a. Hardscape materials shall have a Solar Reflectance Index (SRI) of at least 29.
- b. No spikes, pointed railings, or other sharp objects shall be permitted.

I. OPERATIONS AND MAINTENANCE.

1. Open space areas shall be maintained by pruning, weeding, and the use of supplemental irrigation and supplemental mulch as necessary. See instructions and guidelines in the book, Care and Maintenance of Southern California Native Plant Gardens written by Bart O'Brien, Betsey Landis, and Ellen Mackey.
2. Tree maintenance shall be provided by an arborist certified by the International Society of Arboreal Culture.
3. Open space areas shall be maintained free of litter. Litter receptacles shall be provided at a ratio of at least one cubic foot for every 2,000 square feet of open space, with an additional cubic foot for every 2,000 square feet of space if outdoor eating is present.
4. The owner or owners of said lot on which the publicly accessible open space is to be provided and maintained shall record an agreement in the Office of the County Recorder of Los Angeles County, California, as a covenant running with the land for the benefit of the City of Los Angeles, providing that such owner or owners shall continue to provide and maintain said publicly accessible open space as described in Sections 5 of the Plan so long as the building or use the open space is intended to serve is maintained.

J. SPECIALTY DESIGN REQUIREMENTS

1. Community Gardens

- a. Community gardens shall provide fencing, watering system and a secure storage space.
- b. Community gardens must have solar access of at least 4 hours of summer sun between the hours of 10am and 2pm.
- c. The Project shall identify the parties responsible for maintaining the garden's operation.

2. **Park Recreational Areas.** Park-Recreational areas shall be designed to the specifications of the Department of Recreation and Parks
3. **Paseos.** Paseos shall be designed to:
 - a. Be at least 20 feet wide;
 - b. Have a clear line of sight from the street to the end of the passageway, gathering place, or focal element;
 - c. Be at least 50% open to the sky or covered with a transparent material; and,
4. **Off-Leash Dog Park** Off-leash dog parks shall use softscaping to capture and “scrub” animal fecal matter.

2.5 PARKING AND ACCESS

- A. PURPOSE
- B. PARKING REGULATIONS
- C. PARKING CAP
- D. PARKING DESIGN
- E. VEHICULAR ACCESS
- F. DROP-OFF ZONES

A. PURPOSE

1. Manage and control the parking supply and demand.
2. Avoid an oversupply of parking.
3. Increase pedestrian, bicycle, and transit use, and reduce vehicular trips to, through, and within the area.
4. Minimize the area's parking footprint and preserve land for other productive uses.
5. Reduce the cost of parking typically associated with new construction.
6. Provide vehicular access from side streets or alleyways to minimize driveways along Active Streets and to maintain building continuity and avoid vehicle and pedestrian conflicts.
7. Create active ground floors around the base of parking structures that are adjacent to Active Streets.
8. Screen parking to provide a safe, aesthetically pleasing and secure environment for pedestrians.
9. Provide adequate signage to public parking structures to aid visitors in finding them upon arrival and getting oriented to their surroundings.
10. Encourage the use of alternate modes of transportation by reducing the availability of off-street parking.
11. Limit the number and width of curb cuts and vehicular entries to promote street wall continuity and reduce conflicts with pedestrians.

B. PARKING REGULATIONS.

1. **Supersedes LAMC requirements.** Where this Specific Plan contains language or standards that require more parking or permit less parking than LAMC Section 12.21, this Specific Plan shall supersede the LAMC.
2. Parking which is assigned to a particular Project or lot may be located anywhere within 1,500 feet of the Project site.
3. Tandem parking spaces are not permitted.
4. All Projects that elect to provide any parking shall provide:
 - a. Vehicle charging stations for a minimum of 5% of vehicle parking spaces.
 - b. In a publicly accessible area, one shared vehicle parking space for every 25 units and/or 25,000 square feet, and
 - c. Designated stalls for scooters, mopeds and motorcycles at a ratio of one space for every 25 units and/or 25,000 square feet.
5. **Residential Parking standards.** Notwithstanding the provisions of Section 12.21 of the Code and regardless of the underlying zone, the following parking standards shall apply to Residential Projects or those portions of Mixed-Use Projects uses within the Specific Plan area:
 - a. Provide a minimum of one bicycle parking space or locker for every two units, and
 - b. Provide a maximum of one vehicle parking space per unit, exclusive of the shared vehicle and electric charging parking spaces.
6. **Non-Residential Parking standards.** Notwithstanding the provisions of Section 12.21 of the Code and regardless of the underlying zone, the following parking standards shall apply to Non-Residential Projects or those portions of Mixed-Use Projects that are non-residential uses within the Specific Plan area:
 - a. Provide a minimum of one bicycle space or locker for every 2,000 square feet.
 - b. Provide a maximum of one vehicle parking space per 1,000 square feet, exclusive of the shared vehicle parking spaces.
7. **Open Space and Public Park Parking Standards.** Notwithstanding the provisions of Section 12.21 of the Code and regardless of the underlying zone, the following parking standards shall apply to Open Space areas and Public Parks within the Specific Plan area:
 - a. Provide a maximum of four parking spaces per acre. There is no minimum parking requirement.
 - b. Provide a minimum of two bicycle parking spaces for every 15,000 square feet of open space or park area.
8. **Additional Parking Capacity.** Publicly accessible parking spaces (above and beyond the Project's maximum parking limit) may be developed, sold and/or rented for either short and/or long term periods of time, at the prevailing market rate, so long as they are not designated for a single property or use. The development of said spaces (exclusive of any spaces developed within the allowable Project maximum) shall not exceed the allotted Parking Cap established for the geographic Plan Subarea in which the Project is located.

9. Shared Parking Standards.

- a. The owner or owners of said lot on which publicly accessible shared parking space(s) are to be provided shall record an agreement in the Office of the County Recorder of Los Angeles County, California, as a covenant running with the land for the benefit of the City of Los Angeles, providing that such owner or owners shall continue to provide said parking spaces for the use of a publicly accessible shared vehicle so long as the building or use the vehicle(s) are intended to serve is maintained.
- b. Any parking space may be used for shared parking purposes. The purchaser or lessor of a parking space may rent the space to a secondary shared user for hours and/or days when the primary user of the space is not occupying the space.

10. Unbundled Parking.

- a. Projects shall unbundle the cost of parking from the cost of living and employment areas, either by charging a rent or lease fee, or selling the parking space separately. The owner or owners of said lot on which the parking is to be provided shall record an agreement in the Office of the County Recorder of Los Angeles County, California, as a covenant running with the land for the benefit of the City of Los Angeles, providing that such owner or owners shall continue to provide said parking spaces separate from the cost of the sale or lease of the living and/or employment areas so long as the building or use they are intended to serve is maintained.
- b. To incentivize transit use, commercial projects shall include a plan to allow the cashing-out of any parking subsidies provided by an employer in the event an employee does not require parking.

C. PARKING CAP.

1. In order to regulate the quantity of publicly available parking provided in the Specific Plan Area a Parking Cap is established for each of the five geographic Plan Subareas identified in the Parking Cap Map. The Cap defines the maximum number of public parking spaces, above and beyond the maximum parking spaces permitted for each project that can be built within each of the Plan Subareas. The Cap for each subarea is:
 - Subarea 1- 462 spaces
 - Subarea 2- 114 spaces
 - Subarea 3- 153 spaces
 - Subarea 4- 205 spaces
 - Subarea 5- 187 spaces
2. The Department of City Planning (DCP) shall maintain a database of publicly accessible parking spaces within each Subarea.

D. PARKING DESIGN REQUIREMENTS.

1. **Bicycle Parking Design.** Bicycle parking racks shall be provided in accordance with the amounts required in Subsections 13.B of this plan. and shall be:
 - a. Located at a distance no greater than the vehicle parking spaces or 250' whichever is less,
 - b. Located inside a parking structure or shall be located in other areas protected from the weather when automobile parking spaces are provided in a structure,
 - c. Clearly marked and separated from auto parking by some form of barrier to minimize the possibility of a parked bicycle being hit by a car,

- c. Clearly marked and separated from auto parking by some form of barrier to minimize the possibility of a parked bicycle being hit by a car,
 - d. Sufficient to accommodate a cycle at least six (6) feet in length and two feet wide and shall have a minimum of six feet of overhead clearance,
 - e. Provide some form of stable frame permanently anchored to a foundation to which a bicycle frame and both wheels may be conveniently secured using a chain and padlock, locker or other storage facilities which are convenient for storage and are reasonably secure from theft and vandalism,
 - f. Placed no closer than 24" from a wall,
 - g. Spaced such that there is at least 30" between the racks from side to side (measured from the center of the rack), and at least 48" between the racks from end to end (measured from the end points of each rack).
 - h. Provide aisles, at least five feet in width to access bicycle parking spaces, and
 - i. Display signage, which is clearly legible upon approach to all pedestrian building entrances that indicates the location of bicycle parking.
2. **Parking Structure Design.** Good parking structure design can elevate the building's stature and contribute to the overall quality of the built landscape.
- a. Parking structures shall have an external skin designed to improve the building's appearance and conceal ramps, walls and columns. This can include heavy-gage metal screen, pre-cast concrete panels, laminated glass or photovoltaic panels.
 - b. Parking structures that include parking at the ground level shall either line the perimeter with active uses and/or provide a low screen to block views of parked vehicle bumpers and headlights from pedestrians.
 - c. Vertical circulation cores (elevators and stairs) shall be located on the primary pedestrian corners and be highlighted architecturally so visitors can easily find and access these entry points.
 - d. Automobiles on parking levels above the ground floor shall be screened from public view.
 - e. Parking structures that abut or are adjacent to any residential use shall:
 - i. Contain solid decorative walls and/or baffles to block light and deflect noise along those sides closest to residential use,
 - ii. Contain solid spandrel panels at a minimum of 3 feet 6 inches in height, installed at the ramps of the structure, to minimize headlight glare,
 - iii. Construct garage floors and ramps using textured surfaces to minimize tire squeal,
 - iv. Not contain exhaust vents along sides closest to residential uses, and
 - v. Not produce glaring light sources toward adjacent units.

3. Parking Lot Design

- a. Parking lot area may contribute towards open space requirement as long as it meets the standards described in Section 2.4.C.10.a. of this Plan.

- b. The parking capacity of a surface parking lot shall be limited to no more than 10% of the maximum parking allowed for the specific project unless the parking area also complies with the standards described in Section 2.4.C.10.a.
- c. No at-grade parking space shall be located within the front yard.
- d. Off-street parking facilities containing five or more spaces and not in a structure shall be effectively screened from abutting streets and lots. However, such screening shall not obstruct vehicle sight distances, entrances and exits and shall consist of one or a combination of the following:
 - i. A strip at least five feet in width of densely planted shrubs or trees which are at least two feet high at the time of planting and are of a type that may be expected to form, within three years after time of planting, a continuous, unbroken, year round visual screen, or
 - ii. A wall, barrier, or fence of uniform appearance. Such wall, barrier, or fence may be opaque or perforated provided that not more than fifty percent of the face is open. The wall, barrier or fence shall be at least four feet and not more than six feet in height.
- e. Provide any combination of the following strategies for 50% of the surface parking lot and driveways:
 - i. Shade within five years of occupancy,
 - ii. Paving materials with a Solar Reflectance Index (SRI) of at least 29, or
 - iii. Open grid pavement system.
- f. On grade, open parking facilities which contain five or more parking spaces shall be landscaped in accordance with the design regulations required by Sections 2.4.H.2-2.4.I.3, the Landscape Requirements of the Los Angeles River Improvement Overlay and the following requirements:
 - i. At least five percent of the interior area of the parking facility shall be landscaped. This does not include the perimeter planting provided for beautification or to satisfy screening requirements.
 - ii. Each planting shall be at least twenty five square feet in area and have no dimension less than five feet.
 - iii. Each planting area shall contain at least one tree and the facility as a whole shall contain at least one tree for every ten parking spaces.
 - iv. Trees used to satisfy parking lot landscaping requirements shall be a minimum of three inch caliper at planting and shall be suitable for location in parking lots.
 - v. Existing trees shall be preserved wherever possible.
 - vi. Existing and new trees shall be protected by bollards, high curbs or other barriers sufficient to minimize damage.
 - vii. Parking lots shall be designed to provide clear and designated paths of travel for pedestrians.
 - viii. Paths shall conform to the standards of the Americans with Disabilities Act.

E. VEHICULAR ACCESS.

1. No curb cuts are permitted from Secondary Modified and Collector Modified Streets except when no other street type is adjacent to the Project.
2. Local Modified, Local Modified Industrial Streets and Alleyways shall provide the primary point of vehicular access for service and parking facilities.
3. Not more than two driveways shall be permitted per building, and at least 20 feet in distance should span between them.
4. Driveways shall not exceed the minimum width required by LADOT.
5. Parking and loading access shall be located a minimum of 25 feet from primary building entrances, pedestrian paseo, or public outdoor gathering area.
6. A vehicular exit from a parking structure within five feet of a sidewalk area, paseo, or trail shall feature a visual/audible alarm to warn pedestrians and cyclists of exiting vehicles.

F. DROP-OFF ZONES. Drop-off Zones, including residential, hotel and restaurant drop-off areas shall be provided either:

1. Within, or along the driveway access to the off-street parking facilities, or
2. Alongside the required curb line where there is a full-time curbside parking lane, with no sidewalk narrowing.

2.6 CONSERVATION

- A. PURPOSE
- B. PLUMBING
- C. INTERIOR LIGHTING
- D. ENERGY PRODUCTION
- E. HEAT ISLAND REDUCTION
- F. WINDOWS/GLAZING
- G. POOLS AND JACUZZIS

A. PURPOSE

1. Reduce energy demand
2. Recycle water and decrease demand for potable water
3. Reduce waste and use of new materials
4. Reduce demand on natural resources.

B. PLUMBING AND PLUMBING FIXTURES : *For all projects installing or replacing plumbing or plumbing fixtures.*

1. All faucets not governed by City Ordinance 180822 shall not exceed 1.5 gallons per minute.
2. Residential shower stalls are not permitted to have more than one shower head per stall. Shower head flow shall be no greater than 2.0 gallons/minute.
3. All residential units shall be either individually metered or sub-metered such that each unit is billed individually for its water use.
4. All Projects, which involve the installation of new internal rough plumbing system, shall install a dual plumbing system such that toilets and approved industrial uses can be served by recycled water.
5. Tankless and on-demand Water Heaters shall be installed in lieu of standard water heaters.
6. Conductivity Controllers or pH Conductivity Controllers shall be used when installing Cooling Towers.
7. Install a hot water on demand, re-circulation pump(s) to service any and all faucets requiring hot water.

C. INTERIOR LIGHTING DESIGN AND OPERATIONS: *For all projects installing or replacing interior lighting system.*

1. All non-residential buildings or portions thereof shall install lighting controls to extinguish all unnecessary exterior and interior lights from 11pm to sunrise.
2. All buildings shall schedule nightly maintenance activities to conclude before 11pm.
3. All non-residential buildings or portions thereof use gradual, "staggered switching" to turn on building lights at sunrise rather than instant light-up of the entire building.
4. All non-residential buildings or portions thereof shall install devices such as photo-sensors, infrared and/or motion detectors to turn off lights when no occupants are present.
5. All commercial and industrial buildings or portions thereof shall design lighting layouts in smaller zones and avoid wholesale area illumination.
6. All non-residential perimeter space with a continuous depth of 20ft shall have 20% dimming ballasts and day lighting control.
7. All buildings shall include dimmers in lobbies, atria and perimeter corridors for nighttime use.

D. ENERGY GENERATION: *For all new construction projects.*

1. All New Construction Projects shall install and maintain an onsite renewable energy generation system to provide a minimum of 20% of the Project's non-residential electrical needs and 10% of the projects residential demand.
2. Participation in DWP's Green Power for Green LA Program may be used to satisfy the above requirement. Proof of annual participation will be required.

E. HEAT ISLAND REDUCTION. *All Projects that are installing or replacing a roof* shall use roofing materials that have a Solar Reflectance Index (SRI) equal to or greater than the values in the table below for a minimum of 75% of the roof surface of all buildings within the Project or install a green (vegetated) roof for at least 50% of the roof area of all buildings within the Project. Combinations of SRI compliant and vegetated roof can be used provided that they collectively cover 75% of the roof area of all buildings.

Roof Type	Slope	SRI
Low-Sloped Roof	<2:12	78
Steep-Sloped Roof	>2:12	29

F. WINDOWS/GLAZING. *All projects that are installing or replacing windows* shall refer to Section 9. Urban Design Regulations for requirements that will assist Projects in reducing internal heat gain.

G. POOLS AND JACUZZIS

1. All pools shall be installed with a water-saving pool filter.
2. A leak detection system shall be installed on all swimming pools and Jacuzzis.

2.7

PERFORMANCE

- A. PURPOSE
- B. COMPLIANCE
- C. MAINTENANCE AND DELIVERY
- D. NOISE
- E. RECYCLED MATERIALS
- F. STORAGE
- G. VIBRATION
- H. UTILITIES

A. PURPOSES

1. To provide for a safe, clean, and healthy environment.
2. To minimize the effects of noise and vibrations on the surrounding environment.
3. To reduce the visual impact of utility facilities.

B. COMPLIANCE. Prior to the issuance of a building permit or land use permit, the owner of the lot or lots shall execute and record a covenant and agreement, acknowledging that the owner shall implement each of the applicable regulations set forth in this Section. The covenant and agreement shall run with the land and be binding upon the owners, and any assignees, lessees, heirs, successors of the owners. The City's right to enforce the covenant and agreement is in addition to any other remedy provided by the law.

C. MAINTENANCE AND DELIVERY STANDARDS

1. All Projects shall be maintained in a clean, safe and sanitary condition.
2. All Projects shall keep the site clear of weeds, rubbish, and all types of litter and combustible materials at all times.
3. All projects shall permit no loitering, camping, public begins, consumption of alcoholic beverages, use of illegal narcotics, or any other criminal activity on any premises.
4. All projects shall prevent standing water from accumulating anywhere on site.
5. Loading and unloading of vehicles shall occur either on site, within an alley, or a local modified, or local industrial modified street. Loading and unloading of vehicles from a Secondary street shall be permitted only when no other public right of way is adjacent to the project site.
6. Site cleaning, sweeping, trash collection, deliveries, and loading and unloading to the site are limited to the hours in table below.

MAINTENANCE AND DELIVERY SCHEDULE TABLE

Hours	Greenway	Urban Village	Urban Innovation	Urban Center
Mon-Friday	6am-10pm	7am-7pm	24 Hours	6am-10pm
Sat., Sun., & Legal Holidays	8am-5pm	8am-5pm	24 Hours	8am-8pm

D. NOISE

1. Loudspeakers or public address systems are not permitted to be installed or operated within any portion of Projects in the Urban Village, Urban Innovation, or Urban Center Districts.
2. Loudspeakers or other public address systems are permitted in the Greenway District but their use is limited to the hours of 8am-7pm Monday-Thursday, 10am-10pm Friday-Saturday, and Noon-5pm Sundays and Legal Holidays. In any event the maximum noise level may not exceed 90 dba lbn.
3. At the boundary line between two districts, the presumed ambient noise level of the quieter zone shall be used.
4. Maximum Noise Levels within Industrial Workspaces shall be as defined in the Industrial Noise Level Table below.

INDUSTRIAL NOISE LEVEL TABLE

Noise levels between	Greenway	Urban Village	Urban Innovation	Urban Center
7am-10pm	55 dba lbn	55 dba lbn	70 dba lbn	65 dba lbn
10am-7pm	45 dba lbn	45 dba lbn	65 dba lbn	55 dba lbn

- Maximum Noise Levels within Commercial Workplaces shall be as defined in the Commercial Noise Level Table below.

COMMERCIAL NOISE LEVEL TABLE

Noise levels between	Greenway	Urban Village	Urban Innovation	Urban Center
7am-10pm	55 dba lbn	55 dba lbn	65 dba lbn	65 dba lbn
10am-7pm	45 dba lbn	45 dba lbn	60 dba lbn	55 dba lbn

- Maximum Noise Levels within Residential Habitable Spaces shall be as defined in the Residential Noise Level Table below.

RESIDENTIAL NOISE LEVEL TABLE

Noise levels between	Greenway	Urban Village	Urban Innovation	Urban Center
7am-10pm	NA	50 dba lbn	50 dba lbn	50 dba lbn
10am-7pm	NA	45 dba lbn	45 dba lbn	45 dba lbn

E. RECYCLED MATERIALS

- All Projects shall provide a recycling area that is clearly labeled, and easily accessible.
- All Projects are required to develop a recycling program and contract for recycling pick-up if all recycled refuse is not re-used on site.
- All recycled goods shall be placed or stored in Recycling Receptacles by the end of the business day and not be left in plain view on the site.
- All recycling receptacles shall be kept covered, and made of durable, waterproof, rustproof, of incombustible construction, and of sufficient capacity to accommodate the materials collected.
- The recycling area shall be kept free of litter, debris, spillage, bugs, rodents, odors, and other similar undesirable hazards.
- Paper products and other lightweight materials shall be immediately placed into covered recycling receptacles.
- All recycling receptacles and containers shall be kept in a secure location to prevent unauthorized entry and scavenging and theft of recyclable materials.
- Recyclable materials, other than recyclable materials contained in reverse vending machine commodity storage bins, shall be emptied from recycling receptacles when full or every week, whichever comes first.

F. STORAGE

1. No materials or equipment shall be stored out of doors to a height greater than the height of the enclosing wall or fence.
2. Open air storage of merchandise or materials must be confined to a storage area completely enclosed by a solid, non-combustible wall (with self-closing gates).
3. Trash storage bins shall be located within a gated, covered enclosure masonry block wall at least six feet in height.

G. VIBRATION. Consistent with ASHRAE 200 and the L.A.M.C Section 111.02 the Maximum Vibration Levels for Industrial, Commercial, and Residential uses shall be as defined in the Vibration Levels Table below.

VIBRATION LEVELS TABLE

Use	Hours	Urban Village	Urban Innovation	Urban Center
Industrial	7am-10pm	16,000 pin/s	32,000 pin/s	16,000 pin/s
	10pm-7am	5,600 pin/s	32,000 pin/s	8,000 pin/s
Commercial	7am-10pm	16,000 pin/s	16,000 pin/s	16,000 pin/s
	10pm-7am	5,600 pin/s	16,000 pin/s	8,000 pin/s
Residential	7am-10pm	8,000 pin/s	8,000 pin/s	8,000 pin/s
	10pm-7am	5,600 pin/s	5,600 pin/s	5,600 pin/s

H. UTILITIES

1. All new utility lines, which directly service the lot or lots, shall be installed underground. If underground service is not available at the time the application is submitted and fees paid for plan check, then provisions should be made for future underground service to the satisfaction of the Bureau of Engineering, if determined necessary by the Department of Water and Power.
2. All utility boxes located within the public right-of-way shall be wrapped with a graphic image.

2.8 SIGNS

- A. PURPOSE
- B. PROHIBITIONS
- C. PERMITTED SIGNS

A. PURPOSES.

1. To create strong building identity that is well integrated with the design of the architecture.
2. To provide clear and attractive business identity.
3. To attract visitors to publicly accessible open space areas.

B. PROHIBITIONS.

1. The exposed unfinished backs and sides of all signs shall not be visible from a public right-of-way or greenway.
2. The following signs are prohibited; animated, blinking or scrolling signs, inflatable devices, off-site, supergraphics, pole signs, roof, and window signs.
3. Signs shall not obscure the architecture, windows or window trim and molding.
4. No signs other than flags and banners, shall be located above the second story.
5. Additional signs, beyond the Permitted signs described above, shall not be permitted.

C. PERMITTED SIGNS.

1. Each premise or business shall be permitted one identification sign limited to a maximum of 12 square feet in size and shall not exceed a depth of one 1 foot. An additional sign is permitted if the premise abuts another street, alley, public parking area, park or open space. An identification sign may be located on any portion of an awning as long as the sign does not exceed the maximum allowable dimensions.
2. For projects that have multiple storefront tenants of similar size, all Identification signs shall be of the same type but may vary in respect to font style and color. (ie. Cut out, blade signs, painted panel), the same relative size and source of illumination.
3. Building Identification Signs shall be permitted one per building, and shall not exceed 16 square feet for one story-buildings. For each story above the first, the size of the sign may increase an additional 4 square feet. An additional Building Identification Sign shall be permitted for buildings located on a corner lot or where a second façade is visible to a publicly accessible park or open space. This secondary sign shall not exceed the size of the primary sign.
4. Each premise or business shall be permitted one Information sign limited to a maximum of six square feet in size and shall not exceed a depth of one foot. An additional sign of equal size is permitted if the premise abuts another street, alley, public parking area, park or open space.

5. Each building, premise or business shall be permitted one Street Address Information sign limited to a maximum of six square feet in size and shall not exceed a depth of one foot. An additional sign of equal size is permitted if the premise abuts another street, alley, public parking area, park or open space.
6. Identification, Building Identification, Information, and Street Address Information signs shall be permitted as wall, awning/canopy, or projecting signs.
 - a. Projecting signs shall not extend more than five feet beyond the property line, shall not be located lower than eight feet above the sidewalk grade or edge of roadway grade nearest the sign and shall not extend above the top of the wall.
 - b. Wall signs that are made up of individual letters that use the wall of the building as background, the allowable sign area may be increased by 20 percent, provided there is no change in color between the background and the surrounding wall area. A wall sign shall not extend above the top of the wall of the building. Wall signs may extend no more than one foot beyond the face of the building.
7. Original art murals or public art installations are permitted with approval pursuant to Section 14.4.20.
8. One portable menu board sign may be permitted in the right-of-way for eating establishments, bakeries, florists, and similar businesses whose primary sales consist of perishable goods, provided that all of the following conditions are met:
 - a. The sign is removed at the end of each business day.
 - b. The sign's dimensions do not exceed two feet by four feet.
 - c. The sign does not interfere with pedestrian movement or wheelchair access.
 - d. The sign has a mounted base capable of keeping the sign upright in a moderate wind.
 - e. The sign is not illuminated.
 - f. The sign's permits have been secured from the appropriate City of Los Angeles departments.
9. Each publicly accessible park area shall be permitted one monument sign for every eight acres and each monument sign shall have a maximum of 75 square feet of sign face visible to the same direction of traffic and shall be limited to an overall height of eight feet above sidewalk grade or edge of roadway grade nearest the sign.
10. Each publicly accessible park area shall be permitted one flag or banner style sign for every acre or portion thereof.
 - a. Each flag/banner shall have a maximum of 24 square feet of sign face visible to the same direction and be affixed to a building or pole at a height no lower than eight feet above sidewalk grade or edge of roadway grade nearest the banner.
 - b. Height of the top of the flag/banner shall be measured from the nearest sidewalk or edge of roadway grade to the top of the sign. The overall height limitation of the flag/banner shall be determined by the length of adjoining street frontage as follows:
 - i. 25 feet for lots having 50 feet of street frontage;
 - ii. 35 feet for lots having more than 50 feet and less than 100 feet of street frontage; and
 - iii. 42 feet for lots having at least 100 feet of street frontage.

3

STREETS

- A. PURPOSE
- B. STREET DEFINITIONS
- C. STREET MODIFICATION SUMMARY
- D. SIDEWALK
- E. STREET DESIGN
- F. STREET MODIFICATION DETAILS

A. PURPOSE.

1. To connect the area to its neighboring communities, the City of Los Angeles, and the greater Los Angeles region through a safe, efficient and accessible circulation network that embraces pedestrians, bicyclists, transit, truck traffic, and automobiles.
2. To recognize the shared use of streets not only for moving traffic, but also as the front door to businesses that are the economic and fiscal foundation of the City and as public outdoor space for residents and workers.
3. To develop an efficient yet balanced circulation system that defines different types of streets based on their transportation function and community role.
4. To provide residents, employees, and visitors with a variety of transportation alternatives that result in a more efficient use of transportation resources.
5. Encourage a vibrant pedestrian-oriented environment, with activity centered along property edges at the interface between building and street.
6. Design streets and sidewalks so that pedestrians, bicyclists, transit riders, transit vehicles, trucks and automobile traffic can coexist safely.
7. Build linkages to the neighboring Chinatown, Lincoln Heights, Cypress Park, Elysian and Heritage Square neighborhoods as well as nearby regional park amenities such Elysian Park, Debs Park, El Rio de Los Angeles State Park, and Arroyo Seco and Los Angeles River Greenways.
8. Promote a multi-modal street network
9. Establish recommended standards for modified cross sections
10. Illustrate modified street standards
11. Establish street assumptions and criteria

B. STREET DEFINITIONS.

Collector Modified Streets. Collector Modified Streets emphasize multi-modal neighborhood travel and serve as a “Main Street” for Urban Villages and Urban Centers. Collector Modified Streets have one vehicle lane in each direction. Typical features include wide sidewalks, exclusive bicycle lanes, on-street parking, and street trees.

Local Modified Streets. Local Modified Streets emphasize access to individual properties and serve living or work spaces. Local Modified Streets allow for one lane in each direction and are not designed to accommodate regular bus or truck traffic. Typical features include relatively narrow cross sections, on-street parking sidewalks, and street trees.

Local Industrial Modified Streets. Local Industrial Modified Streets emphasize truck access to industrial properties. Local Industrial Modified Streets allow for one lane in each and includes a bicycle lane. Typical features include limited on-street parking, sidewalks, and street trees.

Modified Alleys. Modified Alley’s emphasize access to individual properties, and accommodate parking access and service functions as an alternative to other streets and provide the opportunity to incorporate stormwater BMPs.

Pedestrian Street Lights: Provide ornamentation to supplement the required illumination level. Pedestrian street lights contribute to the pedestrian scale of the area by adding a soft flow of light on the sidewalk and enhance pedestrian safety.

Roadway Lights. Provide roadway illumination.

Secondary Modified Streets. Secondary Modified Streets emphasize intra-city, multi-modal travel and connect urban activity centers. Secondary Modified Streets have two lanes in each direction and carry a mix of local and regional traffic. Typical features include on-street parking, exclusive bicycle lanes and wide sidewalks, and street trees.

Sidewalks. A sidewalk is that portion of the public-right-of-way that is typically raised above the street surface and is physically defined as the area between the property line and the curb. A sidewalk can be divided into three separate zones; parkway, pedestrian, and furniture zone.

Parkway Zone. The sidewalk area adjacent to the curb is typically referred to as the Parkway zone and depending upon the level of activity may include landscaping, trees, transit infrastructure, signage, lighting, benches, fire hydrants, and vending machines.

Pedestrian Zone. The Pedestrian Zone is the portion of the sidewalk that shall be maintained clear of obstructions for the safe and accessible passage of pedestrians.

Furniture Zone. The sidewalk area immediately abutting the property line is typically referred to as the Furniture Zone. The width of the Furniture Zone will vary throughout the Plan area depending upon the overall width of the sidewalk area.

C. STREET MODIFICATION SUMMARY. For the purposes of this Subsection, the regulations and procedures contained in L.A.M.C. Section 12.37 shall be followed. Notwithstanding L.A.M.C. Section 12.37 H, the modified highway and street improvement standards illustrated in Section 3.G. of this Plan and summarized in the Street Modification table on the following page and on the Modified Street Standards Map shall be utilized, to the extent physically feasible, for any improvements of streets required in the Specific Plan area.

STREET MODIFICATION TABLE

Street	Current Designation	New Designation
Albion	Local Street	Local - Modified
Alhambra	Local Street	Local – Modified
Ann (b/t Spring & Main)	Collector Street	Local – Modified
Ann (Sough of Main)	Local Street	Local – Modified
Artesian	Local Street	Local – Modified
Aurora	Local Street	Local – Modified
Ave 16	Local Street	Local – Modified
Ave 17	Local Street	Local – Modified
Ave 18	Local Street	Local – Modified
Ave 19	Local Street	Collector- Modified
Ave 20 (South of Broadway)	Collector Street	Collector- Modified
Ave 20 (North of Broadway)	Secondary Hwy	Collector- Modified
Ave 21	Local Street	Local- Modified
Ave 22	Local Street	Local- Modified
Ave 23	Local Street	Local - Modified
Ave 25	Local Street	Local - Modified
Ave 26	Secondary Hwy	Collector- Modified
Ave 33	Local Street	Local - Modified
Baker – to Aurora	Local Street	Local - Modified
Barranca	Local Street	Local - Modified
Bloom	Local Street	Local - Modified
Bolero	Local Street	Local - Modified
Broadway	Major Hwy Class II	Secondary - Modified
Cardinal	Local Street	Local - Modified
Clover	Local Street	Local – Modified
College	Local Street	Local – Modified
Darwin	Local Street	Local – Modified
Elmyra (North of Main)	Collector Street	Local – Modified
Elmyra (South of Main)	Local Street	Local – Modified
Figueroa	Major Hwy Class II	Secondary- Modified
Gibbons	Local Street	Local – Modified
Humbolt	Local Street	Local – Modified
Lacy	Local Street	Local – Modified
Lamar	Local Street	Local – Modified
Leon	Local Street	Local – Modified
Leroy	Local Street	Local – Modified
Livingstone	Local Street	Local – Modified
Llewellyn	Local Street	Local - Modified
Magdalena	Local Street	Local – Modified
Main	Secondary Hwy	Collector – Modified
Messenger	Collector Street	Local – Modified
Moulton	Local Street	Local – Modified
Mozart	Local Street	Local – Modified
Naud	Collector Street	Local – Modified
Pasadena	Secondary Hwy	Collector- Modified
Rondout	Local Street	Local – Modified
San Fernando	Secondary Hwy	Collector – Modified
Sotello	Collector Street	Local – Modified
Spring	Major Hwy Class II	Secondary – Modified
Weyse	Collector Street	Local – Modified
Wilhardt	Collector Street	Local – Modified

D. SIDEWALK REGULATIONS.

1. Sidewalks.

- a. Required minimum sidewalk widths for all streets in the plan area are shown in Section 3-G.
- b. Street furniture, trees and similar amenities shall be located outside of the Pedestrian Zone.
- c. A minimum 6' wide barrier free continuous path of travel shall be provided in all Pedestrian Zones.
- d. Projects selecting to install a paving pattern or non-standard material shall need to obtain approvals from DPW.
- e. Sidewalks shall be maintained by the adjacent property owner.

2. Street Lighting.

- a. Roadway lights shall be spaced 90 to 110 feet apart and designed to illuminate both the roadways and sidewalks to the levels required by the Bureau of Street Lighting for safety and security.
- b. Space trees from other elements, as specified by the Urban Forestry Division, except that trees may be positioned within 10' of pedestrian lights. The adjacent property owner shall agree to maintain any tree planted within 10' of a pedestrian light so that the lights are accessible for maintenance purposes.
- c. Energy-efficient Pedestrian Style Lighting Fixtures shall be installed midway between two street lights and no less than every 100' or as determined by the Bureau of Street Lighting.
- d. Once a Pedestrian Style Lighting Fixture is selected for a particular block the entirety of that block shall be designated with that lighting fixture type.
- e. All light poles will be located adjacent to the curb as required by the Bureau of Street Lighting.
- f. If the streets are widened or narrowed the existing street lights shall be moved along with the new curb line to maintain the existing street light and tree spacing pattern.
- g. Obtain City Approval from Board of Public Works-Bureau of Street Lighting and Cultural Affairs Department.
- h. Maintenance is provided by the Bureau of Street Lighting funded through the assessment district process. Any additions or changes to the rates must be approved by all affected property owners through the Proposition 218 process.

3. Special Lighting.

Special lighting that adds to the Area's sense of place will be permitted within the public right-of-way, provided that it does not interfere with pedestrian movement, vehicular safety, the approved street light/street tree spacing pattern, or other required streetscape elements.

- a. Examples of special lighting include accent lighting of landscape and architectural features, and seasonal light displays celebrating holidays or special events.
- b. Special lighting may be installed with a revocable permit. The infrastructure for this lighting will be maintained by the permit holder and not BSL.

4. Street Trees.

- a. The Parkway area shall be planted with the selected street tree (See Street Tree Variety Map in Section 4 and Appendix A3. Street Tree List) at the designated spacing for the selected tree. Street trees are typically spaced from 20 to 40' feet on center. If a particular tree species has not been identified, and there are no existing trees within the block the applicant may select the tree species, with the approval of the Urban Forestry Division. Once a tree is selected and planted for a particular block that same tree species shall be planted by subsequent projects that develop within the same block.
 - b. Where existing street trees must be removed as a result of required street widening, or other improvements, they shall be relocated or replaced, as approved by, the Urban Forestry Division.
 - c. Plant minimum 36" box trees.
 - d. Trees shall be planted with 4' x 8' foot tree wells with a 3" decomposed granite on the tree well surface, compacted to no more than 80%.
 - e. Structural soil to a depth of three feet shall be installed under the entire width of sidewalk within 25 feet of all new or relocated street trees.
 - f. Obtain city approval from the Department of Public Works-Urban Forestry Division.
 - g. The adjacent property owner shall be responsible for regular pruning, staking, and supplemental irrigation for the first three years as needed.
5. **Sidewalk Dining Facilities.** Just as sidewalk dining contributes to street life, the physical facilities associated with it should contribute to the quality of the street environment and the project. While sidewalk dining is not required, projects that elect to include sidewalk dining shall follow the following regulations:
- a. All dining facilities located on the sidewalk shall be freestanding, shall not be attached to the sidewalk, and shall be removed when the dining facilities are not open for business.
 - b. Enclosures are required only where alcohol is served, but may be provided elsewhere to create a sense of security. Enclosures shall not exceed 42 inches in height and shall be fabricated of durable materials that are in the same family as, or compatible with, the project's architectural materials.
 - c. A revocable permit, from the DPW is required for outdoor dining facilities.

E. STREET INTERSECTION DESIGN REGULATIONS

1. Crosswalks.

- a. Painted ladder or white zebra striped crosswalks shall be installed at all intersections that include either a Major Class II, Modified Secondary and/or Collector street as indicated on the Subarea Street Maps in Section 4.
- b. The Bureau of Engineering (BOE) shall flag intersections that require crosswalks on Navigate LA.

2. Signalized Intersections.

- a. Traffic signals shall be added to the intersections indicated below and illustrated on the Street Maps in Section 4.

N. Main Street and W. College

Ann Street and N. Spring Street

Sotello Street and N. Spring Street

Mesnager and N. Spring Street

Wilhardt Street and N. Main Street

S. Avenue 21 and N. Main Street

Humboldt and Avenue 26

- b. The Bureau of Engineering (BOE) shall flag intersections that require signals on Navigate LA.

3. Bicycle, Vehicle, and Parking Lanes

- a. **Traffic Lanes.** Roadbeds shall be marked with the number of traffic lanes that coincide with the standard plans on Navigate LA.
- b. **Bikeways.**
 - i. All Bicycle Friendly Streets identified in the 2010 Bicycle Plan shall be improved to include Bicycle Friendly Street improvements as described in the 2010 Bicycle Plan and highlighted in the 2010 Bicycle Plan's Technical Design Handbook.
 - ii. Any landscaped portions of a bicycle friendly feature shall be planted with drought tolerant trees and/or low-maintenance, drought tolerant shrubs and groundcover.
 - iii. Bicycle lanes shall be included on N. Spring, N. Main, Pasadena Avenue, San Fernando Boulevard, Figueroa Street, and a portion of Avenue 26 as illustrated on the cross-section standard plans on Navigate LA and on the Street Maps in Section 4.
 - iv. Bicycle sharrow markings shall be included on Avenue 26 between the Arroyo Seco (Pasadena) Freeway and the Gold Line Bridge as severe roadway width constraints, due to the freeway on and off-ramps prohibit the addition of bicycle lanes.

c. Parking Lanes.

- i. Car Share, Bicycle share or bicycle corrals shall be given priority access to on-street parking spaces.
- ii. Approval for any enhancement or unique design treatments in the parking lane shall be obtained from DOT.
- iii. In the case that a parking space is reserved for a bicycle corral the adjacent property owner shall assume maintenance responsibilities beyond the normal re-stripping and repair that will continue to be the purview of DOT.

d. Landscaped Median.

- i. A landscaped median shall be installed along Spring Street between College and Baker Streets. The median improvements will be interrupted to accommodate left-turn pockets at Ann Street, Sotello and Mesnager Streets.
- ii. The landscaped median shall be approximately 10' feet in width and shall be planted with mature, drought-tolerant, shade canopy trees and low-maintenance, drought-tolerant ground cover and shrubs.
- iii. Approval for the design, plant selection, and irrigation plans for the landscaped median shall be obtained from DOT and the Department of Public Works.
- iv. The Bureau of Street Services shall be responsible for regular pruning, weed control, tree and/or plant replacement, and irrigation repair and replacement.

F. STREET STANDARDS

1. The Plan's Street Standards are modifications of the existing street designations and apply to the Plan's street segments illustrated in the cross-sections on the following pages. The primary distinction between the various street designations that occur in the Plan is their number of traffic lanes. The designations are then further distinguished by the width of sidewalk and the presence or absence of on-street parking and/or bicycle lanes.

- a. **Major Class II.** Four full-time traffic lanes (two in each direction) and two additional peak-period traffic lanes that displace off-peak parking.
- b. **Secondary.** Four full-time traffic lanes (two in each direction). Depending upon the road width and its particular role this designation also may include full-time parking lanes and/or bicycle lanes.
- c. **Collector.** Two full-time traffic lanes (one in each direction) and full-time parking and bicycling lanes.
- d. **Local.** Two full-time traffic lanes (one in each direction) and full-time parking on at least one side of the street.

2. The Plan's Street Standards are illustrated by a series of cross-sections. The cross-sections show the typical midblock conditions. Intersections are not shown. For each street, the existing street designation and existing cross sections by segment are shown in the left column. The proposed cross-sections for those same segments are shown in the right column. The legend on the following page identifies each element in the cross section diagrams.

3. The proposed Plan Street Standard for each street segment includes:
 - a. **Right-of-way width (ROW).**
 - b. **Roadway width (curb to curb).**
 - c. **Sidewalk width within the ROW.** The sidewalk width cannot be reduced. In other words, the roadway cannot be widened at the expense of the sidewalk.

4. Upon final approval of these standards the Bureau of Engineering will add a layer to its Navigate LA website to inform all developers of the future block-by-block requirements for streets and sidewalk widths.

4 MAPS

PLAN BOUNDARY MAP

GENERALIZED LAND USE MAP

ZONING DISTRICTS MAP

FAR MAP

BLOCK NUMBERS MAP

MAXIMUM BLOCK LENGTH MAP

BUILDING HEIGHTS MAP

ACTIVE STREETS MAP

PARKING CAP MAP

MODIFIED STREET STANDARDS MAP

STREET LABEL MAP (REFERENCE ONLY)

STREET TREE VARIETY MAP

SUBAREA 1 STREET MAP

SUBAREA 2 STREET MAP

SUBAREA 3 STREET MAP

SUBAREA 4 STREET MAP

SUBAREA 5 STREET MAP

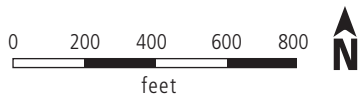
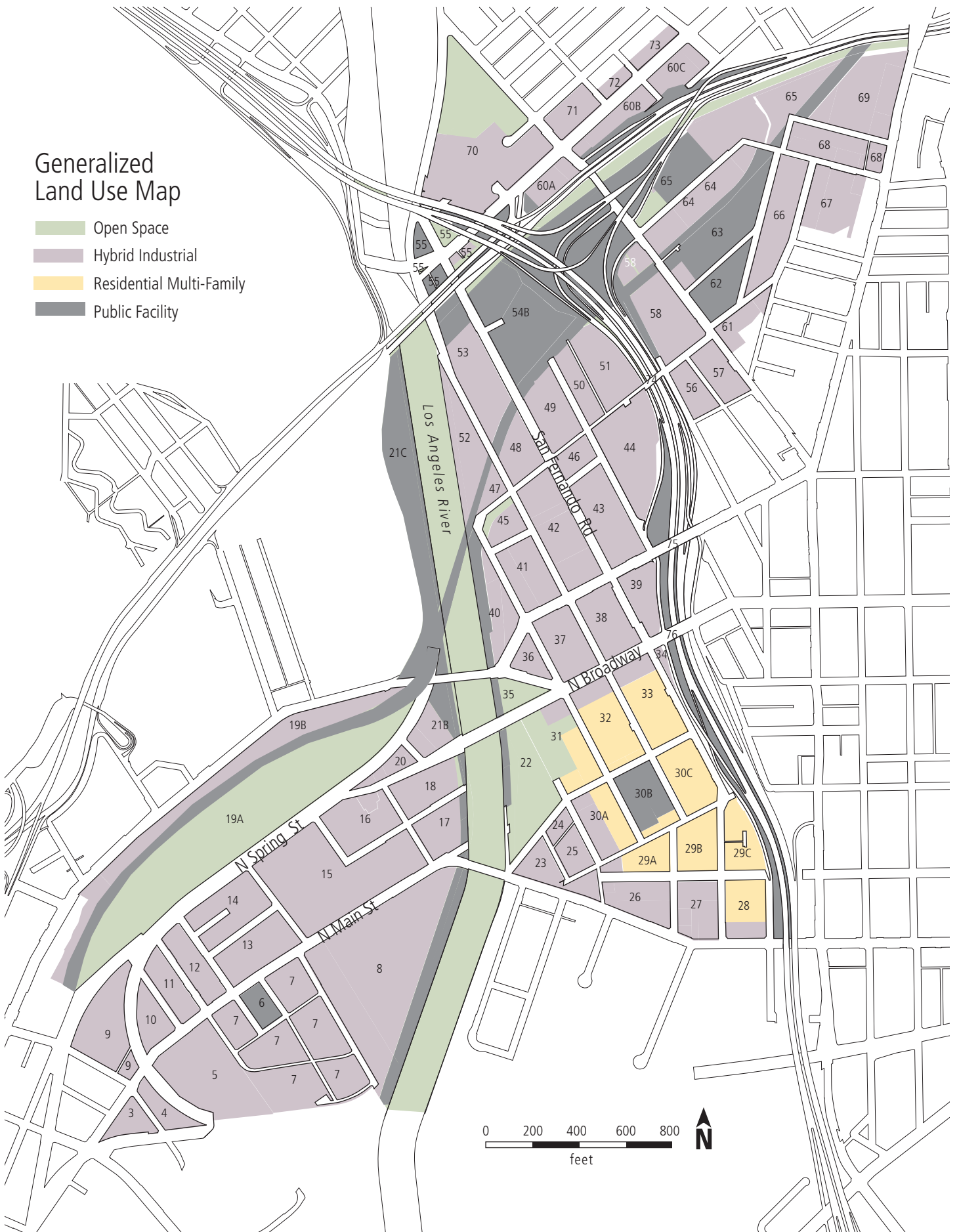
Plan Boundary Map

- Los Angeles River and Arroyo Seco
- Specific Plan Area
- Metro Gold Line & Station












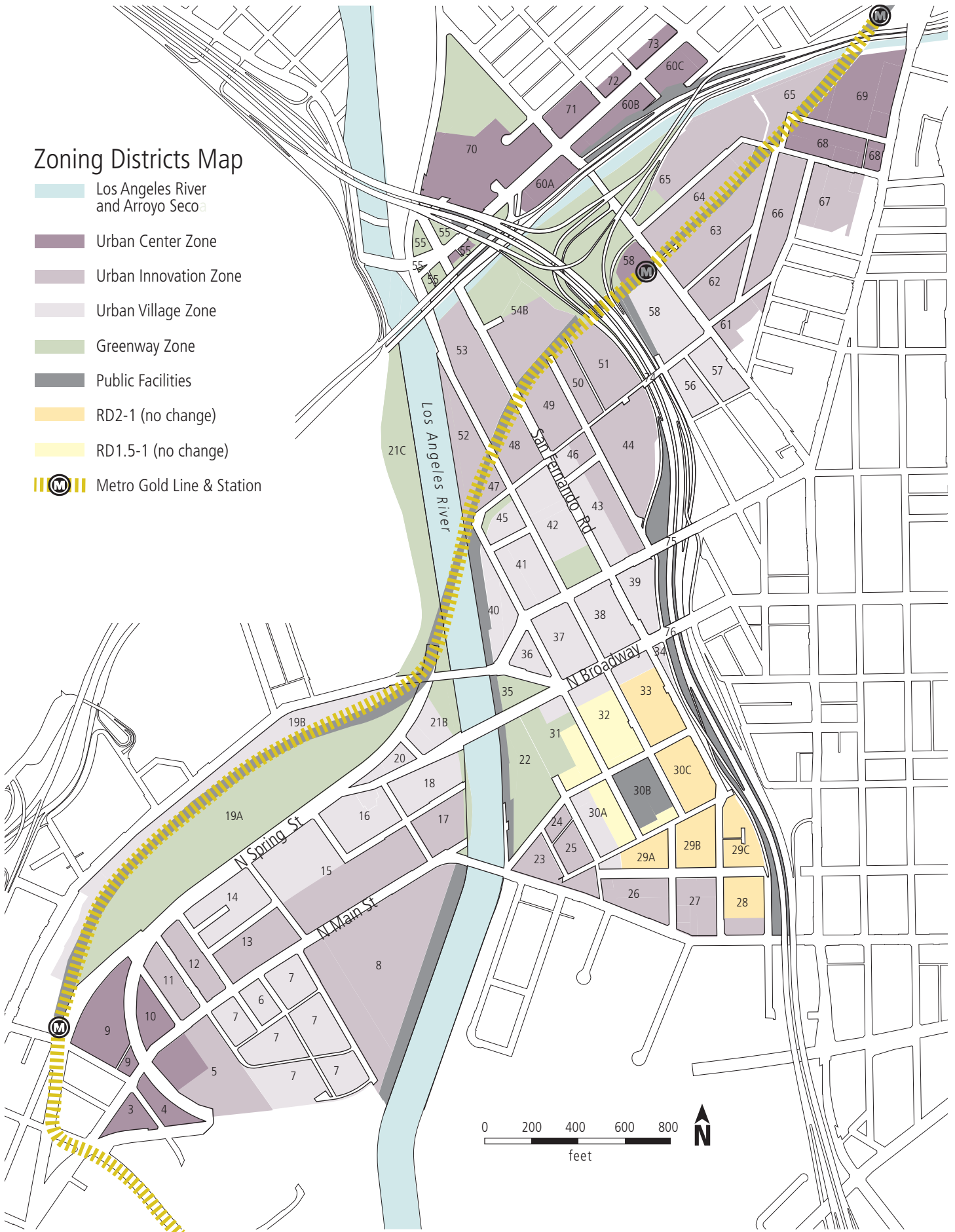
Generalized Land Use Map

- Open Space
- Hybrid Industrial
- Residential Multi-Family
- Public Facility












Zoning Districts Map

-  Los Angeles River and Arroyo Seco
-  Urban Center Zone
-  Urban Innovation Zone
-  Urban Village Zone
-  Greenway Zone
-  Public Facilities
-  RD2-1 (no change)
-  RD1.5-1 (no change)
-  Metro Gold Line & Station



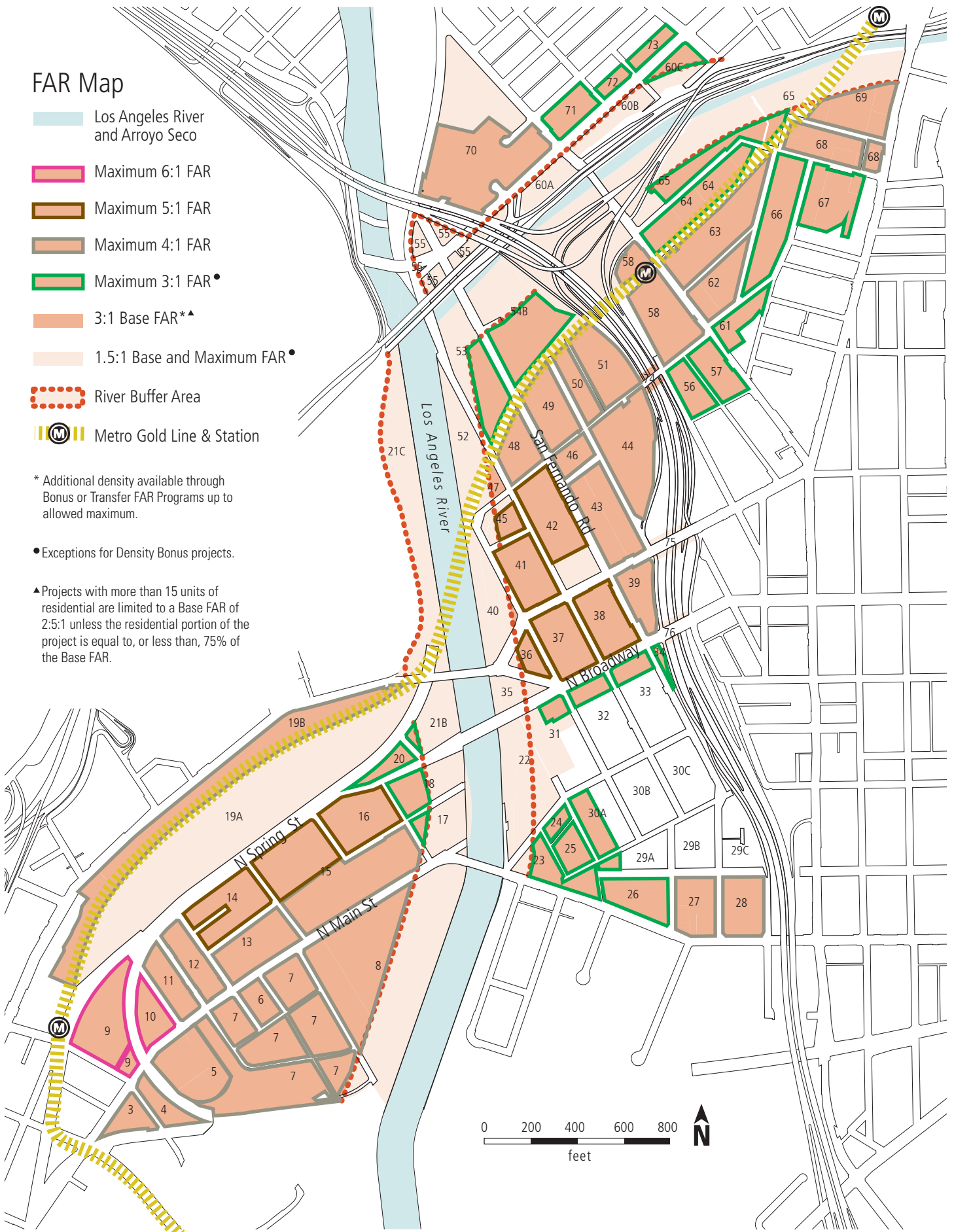
FAR Map

-  Los Angeles River and Arroyo Seco
-  Maximum 6:1 FAR
-  Maximum 5:1 FAR
-  Maximum 4:1 FAR
-  Maximum 3:1 FAR •
-  3:1 Base FAR*▲
-  1.5:1 Base and Maximum FAR •
-  River Buffer Area
-  Metro Gold Line & Station




* Additional density available through Bonus or Transfer FAR Programs up to allowed maximum.

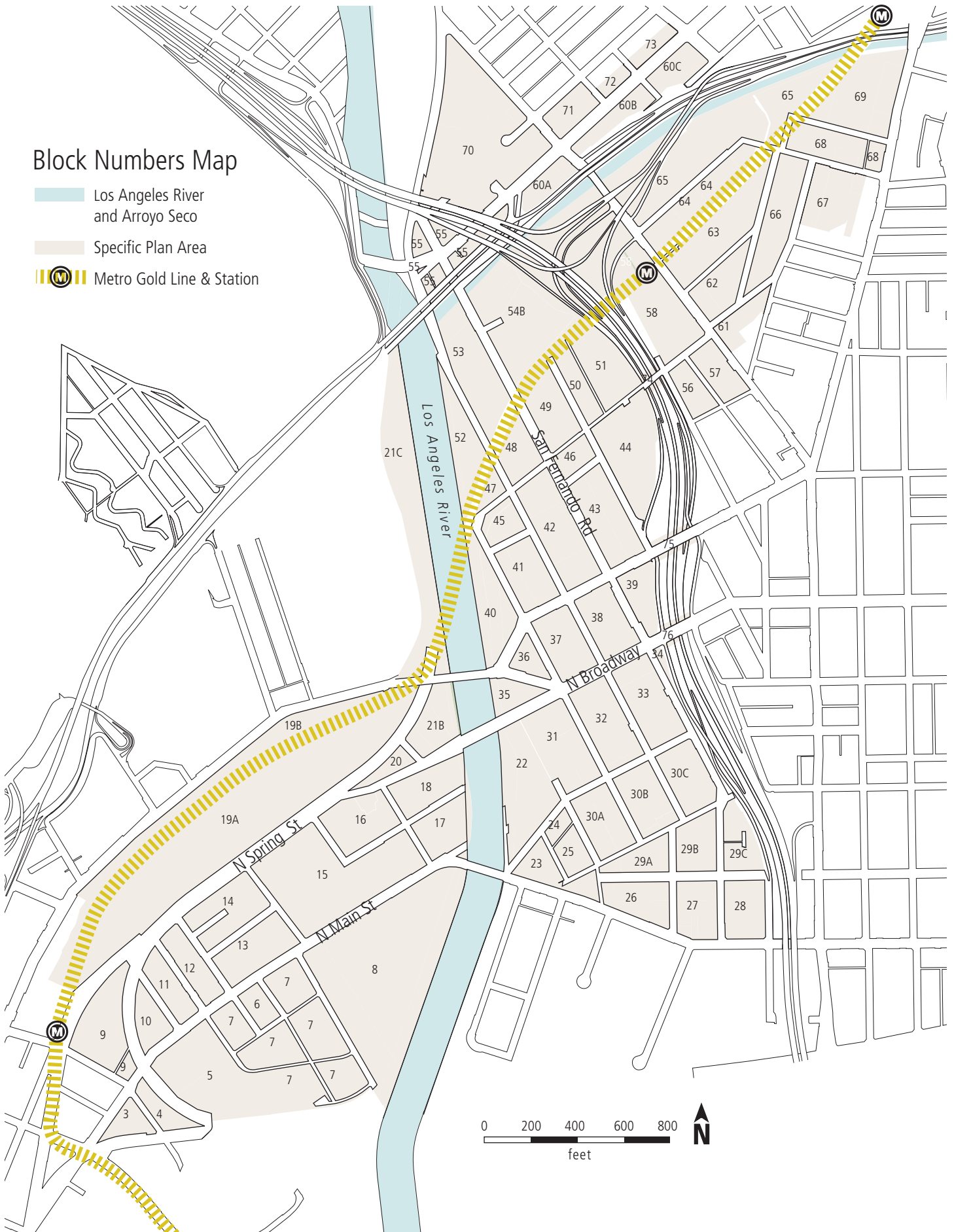
• Exceptions for Density Bonus projects.

▲ Projects with more than 15 units of residential are limited to a Base FAR of 2.5:1 unless the residential portion of the project is equal to, or less than, 75% of the Base FAR.













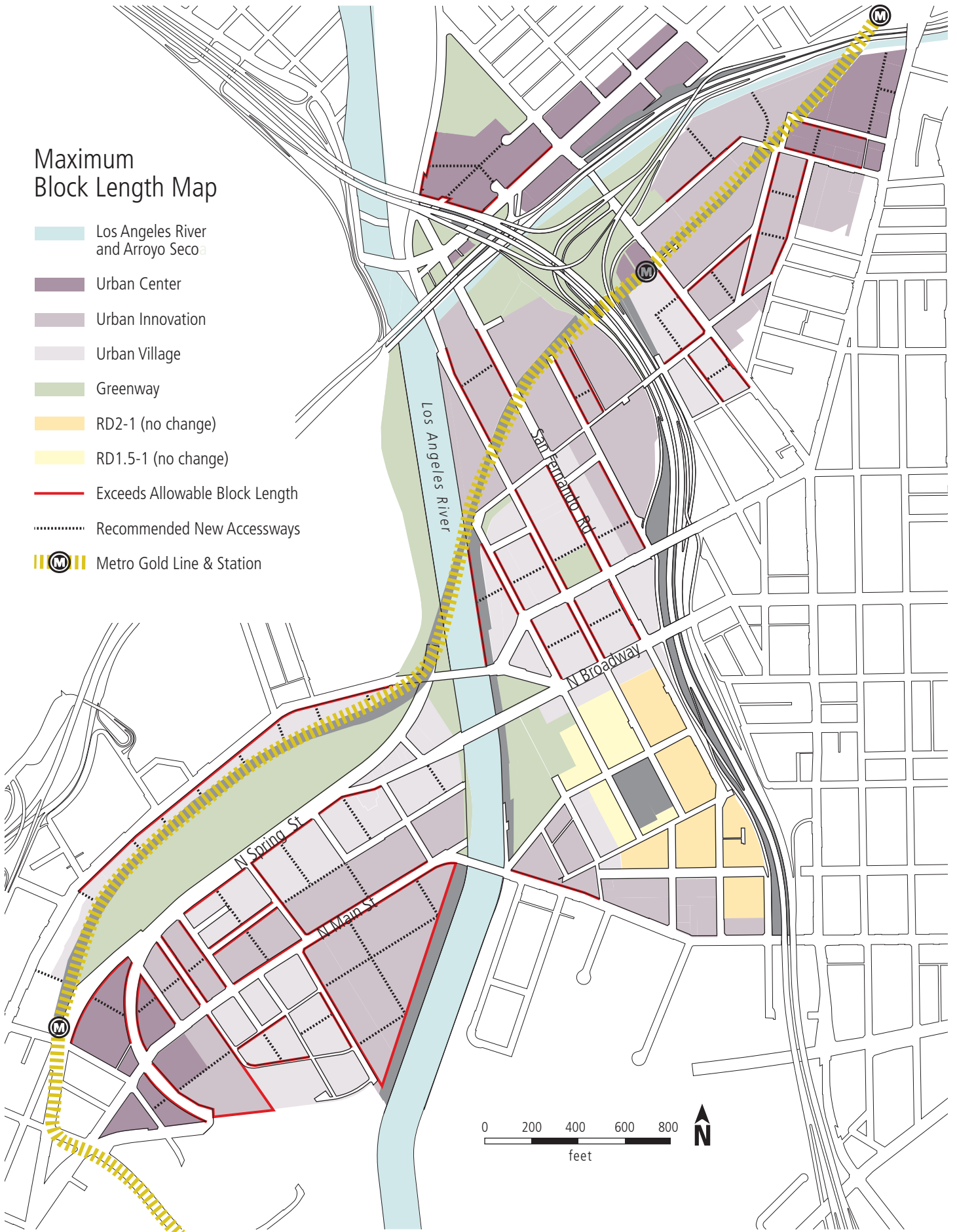
Block Numbers Map

-  Los Angeles River and Arroyo Seco
-  Specific Plan Area
-  Metro Gold Line & Station



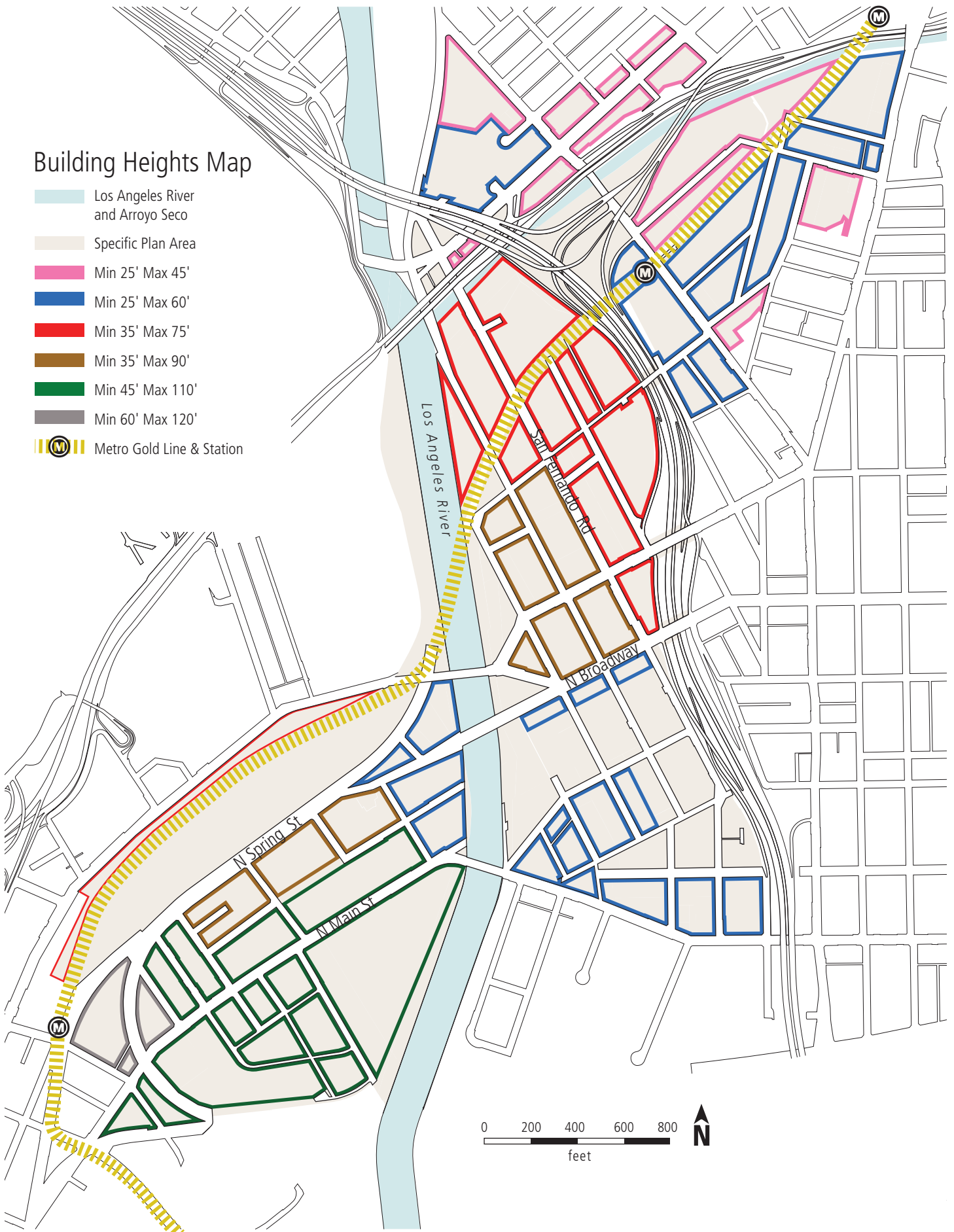
Maximum Block Length Map

-  Los Angeles River and Arroyo Seco
-  Urban Center
-  Urban Innovation
-  Urban Village
-  Greenway
-  RD2-1 (no change)
-  RD1.5-1 (no change)
-  Exceeds Allowable Block Length
-  Recommended New Accessways
-  Metro Gold Line & Station



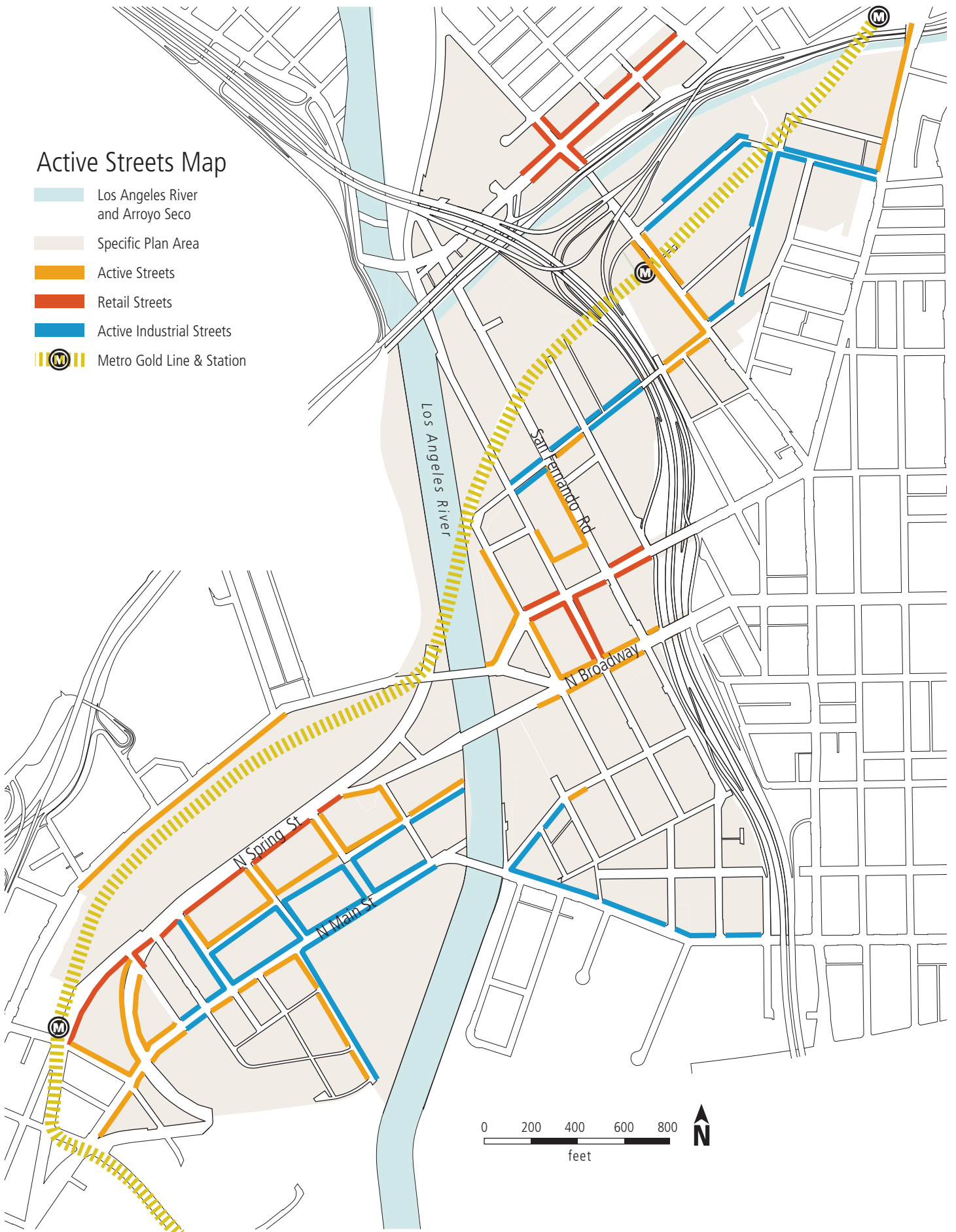
Building Heights Map

- Los Angeles River and Arroyo Seco
- Specific Plan Area
- Min 25' Max 45'
- Min 25' Max 60'
- Min 35' Max 75'
- Min 35' Max 90'
- Min 45' Max 110'
- Min 60' Max 120'
- Metro Gold Line & Station






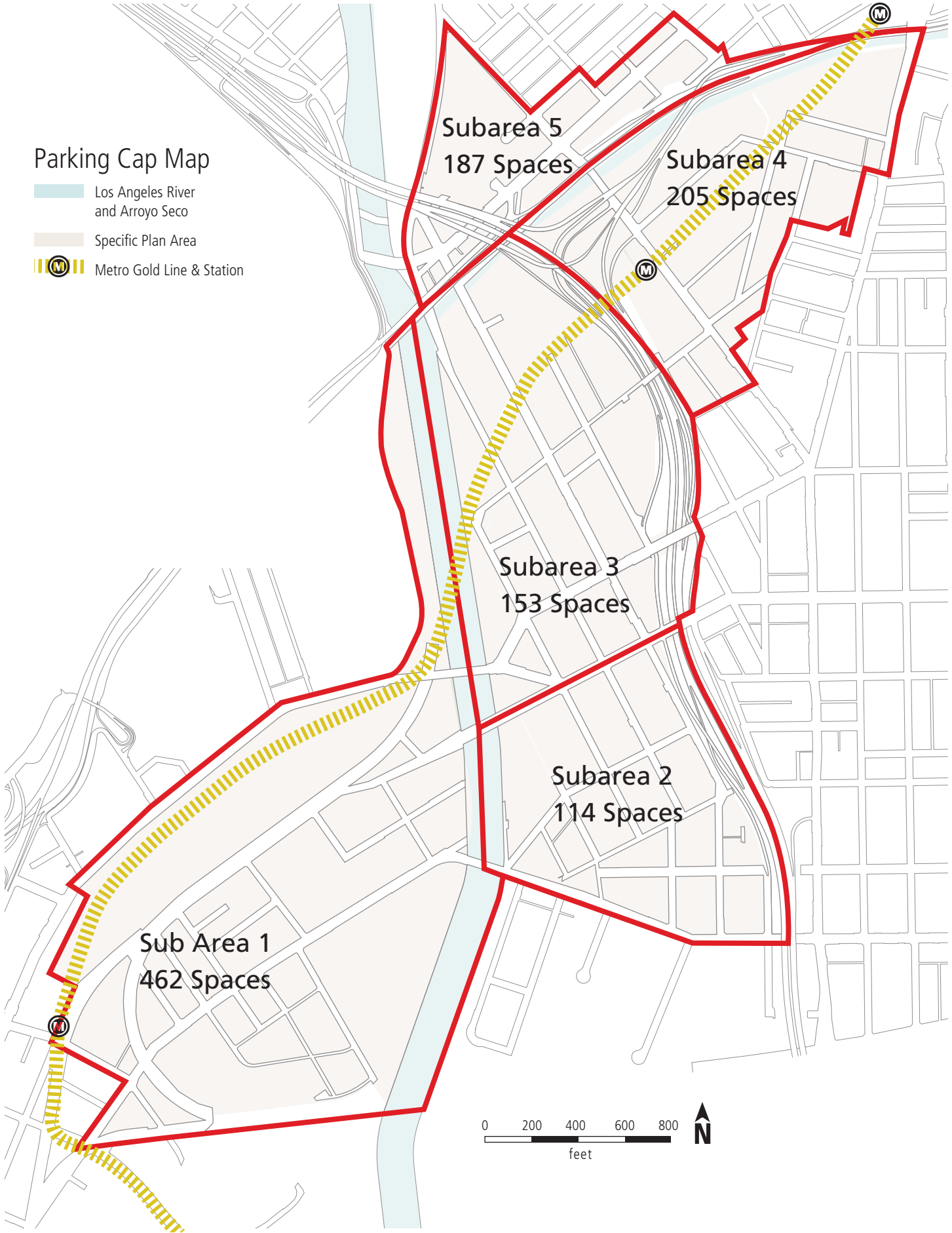
Active Streets Map

- Los Angeles River and Arroyo Seco
- Specific Plan Area
- Active Streets
- Retail Streets
- Active Industrial Streets
- Metro Gold Line & Station











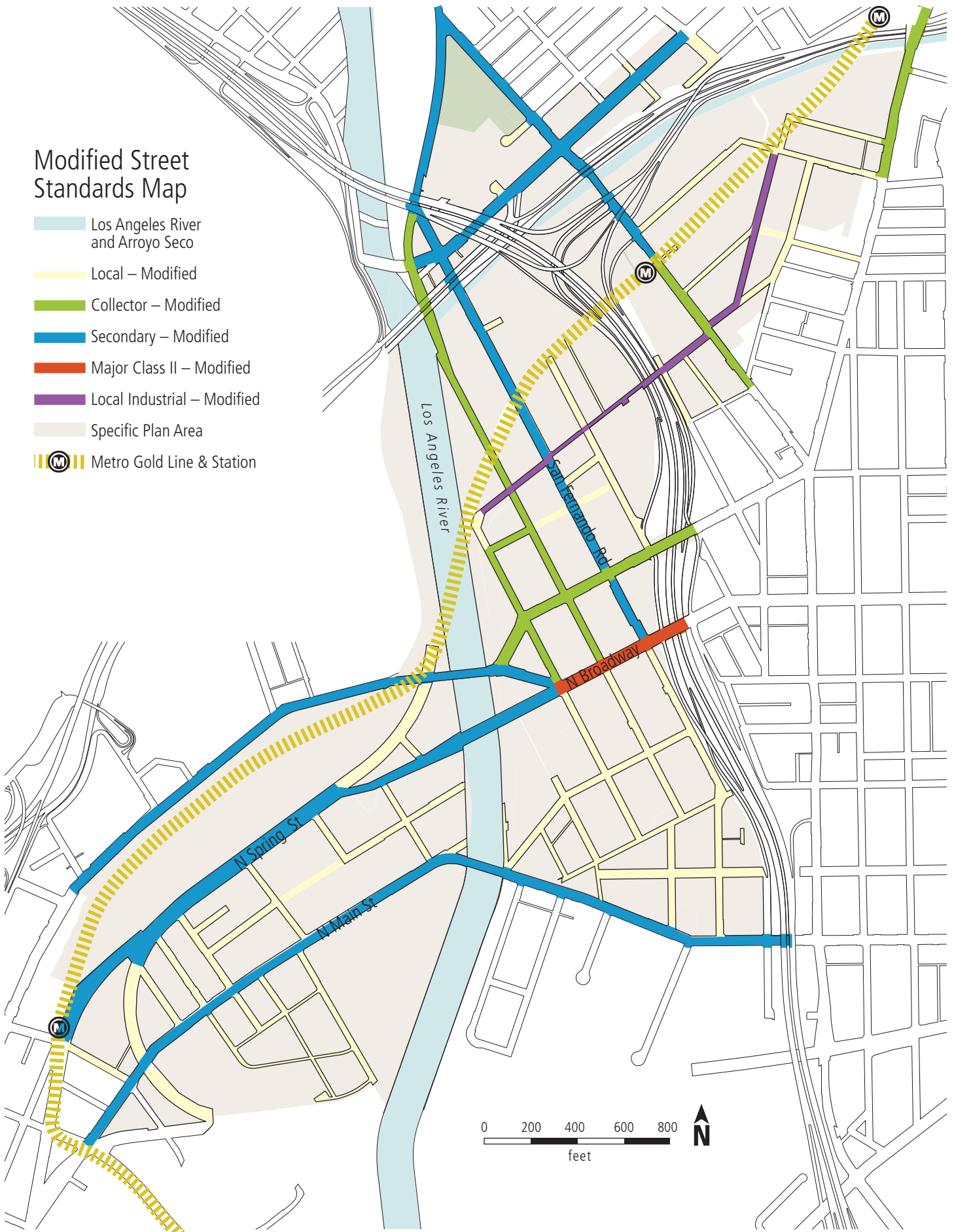
Parking Cap Map

-  Los Angeles River and Arroyo Seco
-  Specific Plan Area
-  Metro Gold Line & Station



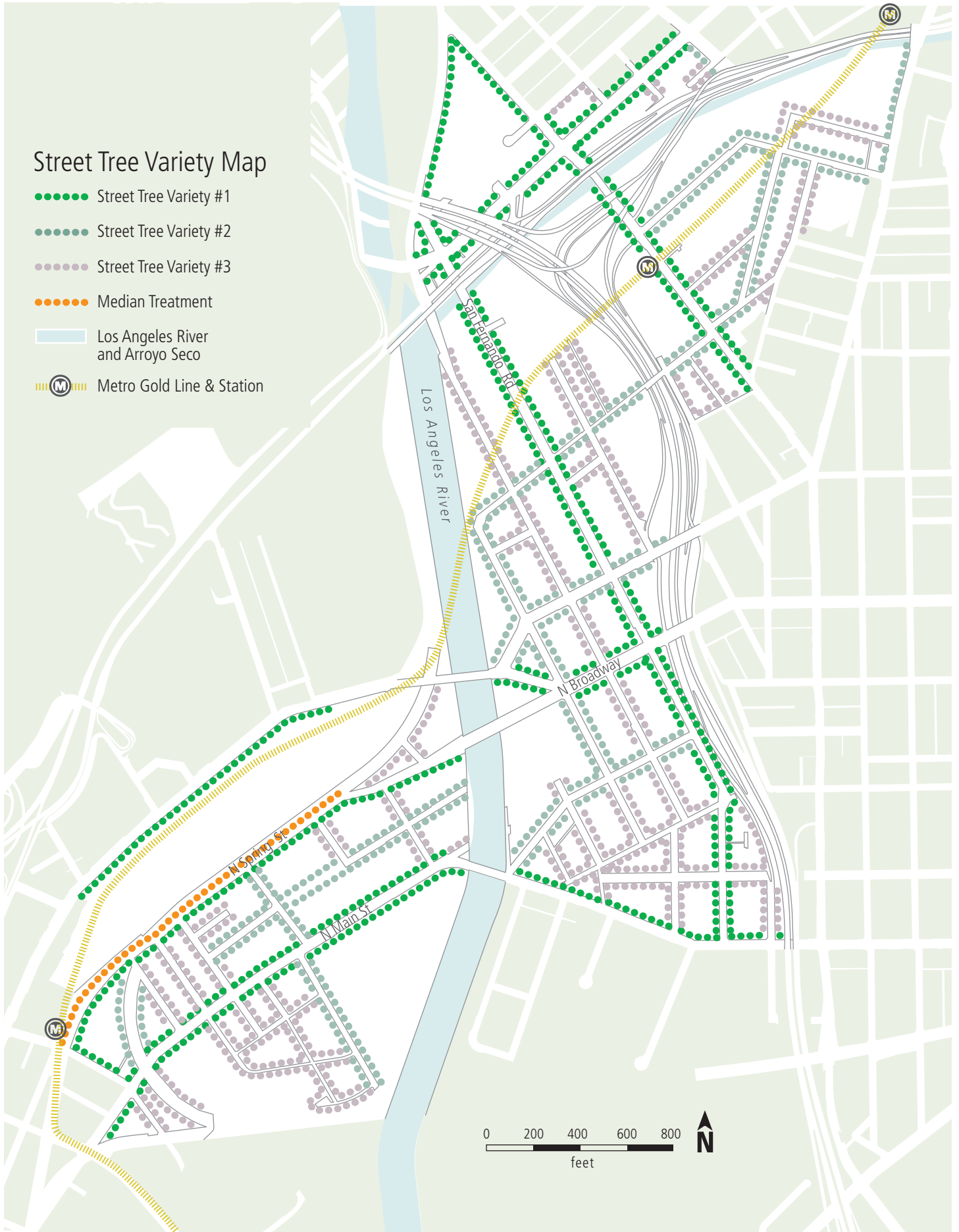
Modified Street Standards Map

-  Los Angeles River and Arroyo Seco
-  Local – Modified
-  Collector – Modified
-  Secondary – Modified
-  Major Class II – Modified
-  Local Industrial – Modified
-  Specific Plan Area
-  Metro Gold Line & Station



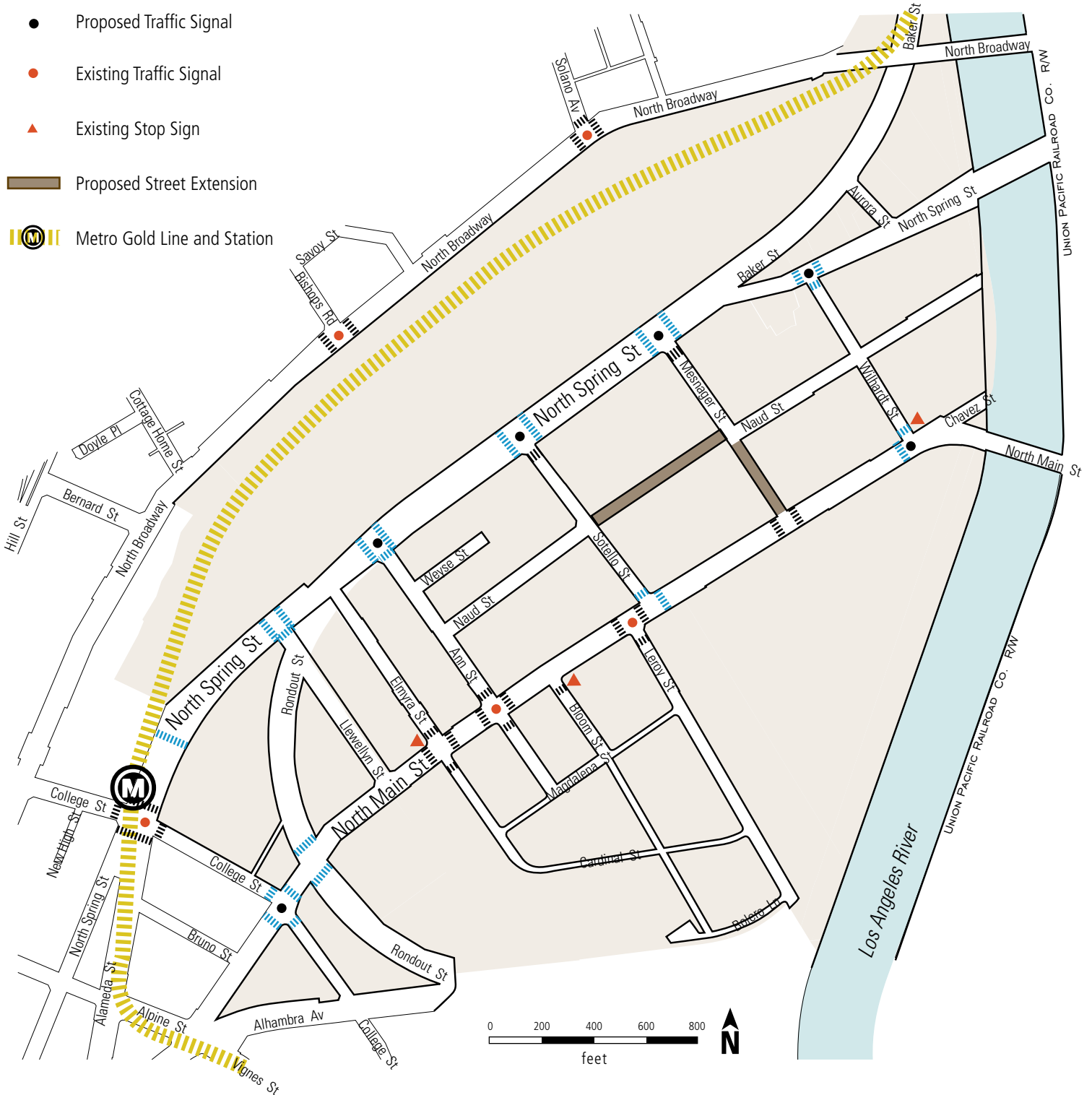
Street Tree Variety Map

- Street Tree Variety #1
- Street Tree Variety #2
- Street Tree Variety #3
- Median Treatment
- Los Angeles River and Arroyo Seco
- Ⓜ Metro Gold Line & Station








Subarea 1 Street Map

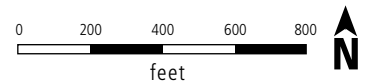
-  Los Angeles River and Arroyo Seco
-  Specific Plan Area
-  Zebra Striping for Existing Crosswalks
-  Zebra Striping for Proposed Crosswalks
-  Proposed Traffic Signal
-  Existing Traffic Signal
-  Existing Stop Sign
-  Proposed Street Extension
-  Metro Gold Line and Station



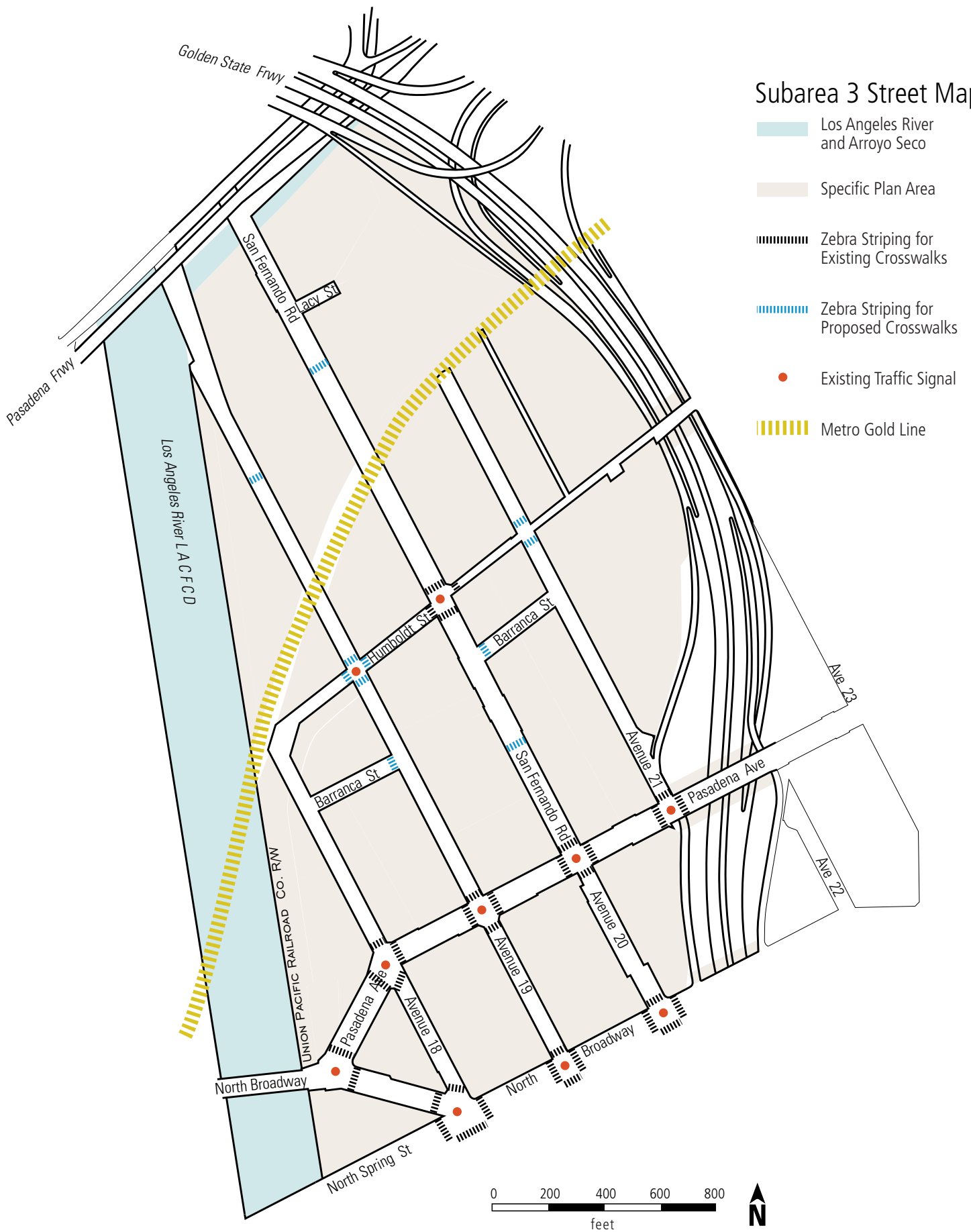


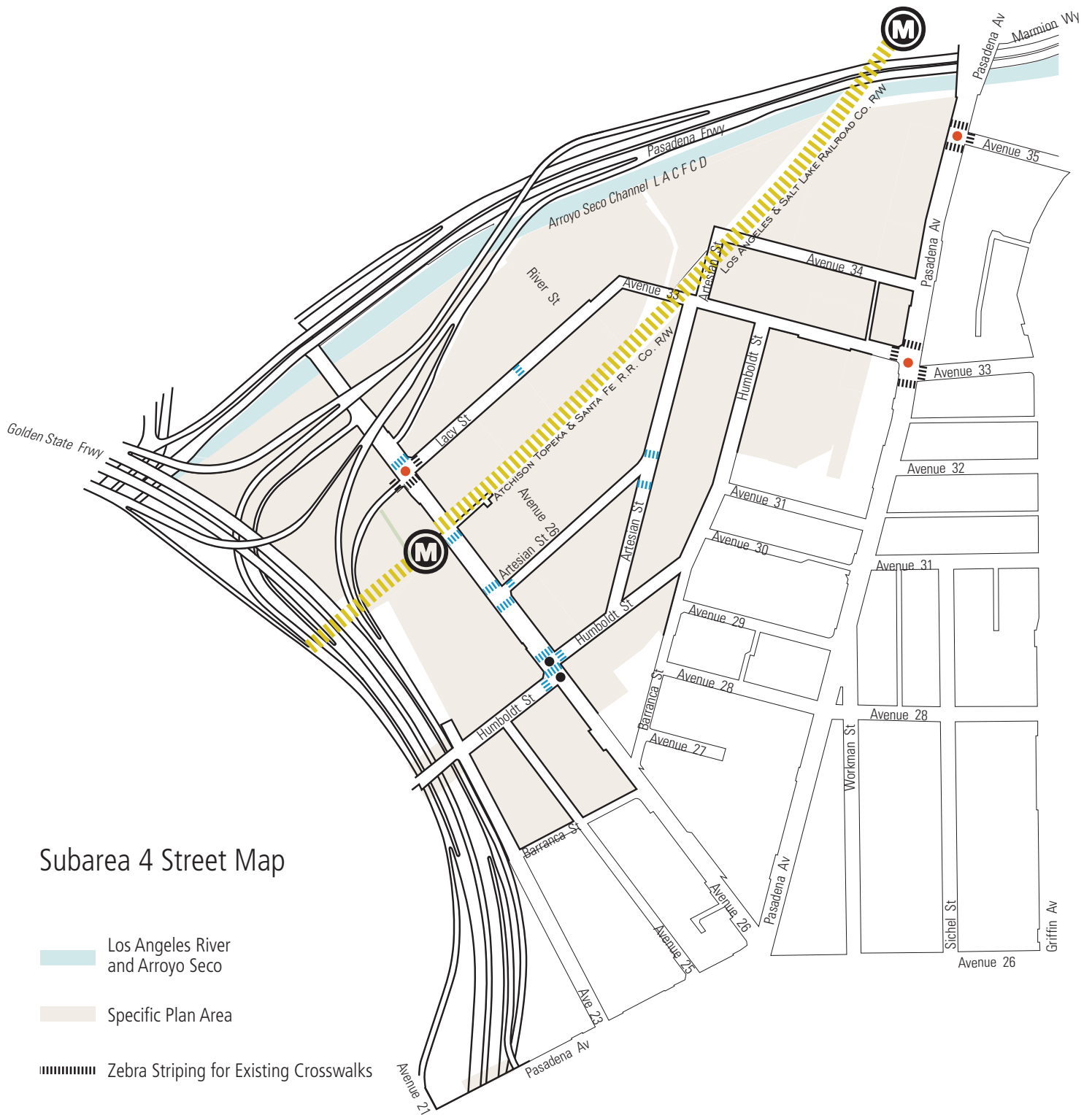
Subarea 2 Street Map

-  Los Angeles River and Arroyo Seco
-  Specific Plan Area
-  Zebra Striping for Existing Crosswalks
-  Zebra Striping for Proposed Crosswalks
-  Proposed Traffic Signal
-  Existing Traffic Signal
-  Existing Stop Sign
-  Proposed Street Extension



Subarea 3 Street Map



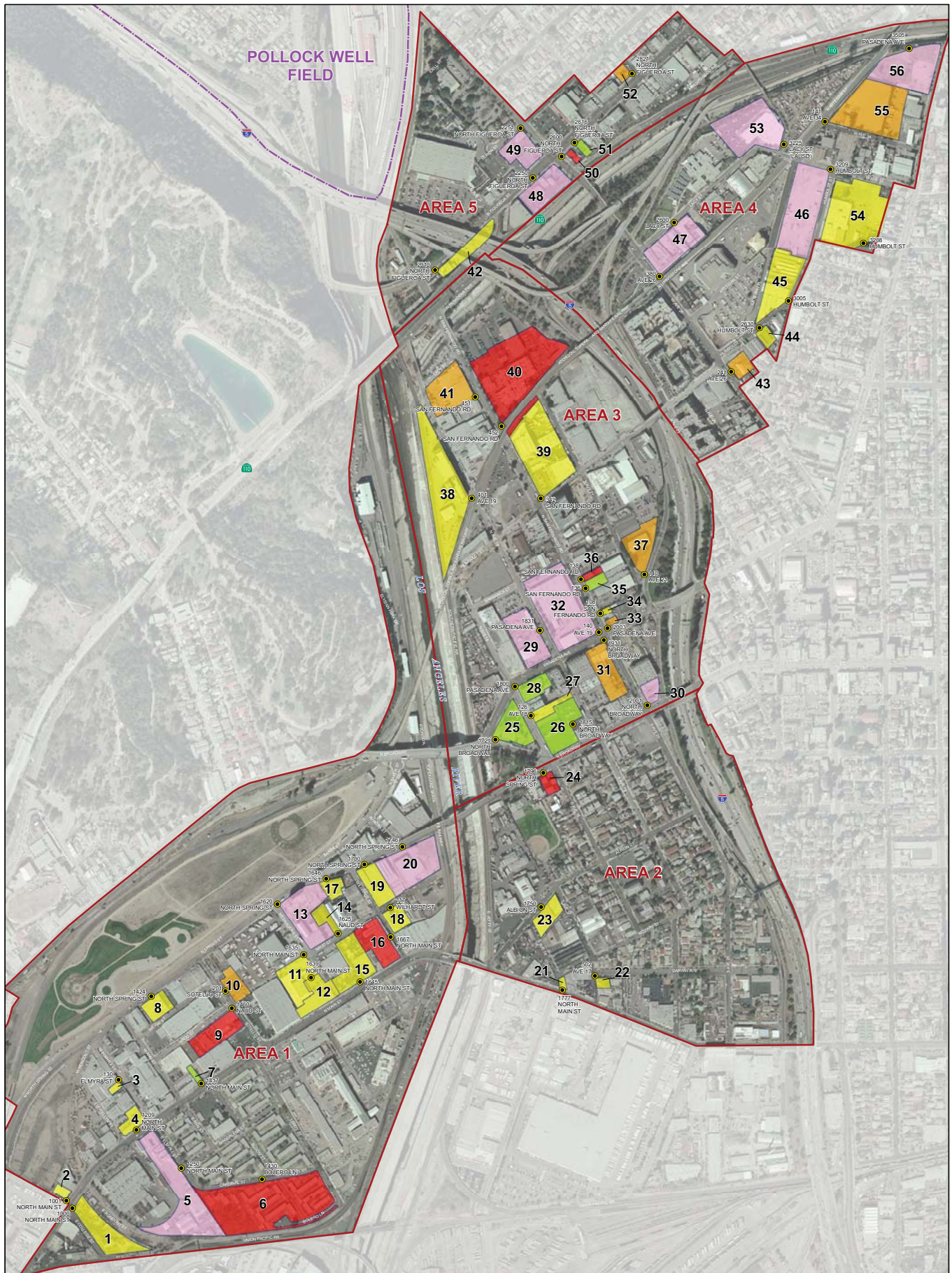


Subarea 4 Street Map

-  Los Angeles River and Arroyo Seco
-  Specific Plan Area
-  Zebra Striping for Existing Crosswalks
-  Zebra Striping for Proposed Crosswalks
-  Proposed Traffic Signal
-  Existing Traffic Signal
-  Metro Gold Line & Station

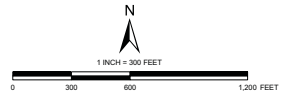


A6 Potential Hazardous Property Inventory- Appendix A1.B. of the Draft CASP



SOURCE: POLLOCK WELL FIELD - EPA, JUNE 2008; CASP BOUNDARY - ARUP 2008; AERIAL IMAGERY - ESRI. Copyright © 2009. Unlabeled

- LEGEND**
- GENERAL PHOTO LOCATION WITH ASSOCIATED ADDRESS
 - ▭ PROJECT BOUNDARY / AREA DIVISION
 - ▭ POLLOCK WELL FIELD BOUNDARY
 - ▭ SITE BOUNDARY
 - ENVIRONMENTAL HAZARD RANK AND SITE ID
 - 1 - HIGH POTENTIAL
 - 1B - MODERATE - HIGH POTENTIAL
 - 2 - MODERATE POTENTIAL
 - 3 - LOW-MODERATE POTENTIAL
 - 4 - LOW POTENTIAL



NOTE: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

Ningo + Moore		ENVIRONMENTAL HAZARD SITE ASSESSMENT	FIGURE
PROJECT NO.	DATE	CORNFIELD ARROYO SECO PROJECT (CASP)	2
207523003	1/10	LOS ANGELES, CALIFORNIA	

**TABLE 1 – SELECTED REDEVELOPMENT PROPERTIES ASSESSED
CORNFIELD ARROYO SECO SPECIFIC PLAN AREA, LOS ANGELES, CALIFORNIA**

Rank 1 - (red on Figure 2) meaning the property has known unresolved environmental issues, an open regulatory agency case. Ranking of 1 was further subdivided into 1A, which includes those properties where no obvious action is being taken (and no responsible party [RP] is known, based on reviewed information), and 1B which includes those properties where action is being taken by an identified RP or through a voluntary cleanup.

Rank 2 - (orange) meaning the property has had environmental concerns in the past, but there is a potential for further issues in the future, and thus further assessment is recommended. In some cases these sites may have received a regulatory closure that did not address all potential issues.

Rank 3 - (yellow) meaning the property has active permits (typically underground storage tanks [USTs], or hazardous waste permits) and/or known historic uses that have a potential for causing impact.

Rank 4 - (green) meaning the property has no significant known environmental issues, based on the information readily available.

SITE NUMBER	ADDRESS	ASSESSOR PARCEL NUMBER	GEOTRACKER NOTES (Regional Water Quality Control Board [RWQCB])	ENVIROSTOR NOTES (Department of Toxic Substances Control [DTSC])	FIRST SEARCH REVIEW NOTES (Compilation of Databases)	SIDEWALK OBSERVATION FOR RECs	RANK	RANK REASONING	RECOMMENDATIONS
1	1000 NORTH MAIN STREET	5409009010	Nothing found for this site.	Nothing found for this site.	The site has hazardous waste permits.	The site is currently used as a recycling center. There are railroad tracks on site.	3	(3) Permits are an indication of possible impacts.	Additional research, site inspection - Review historic info.
2	1001 NORTH MAIN STREET	5409007001	Nothing found for this site.	Nothing found for this site.	The site listed as a hazardous waste generator as Biner Ellison.	Unknown occupants; a sign reading Fu Yuan International was observed on the side of the building (facing 109 West College Street). No hazardous materials were observed from the street. Fu Yuan International is a manufacturer of art supplies; unclear if manufacturing occurred at this site.	3	(3) Manufacturing operations are potential sources of impacts.	Additional research on current and historic uses of site.
3	130 WEST ELMYRA STREET	5409006057	Nothing found for this site.	Nothing found for this site.	The site listed as a hazardous waste generator as Kim Phuoc Jewelry.	The site is currently occupied by KP Inc, a jewelry manufacturer for unidentified uses.	3	(3) Manufacturing operations are potential sources of impacts.	Additional research on current and historic uses of site.
4	1209 NORTH MAIN STREET	5409006048	Nothing found for this site.	Nothing found for this site.	Historic UST (inactive); site listed as Chevron USA gas station as of 1994.	The site is currently occupied by "Arts of Self Defense" studio and "Neon Light and Novelty" custom gifts. No other information was found on the reported former association of the site with Chevron.	3	(3) Historic uses might have impacted the site. Possibly, formerly used as a gasoline station.	Research the past uses of the site. Reverse Directory, Chain of Title, Aerial Photo Review.
5	1250 NORTH MAIN STREET	5409010032	The site was owned Allied Kelite. The lead agency is the Los Angeles Regional Water Quality Control Board (RWQCB), but DTSC is also providing oversight.	The site is referred to as Witco/Allied Kelite Division. The site is listed as overseen by DTSC under the VCP. The site status is No Further Action (NFA) as of October 1995. The site was historically used for manufacturing, chemical usage, and metal finishing. The contaminants of concern are metals and VOCs. The media affected at the site are soil vapor, soil, and groundwater ("other than drinking water). Groundwater sampling has been conducted at the site. (A copy of the Preliminary Endangerment Assessment (PEA) Report dated October 1995 for this site is available in the interactive Figure 2 on the CD.)	The site was used for blending and formulation of liquid and solid chemical compounds and as a metal finishing plant. Soil vapor, groundwater, and soil are impacted by VOCs and metals. An NFA for soil was granted in October 1995 from the DTSC. Groundwater is still impacted from the site and off site sources. Former site uses are for electroplating, plating, polishing, anodizing and coloring, industrial machine manufacturing, and miscellaneous chemical use and manufacturing.	Former occupants Kelite, Witco Allied Kelite are no longer active at this site, which is an abandoned building. Kelite Allied Witco was purchased by MacDermid Corp. in 1994.	1	(1B) Known releases at the site, NFA granted. Groundwater still impacted.	Assess reasons for the NFA. Identify current RP (likely MacDermid) See if the impacts have been delineated and/or cleaned up. Track down groundwater and soil sample reports. The available report in Geotracker is a PEA agreement with the Department of Toxic Substances Control (DTSC). Review DTSC, Los Angeles Regional Water Quality Control Board (LARWQCB) and City of Los Angeles Fire Department (LAFD) files. Potential Phase II or request further information from Responsible Party (RP).
6	1430 BOLERO LANE	5409012903	The site is the Burlington Northern Santa Fe (BNSF) Mission Tower site. A site assessment was conducted in June 2000 but the case is still open. No evidence in database of work performed after June 2000. The contaminants of concern at the site are metals, VOCs, arsenic, and chromium. (A copy of the Office of Environmental Health Hazard Assessment (OEHHA) toxicologist's review for this site is available in the interactive Figure 2 on the CD.)	Nothing found for this site.	The site is listed as a "spills case". The site assessment indicates that arsenic, chromium, other metals, total petroleum hydrocarbons (TPH), and VOCs were released.	Currently at the site are residential apartments with a maintenance yard for automobiles and tool storage.	1	(1A) Known spill and the media affected is not specified. Current residential use; site may be impacted.	Additional research, review the LARWQCB and the Office of Environmental Health Hazard Assessment (OEHHA) health risk files. Site is owned by the City of Los Angeles. Phase II recommended.
7	1417 NORTH MAIN STREET	5409005016	Nothing found for this site.	Nothing found for this site.	Nothing found for this site.	The site is currently occupied by Food Corp.	4	(4) No indication of impacts	None
8	1418- 1424 NORTH SPRING STREET	5409004002	Nothing found for this site.	Nothing found for this site.	The site is listed with UST (inactive) as Bradley Import Co. as of 1994.	The site is currently used as a Poultry Distributor. The new site building address is 1418 North Spring Street. The site address of 1424 North Spring Street was not found during the site visit.	3	(3) Site listed as historically containing a UST, which may have impacted the site.	Additional research on current and historic uses of site.

DTSC = California Department of Toxic Substances Control
 NFA = No Further Action
 UST = Underground Storage Tank
 VOCs = Volatile organic compounds
 UST = Underground Storage Tank
 AST = Aboveground Storage Tank
 VCP = Voluntary Cleanup Program
 PEA = Preliminary Environmental Assessment
 RCRA = Resource Conservation and Recovery Act
 RCQ = Small Quantity Hazardous Waste Generator
 REC = Recognized Environmental Condition
 LARWQCB = California Regional Water Quality Control Board - Los Angeles Region
 LAFD = City of Los Angeles Fire Department
 OEHHA = California Office of Environmental Health Hazard Assessment
 RP = Responsible Party
 TPH = Total petroleum hydrocarbons

**TABLE 1 – SELECTED REDEVELOPMENT PROPERTIES ASSESSED
CORNFIELD ARROYO SECO SPECIFIC PLAN AREA, LOS ANGELES, CALIFORNIA**

Rank 1 - (red on Figure 2) meaning the property has known unresolved environmental issues, an open regulatory agency case. Ranking of 1 was further subdivided into 1A, which includes those properties where no obvious action is being taken (and no responsible party [RP] is known, based on reviewed information), and 1B which includes those properties where action is being taken by an identified RP or through a voluntary cleanup.

Rank 2 - (orange) meaning the property has had environmental concerns in the past, but there is a potential for further issues in the future, and thus further assessment is recommended. In some cases these sites may have received a regulatory closure that did not address all potential issues.

Rank 3 - (yellow) meaning the property has active permits (typically underground storage tanks [USTs], or hazardous waste permits) and/or known historic uses that have a potential for causing impact.

Rank 4 - (green) meaning the property has no significant known environmental issues, based on the information readily available.

SITE NUMBER	ADDRESS	ASSESSOR PARCEL NUMBER	GEOTRACKER NOTES (Regional Water Quality Control Board [RWQCB])	ENVIROSTOR NOTES (Department of Toxic Substances Control [DTSC])	FIRST SEARCH REVIEW NOTES (Compilation of Databases)	SIDEWALK OBSERVATION FOR RECs	RANK	RANK REASONING	RECOMMENDATIONS
9	1460 NAUD STREET	5409005022 5409005023 5409005024	Nothing found for this site on this database.	This site is referred to as Champion Brass Manufacturing Company, and is listed as an evaluation is needed. The Envirostor website indicates "For the clean-up Status Reference: 1248 Local Agency as of February 2004." Additional information concerning this clean-up status reference was not provided on the Envirostor website.	Evaluation needed to be conducted at the site. The past use of the site was by a brass manufacturer. There is limited information available.	Currently the site contains a large building occupied by Super Home Mart with second level parking.	1	(1A) DTSC recommendation is "Evaluation needed."	Research the past uses of the site with a DTSC and LAFD File Review. Possibly reverse directory, aerial photos and chain of title reviews. Identify why the site needs to be evaluated. Check RP status. Phase II recommended.
10	201 WEST SOTELLO STREET	5409003029	The site currently has an UST.	Nothing found for this site.	Site listed with UST and on hazardous waste tracking system for oil/water separator sludge.	The site is currently being utilized for bus storage and maintenance with lifts by Atlantic Express Transportation Group. The site is adjacent to a metals scrap yard.	2	(2) Permitted USTs at the site, possible impacts from adjacent property.	Review tank records and a LAFD File Review. Evaluate corner property for possible off site impacts.
11	1635 NORTH MAIN STREET	5409003041	Nothing found for this site.	Nothing found for this site.	The site has hazardous waste permits for: -Aqueous solution with organic residues >10% (0.22935 tons per year) -Unspecified Solvent Mixture (0.60465 tons per year), -Unspecified Organic Mixture (0.22935 tons per year).	The site contains a large building which was addressed as 1639 North Main Street and also identified as 1635 Main Street, occupied by Vaughn Benz. No indications of potential environmental concerns were observed from the street.	3	(3) Hazardous waste permits are an indication of possible impacts, but relative low volumes of waste indicate impact likely limited.	Site inspection to investigate current site uses.
12	1639 NORTH MAIN STREET	5409003034	Nothing found for this site.	Nothing found for this site.	Site listed with active UST.	A sign on the site building indicates the occupant is I-basic Intima. The site is associated with 1635 North Main Street (Vaughn Benz). No indications of potential environmental concerns were observed from the street. The site contains a large building.	3	(3) Permitted UST is an indication of possible impacts. This address is on the same building as 1635 North Main Street.	Site inspection to investigate current site uses. Review tank records and a LAFD File Review.
13	1620 NORTH SPRING STREET	5409002016	The site is the former Main Street Dairy, and has a leaking UST case which was closed in January 1997. The site contaminant of concern is gasoline.	Nothing found for the site on this database.	A gasoline leak was discovered at the site. Free product was removed from the groundwater table. Groundwater samples indicate methyl-tertiary butyl ether (MTBE) concentrations were reported at 36 parts per billion (ppb).	The site is currently occupied by Veolia, as a Metrolink Bus Maintenance yard. The property is fenced around the perimeter. An Avco Gas aboveground storage tank (AST), vehicle lifts, and possible chemical storage containers were observed at the site.	1	(1B) Groundwater apparently still impacted. Past and current uses have the potential to have impacted the site.	Further investigation needed. LARWQCB and LAFD File Review. Phase II recommended.
14	1625 NAUD STREET	5409002017	Nothing found for this site.	Nothing found for this site.	The site is listed with an inactive UST.	The site is currently occupied by the Southern California Steel Company. The site is adjacent to Stadco and Veolia Metro Bus Maintenance yard (addressed at 1623 Naud Street and 1620 North Spring Street, respectively). 55-gallon drums were observed the rear area.	3	(3) UST and current uses have the potential to impact the site.	Site inspection to investigate current site uses. Review tank records and a LAFD File Review.
15	1645 NORTH MAIN STREET	5409003036 5409003037 5409003038	Nothing found for this site.	Nothing found for this site.	Site listed on the California hazardous waste tracking system.	The site is currently occupied by the California Department of General Services. Two ASTs were seen on site; one labeled as containing diesel fuel, and the other containing nitrogen gas.	3	(3) ASTs were observed on site.	Site inspection and LAFD file review.
16	1667 NORTH MAIN STREET	5409003018	The site is the Sage Property. The case was closed in August 2002. The contaminants of concern are chromium, petroleum, tetrachloroethylene (PCE), other metals, and VOCs.	Site listed as inactive, but needs an evaluation as of June 1995. The DTSC received a complaint about unlawful release or disposal of hazardous waste or hazardous substances, including PCE, trichloroethylene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), and toluene, at the site and the neighboring property. Due to evidence of on-site contamination, the DTSC recommends conducting a Preliminary Environmental Assessment (PEA).	DTSC indicates an evaluation is needed and recommends conducting a PEA. Unlawful disposal of PCE, TCE, 1,1,1-TCA, and toluene was reported at the site. The site was historically used for tire manufacturing (except retreading), then a circuit breaker company. Available hazardous waste records indicates halogenated solvents for degreasing, ignitable waste, corrosive waste, lead, and various others chemicals have been used at the site.	Oriental art statues and pottery glazed in metal were observed at the site The site is also addressed as 1650 North Naud Street.	1	(1A) There are known impacts at the site. The DTSC recommends a PEA, but there is no record of it being performed.	Check for recent environmental work conducted at the site. Further investigation needed. DTSC and LAFD File Review. Check RP status. Phase II recommended.

DTSC = California Department of Toxic Substances Control
 NFA = No Further Action
 tpy = tons per year
 VOCs = Volatile organic compounds
 UST = Underground Storage Tank
 AST = Aboveground Storage Tank
 VCP = Voluntary Cleanup Program
 PEA = Preliminary Environmental Assessment
 RCRA = Resource Conservation and Recovery Act
 RCQ = Small Quantity Hazardous Waste Generator
 ERO = Recognized Environmental Condition
 LARWQCB = California Regional Water Quality Control Board - Los Angeles Region
 LAFD = City of Los Angeles Fire Department
 OEHHA = California Office of Environmental Health Hazard Assessment
 RP = Responsible Party
 TPH = Total Petroleum Hydrocarbons

**TABLE 1 – SELECTED REDEVELOPMENT PROPERTIES ASSESSED
CORNFIELD ARROYO SECO SPECIFIC PLAN AREA, LOS ANGELES, CALIFORNIA**

Rank 1 - (red on Figure 2) meaning the property has known unresolved environmental issues, an open regulatory agency case. Ranking of 1 was further subdivided into 1A, which includes those properties where no obvious action is being taken (and no responsible party [RP] is known, based on reviewed information), and 1B which includes those properties where action is being taken by an identified RP or through a voluntary cleanup.

Rank 2 - (orange) meaning the property has had environmental concerns in the past, but there is a potential for further issues in the future, and thus further assessment is recommended. In some cases these sites may have received a regulatory closure that did not address all potential issues.

Rank 3 - (yellow) meaning the property has active permits (typically underground storage tanks [USTs], or hazardous waste permits) and/or known historic uses that have a potential for causing impact.

Rank 4 - (green) meaning the property has no significant known environmental issues, based on the information readily available.

SITE NUMBER	ADDRESS	ASSESSOR PARCEL NUMBER	GEOTRACKER NOTES (Regional Water Quality Control Board [RWQCB])	ENVIROSTOR NOTES (Department of Toxic Substances Control [DTSC])	FIRST SEARCH REVIEW NOTES (Compilation of Databases)	SIDEWALK OBSERVATION FOR RECs	RANK	RANK REASONING	RECOMMENDATIONS
17	1646 NORTH SPRING STREET	5409002014	Nothing found for this site.	Nothing found for this site.	Site address listed a Resource Conservation & Recovery Act (RCRA) waste generator as Kim Phuoc Jewelry.	The site is currently an Art Gallery. There is a placard on the door indicating the site building was constructed in 1925.	3	(3) Hazardous waste permits are an indication of possible impacts, but relative low volumes of waste indicate impact likely limited.	Site inspection to investigate current site uses.
18	117 WEST WILHARDT STREET	5409002021	The site currently has an UST.	Nothing found for this site.	Site listed with an active UST.	Current property occupant is Daily Seafood Company. The site is adjacent to 119 Wilhardt (which contains unknown users), and 1716 Naud Street which is occupied by Left Coast Electric Inc. (where drums, pallets, and chemical containers were observed).	3	(3) Current uses (Permitted UST) have the potential to impact the site.	Check for possible impacts from surrounding properties. DTSC and LAFD File Review. Phase II recommended.
19	1700 NORTH SPRING STREET	5409002019	Nothing found for this site.	Nothing found for this site.	A train track incident was reported at the site; a dead body was found.	The site is currently occupied by Soy Sauce and Canned Food, Inc. No hazardous materials were observed on the site from the public road.	3	(3) Historic uses might have impacted the site. (Railroad tracks)	Review historical site use, reverse directory, chain of title, historic aerial photo review. Phase II recommended.
20	1746 NORTH SPRING STREET	5409002029	Owned by Bortz Oil Company (BOC). The contaminant of concern is gasoline. (Copies of reports for this site are available in the interactive Figure 2 on the CD.)	State Superfund Site, and the site status indicates there are active land use restrictions as of August 1996. The impacts were caused by Bortz Oil Company (BOC) which was a distributor and manufacturer of chemicals. The contaminants of concern are volatile organic compounds (VOCs). The site cleanup program lead agency is the California Department of Toxic Substances Control (DTSC). Copies of reports available on the CD.	The site has active land use restrictions prohibiting residential reuse. The site historically was used for distribution and manufacturing of chemicals. A building fire occurred in August 1984. BOC was cited for spills, leaking piping valves and drums, and illegal disposal of chemicals. Soil and groundwater was impacted by VOCs and metals. Soils were cleaned-up as of August 2002 according to the DTSC. Groundwater is still impacted. The property next door is 1726 Naud Street and is owned by the same owner. Soil vapor extraction was conducted between June 2000 and April 2001. Soil vapor clean-up goals were met as of December 2001. Currently, groundwater is sampled semi annually.	The site does not appear to be actively used, and consists of an empty yard. One 55-gallon drum was observed on this site. The property adjacent to this site is addressed as 1726 North Spring Street, which was occupied by Luckey Import and Export, Inc.	1	(1B) On-going ground water concern. Land use restrictions suggest contamination left in place.	Review reports for nature and scope of cleanup and Prohibited Uses. Review and synopsise all environmental reports or complete Phase I ESA. Phase II recommended.
21	1777 NORTH MAIN STREET	5410019008	Nothing found for this site.	Nothing found for this site.	Site listed on the California hazardous waste tracking system.	The site is currently occupied by China Pacific Restaurant Equipment Inc. The site is adjacent to 1785 North Main Street (which is occupied by Ace Used Auto Parts and Dismantling).	3	(3) No indication of on-site impacts. Possible impacts from site use and surrounding properties.	Further investigate the uses of the Ace Used Auto Parts and Dismantling next door at 1785 N. Main. Research 1785 North Main Street Geotracker, Envirostor, and LAFD records. Phase II recommended.
22	502 SOUTH AVENUE 17	5410019004	The site reportedly has active hazardous waste permits.	Nothing found for this site.	The site is utilized for dismantling vehicle and sale of used auto parts. The site has active hazardous waste permits.	The site is currently occupied by R&F Used Auto Parts for used auto parts and a junk yard.	3	(3) Permits are an indication of possible impacts. Historic uses might have impacted the site.	Review historical site use, reverse directory, chain of title, historic aerial photo review.
23	1750 ALBION STREET	5447028001	Nothing found for this site.	Nothing found for this site.	The site has active hazardous waste permits, including (waste type, other organic solids) - 0.85 tons per year.	The site is currently occupied by General Truck Body, Inc. The inside of the building looks similar to a metals shop. The site is adjacent to General Restaurant Equipment Inc.	3	(3) Permits are an indication of possible impacts. Current and/or historic uses might have impacted the site.	Review historical site use, reverse directory, change of title, historic aerial photo review.
24	1796 NORTH SPRING STREET	5447026001	The site is Bill's Automotive shop and has a leaking UST case with no record of closure as of June 1997. The contaminant of concern is gasoline. The oversight agency is LARWQCB. (Copies of Quarterly Groundwater Monitoring reports are available for this site in the interactive Figure 2 on the CD.)	Nothing found for this site.	The site has active hazardous waste permits. A gasoline release occurred on site. MTBE migrated into groundwater with concentration of 180 ppb. The requested abatement method by the LARWQCB is to remove free product and floating product for MTBE in groundwater.	The site is currently occupied by an auto repair shop. 55-gallon drums and vehicle lifts were observed at the site.	1	(1A) There are known impacts at the site. The site is an open case.	Further investigation needed. Check for most recent reports. Check RP status. LARWQCB and LAFD File Review. Contact with RP or Phase II recommended.
25	1721 NORTH BROADWAY	5447020006	Nothing found for this site.	Nothing found for this site.	Site listed with and active UST as Young-Nak Press Church as of 1994.	The site building is currently utilized as a Church campus. Another address on the building reads 125 Avenue 18.	3	(3) Current uses (Permitted UST) have the potential to impact the site.	Further investigation needed. LARWQCB and LAFD File Review.

DTSC = California Department of Toxic Substances Control
 NFA = No Further Action
 tpy = tons per year
 VOCs = Volatile organic compounds
 UST = Underground Storage Tank
 AST = Aboveground Storage Tank
 VCP = Voluntary Cleanup Program
 REA = Preliminary Environmental Assessment
 RCRA = Resource Conservation and Recovery Act
 RCQ = Small Quantity Hazardous Waste Generator
 ERO = Recognized Environmental Condition
 LARWQCB = California Regional Water Quality Control Board - Los Angeles Region
 LAFD = City of Los Angeles Fire Department
 OEHHA = California Office of Environmental Health Hazard Assessment
 RP = Responsible Party
 THM = Total Halogenated Hydrocarbons

**TABLE 1 – SELECTED REDEVELOPMENT PROPERTIES ASSESSED
CORNFIELD ARROYO SECO SPECIFIC PLAN AREA, LOS ANGELES, CALIFORNIA**

Rank 1 - (red on Figure 2) meaning the property has known unresolved environmental issues, an open regulatory agency case. Ranking of 1 was further subdivided into 1A, which includes those properties where no obvious action is being taken (and no responsible party [RP] is known, based on reviewed information), and 1B which includes those properties where action is being taken by an identified RP or through a voluntary cleanup.

Rank 3 - (yellow) meaning the property has active permits (typically underground storage tanks [USTs], or hazardous waste permits) and/or known historic uses that have a potential for causing impact.

Rank 4 - (green) meaning the property has no significant known environmental issues, based on the information readily available.

Rank 2 - (orange) meaning the property has had environmental concerns in the past, but there is a potential for further issues in the future, and thus further assessment is recommended. In some cases these sites may have received a regulatory closure that did not address all potential issues.

SITE NUMBER	ADDRESS	ASSESSOR PARCEL NUMBER	GEOTRACKER NOTES (Regional Water Quality Control Board [RWQCB])	ENVIROSTOR NOTES (Department of Toxic Substances Control [DTSC])	FIRST SEARCH REVIEW NOTES (Compilation of Databases)	SIDEWALK OBSERVATION FOR RECs	RANK	RANK REASONING	RECOMMENDATIONS
26	1815 NORTH BROADWAY	5447021028	Nothing found for this site.	Nothing found for this site.	Site listed as a RCRA Small Quantity Generator (SQG) as Service Motor Parts Co.	The site is attached to the 1800 Pasadena Avenue site. This side of the property is used as the Church bus parking lot.	4	(4) No indication of on-site impacts. Possible impacts from surrounding properties.	None
27	126 SOUTH AVENUE 18	5447021027	The site is listed with a permitted UST.	Nothing found for this site.	Site listed with active UST.	The entire block looks to be occupied by a church (with main address at 1800 Pasadena). There is one building with a sign for Jabels Cosmetics at 126 South Avenue 18.	3	(3) Current uses (Permitted UST) have the potential to impact the site.	Additional research, LAFD file review.
28	1800 NORTH PASADENA AVENUE	5447021022	Nothing found for this site.	Nothing found for this site.	Nothing found for this site.	The site building is currently a church; the parking area is utilized as a church bus parking lot.	4	(4) No indication of on-site impacts. Possible impacts from surrounding properties.	None
29	1831 NORTH PASADENA AVENUE	5447018900 5447018901	The site is the Los Angeles Department of Transportation (LADOT) Central Traffic Yard, and had a leaking UST case which was closed in March 2002. The contaminant of concern is aviation fuel.	Nothing found for this site.	Only soil was impacted by on-site Leaking UST. Case was closed.	The site is occupied by the LADOT Central Yard, and is utilized as a truck maintenance facility.	1	(1B) Known historic impacts at the site. Case was closed 3/2002. Current site uses have potential to impact the site.	Review closure report, LARWQCB and LAFD File Review. Site is owned by the City of Los Angeles. Phase II may be recommended based on review.
30	2001 NORTH BROADWAY	5447023018	The site is the NASA Oil Company. The site has a leaking UST case which was closed in November 2006. The contaminant of concern is gasoline. (Copies of Groundwater Monitoring reports are provided in the interactive Figure 2 on the attached CD.)	Nothing found for this site.	The site has hazardous waste permits. There was a reported gasoline leak. MTBE concentrations in groundwater were reported at 65,000 ppb. According to First Search, the case is closed since 2008.	The site is currently a gas station with auto repair. Lifts, ASTs, drum storage, USTs, and pump stations were observed at the site.	1	(1B) Known historic impacts at the site. Current site uses have potential to impact the site.	Review closure report, LARWQCB and LAFD File Review. Site reconnaissance. Phase II recommended.
31	1931 NORTH BROADWAY	5447022027	Nothing found for this site.	Nothing found for this site.	The site has been used for machine manufacturing and fabricated metal products manufacturing. The site has hazardous waste permits.	The site is currently occupied by STADCO. 55-gallon drums, storage of chemicals, Invar solids (i.e., a nickel steel alloy), nitrogen ASTs, and a machine room were observed at the site.	2	(2) Current uses have the potential to impact the site. Permits are an indication of possible impacts. Drums and chemical storage bins observed at the site.	Further investigation needed. LAFD File Review. Site reconnaissance. Determine historical profile. Phase II recommended.
32	140 NORTH AVENUE 19	5447015901	The site is the Supply and Maintenance Division of the City of Los Angeles Fire Department (LAFD). The site had a leaking UST case which was closed in March 1993. The contaminant of concern was gasoline. UST(s) still present on the site.	Nothing found for this site.	A gasoline leak was discovered at the site. Approximately 3 gallons of ethyl ether was spilled (dumped), which impacted the soil. Chemicals found in soil consist of benzene, methyl ethyl ketone (MEK), TCE, PCE, and others. The site is used for general auto paint, maintenance, and repair.	The site is currently the City of Los Angeles Fire Department, Supply and Maintenance Yard. There is an on-site fueling station. Vehicle lifts and possible chemical storage containers were observed from the street.	1	(1B) Known gasoline spill and the media affected is soil. Chemicals found in soil indicate impacts other than known gasoline leak.	LARWQCB and LAFD File Review. Site reconnaissance. Determine historical profile. Phase II recommended. Site is owned by the City of Los Angeles.
33	2003 NORTH PASADENA AVENUE	5447014001	Nothing found for this site.	Nothing found for this site.	The site has hazardous waste permits.	The site is currently a radiator repair shop. Lifts and a possible drum storage area were observed.	2	(2) Historic and current uses might have impacted the site. Permits are an indication of possible impacts.	Review historical site use, reverse directory, chain of title, historic aerial photo review. LAFD File Review. Site inspection.
34	108 NORTH SAN FERNANDO ROAD	5447014003	Nothing found for this site.	Nothing found for this site.	The site has hazardous waste permits.	The site building is currently used as an art shop, and adjacent to a radiator repair shop (at 2003 Pasadena Avenue).	3	(3) Permits are an indication of possible impacts. Next door is a radiator repair shop.	Review historical site use, reverse directory, chain of title, historic aerial photo review for this site as well as adjacent site.
35	136 NORTH SAN FERNANDO ROAD	5447014025	Nothing found for this site.	Nothing found for this site.	Site listed on the California hazardous waste tracking system for small amounts of liquid wastes.	The name on the side of the building indicates the site is occupied by the National Wire and Cable Company. No hazardous materials were observed from the public thoroughfare.	4	(4) No indication of impacts.	None
36	138 NORTH SAN FERNANDO ROAD	5447014024	Nothing found for this site.	Nothing found for this site.	The site was historically used to manufacture industrial batteries. Groundwater beneath the site is suspected to be contaminated. There was a possible illegal discharge of hazardous waste into an unlined pit in the rear and driveway portions of the site. Maximum lead concentrations of 30,000 mg/kg and the minimum pH of 0.48 were reported. The site has active deed restrictions. An NFA status was granted by the DTSC. The First Search report included "(note: check deed restrictions at DTSC website.)". No other information was provided regarding the note to check deed restrictions.	Signs on building possibly indicate this building is occupied by a sports bar.	1	(1A) Active deed restrictions, possibly still contaminated.	Check for recent work conducted at the site. Further investigation needed. Check RP status. DTSC File Review. Phase II recommended.

DTSC = California Department of Toxic Substances Control
 NFA = No Further Action
 ppb = parts per billion
 VOCs = Volatile organic compounds
 UST = Underground Storage Tank
 AST = Aboveground Storage Tank
 VCP = Voluntary Cleanup Program
 REA = Remedial Environmental Assessment
 RCRA = Resource Conservation and Recovery Act
 SQG = Small Quantity Hazardous Waste Generator
 REC = Recognized Environmental Condition
 LARWQCB = California Regional Water Quality Control Board - Los Angeles Region
 LAFD = City of Los Angeles Fire Department
 OEHHA = California Office of Environmental Health Hazard Assessment
 RP = Responsible Party
 THF = Total Hazardous Inorganics

**TABLE 1 – SELECTED REDEVELOPMENT PROPERTIES ASSESSED
CORNFIELD ARROYO SECO SPECIFIC PLAN AREA, LOS ANGELES, CALIFORNIA**

Rank 1 - (red on Figure 2) meaning the property has known unresolved environmental issues, an open regulatory agency case. Ranking of 1 was further subdivided into 1A, which includes those properties where no obvious action is being taken (and no responsible party [RP] is known, based on reviewed information), and 1B which includes those properties where action is being taken by an identified RP or through a voluntary cleanup.

Rank 3 - (yellow) meaning the property has active permits (typically underground storage tanks [USTs], or hazardous waste permits) and/or known historic uses that have a potential for causing impact.

Rank 2 - (orange) meaning the property has had environmental concerns in the past, but there is a potential for further issues in the future, and thus further assessment is recommended. In some cases these sites may have received a regulatory closure that did not address all potential issues.

Rank 4 - (green) meaning the property has no significant known environmental issues, based on the information readily available.

SITE NUMBER	ADDRESS	ASSESSOR PARCEL NUMBER	GEOTRACKER NOTES (Regional Water Quality Control Board [RWQCB])	ENVIROSTOR NOTES (Department of Toxic Substances Control [DTSC])	FIRST SEARCH REVIEW NOTES (Compilation of Databases)	SIDEWALK OBSERVATION FOR RECs	RANK	RANK REASONING	RECOMMENDATIONS
37	140 NORTH AVENUE 21	5447012019	Nothing found for this site.	Nothing found for this site.	The site has hazardous waste permits	The site is currently a LADOT bus maintenance and storage yard. Vehicle lifts and ASTs were observed at the site.	2	(2) Historic and current uses might have impacted the site. Permits are an indication of possible impacts.	Review historic records, LAFD File Review. Site reconnaissance. Site operated by the City of Los Angeles. Phase II recommended.
38	401 NORTH AVENUE 19	5447005900	The site is listed as having a permitted UST.	Nothing found for this site.	Site listed with an active UST.	The back portion of the site is currently used as a LADOT truck maintenance facility. The front portion of the site contains a large building with a Bilingual Foundation of the Arts poster over the front doors (421 North Avenue 19). The site has railroad tracks on the western and southern borders. There are two old-appearing electric transformer towers which are suspected of containing polychlorinated biphenyls (PCBs). Stains were not observed beneath the transformers.	3	(3) Current uses (Permitted UST) have the potential to impact the site.	Review UST records, LAFD file review. Site is owned by the City of Los Angeles. Phase II recommended.
39	342 SAN FERNANDO ROAD	5447009017	The site is listed as having a permitted UST.	Nothing found for this site.	The site has hazardous waste permits. Site listed with an active UST.	The site is currently occupied by Good Will Industries.	3	(3) Current uses (Permitted UST) have the potential to impact the site. Permits are an indication of possible impacts.	Review UST records, LAFD file review.
40	452 SAN FERNANDO ROAD	5447003900 5447003902 5447009903 5447009901	The site is the San Fernando Consolidated Facility. The site has a leaking UST case. The case appears to still be open with significant amount of contamination still likely to be present. The potential contaminant of concern is diesel and gasoline. (Copies of the most recent Groundwater Monitoring reports are provided in the interactive Figure 2 on the attached CD.)	Nothing found for this site.	The site is referred as the San Fernando Consolidated Facility, San Fernando Road Consolidated, East Yard, East Street Maintenance District Yard and the City of LA General services. A piping leak was discovered from conducting subsurface monitoring at the site March 2004, it was leaking 1203 (gasoline). The leak was stopped by removing contents. The lead agency is the Regional Board. The current known status of the site is a Remediation Plan. The site has hazardous waste permits for: -off specification, aged or surplus organics (1.7 tons per year), -unspecified aqueous solution (2.5 tons per year), -waste oil and mixed oil (51.6 tons per year), -tank bottom waste (0.834 tons per year) and Aqueous solution with total organic residues less than 10% (6.72 tons per year.)	452 North San Fernando Road, is currently used as a maintenance yard for dump trucks, with an on-site fueling station, lifts, and possible chemicals stored bins.	1	(1A) Historic and current uses might have impacted the site.	LARWQCB and LAFD File Review. Synopsise environmental reports. Site is owned by the City of Los Angeles. Phase II recommended.
41	451 SAN FERNANDO ROAD	5447004001	Nothing found for this site.	Nothing found for this site.	The site listing indicates it has on-site dry-cleaning and laundry services. Tetrachloroethylene is listed under hazardous waste information. Site is listed with an active UST as Angelica Textile Services.	The site is currently occupied by Angelica's Health Services. It appears to be a large scale laundry services building. Possible PCE and TCE impacts. A 2-inch monitoring well was observed (MW9). Believed to be from 452 San Fernando Road GW investigation.	2	(2) Historic and current uses might have impacted the site. Possible impacts from an off-site source (452 San Fernando Road)	Research current site activities, develop historical profile. Phase II recommended.
42	2010 NORTH FIGUEROA STREET	5415001016	Nothing found for this site.	Nothing found for this site.	The site has hazardous waste permits for waste oil and mixed oil, produced at a rate of approximately 5.421 tons per year (TPY).	The site is currently utilized as a tow truck yard with tow trucks and recently towed cars. A diesel AST was observed at the site. There is possible truck maintenance conducted in one of the buildings at the site.	3	(3) Current uses have the potential to impact the site. Permits are an indication of possible impacts. Diesel AST observed at the site.	Review historic records, LAFD File Review. Site reconnaissance.

DTSC = California Department of Toxic Substances Control
 EPA = U.S. Federal Agency
 tpy = tons per year
 VOCs = Volatile organic compounds
 UST = Underground Storage Tank
 AST = Aboveground Storage Tank
 VCP = Voluntary Cleanup Program
 REA = Preliminary Environmental Assessment
 RCRA = Resource Conservation and Recovery Act
 RCQ = Small Quantity Hazardous Waste Generator
 REC = Recognized Environmental Condition
 LARWQCB = California Regional Water Quality Control Board - Los Angeles Region
 LAFD = City of Los Angeles Fire Department
 OEHHA = California Office of Environmental Health Hazard Assessment
 RP = Responsible Party
 TPH = Total Petroleum Hydrocarbons

**TABLE 1 – SELECTED REDEVELOPMENT PROPERTIES ASSESSED
CORNFIELD ARROYO SECO SPECIFIC PLAN AREA, LOS ANGELES, CALIFORNIA**

Rank 1 - (red on Figure 2) meaning the property has known unresolved environmental issues, an open regulatory agency case. Ranking of 1 was further subdivided into 1A, which includes those properties where no obvious action is being taken (and no responsible party [RP] is known, based on reviewed information), and 1B which includes those properties where action is being taken by an identified RP or through a voluntary cleanup.

Rank 2 - (orange) meaning the property has had environmental concerns in the past, but there is a potential for further issues in the future, and thus further assessment is recommended. In some cases these sites may have received a regulatory closure that did not address all potential issues.

Rank 3 - (yellow) meaning the property has active permits (typically underground storage tanks [USTs], or hazardous waste permits) and/or known historic uses that have a potential for causing impact.

Rank 4 - (green) meaning the property has no significant known environmental issues, based on the information readily available.

SITE NUMBER	ADDRESS	ASSESSOR PARCEL NUMBER	GEOTRACKER NOTES (Regional Water Quality Control Board [RWQCB])	ENVIROSTOR NOTES (Department of Toxic Substances Control [DTSC])	FIRST SEARCH REVIEW NOTES (Compilation of Databases)	SIDEWALK OBSERVATION FOR RECs	RANK	RANK REASONING	RECOMMENDATIONS
43	241 AVENUE 26	5205015005	Nothing found for this site.	The site is the former Baron Manufacturing property. The site is listed under special programs for RCRA 3012 regarding waste oil. The cause of contamination was not specified. The contaminant of concern is an unspecified solvent mixture.	The site has been used for sheet metal fabrication. Unspecified solvent mixtures were used at the site. Potential improper hazardous waste disposal and inventory issues for waste oil were identified. A site screening was conducted and no significant impacts were found. The site was granted an NFA by the DTSC in October 1994.	The site is currently used as a swap meet lot.	2	(2) Historic uses might have impacted the site.	Additional research, DTSC File Review. Phase II recommended.
44	2630 HUMBOLDT STREET	5205015014	Nothing found for this site.	Nothing found for this site.	The site has hazardous waste permits. Site listed with an inactive UST.	No hazardous materials were observed on site.	3	(3) Permits and UST are an indication of possible impacts.	Review historical site use, reverse directory, chain of title, historic aerial photo review. LAFD File Review. Site inspection.
45	3005 HUMBOLDT STREET	5205009003	Nothing found for this site.	Nothing found for this site.	Site is listed on the hazardous waste tracking system.	The site occupants currently include L.A. Cabinet & Millwork, Inc. Indications of various other occupants were observed in the same building; however, they were not identifiable from the road.	3	(3) The site is one suite of a large building, and is on the same lot as 3209 Humboldt Street along with many other types of businesses.	Further investigation needed of entire block, reverse directory, chain of title, historic aerial photo review.
46	3209 HUMBOLDT STREET	5205006053	Nothing found for this site.	The site is referred to as the former Kennington Property. The site status is active, with land use restrictions, as of April 1996. The lead regulatory oversight agency is the DTSC under the site voluntary cleanup program (VCP). Past uses of the site include battery manufacturing and manufacturing of electronics. The contaminants of concern at the site include lead, PCBs, PCE, and TCE. Reported concentrations of PCBs were at 24,076 parts per million (ppm), and concentrations of total recoverable petroleum hydrocarbons (TRPH) up to 73,050 ppm. A Final Remedial Investigation Report has been reviewed and approved by the DTSC. There are active land use restrictions at the site. (Copies of the Groundwater Monitoring reports for this site are available in the interactive Figure 2 on the CD.)	There are active land use restrictions at the site. The site was used in the past by a battery manufacturer, it was also used at one time for preparation of ant poison. The soil and groundwater are impacted with high levels of PCE, PCBs, TCE and metals (primarily lead). Reported concentrations of PCBs were at 24,076 ppm, and concentrations of TRPH up to 73,050 ppm. The site is in process of implementing a groundwater monitoring plan (for PCE and TCE). As directed by DTSC, fence and erosion controls are needed at the site until developed. Asbestos-containing materials (ACMs) were found in the previous building. Soil impacts were contained by concrete flooring (i.e., engineering controls).	Currently the site contains a large building with parking on the second level.	1	(1B) Active land use restrictions. Site still contaminated.	Check for recent work conducted at the site. DTSC File Review. Identify potential RPs. Phase II recommended.
47	380 AVENUE 26 2600 LACY STREET	5205011012	Nothing found for this site.	Nothing found for this site.	The site was used by the BlueLine Construction Authority in the past. Lead is listed under hazardous waste information. Substances released at the site are lead and total petroleum hydrocarbons (TPH), the lead agency is the LARWQCB. Case is closed.	The site is currently a film production studio. The title on the side of the building is Lacy Street Production Studios and American Wrecking Company (at 2600 Lacy Street). Blue drums were observed at the site.	1	(1B) Lead and TPH indicates a known release at the site. Case has been closed.	Additional research, LAFD and LARWQCB file review. Site was formerly used by Metropolitan Transit Authority (MTA). Phase II recommended.
48	2250 NORTH FIGUEROA STREET	5446016010 5446016003 5446016004 5446016012	The site is referred to as the Former 76 Station and Circle-K. The site had a leaking UST. The LUST case is closed as of July 2005. The contaminant of concern was gasoline. (Copies of Groundwater Monitoring reports for the site are available in the interactive Figure 2.)	Nothing found for this site.	The LUST case is closed. The site has hazardous waste permits.	The site is currently a Circle-K gas station with USTs and pump stations. Drums were observed at the site.	1	(1B) Known historic impacts at the site. Case was closed 2005. Current site uses have potential to impact the site.	Further investigation needed. The most recent available report from second quarter 2005 indicates groundwater is still impacted with TPH and MTBE, concentrations are increasing. LARWQCB and LAFD File Review. Phase II recommended.
49	2251 NORTH FIGUEROA STREET	5446015061	The site is referred to as an ARCO Facility. The site had a leaking UST case which was closed as of September 2003. The contaminant of concern was gasoline. (Some groundwater data is available on Geotracker, but no reports were found.)	Nothing found for this site.	The site had a gasoline leak. The case status is closed.	Currently the site is a gas station and tire repair shop, with possible lifts on site.	1	(1B) Known historic impacts at the site, Case was closed 2003. Current site uses have potential to impact the site.	LARWQCB and LAFD File Review, further investigation needed. Phase II recommended.

DTSC = California Department of Toxic Substances Control
 NFA = No Further Action
 ppb = parts per billion
 VOCs = Volatile organic compounds
 UST = Underground Storage Tank
 AST = Aboveground Storage Tank
 VCP = Voluntary Cleanup Program
 REA = Preliminary Environmental Assessment
 RCRA = Resource Conservation and Recovery Act
 RCQ = Small Quantity Hazardous Waste Generator
 RFO = Registered Environmental Consultant
 LARWQCB = California Regional Water Quality Control Board - Los Angeles Region
 LAFD = City of Los Angeles Fire Department
 OEHHA = California Office of Environmental Health Hazard Assessment
 RP = Responsible Party
 TPH = Total petroleum hydrocarbons

**TABLE 1 – SELECTED REDEVELOPMENT PROPERTIES ASSESSED
CORNFIELD ARROYO SECO SPECIFIC PLAN AREA, LOS ANGELES, CALIFORNIA**

Rank 1 - (red on Figure 2) meaning the property has known unresolved environmental issues, an open regulatory agency case. Ranking of 1 was further subdivided into 1A, which includes those properties where no obvious action is being taken (and no responsible party [RP] is known, based on reviewed information), and 1B which includes those properties where action is being taken by an identified RP or through a voluntary cleanup.

Rank 3 - (yellow) meaning the property has active permits (typically underground storage tanks [USTs], or hazardous waste permits) and/or known historic uses that have a potential for causing impact.

Rank 2 - (orange) meaning the property has had environmental concerns in the past, but there is a potential for further issues in the future, and thus further assessment is recommended. In some cases these sites may have received a regulatory closure that did not address all potential issues.

Rank 4 - (green) meaning the property has no significant known environmental issues, based on the information readily available.

SITE NUMBER	ADDRESS	ASSESSOR PARCEL NUMBER	GEOTRACKER NOTES (Regional Water Quality Control Board [RWQCB])	ENVIROSTOR NOTES (Department of Toxic Substances Control [DTSC])	FIRST SEARCH REVIEW NOTES (Compilation of Databases)	SIDEWALK OBSERVATION FOR RECs	RANK	RANK REASONING	RECOMMENDATIONS
50	2600 NORTH FIGUEROA STREET	5446017033 5446017034	The site has an UST.	Nothing found for this site.	The site is referred to as the Shell Service Station. The site is listed as a LUST facility with active permits. Reported MTBE concentrations in groundwater are up to 650 ppb. LARWQCB is the lead reporting agency which approved the abatement to remove free and floating product from above the water table. The site has hazardous waste permits.	The site is currently a gas station with UST and pump stations, there is a flammable storage bin on site.	1	(1A) Known gasoline spill and the media affected is soil and groundwater.	Check RP status. LARWQCB and LAFD File Review. Phase II recommended.
51	2616 NORTH FIGUEROA STREET	5446017008	Nothing found for this site.	Nothing found for this site.	The site is listed as containing motor parts.	The site is currently an auto parts store.	4	(4) No indication of impact.	None
52	2821 NORTH FIGUEROA STREET	5446010029	Nothing found for this site.	Nothing found for this site.	Indicates the site has been used for general auto repair.	The site is currently used for auto repair and maintenance. Lifts and junk cars were observed at the site.	2	(2) Historic and current uses might have impacted the site.	Review historical site use, reverse directory, chain of title, historic aerial photo review. LAFD File Review.
53	3225 LACY STREET	5205003006	The site is the former Heath & Company Facility. The site had a leaking UST case which was closed in November 1995. The contaminant of concern was gasoline.	Nothing found for the site.	A gasoline leak occurred at the site and impacted only the soil. The case has a closed status.	The site is currently utilized by Los Angeles Unified School District (LAUSD) and used for maintenance and operations for LAUSD Area 4. Drum storage, electrical transformer towers (possibly containing PCBs), and chemicals being delivered and stored at the site were observed.	1	(1B) Known historic impacts at the site. Case was closed. Current site uses have potential to impact the site.	Additional research, LARWQCB and LAFD File Review. The site is currently operated by LAUSD. Phase II recommended.
54	3208 HUMBOLT AVENUE	5205006059	Nothing found for this site.	Nothing found for this site.	The site is listed as a RCRA generator.	The site is a large parking lot with one large building. The site is surrounded by fencing with barbed wire. There were no signs indicating who are the current tenants.	3	(3) Hazardous waste permits are an indication of possible impacts, but relative low volumes of waste indicate impact likely limited.	Site inspection to investigate current site uses.
55	141 WEST AVENUE 34	5205004011	Nothing found for this site.	Nothing found for this site.	The site has been used for hardware manufacturing, and ball and roller bearing manufacturing.	The site currently occupied by Orbiz Brothers Moving and Storage. The site consists of a warehouse with drums present.	2	(2) Historic uses might have impacted the site. An empty lot is north of the property	Research current site activities, develop historical profile. Phase II recommended.
56	3505 PASADENA AVENUE	5205004010	The site is the Former Welch Uniform Rental Site. It has been an Open - Site Assessment as of 12/28/1998. The potential contaminants of concern are the VOCs and petroleum products. The potential media affected is not specified. Groundwater monitoring has been conducted at the site. In the 4th Quarter 2006 Groundwater Monitoring Report Sampling Results, the site was a commercial drycleaning facility, and there are possibly USTs still present at the site. There are on- and off-site wells impacted with PCE, TCE, cis-1,2 DCE, and trans 1,2 DCE. There are two on-site wells impacted with vinyl chloride. (Copies of reports for this site are available in the interactive Figure 2 on the CD.)	The site is listed as being active as May 2007. The site is under the Voluntary Cleanup Program (VCP). The Lead agency for the VCP is the DTSC. The site was used in the past for laundry services. The potential environmental concern is TCE. The potential media affected is "Other" groundwater (uses other than drinking water), soil, and soil vapor. The site was owned by AmeriPride Services, Inc. The site was previously owned by Welch's Uniform Facility and had been used as a laundry services facility for over 70 years. The soil and groundwater are impacted with VOC compounds including TCE. Currently there is quarterly groundwater monitoring being conducted at the site.	The former Welch Uniform Rental Site is listed as UST, spills, RCANLR, RCAGN, and LUST. The Lead agency for the groundwater assessment is Los Angeles RWQCB (Region 4). The responsible party is AmeriPride Services, Inc. The substances released are petroleum and VOCs. The substances were discovered during subsurface monitoring. The current status of the site is post remedial action monitoring. The abatement method used was remove free product and floating product from the water table.	The site is an empty lot with a visible footprint of a building near Pasadena Avenue.	1	(1B) Soil and groundwater apparently still impacted at the site. Current groundwater monitoring still being conducted.	Check for recent environmental work conducted at the site. Further investigation needed. DTSC, LARWQCB and LAFD File Review. Phase II recommended.

DTSC = California Department of Toxic Substances Control
 NFA = No Further Action
 UST = Under Storage Tank
 VOCs = Volatile organic compounds
 UST = Underground Storage Tank
 AST = Aboveground Storage Tank
 VCP = Voluntary Cleanup Program
 REA = Preliminary Environmental Assessment
 RCRA = Resource Conservation and Recovery Act
 RCQ = Small Quantity Hazardous Waste Generator
 REO = Recognized Environmental Condition
 LARWQCB = California Regional Water Quality Control Board - Los Angeles Region
 LAFD = City of Los Angeles Fire Department
 OEHHA = California Office of Environmental Health Hazard Assessment
 RP = Responsible Party
 TPH = Total petroleum hydrocarbons