

**Draft
Environmental Impact Report
for
Machado Estates**

Volume I

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Prepared for:

City of Manteca
Community Development Department
1001 W. Center Street
Manteca, CA 95337
Contact: David Hanham
209/239-8427

Prepared by:

Jones & Stokes
2600 V Street
Sacramento, CA 95818-1914
Contact: Wendy Johnson
916/737-3000

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Acronyms and Abbreviations

µg/l	micrograms per liter
µg/m ³	per cubic meter
µmhos/cm	micromhos per centimeter
AB	Assembly Bill
ACBM	asbestos containing building material
ACE	Altamont Commuter Express
ADA	Americans with Disabilities Act
ADAM	ARB Databases: Aerometric Data Analysis and Management System
ADT	average daily traffic
af	acre-feet
afa/yr	af per acre per year
AG-40	General Agriculture, with a minimum parcel size of 40 acres for this zone
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
AM	morning
ARB	California Air Resources Board
AU-20	Agriculture-Urban Reserve with a minimum parcel size of 20 acres
basin plans	water quality control plans
BAT	best available technology
BLD	Big League Dreams
Bulletin 118	California's Groundwater—Bulletin 118, Update 2003
CAA	federal Clean Air Act
CAAA	Clean Air Act Amendments of 1990
CAAQS	California Ambient Air Quality Standards
Cal-OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAT	County Area Transit
CBC	California Building Code
CCAA	California Clean Air Act
CCIC	Central California Information Center
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CESQGs	conditionally exempt small quantity generators
CFCP	California Farmland Conservancy Program
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations

CGC	California Government Code
CGS	California Geological Survey
CHRIS	California Historical Resources Information System
City	City of Manteca
City General Plan	City of Manteca General Plan 2023
CIWMB	California Integrated Waste Management Board
CMP	Congestion Management Plan
CMU	Commercial Mixed Use
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNG	compressed natural gas
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
County	San Joaquin County
County General Plan	San Joaquin County General Plan 2010
CPRR	Central Pacific Railroad
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CWA	Clean Water Act
CWC	California Water Code
DAR	Dial-A-Ride
dB	Decibel
dBA	A-Weighted Decibel
DBCP	dibromochloropropane
DDT	dichlorodiphenyltrichloroethane
Delta	Sacramento River–San Joaquin River Delta
DFCG	California Fish and Game Code
DFG	California Department of Fish and Game
Division	Department of Conservation, Oil and Gas, & Geothermal Resources Division
DOC	California Department of Conservation
DOF	California Department of Finance
DPR	California Department of Parks and Recreation
DTSC	Department of Toxics and Substance Control
E&P	exploration and production
EC	electromagnetic conductivity
EDR	Environmental Data Resources
EIR	environmental impact report
EMT-1	Emergency Medical Technician 1
EMT-D	EMT-Defibrillation
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
FR	Federal Register
FTA	Federal Transit Administration

g	acceleration due to gravity
General Construction Permit	NPDES General Permit for Construction Activities
General Permit	General Permit for Stormwater Discharges Associated with Construction Activity
GHG	greenhouse gas
gpm	gallons per minute
GPTA	General Plan Transportation Analysis
HCM	Highway Capacity Manual
HCP	habitat conservation plan
HCS+	Highway Capacity Software
HSWA	Federal Hazardous and Solid Waste Amendments
I-5	Interstate 5
IPCC	Intergovernmental Panel on Climate Change
IS	initial study
ISO	Insurance Services Office
ISR	Indirect Source Review
IWMP	Integrated Waste Management Plan
LAFCO	Local Agency Formation Commission
L _{dn}	Day-Night Level
LDR	Low Density Residential
L _{eq}	Equivalent Sound Level
L _{max} and L _{min}	Maximum and Minimum Sound Levels
L _n	Sound Level Percentiles
LOS	Level of Service
LPG	liquid propane gas
LQGs	large quantity generators
MAX	Modesto Area Express
MBTA	Migratory Bird Treaty Act
MCE	maximum credible earthquake
MFD	Manteca Fire Department
mg/L	milligrams per liter
mgd	million gallons per day
MPD	Manteca Police Department
MUSD	Manteca Unified School District
MUTCD	<i>Manual on Uniform Traffic Control Devices</i>
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NO ₂	nitrogen dioxide
NOAA Fisheries	National Oceanic and Atmospheric Administration's National Marine Fisheries Service
NOI	notice of intent
NOP	notice of preparation
NO _x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPDWRs	National Primary Drinking Water Regulations

NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTUs	Nephelometric Turbidity Units
OCPs	organochlorine pesticides
PCBs	polychlorinated biphenyls
PFIP	Public Facilities Implementation Plan
PG&E	Pacific Gas & Electric's
Phase I ESA	Phase I Environmental Site Assessment
PM	evening
PM10	particulate matter 10 microns or less in diameter
PM2.5	particulate matter smaller than 2.5 microns or less in diameter
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
ppm	parts per million
PPMP	pollution prevention and monitoring program
PRC	Public Resources Code
proposed project	Machado Estates Project
PSR	Project Study Report
PUD	Planned Unit Development Combining Zone District
PUSA	Primary Urban Service Boundary
RCRA	Resource Conservation and Recovery Act
RHNA	regional housing needs assessment
ROG	reactive organic gases
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SCSWSP	South County Surface Water Supply Project
SIPs	State Implementation Plans
SJCEHD	San Joaquin County Environmental Health Department
SJCOG	San Joaquin Council of Governments
SJMSCP	San Joaquin County Multi-Species Habitat Conservation and Open Space Plan
SJRTD	San Joaquin Regional Transit District
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMTS	South Manteca Trunk Sewer
SO ₂	sulfur dioxide
SOI	sphere of influence
SPRR	Southern Pacific Railroad
SQGs	small quantity generators
SR	State Route
SSJID	South San Joaquin Irrigation District
SVP	Society of Vertebrate Paleontology
SWMP	Storm Water Management Program
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TCMs	traffic control measures

TDS	total dissolved solids
TMDL	total maximum daily load
TNM	Federal Highway Administration Traffic Noise Model Version 2.5
UBC	Uniform Building Code
UCMP	University of California at Berkeley's Museum of Paleontology
ULSD	ultra-low sulfur diesel
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UV	ultraviolet
UWMP	Urban Water Master Plan
V/C	volume-to-capacity
VOC	volatile organic compounds
WDRs	waste discharge requirements
Williamson Act	California Land Conservation Act of 1965
WMP	water master plan
WQCF	Manteca Wastewater Quality Control Facility
WSA	Water Supply Assessment/Verification
WWTP	wastewater treatment plant

Executive Summary

Introduction

This environmental impact report (EIR) analyzes the environmental effects of the proposed Machado Estates Project (proposed project), indicates ways to reduce or avoid potential environmental damage resulting from the project, and identifies alternatives to the proposed project. This EIR also discloses the proposed project's significant environmental effects that cannot be avoided, growth-inducing effects, effects found not to be significant, and significant cumulative impacts.

An EIR is a public, informational document used in the planning and decision-making process. The purpose of an EIR is not to recommend approval or denial of a project, but to provide information to aid in the decision-making process. Although the EIR does not control the ultimate decision on the project, the City of Manteca (City), as the lead agency, must consider the information in the EIR and respond to each significant impact identified in the EIR.

The California Environmental Quality Act (CEQA) requires that the City prepare an EIR that reflects the independent judgment of the City regarding the impacts of the project, the level of significance of the impacts both before and after mitigation, and mitigation measures proposed to avoid or reduce the impacts.

Project Description

The proposed project consists of the Machado Estates subdivision project and the annexation of the Machado Estates site plus 15 adjacent parcels to the City. The project proposes the subdivision of the approximately 156.8-acre site into 575 single-family residential lots. One existing single-family home on the site will be removed. The proposed project includes the City's approval of annexation of the project site to Manteca, rezoning, a development agreement, and a tentative map for residential development. The project also involves the annexation of 15 parcels north of the project area for inclusion in Manteca to maintain adequate provision of services in an area that is experiencing growth and development. The purpose of the project is to provide additional housing for the expanding population in Manteca. This project would help accommodate the growing community.

Alternatives

The City considered four potential alternatives in its initial screening of alternatives for analysis in this EIR.

- Alternative 1 (Alternative Site)
- Alternative 2 (Reduced Density)
- Alternative 3 (Commercial Mixed Use)
- Alternative 4 (Alternative Tentative Map)
- Alternative 5 (Phased Development)
- Alternative 6 No-Project (No-Development) Alternative

Following the initial screening, Alternatives 1 and 2 were found to either not meet project objectives or not offer a substantial reduction in the project's potential impacts. Therefore, they were not analyzed further. Alternatives 3, 4, and 5 were carried forward and considered in this EIR. Chapter 15 presents a description of the alternatives and compares the impacts of the alternatives with those of the proposed project.

Environmentally Superior Alternative

State CEQA Guidelines Section 15126.6(e)(2) requires that an EIR identify which alternative is the environmentally superior alternative. If the No-Project Alternative is the environmentally superior alternative, the EIR then must identify which alternative, other than the No-Project Alternative, is considered environmentally superior.

In this case, Alternative 6, No Project (No Development), is environmentally superior to the proposed project and all of the other Alternatives. Alternative 5, the Phased Development Alternative, is considered environmentally superior among the remaining alternatives. While this alternative would have similar environmental impacts to those of the project in most ways, implementation of this alternative would serve to reduce impacts to traffic and circulation below those of the proposed project. Traffic and circulation impacts are the most substantial impacts of the project identified in this EIR. Additionally, the Phased Development Alternative meets the goals of the project by providing additional housing to accommodate growth in the City of Manteca, while reducing the traffic and circulation impacts of the proposed project.

Impacts and Mitigation Measures

Chapters 3 through 13 of this document present analysis of the potential impacts of the proposed project for each of the resource subjects required by CEQA that have not already been reduced to less-than-significant levels in the initial study

(IS). Growth-inducing and cumulative impacts are analyzed in Chapter 14. Table ES-1 provides a summary of the environmental impacts of the proposed project, including the significance of each impact before mitigation, appropriate mitigation measures, and the significance of each impact based on the planned implementation of the mitigation measures.

Impacts Found Not to Be Significant in the IS

Analysis in the IS found that the project would have no impact or a less-than-significant impact on aesthetics and mineral resources. These issues are therefore not further addressed in this EIR.

Impacts Found to Be Less than Significant in the EIR

The proposed project was found to have less-than-significant impacts in a number of areas assessed in the EIR. Impacts of the project following construction (operational impacts) were found to be less than significant in the areas of air quality; historic resources; seismic hazards and potentially unstable soils; water supply and groundwater; noise impacts on existing residents; and schools, fire, police, and other services, with the exception of parks. The project was also found to have no growth-inducing impacts.

Impacts and Mitigation Measures Identified in the EIR

Project development would result in the conversion of agricultural lands, including Prime Farmland and Farmland of Statewide Importance, to nonagricultural use. Mitigation measures are proposed in this EIR, but this impact remains significant and unavoidable.

Project construction would result in the generation of significant levels of air emissions. Mitigation measures are proposed in this EIR, but this impact would remain significant and unavoidable.

Project development could have significant impacts on biological resources, including effects on candidate, sensitive, or special-status species; conflicts with local policies protecting biological resources; impacts on federally protected wetlands as defined in Section 404 of the Clean Water Act; and conflicts with a habitat conservation plan. However, these impacts would be reduced to a less-than-significant level with the implementation of mitigation measures identified in the EIR.

Project development could increase the use of existing neighborhood and regional parks or other recreational facilities and result in substantial physical deterioration of the facilities, but this impact would be reduced to a less-than-significant level by mitigation measures identified in the EIR.

Project development could result in significant impacts on cultural resources, including the potential destruction of buried archaeological resources and destruction or disturbance of human remains, but these impacts would be reduced to a less-than-significant level by mitigation measures identified in this EIR.

Project development could result in significant impacts on geology, soils, and paleontology, including damage to paleontological resources, but these impacts would be reduced to a less-than-significant level by mitigation measures identified in this EIR.

Project development could result in hazard-related impacts, including the accidental hazardous release of construction liquids (e.g., oils and gas), which could lead to the potential exposure of workers, schoolchildren, and the environment to these substances. However, these impacts would be reduced to a less-than-significant level by mitigation measures identified in this EIR.

Project development could result in impacts on hydrology and water quality, including construction-related erosion and sedimentation; water quality impacts as a result of construction-related hazardous materials; water quality impacts from construction below the water table, within a 100-year floodplain; possible levee or dam failure; and increased amounts of surface runoff during operation. However, these impacts would be reduced to less-than-significant levels by mitigation measures identified in this EIR.

Project development would result in the exposure of noise-sensitive land uses to vibration and noise during construction as well as the exposure of future Machado Estates residents to traffic noise, but these impacts would be reduced to less-than-significant levels by mitigation measures identified in this EIR.

Project development could result in substantial adverse physical impacts associated with the provision of new or physically altered school facilities or a need for new or physically altered school facilities, the construction of which could cause significant environmental impacts, but this impact would be reduced to a less-than-significant level by mitigation measures identified in the EIR.

Project development would result in an increase in traffic in the project vicinity. Most impacts on traffic would be reduced to a less-than-significant level by project contributions to local roadway improvements as identified in mitigation measures in this EIR, but some of the impacts would remain significant and unavoidable because the identified improvements are not yet fully funded.

Project development would result in temporary, planned, or accidental construction-related disruptions to utility services. However, these impacts would be reduced to less-than-significant levels by mitigation measures identified in this EIR.

Impacts Reduced to Less-than-Significant Levels by Identified Mitigation Measures in the EIR

Project-level significant impacts pertaining to the following resource areas would be reduced to a less-than-significant level by mitigation measures identified in the EIR: air quality; biological resources; cultural resources; geology, soils, and paleontology; hazards and hazardous materials; hydrology and water quality; noise; and utilities and service systems.

Significant and Unavoidable Impacts

The project would result in several significant impacts that would not be reduced to a less-than-significant level through mitigation (i.e., significant and unavoidable impacts). These impacts are listed below. Discussion of these impacts is found in Chapters 3, 4, 12, and 14 of this EIR.

- Impact AG-1: Direct Conversion of Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or Other Farmland to Nonagricultural Use
- Impact AIR-3: Generation of Emissions of Reactive Organic Gases and Oxides of Nitrogen in Excess of San Joaquin Valley Air Pollution Control District
- Impact CE-1: Cumulative Loss of Agricultural Lands
- Impact CE-3: Cumulative Effect on Climate Change
- Impact CE-5: Cumulative Impacts to Energy
- Impact CE-6: Cumulative Impact Resulting from Increased Traffic Noise
- Impact TRA-3: Unacceptable Level of Service on Freeway Mainline Segments under Existing Plus Project Conditions Impact
- Impact TRA-4: Unacceptable Level of Service at the Yosemite Avenue/McKinley Avenue Intersection under Cumulative Plus Project Conditions
- Impact TRA-5: Unacceptable Level of Service at the Woodward Avenue/McKinley Avenue Intersection under Cumulative Plus Project Conditions
- Impact TRA-6: Unacceptable Level of Service at the Woodward Avenue/Bella Terra Drive Intersection under Cumulative Plus Project Conditions
- Impact TRA-7: Unacceptable Level of Service at the Yosemite Avenue/Airport Way Intersection under Cumulative Plus Project Conditions
- Impact TRA-8: Unacceptable Level of Service at the Wawona Street/Airport Way Intersection under Cumulative Plus Project Conditions

- Impact TRA-9: Unacceptable Level of Service at the Daniels Street/Airport Way Intersection under Cumulative Plus Project Conditions
- Impact TRA-10: Unacceptable Level of Service at the Westbound SR 120 Ramps/Airport Way Intersection under Cumulative Plus Project Conditions
- Impact TRA-11: Unacceptable Level of Service at the Eastbound SR 120 Ramps/Airport Way Intersection under Cumulative Plus Project Conditions
- Impact TRA-12: Unacceptable Level of Service at the Atherton Road/Airport Way Intersection under Cumulative Plus Project Conditions
- Impact TRA-13: Unacceptable Level of Service at the Woodward Avenue/Airport Way Intersection under Cumulative Plus Project Conditions
- Impact TRA-14: Unacceptable Level of Service at the Woodward Avenue/Union Way Intersection under Cumulative Plus Project Conditions
- Impact TRA-15: Unacceptable Level of Service at the Woodward Avenue/Main Street Intersection under Cumulative Plus Project Conditions
- Impact TRA-16: Unacceptable Roadway Segment Level of Service on Airport Way between Yosemite Avenue and Daniels Street under Cumulative Plus Project Conditions
- Impact TRA-17: Unacceptable Roadway Segment Level of Service on Airport Way between Daniels Street and Atherton Road under Cumulative Plus Project Conditions
- Impact TRA-18: Unacceptable Roadway Segment Level of Service on Airport Way between Atherton Road and Woodward Avenue under Cumulative Plus Project Conditions
- Impact TRA-19: Unacceptable Level of Service on Woodward Avenue between McKinley Avenue and Airport Way under Cumulative Plus Project Conditions
- Impact TRA-22: Unacceptable Level of Service on Freeway Ramp Junctions under Existing Plus Project Conditions

Areas of Known Controversy and Unresolved Issues

State CEQA Guidelines Section 15123(b) requires that the summary section of the EIR include a description of areas of controversy known to the lead agency, including issues raised by agencies and the public as well as issues to be resolved. Issues to be resolved include the choice of alternative and whether or how to mitigate the significant impacts. No known areas of controversy have been identified for this project.

Table ES-1. Summary of Impacts and Mitigation Measures

Impact	Significance Before Mitigation	Mitigation	Significance with Mitigation Incorporated
Agriculture, Land Use, and Planning			
Impact LU-1: Physical Division of an Established Community	No Impact	–	–
Impact LU-2: Incompatibility with Existing or Future Land Uses	Less than Significant	–	–
Impact LU-3: Conflicts with an Applicable Local Habitat Conservation Plan or Natural Community Conservation Plan	No Impact	–	–
Impact AG-1: Direct Conversion of Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or Other Farmland to a Nonagricultural Use	Significant	Mitigation Measure AG-1a: Agricultural Mitigation Fee	Significant and Unavoidable
Impact AG-2: Conflicts with a Williamson Act Contract	No Impact	–	–
Air Quality			
Impact AIR-1: Temporary Increase in Construction-Related Emissions	Significant	Mitigation Measure AIR-1a: Prepare and Implement a Dust Control Plan Mitigation Measure AIR-1b: Implement Measures to Reduce Construction Emissions Mitigation Measure AIR-1c: Implement Measures to Comply with SJVAPCD Rule 9510, Indirect Source Review Mitigation Measure AIR-1d: Enter into a Development Mitigation Contract	Less than Significant
Impact AIR-2: Elevated Health Risk from the Exposure of Nearby Sensitive Receptors to Diesel Particulate Matter	Significant	Mitigation Measure AIR-1b: Implement Measures to Reduce Construction Emissions	Less than Significant

Table ES-1. Continued

Impact	Significance Before Mitigation	Mitigation	Significance with Mitigation Incorporated
Impact AIR-3: Generation of Emissions of Reactive Organic Gases and Oxides of Nitrogen in Excess of San Joaquin Valley Air Pollution Control District Thresholds	Significant	Mitigation Measure AIR-3a: Incorporate Additional Innovative Measures to Reduce Air Quality Impacts Mitigation Measure AIR-3b: Implement Measures to Comply with SJVAPCD Rule 9510, Indirect Source Review Mitigation Measure AIR-1d: Enter into a Development Mitigation Contract	Significant and Unavoidable
Impact AIR-4: Exposure of Sensitive Receptors to Substantial Concentrations of Carbon Monoxide	Less than Significant	–	–
Impact AIR-5: Increase in Greenhouse Gas Contaminant Emissions	Less than Significant	–	–
Biological Resources			
Impact BIO-1: Potential Introduction or Spread of Noxious Weeds	Significant	Mitigation Measure BIO-1a: Conduct a Noxious Weed Survey and Document Noxious Weed Infestation Mitigation Measure BIO-1b: Avoid the Dispersal of Noxious Weeds into Uninfested Areas	Less than Significant
Impact BIO-2: Disturbance or Loss of Waters of the United States (Including Wetlands)	Significant	Mitigation Measure BIO-2a: Identify and Delineate Waters of the United States and Obtain and Comply with State, Federal, and Local Permits	Less than Significant
Impact BIO-3: Impacts to Nesting Swainson's Hawk and Non-Special-Status Migratory Birds	Significant	Mitigation Measure BIO-3a: Conduct Tree Removal Activities during Nonbreeding Season for Swainson's Hawk and Non-Special-Status Migratory Birds and Raptors or Conduct Nesting Bird Survey Prior to Tree Removal Activities	Less than Significant
Impact BIO-4: Loss of Swainson's Hawk Foraging Habitat	Significant	Mitigation Measure BIO-4a: Compensate for Loss of Swainson's Hawk Foraging Habitat as Outlined in the SJMSCP	Less than Significant

Table ES-1. Continued

Impact	Significance Before Mitigation	Mitigation	Significance with Mitigation Incorporated
Impact BIO-5: Loss of Potential Foraging Habitat for Other Special-Status Birds	Significant	Mitigation Measure BIO-3a: Conduct Tree Removal Activities during Nonbreeding Season for Swainson's Hawk and Non-Special-Status Migratory Birds and Raptors or Conduct Nesting Bird Survey Prior to Tree Removal Activities	Less than Significant
Impact BIO-6: Impacts to Western Burrowing Owl	Significant	Mitigation Measure BIO-6a: Conduct Preconstruction Survey and Adhere to DFG Guidelines Mitigation Measure BIO-6b: Avoid and Minimize Impacts on Nesting Burrowing Owl Mitigation Measure BIO-6c: Compensate for Loss of Burrowing Owl Habitat	Less than Significant
Cultural Resources			
Impact CR-1: Potential Destruction of Unknown Buried Archaeological Resources	Significant	Mitigation Measure CR-1a: Stop Work in Case of Accidental Discovery of Buried Archaeological Resources	Less than Significant
Impact CR-2: Destruction or Disturbance of Human Remains	Significant	Mitigation Measure CR-2a: Stop Work in Case of Accidental Discovery of Buried Human Remains	Less than Significant
Impact CR-3: Disturbance or Destruction of Significant Historic Resources	No Impact	—	—
Geology, Soils, and Paleontology			
Impact GEO-1: Rupture of a Known Earthquake Fault, as Delineated on the Most Recent Alquist-Priolo Earthquake Fault Zoning Map Issued by the State Geologist for the Area or Based on Other Substantial Evidence of a Known Fault	Less than Significant	—	—
Impact GEO-2: Potential for Increased Exposure of People or Structures to Hazards Related to Strong Seismic Groundshaking	Less than Significant	—	—
Impact GEO-3: Potential for Increased Exposure of People or Structures to Hazards Related to Liquefaction and Ground Failure	Less than Significant	—	—

Table ES-1. Continued

Impact	Significance Before Mitigation	Mitigation	Significance with Mitigation Incorporated
Impact GEO-4: Potential for Increased Exposure of Persons or Structures to Landslide Hazards	Less than Significant	–	–
Impact GEO-5: Contribution to Substantial Soil Erosion or Loss of Topsoil	Significant	Mitigation Measure GEO-5a: Stockpile Excavated Topsoil for Onsite Reuse	Less than Significant
Impact GEO-6: Location on a Geologic Unit or Soil that is Unstable or that Would Become Unstable as a Result of Construction	Less than Significant	–	–
Impact GEO-7: Location on Expansive Soils	Less than Significant	–	–
Impact GEO-8: Damage to Paleontological Resources	Significant	Mitigation Measure GEO-8a: Conduct Preconstruction Survey, Salvage, and Protection Mitigation Measure GEO-8b: Retain a Qualified Professional Paleontologist to Monitor during Ground-Disturbing Activities Mitigation Measure GEO-8c: Provide Worker Sensitivity Training for Paleontological Resources Mitigation Measure GEO-8d: Stop Work and Implement Evaluation and Treatment Measures if Macrofossil Remains are Encountered during Construction	Less than Significant
Hazards and Hazardous Materials			
Impact HAZ-1: Potential Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials during Operation	Less than Significant	–	–

Table ES-1. Continued

Impact	Significance Before Mitigation	Mitigation	Significance with Mitigation Incorporated
Impact HAZ-2: Potential Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials during Construction	Significant	Mitigation Measure HAZ-2a: Screen Surface Soils in Project Area for Residuals from Agricultural Chemicals and Other Hazardous Materials Mitigation Measure HAZ-2b: Proper Removal of Hazardous Materials and Hazardous Material Containers from the Site Mitigation Measure HAZ-2c: Proper Disposal of Asbestos by Certified Asbestos Abatement Contractor Mitigation Measure HAZ-2d: Notification of Contractors of Presence of Asbestos and Lead Paint Mitigation Measure HAZ-2e: Prepare Site Construction Plan for Work in Vicinity of Oil/Gas Well/Drilling Mud Pit Mitigation Measure HAZ-2f: Proper Abandonment of Septic Systems	Less than Significant
Impact HAZ-3: Potential Hazard to the Public or the Environment through Upset or Accident Conditions	Significant	Mitigation Measure HAZ-3a: Develop and Implement Plans to Reduce Exposure to Hazardous Conditions Mitigation Measure HAZ-3b: Follow Manteca Fire Department and Other Guidelines for Storage and Handling of Hazardous Materials Mitigation Measure HAZ-3c: Immediately Contain Spills, Excavate Spill-Contaminated Soil, and Dispose of It at Approved Facility	Less than Significant
Impact HAZ-4: Potential Exposure of School Children to Hazardous Materials	No Impact	—	—
Impact HAZ-5: Significant Hazard from Location on a Site that Is Included on a List of Hazardous Materials Sites	No Impact	—	—
Impact HAZ-6: Potential Impairment or Interference with an Adopted Emergency Response Plan	Less than Significant	—	—

Table ES-1. Continued

Impact	Significance Before Mitigation	Mitigation	Significance with Mitigation Incorporated
Impact HAZ-7: Potential Exposure of People or Structures to Risk from Wildfires	Less than Significant	–	–
Impact HAZ-8: Be Located within an Airport Land-Use Plan Area or within 2 Miles of an Existing Airport	No Impact	–	–
Hydrology and Water Quality			
Impact HYD-1: Reduced Water Quality as a Result of Construction-Related Earth Disturbing Activities	Significant	Mitigation Measure HYD-1a: Comply with NPDES Requirements Mitigation Measure HYD-1b: Clean Paved Areas with Street Sweeping Equipment Mitigation Measure HYD-1c: Employ Other Provisions for Work in Surface Waters	Less than Significant
Impact HYD-2: Water Quality Impacts as a Result of Construction-Related Hazardous Materials	Significant	Mitigation Measure HYD-2a: Implement a Spill Prevention and Control Program	Less than Significant
Impact HYD-3: Water Quality Impacts from Construction below the Water Table	Significant	Mitigation Measure HYD-3a: Implement Provisions for Dewatering	Less than Significant
Impact HYD-4: Change in Drainage Patterns and Surface Runoff	Significant	Mitigation Measure HYD-4a: Develop and Implement a Master Drainage Plan	Less than Significant
Impact HYD-5: Increased Amounts of Surface Runoff and Associated Impacts on Water Quality and Drainage Facilities during Operation	Significant	Mitigation Measure HYD-5a: Implement Best Management Practices to Maximize Stormwater Quality	Less than Significant
Impact HYD-6: Decrease in Groundwater Recharge	Less than Significant	–	–
Impact HYD-7: Substantial Depletion of Groundwater Supplies	Less than Significant	–	–
Impact HYD-8: Insufficiency of Water Supply	No Impact	–	–
Impact HYD-9: Impacts on Groundwater and Surface Water from Infrastructure Failure	Less than Significant	–	–

Table ES-1. Continued

Impact	Significance Before Mitigation	Mitigation	Significance with Mitigation Incorporated
Impact HYD-10: Water Quality Impacts from Discharges to CWA 303(d)-Listed Surface Water Bodies	Less than Significant	–	–
Impact HYD-11: Impacts on Floodflows from Structures in a 100-Year Floodplain or Impacts on Housing from Placement in a 100-Year Floodplain	Less than Significant	–	–
Impact HYD-12: Flood Hazards Associated with Levee or Dam Failure	Less than Significant	–	–
Impact HYD-13: Be Subject to Inundation by Seiche, Tsunami, or Mudflow	No Impact	–	–
Noise			
Impact NOI-1: Exposure of Noise-Sensitive Land Uses to Vibration and Noise and during Construction Activities	Significant	Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices Mitigation Measure NOI-1b: Disseminate Essential Information to Residences and Implement a Complaint/Response Tracking Program	Less than Significant
Impact NOI-2: Exposure of Existing Noise-Sensitive Land Uses on Project Approach Roadways to Increased Traffic Noise	Significant	none feasible	Significant and Unavoidable
Impact NOI-3: Exposure of Future Noise-Sensitive Land Uses within the Machado Estates Project to Traffic Noise	Significant	Mitigation Measure NOI-3a: Construct Noise Barriers along Woodward Avenue and Airport Way so that Traffic Noise Does Not Exceed 60 dBA L _{dn} in Outdoor Use Areas	Less than Significant
Population and Housing			
Impact PH-1: Direct and Indirect Inducement of Substantial Population Growth	Less than Significant	–	–
Impact PH-2: Displacement of a Substantial Number of Housing Units or People	Less than Significant	–	–

Table ES-1. Continued

Impact	Significance Before Mitigation	Mitigation	Significance with Mitigation Incorporated
Transportation and Traffic			
Impact TRA-1: Unacceptable Level of Service at Unsignalized Airport Way/Westbound State Route 120 On- and Off-Ramp Intersection under Existing Plus Project Conditions	Significant	Mitigation Measure TRA-1a: Pay PFIP Fee for the Installation of a Traffic Signal at the Airport Way/Westbound State Route 120 On- and Off-Ramp Intersection	Less than Significant
Impact TRA-2: Unacceptable Level of Service at Unsignalized Airport Way/Eastbound State Route 120 On- and Off-Ramp Intersection under Existing Plus Project Conditions	Significant	Mitigation Measure TRA-2a: Pay PFIP Fee for the Installation of a Traffic Signal at the Airport Way/Eastbound State Route 120 On- and Off-Ramp Intersection	Less than Significant
Impact TRA-3: Site Access and Circulation Impacts	Significant	Mitigation Measure TRA-3a: Reconfigure Site Plan to Provide Better Access and Circulation	Less than Significant
Impact TRA-4: Unacceptable Level of Service at the Yosemite Avenue/McKinley Avenue Intersection under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-4a: Pay Fair-Share of Intersection Improvements at Yosemite Avenue/McKinley Avenue	Significant and Unavoidable
Impact TRA-5: Unacceptable Level of Service at the Woodward Avenue/McKinley Avenue Intersection under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-5a: Pay Fair-Share of Intersection Improvements at Woodward Avenue/McKinley Avenue	Significant and Unavoidable
Impact TRA-6: Unacceptable Level of Service at the Woodward Avenue/Bella Terra Drive Intersection under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-6a: Pay Fair-Share to Signalize Woodward Avenue/Bella Terra Drive Intersection	Significant and Unavoidable
Impact TRA-7: Unacceptable Level of Service at the Yosemite Avenue/Airport Way Intersection under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-7a: Pay Fair-Share of Intersection Improvements at Yosemite Avenue/Airport Way	Significant and Unavoidable
Impact TRA-8: Unacceptable Level of Service at the Wawona Street/Airport Way Intersection under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-8a: Pay Fair-Share of Intersection Improvements at Wawona Street/Airport Way	Significant and Unavoidable

Table ES-1. Continued

Impact	Significance Before Mitigation	Mitigation	Significance with Mitigation Incorporated
Impact TRA-9: Unacceptable Level of Service at the Daniels Street/Airport Way Intersection under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-9a: Pay Fair-Share of Intersection Improvements at Daniels Street/Airport Way	Significant and Unavoidable
Impact TRA-10: Unacceptable Level of Service at the Westbound SR 120 Ramps/Airport Way Intersection under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-10a: Pay Fair-Share for Interchange Improvements at Airport Way and SR 120	Significant and Unavoidable
Impact TRA-11: Unacceptable Level of Service at the Eastbound SR 120 Ramps/Airport Way Intersection under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-11a: Pay Fair-Share for Interchange Improvements at Airport Way and SR 120	Significant and Unavoidable
Impact TRA-12: Unacceptable Level of Service at the Atherton Road/Airport Way Intersection under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-12a: Pay Fair-Share of Intersection Improvements at Atherton Road/Airport Way Intersection	Significant and Unavoidable
Impact TRA-13: Unacceptable Level of Service at the Woodward Avenue/Airport Way Intersection under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-13a: Pay Fair-Share of Intersection Improvements at Woodward Avenue/Airport Way Intersection	Significant and Unavoidable
Impact TRA-14: Unacceptable Level of Service at the Woodward Avenue/Union Road Intersection under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-14a: Pay Fair-Share of Intersection Improvements at Woodward Avenue/Union Road Intersection	Significant and Unavoidable
Impact TRA-15: Unacceptable Level of Service at the Woodward Avenue/Main Street Intersection under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-15a: Pay Fair-Share of Intersection Improvements at Woodward Avenue/Main Street Intersection	Significant and Unavoidable
Impact TRA-16: Unacceptable Roadway Segment Level of Service on Airport Way between Yosemite Avenue and Daniels Street under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-16a: Pay Fair-Share to Widen Airport Way to Four Lanes	Significant and Unavoidable
Impact TRA-17: Unacceptable Roadway Segment Level of Service on Airport Way between Daniels Street and Atherton Road under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-17a: Pay Fair-Share for Interchange Improvements at Airport Way and SR 120 and Airport Way Widening	Significant and Unavoidable
Impact TRA-18: Unacceptable Roadway Segment Level of Service on Airport Way between Atherton Road and Woodward Avenue under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-18a: Pay Fair-Share to Widen Airport Way to Four Lanes	Significant and Unavoidable

Table ES-1. Continued

Impact	Significance Before Mitigation	Mitigation	Significance with Mitigation Incorporated
Impact TRA-19: Unacceptable Roadway Segment Level of Service on Woodward Avenue between McKinley Avenue and Airport Way under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-19a: Pay Fair-Share to Widen Airport Way to Four Lanes	Significant and Unavoidable
Impact TRA-20: Unacceptable Roadway Segment Level of Service on McKinley Avenue between Yosemite Avenue and SR 120 under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-20a: Pay Fair-Share to Widen McKinley Avenue to Four Lanes	Significant and Unavoidable
Impact TRA-21: Unacceptable Level of Service on Freeway Mainline Segments under Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-21a: City Regional Transportation Impact Fee	Less than Significant
Impact TRA-22: Unacceptable Level of Service on Freeway Ramp Junctions under Existing Plus Project Conditions	Significant	Mitigation Measure TRA-22a: Pay Fair-Share for Interchange Improvements at Airport Way and SR 120	Significant and Unavoidable
Impact TRA-23: Increased Demand for Bicycle Facilities under Existing Plus Project and Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-23a: Install Bicycle Facility Improvements in the Vicinity of the Project Site	Less than Significant
Impact TRA-24: Increased Demand for Public Transit under Existing Plus Project and Cumulative Plus Project Conditions	Significant	Mitigation Measure TRA-24a: Coordinate with the City of Manteca to Develop Transit Service and Construct Facilities in the Vicinity of the Project Site	Less than Significant
Utilities and Service Systems			
Impact USS-1: Temporary Construction-Related Impacts on Access Routes and Reduced Response Times for Police, Fire, and Emergency Services	Less than Significant	—	—
Impact USS-2: Operational Impacts on Police Services, Including Inadequate Service Ratios and Response Times	Less than Significant	—	—
Impact USS-3: Operational Impacts on Fire Services, Including Inadequate Service Ratios, Response Times, and Water Pressure and Supply for Fire Suppression	Less than Significant	—	—
Impact USS-4: Inadequate Service Ratios at Schools in the Project Area	Less than Significant	—	—
Impact USS-5: Provision of Parks and Recreational Facilities	Significant	Mitigation Measure USS-5a: Pay Park Acquisition and Improvement Fee	Less than Significant

Table ES-1. Continued

Impact	Significance Before Mitigation	Mitigation	Significance with Mitigation Incorporated
Impact USS-6: Operational and Construction-Related Impacts on Solid Waste Collection and Storage Capacity	Less than Significant	–	–
Impact USS-7: Expansion or Construction of New Wastewater Collection, Conveyance, or Treatment Facilities	Less than Significant	–	–
Impact USS-8: Insufficient Drainage Capacity to Serve the Proposed Project	Less than Significant	–	–
Impact USS-9: Inadequate Energy Sources and Infrastructure	Less than Significant	–	–
Impact USS-10: Temporary, Planned, or Accidental Construction-Related Disruptions to Utility Services	Significant	Mitigation Measure USS-10a: Identify and Relocate Existing Utilities Where Necessary	Less than Significant
Growth Inducing Impacts			
Impact GI-1: Fosters Economic or Population Growth or Additional Housing	Less than Significant	–	–
Impact GI-2: Removal of a Potential Obstacle to Growth	Less than Significant	–	–
Impact GI-3: Taxes Community Services or Facilities to an Extent that New Services or Facilities Would Be Necessary	Less than Significant	–	–
Cumulative			
Impact CE-1: Cumulative Loss of Agricultural Lands	Significant	Mitigation Measure AG-1a: Agricultural Mitigation Fee	Significant and Unavoidable
Impact CE-2: Cumulative Effect on Air Quality	Significant	Mitigation Measure AIR-3b: Implement Measures to Comply with SJVAPCD Rule 9510, Indirect Source Review	Less than Significant
Impact CE-3: Cumulative Effect on Climate Change	Significant	Mitigation Measure CE-3a: Implement City of Manteca General Plan Policies for Energy Conservation	Significant and Unavoidable
Impact CE-4: Cumulative Impacts to Geology and Soils	No impacts	–	–
Impact CE-5: Cumulative Impacts to Energy	Significant	Comply with City of Manteca General Plan policies related to energy conservation	Significant and Unavoidable

Table ES-1. Continued

Impact	Significance Before Mitigation	Mitigation	Significance with Mitigation Incorporated
Impact CE-6: Cumulative Impact Resulting from Increased Traffic Noise	Significant	Mitigation Measure NOI-3a: Construct Noise Barriers along Woodward Avenue and Airport Way so that Traffic Noise Does Not Exceed 60 dBA Ldn in Outdoor Use Areas	Significant and Unavoidable
Impact CE-7: Cumulative Impacts on Other Public Services and Utilities	Less than Significant	—	—
Impact CE-8: Cumulative Impacts to Public Services	No Impact	—	—

Chapter 1

Introduction

The California Environmental Quality Act (CEQA) of 1970, as amended, requires that an environmental impact report (EIR) be prepared, certified, and considered by decision-makers before action is taken on a project. State CEQA Guidelines Section 15161 requires an EIR to examine the expected individual and cumulative impacts of all phases of a proposed project, including planning, construction, and operation. An EIR also identifies means to minimize potential adverse impacts (mitigation measures) and evaluates reasonable alternatives to the proposed project, including a required no-project alternative. The project being evaluated in this EIR is the Machado Estates Project (proposed project), which requires approval by the City of Manteca (City).

EIR Requirements

CEQA (Public Resources Code [PRC] 21000–21178.1) and the State CEQA Guidelines provide the statutory requirements for evaluating environmental impacts of the proposed project. CEQA requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority. Public agencies are required to avoid or mitigate impacts, when feasible. Public agencies also are required to balance a variety of public objectives, including economic, environmental, and social objectives.

An EIR is a public informational document used in the planning and decision-making process. Although the EIR does not control the ultimate decision on the project, the lead agency (in this case, the City) must consider the information in the EIR and respond to each significant impact identified in the EIR. In providing that information, an EIR must:

- identify the potentially significant impacts of the proposed project on the environment and indicate the manner in which those significant impacts can be avoided or mitigated,
- identify any significant impacts that cannot be mitigated, and
- identify reasonable and feasible alternatives to the project that would eliminate any significant impacts or reduce them to a less-than-significant level.

An EIR also discloses growth-inducing impacts; impacts found not to be significant; and significant cumulative impacts of all past, present, and reasonably anticipated future projects. An EIR represents an objective, good-faith disclosure of the foreseeable environmental impacts that might occur should the project be approved and developed. An EIR does not approve or deny the project.

CEQA requires the lead agency to prepare an EIR that reflects the independent judgment of the agency regarding the impacts of the project, the level of significance of the impacts both before and after mitigation, and any mitigation measures proposed to reduce the impacts. A draft EIR is circulated to responsible agencies, trustee agencies with resources affected by the project, and interested agencies and individuals. The purposes of public and agency review of a draft EIR include sharing expertise, disclosing agency analyses, checking accuracy, detecting omissions, discovering public concerns, and soliciting counterproposals.

Reviewers of a draft EIR should focus on the sufficiency of the document in identifying and analyzing the possible impacts on the environment and ways in which the significant impacts of the project might be avoided or mitigated. Comments are most helpful when they suggest additional specific alternatives or mitigation measures that would provide better ways to avoid or mitigate significant impacts.

Focus of the EIR

CEQA identifies various types of EIRs, the most common of which is the project EIR. A project EIR, such as this document, focuses primarily on the changes in the environment that would result from a development project. It examines all phases of the project, including planning, construction, and operation.

A notice of preparation (NOP) and initial study (IS) (Jones & Stokes 2006a) were prepared for the proposed project and published for a 30-day public review and comment period beginning May 1, 2007 (Appendix A). After considering the results of the analysis presented in the IS, the City determined that preparation of an EIR that would cover the full range of environmental issues, except those scoped out in the IS, was required.

The IS found that the project would have no impact or a less-than-significant impact on aesthetics and mineral resources. Additionally, the IS determined that potential significant impacts on biological resources, land use and planning, public services and utilities, and recreation could be reduced to a less-than-significant level with mitigation.

The IS further found that the project would create a cumulatively considerable contribution to significant cumulative impacts related to conversion of important farmland to urban uses.

In the following areas, the IS determined that additional study was required to evaluate the significance of the potential impacts and develop mitigation measures, if necessary and available.

- **Air Quality:** AQAP conformity study, URBEMIS modeling, CALINE modeling, and evaluation of conformance with San Joaquin Valley Air Pollution Control District (SJVAPCD) thresholds for contribution to cumulative impacts related to emissions of reactive organic gases (ROG) and oxides of nitrogen (NO_x).
- **Cultural Resources:** historical and archaeological resource studies.
- **Geology, Soils, and Paleontology:** site-specific geotechnical study.
- **Hazards and Hazardous Materials:** site drainage study.
- **Noise:** construction and traffic noise study following completion of traffic impact study.
- **Public Services and Utilities:** wastewater and drainage studies and water supply assessment.
- **Traffic and Transportation:** traffic impact study.

Terminology

To assist readers in understanding this EIR, key terms are defined below.

- A *project* is the whole of an action that has the potential for resulting in a physical change in the environment, either directly or ultimately.
- The *environment* is the physical conditions that exist in the area and that would be affected by a proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. The area involved is the area in which significant direct or indirect impacts would occur as a result of the project. The environment includes both natural and artificial conditions.
- *Impacts* analyzed under CEQA must be related to a physical change. Impacts comprise:
 - direct or primary effects that are caused by the proposed project and occur at the same time and place; or
 - indirect or secondary effects that are caused by the proposed project and are later in time or farther removed in distance but are still reasonably foreseeable, including growth-inducing impacts and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
- A *significant impact* is a substantial or potentially substantial adverse change in any of the physical conditions in the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic

or aesthetic significance. This EIR uses several terms to describe the level of significance of adverse impacts, as described under “Outline of Resource Chapters” below. An economic or social change by itself is not considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.

- *Mitigation* consists of:
 - ❑ avoiding the impact altogether by not taking a certain action or parts of an action;
 - ❑ minimizing impacts by limiting the degree or magnitude of the action and its implementation;
 - ❑ rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
 - ❑ reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or
 - ❑ compensating for the impact by replacing or providing substitute resources or environments.
- Cumulative impacts are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The individual impacts may be changes resulting from a single project or separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

Organization of the EIR

This EIR is organized in the following chapters.

- “Executive Summary” presents a brief summary of the project; summarizes the impacts and mitigation measures; identifies areas of known controversy, including issues raised by agencies and the public; and identifies unresolved issues. This chapter also summarizes the proposed project’s growth-inducing impacts, significant and unavoidable impacts, and significant irreversible impacts.
- Chapter 1, “Introduction,” explains the purpose of this EIR, defines terms used in the analysis, presents the general outline of the resource chapters, and discusses the environmental review process.
- Chapter 2, “Project Description,” describes the project.
- Chapters 3 through 13 are devoted to environmental analysis according to resource topics, such as agriculture and land use, air quality, cultural

resources, hydrology, and transportation. Each resource is embodied within its own chapter.

- Chapter 14, “Other CEQA Considerations,” presents the analysis of the proposed project’s cumulative and growth-inducing impacts. Significant and irreversible environmental changes also are indicated in this chapter.
- Chapter 15, “Alternatives Analysis,” identifies the alternatives that are being considered to eliminate or reduce significant impacts.
- Chapter 16, “References Cited,” lists documents and persons consulted in preparation of this EIR.
- Chapter 17, “List of Preparers,” lists the EIR authors, technical specialists, members of the production team, and other key individuals who assisted in the preparation and review of this EIR.
- Technical appendices with supporting data and information are presented at the end of this EIR.

Outline of Resource Chapters

Each resource chapter generally conforms to the outline below.

- **Environmental Setting**
 - **Regulatory Setting:** In this section, federal, state, and local policies, regulations, and standards are described for the resource area.
 - **Existing Conditions:** In this section, the existing site and study area conditions are described for the resource area.
- **Impact Analysis**
 - **Approach and Methodology:** In this section, the technical methodology for impact assessment is described. The thresholds or standards used to determine the significance of the impacts are identified, as are models used to assess impacts and any other technical tools.
 - **Impacts and Mitigation Measures:** In this section, the impacts of the proposed project are described. For each identified significant or potentially significant impact, one or more feasible and enforceable mitigation measures are identified if available. The significance conclusions at the end of each impact discussion correspond to one of the following categories.
 - **No Impact:** This level of significance is used for impacts where there is clearly no impact. Where it was clear at the outset that there would be no impact on a particular resource area under any of the alternatives (e.g., biological resources), the resource area was evaluated at a lesser level of analysis.

- **Less than Significant:** This level of significance is used for impacts where there would be an impact but the degree of the impact would not meet or exceed the identified thresholds.
- **Less than Significant with Mitigation:** This level of significance is used for impacts that would meet or exceed the identified thresholds, but would be reduced to a less-than-significant level through the implementation of mitigation measures.
- **Significant and Unavoidable:** This level of significance describes significant impacts for which mitigation to reduce the significant impact to a less-than-significant level is not available or feasible.

Agencies That May Use the EIR

This EIR may be used by several responsible or trustee agencies that also have review authority over the proposed project. As stated in State CEQA Guidelines Section 15231:

A final EIR prepared by a Lead Agency or a Negative Declaration adopted by a Lead Agency shall be conclusively presumed to comply with CEQA for purposes of use by Responsible Agencies which were consulted pursuant to Sections 15072 or 15082 unless one of the following conditions occurs:

- a. The EIR or Negative Declaration is finally adjudged in a legal proceeding not to comply with the requirements of CEQA, or
- b. A subsequent EIR is made necessary by Section 15162 of these Guidelines.

Agencies anticipated to use this EIR include the Local Agency Formation Commission (LAFCo) and the City of Manteca.

Environmental Review Process

CEQA does not require formal hearings at any stage of the environmental review process (State CEQA Guidelines Section 15202[a]). However, it does encourage “wide public involvement, formal and informal...in order to receive and evaluate public reactions to environmental issues” (State CEQA Guidelines Section 15201). The City distributed an NOP of a draft EIR for the proposed project on May 1, 2007 (Appendix A). The NOP was distributed for a 30-day comment period that ended May 31, 2007. Comments on the NOP were considered in the preparation of the EIR. Appendix B contains written comments received on the NOP.

Chapter 2

Project Description

Project Location

The proposed project is located in San Joaquin County (Figure 2-1), directly south of the Manteca city limits but within the City's primary urban service boundary (PUSA). The Machado Estates site is located at the southwest corner of the Airport Way/Woodward Avenue intersection (Figure 2-2). The specific site plan is shown in Figure 2-3.

Existing Conditions

The project site is currently being used for agriculture (corn). One ranch house located on the site would be removed as part of the proposed project.

Adjacent land uses include residential land to the north, agricultural land to the east and south, and fallow agricultural land to the west. The Terra Ranch development is proposed directly west of the site on currently fallow agricultural land.

Purpose and Need

The purpose of the project is to provide additional housing for an expanding population in Manteca. This project would help to accommodate the growing community.

Project Characteristics

The proposed project includes the City's approval of the following:

- rezoning,
- annexation of the Machado Estates site to the City,

- annexation of adjacent parcels to the City,
- a development agreement, and
- a tentative map for residential development.

Proposed Land Uses

The proposed project includes the construction of the Machado Estates subdivision. The project would subdivide 156.8 acres into 575 single-family residential lots. One existing ranch house would be removed for the purposes of the project.

The City proposes to annex the proposed Machado Estates site plus approximately 15 acres of land north of the project site currently used for private residences and designated in the City General Plan for future low-density residential and mixed-use commercial land uses. This area is comprised of 15 parcels (Figure 2-4) located along Woodward Avenue and Airport Way, immediately north of the proposed Machado Estates development. No additional development and/or alteration are proposed for these parcels, which are only proposed for annexation to the City of Manteca.

Public Services and Utilities

The project proponents propose that the project site connect to existing city public services and utilities, which are described below.

Gas and Electricity

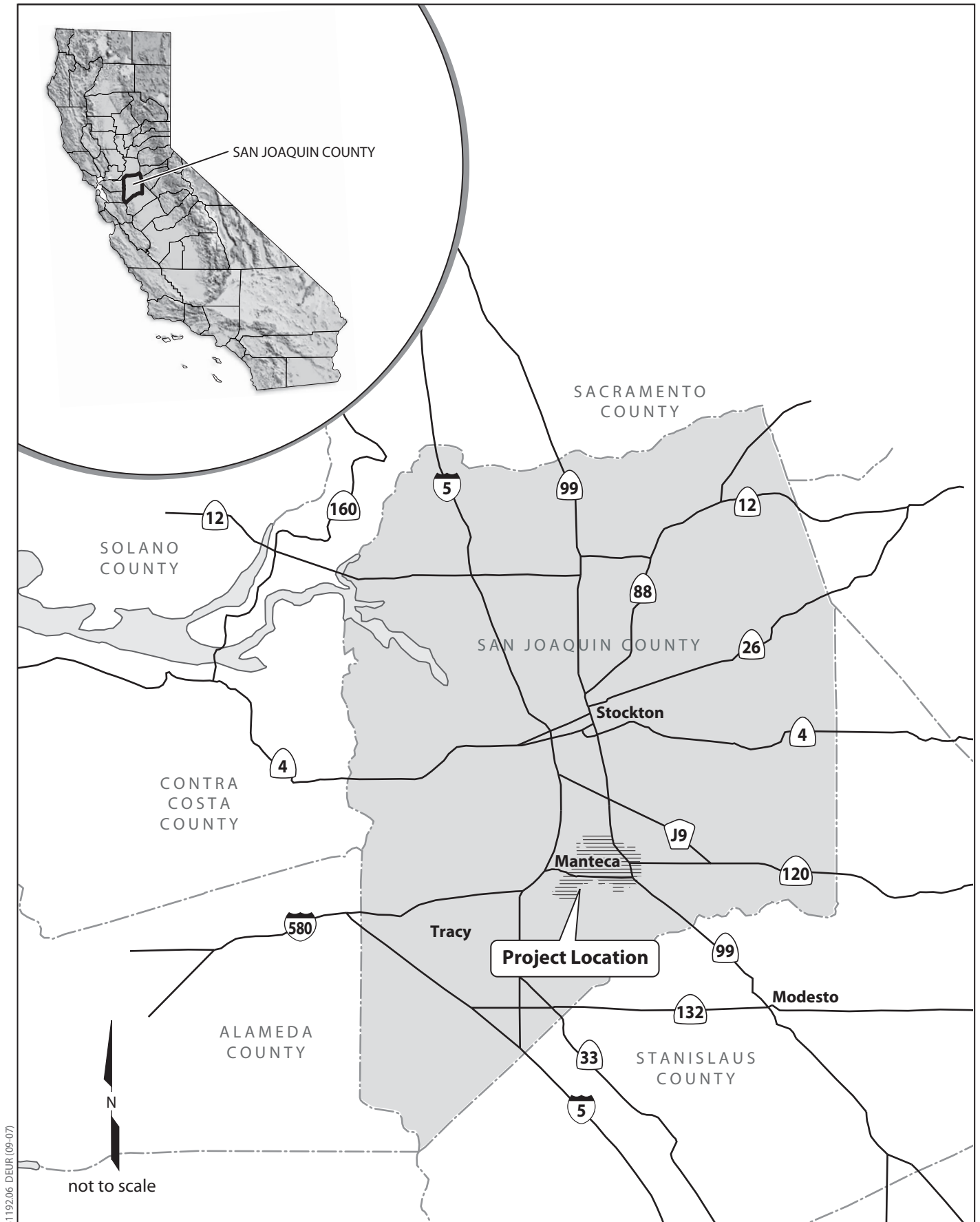
The Pacific Gas & Electric Company currently provides natural gas and electric service to residents and businesses in Manteca.

Telephone

Verizon provides local telephone service for more than 45,000 customers in the Manteca area. The existing community is equipped with fiber optic lines. Digital data services include DSL, T-1, ISDN (BRI and PRI), Frame Relay, Centranet, and telephone services.

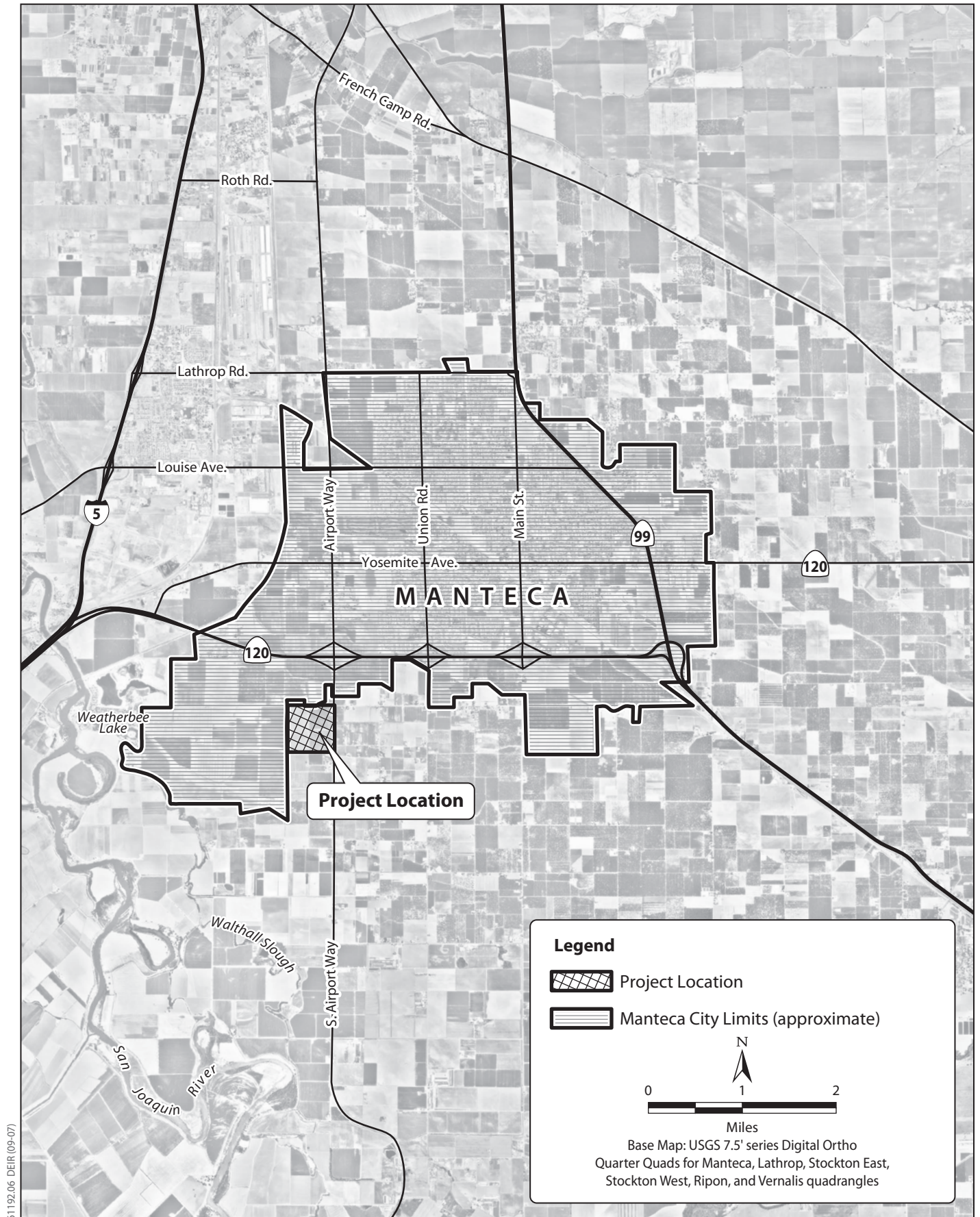
Water

The City provides water service for the existing community. Approximately 17,500 connection customers are served, with an average use of 11 million



6119206 DEUR (09-07)

Figure 2-1
Project Vicinity



61192.06 DEIR (09-07)

6/19/2006 (7/07)

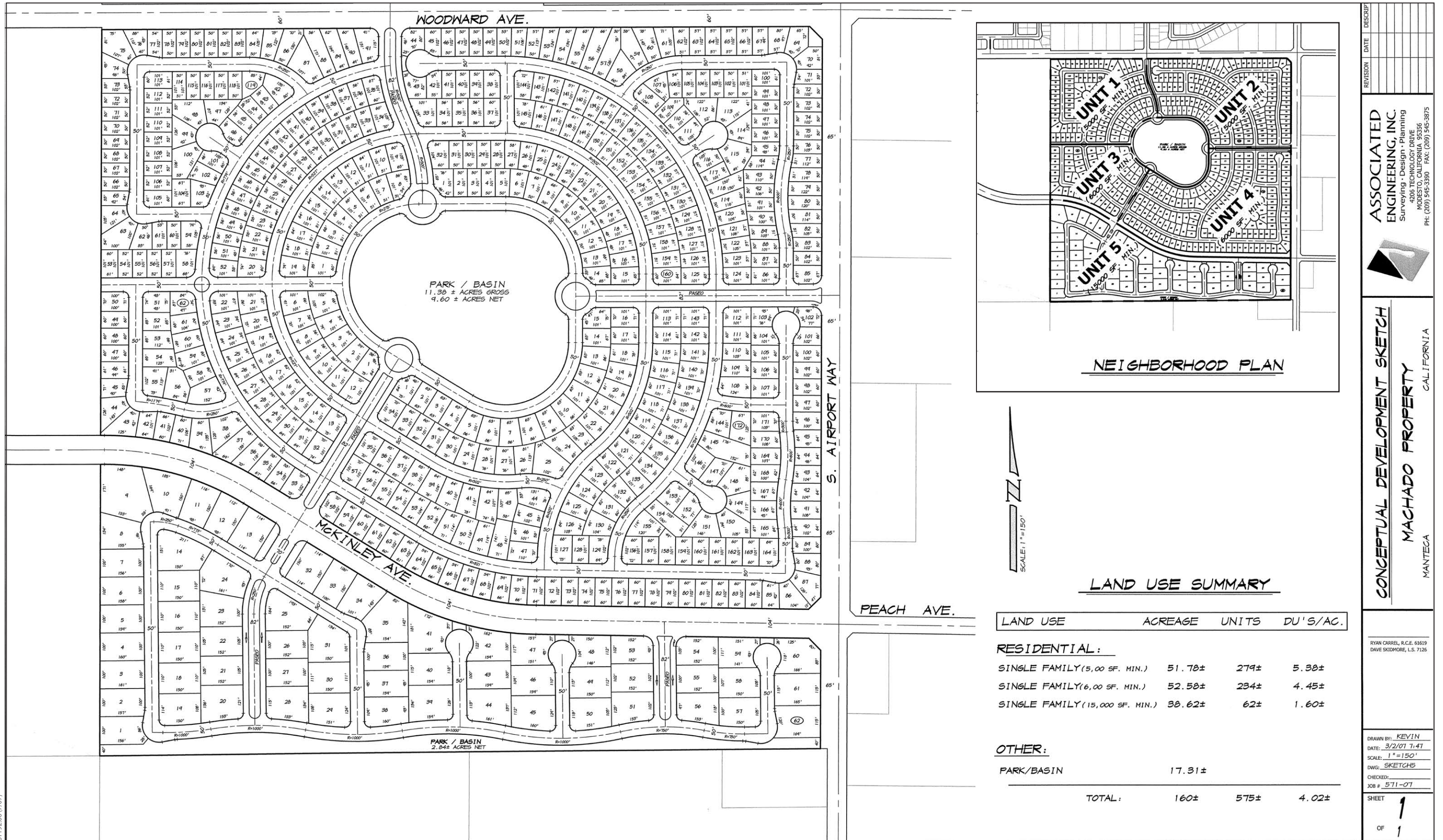
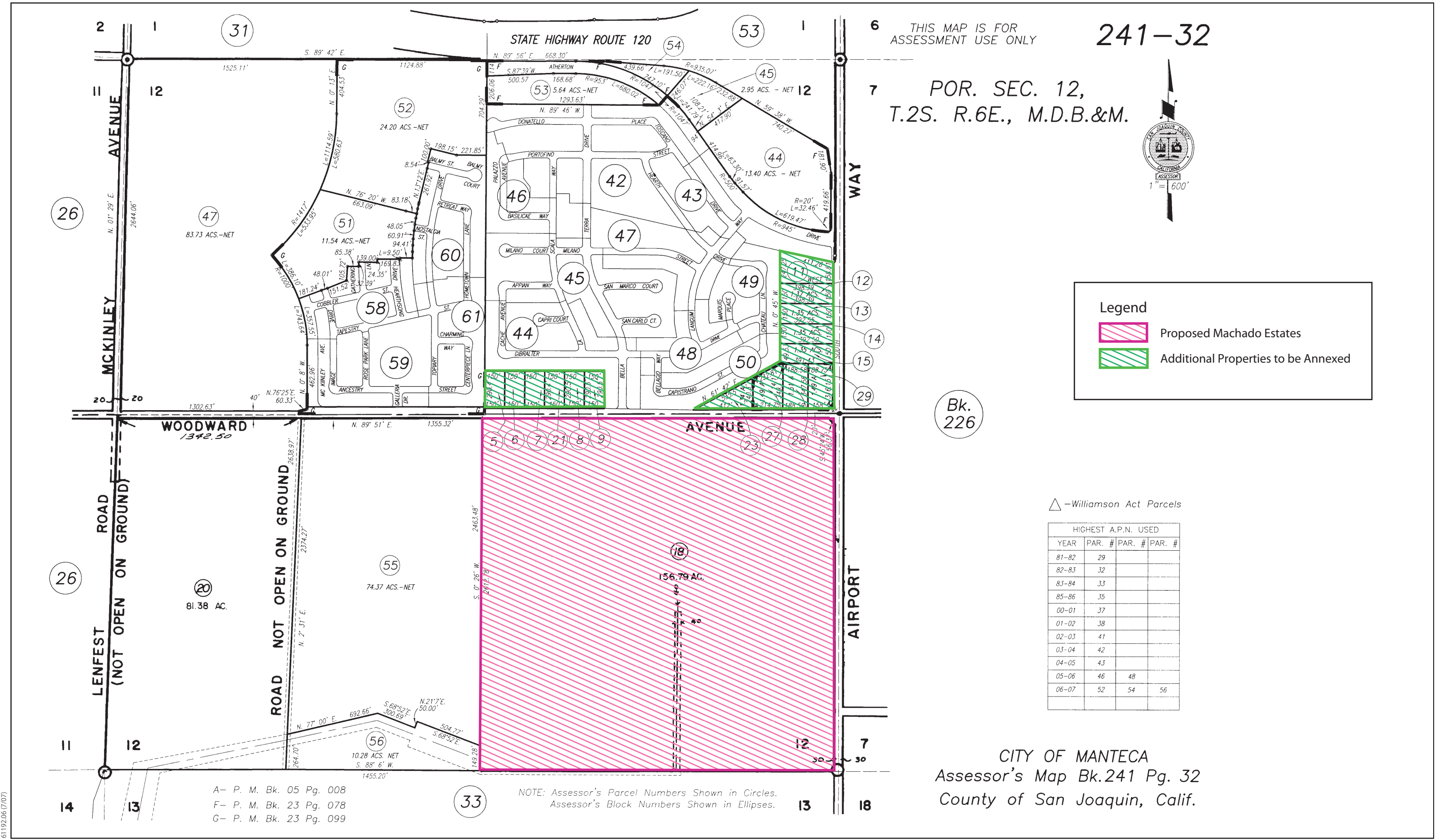


Figure 2-3
Machado Estates Proposed Site Map

61192.06 (7/07)



gallons per day (mgd). A new 1 million-gallon storage tank will be constructed in the Tesoro Subdivision northeast of the proposed Machado Estates subdivision. The City of Manteca, along with the Cities of Escalon, Tracy, and Lathrop, are participating in the South County Surface Water Supply Project (SCSWSP). This project was developed to address future water needs through construction of a water treatment plant, transmission mains, surface storage reservoirs, and booster pump stations. The surface water and groundwater are utilized in a conjunctive use program in which the surface water becomes the primary source of domestic water for the City. Manteca began receiving deliveries of water from SCSWSP in August 2005 (Jones & Stokes 2006b).

Garbage

The City provides solid waste service for the Manteca area.

Sewer

The City's wastewater treatment plant (WWTP) serves Manteca, Lathrop, and Raymus Village in San Joaquin County. The plant currently treats 6.5 mgd of wastewater and has been rated with a capacity of approximately 8.11 mgd.

Storm Drainage

The City operates and maintains a storm drain system that serves the existing community. The system consists of approximately 170 miles of pipeline, 36 pump stations, and 35 detention basins. Runoff from rainfall flows through the system, into South San Joaquin Irrigation District (SSJID) drains and laterals, and eventually into the San Joaquin River.

Related Projects

The Manteca Community Development Department has identified 28 other residential developments throughout or directly outside Manteca that are slated for construction or tentatively proposed and pending environmental review. These projects are listed in Table 2-1. They range in size from small projects, such as the Westport development (5.27 acres, 24 total lots), to large ones such as the Union Ranch development (356 acres, 1,960 total lots).

Additionally, the City is currently proposing to widen the existing overcrossing and ramps for the State Route (SR) 120/South Union Road interchange within the city and install traffic signals. An initial study/environmental assessment for this project is currently being prepared. The City is also proposing to improve the existing South Union Road and extend Atherton Drive to South Main Street. Environmental review for this project is underway.

Intended Uses of This Environmental Impact Report

This EIR analyzes the environmental effects of the proposed project, indicates ways to reduce or avoid potential environmental damage resulting from the project, and identifies alternatives to the project. This EIR also discloses the proposed project's significant environmental effects that cannot be avoided, growth-inducing effects, effects found not to be significant, as well as significant cumulative impacts.

An EIR is a public, informational document used in the planning and decision-making process. The purpose of an EIR is not to recommend approval or denial of a project, but to provide information to aid in the decision-making process. Although the EIR does not recommend or control what the ultimate decision should be regarding the project, the City, as lead agency, must consider the information in the EIR and respond to each significant impact identified in the EIR.

CEQA requires that the City prepare an EIR that reflects the independent judgment of the City regarding the impacts of the project, level of significance of the impacts both before and after mitigation, and mitigation measures proposed to avoid or reduce the impacts.

As the lead agency for the Project under CEQA, the City will approve or adopt the following:

- certification of the EIR for the project.

Additionally, LAFCo may utilize the EIR for the purposes of:

- approval or review of annexation of the project area, and
- approval or review of annexation of additional 15 acres north of the proposed project area.

Required Permits and Approvals

The proposed project would require general plan amendment, annexation, rezoning, a development agreement, and a tentative map for residential development.

Table 2-1. Other Approved, Pending, and Proposed Development Projects

Development Name	Tentative Date	Final Date	Status	Total Lots	Acreage	Builder/Developer/Engineer/ Owner Contact Information
Sierra Creek	5-18-98	2-27-02	Final	85	33.5	MCR Engineering 310 Sun West Place Manteca, CA 209/239-6229
Jasmine Hollow #4	11-27-02		Final	9	0.58	Atherton Boyce Development P.O. Box 871 Manteca, CA 209/239-4014
Westport	10-2-00		Tentative	24	5.27	Aldo Brocchini 6926 E. Woodward Avenue Manteca, CA 209/823-4624
Terra Bella	4-24-03		Tentative	158	42.3	Bright Development 1620 N. Carpenter Road Modesto, CA 209/426-8242
Tesoro	12-23-03		Tentative	485	128	Atherton Boyce Development P.O. Box 871 Manteca, CA 209/239-4014
Dutra Estates	6-17-04		Tentative	426	77.3	Florsheim Land Co. 1701 W. March Lane Stockton, CA 209/473-1106
Shadowbrook	7-15-04		Tentative	497	122	Shadowbrook Joint Venture 544 E. Yosemite Avenue Manteca, CA 209/823-3148
Antigua	7-21-04		Tentative	120	3.33	Atherton Boyce Development P.O. Box 871 Manteca, CA 209/239-4014
Paseo West	6-8-04		Tentative	191	50.8	Anderson Homes P.O. Box 1237 Lodi, CA 209/367-7600
Villa Ticino West Vesting	11-1-04		Tentative	711	127	Andrew Rossi 611 N. Main Street Manteca, CA 209/824-4000
Ken Hill Estates	4-18-05		Tentative	12	4.73	Jerry Parker 2355 Oakland Road San Jose, CA 408/953-9918
Union Ranch	Pending		Tentative	1,960	356	RLC Associates 250 Cherry Lane, #208 Manteca, CA 209/239-5030

Table 2-1. Continued

Development Name	Tentative Date	Final Date	Status	Total Lots	Acreage	Builder/Developer/Engineer/ Owner Contact Information
Machado Estates	Pending		Tentative	564	160	Airport Woodward Joint Venture 544 E. Yosemite Manteca, CA 209/823-3148
Rodoni Estates	6-6-05		Tentative	99	28.2	D.R. Horton 1210 Central Boulevard Brentwood, CA 925/634-6023
Evans Estates	Pending		Tentative	586	159	MCR Engineering 322 Sun West Place Manteca, CA 209/239-6229
Crivello Estates	Pending		Tentative	62	18.8	MCR Engineering 322 Sun West Place Manteca, CA 209/239-6229
Sundance	Pending		Tentative	451	110	FCB Homes 3247 W. March Lane Stockton, CA 209/957-8112
Sundance 2 (Medium Density)	Pending		Tentative	79	7.53	FCB Homes 3247 W. March Lane Stockton, CA 209/957-8112
Oleander Estates	Pending		Tentative	544	112	Raymus Homes 250 Cherry Lane, #116 Manteca, CA 209/824-3080
Tara Park	Pending		Tentative	583	160	Beck Properties 3114 W. Hammer Lane Stockton, CA 209/957-0331
Pillsbury Estates	Pending		Tentative	275	80	Brocchini Family Ptp. 6926 E. Woodward Avenue Manteca, CA 209/239-1303
Terra Ranch	Pending		Tentative	269	74.8	Atherton Boyce Development P.O. Box 1870 Manteca, CA 209/239-4014
Lundbom Estates	Pending		Tentative	21	5	RLC Associates 250 Cherry Lane, #208 Manteca, CA 209/239-5030
Dutra Estates West	Pending		Tentative	188	23.1	Florsheim Land Co. 1701 W. March Lane Stockton, CA 209/473-1106

Table 2-1. Continued

Development Name	Tentative Date	Final Date	Status	Total Lots	Acreage	Builder/Developer/Engineer/ Owner Contact Information
Yosemite Park	Pending		Tentative	253	29.5	Kimball Hill Homes 10535 E. Stockton Boulevard Elk Grove, CA 916/714-1153
Lincoln Estates	Pending		Tentative	19	3.65	Ed Machado 11708 E. Moncure Road Ripon, CA 209/599-2565
Alameda Estates	Pending		Tentative	10	.98	Rick Hogan/Ed Cardoza 2604 E. Louise Manteca, CA 209/239-4141
Bright World Estates	Pending		Tentative	21	5	Jehawn Ramish 7276 E. Woodward Avenue Manteca, CA 209/823-0016

Chapter 3

Agriculture, Land Use, and Planning

Introduction

This chapter describes the impacts on agriculture, land use, and planning that would result from the project. The key sources of data and information used in the preparation of this chapter are:

- *San Joaquin County General Plan 2010* (County General Plan) (San Joaquin County 2005),
- *Manteca General Plan 2023 Draft Environmental Impact Report* (Wade Associates 2003),
- *City of Manteca General Plan 2023: Policy Document* (City General Plan) (City of Manteca 2003a), and
- California Farmland Mapping and Monitoring Program Website (California Department of Conservation 2007).

Environmental Setting

This section discusses federal, state, and local regulations related to land use and agricultural resources that would apply to the proposed project. It then describes existing conditions related to agricultural resources in the project area.

Regulatory Setting

Federal

There are no federal regulations associated with land use and agricultural resources that may be affected by the proposed project. The Natural Resources Conservation Service (NRCS) is a primary source of information concerning the suitability of soils for agricultural use.

State

California Farmland Mapping and Monitoring Program

The California Farmland Mapping and Monitoring Program (FMMP) does not regulate property use, but its goal is to provide consistent and impartial data to decision makers with regulatory authority for use in assessing present statuses, reviewing trends, and planning for the future of California's agricultural land resources. The FMMP produces updated Important Farmland maps, which are a hybrid of resource quality (soils) and land use information. Although these maps are intended to be updated every 2 years, the FMMP has not been updated at that frequency. These maps identify Prime Farmland, Unique Farmland, Farmland of Statewide Importance, Farmland of Local Importance, urbanized land, and other lands. Data also are released in statistical formats, principally the biennial *California Farmland Conversion Report*. This information tracks the rate of farmland loss throughout California.

The following information, derived from the California Department of Conservation's (DOC's) FMMP and San Joaquin County (County) information, defines the farmland categories applied in the FMMP.

- **Prime Farmland:** farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the 4 years before the mapping date.
- **Farmland of Statewide Importance:** farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.
- **Unique Farmland:** farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but it may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the 4 years prior to the mapping date.
- **Farmland of Local Importance:** land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee. For the County, this definition is all farmable land within San Joaquin County not meeting the definitions of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland. This includes land that is or has been used for irrigated pasture, dryland farming, confined livestock or dairy facilities, aquaculture, poultry facilities, and dry grazing. It also includes soils previously designated by soil characteristics as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland that since has become idle.

- **Grazing Land:** land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, the University of California Cooperative Extension, and other groups interested in the extent of grazing activities. The minimum mapping unit for Grazing Land is 40 acres.
- **Urban and Built-Up Land:** land occupied by structures, with a building density of at least one unit to 1.5 acres, or approximately six structures per 10-acre parcel. This land is used for residential uses, industrial uses, commercial uses, construction purposes, institutional uses, public administration uses, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.
- **Other Land:** land not included in any other mapping category. Common examples include low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines; borrow pits; and water bodies smaller than 40 acres.
- **Water:** perennial water bodies with an extent of at least 40 acres.

The 2000–2002 edition of the *California Farmland Conversion Report* states that approximately 4,270 acres of Prime Farmland within San Joaquin County was converted to nonagricultural uses between the years 2000 and 2002. This continues a steady trend of conversion throughout the region.

California Land Conservation Act of 1965 (Williamson Act)

The California Land Conservation Act of 1965, commonly known as the Williamson Act (California Government Code [CGC] 51200–51295), provides incentives, through reduced property taxes, to encourage long-term agricultural and open-space land uses. Cities and counties may designate agricultural preserves and may offer contracts to owners of land within the preserve that is dedicated to agricultural use. The contracts ensure a preferential property-tax rate, and the landowner agrees not to convert the land to nonagricultural uses for a minimum 10-year period. Contracts are automatically renewed annually for an additional year unless a party to the contract files a notice of nonrenewal. Contracts also may be canceled prior to expiration of the 10-year period under certain circumstances.

Whenever land is proposed to be removed from Williamson Act coverage, the affected agency must notify the DOC.

California Farmland Conservancy Program

The California Farmland Conservancy Program (CFCP) provides grant funding for projects that use and support agricultural conservation easements for the protection of agricultural lands. It provides for the long-term, private

stewardship of agricultural lands where the property owner has voluntarily agreed to place his or her land into an agricultural conservation easement. As of October 2006, the CFCP has provided 28 conservation easement grants from state Proposition 12 monies, preserving nearly 11,000 acres of strategic farm and ranch land within the Central Valley. The CFCP is administered by the California DOC.

Local

San Joaquin County Local Agency Formation Commission

The San LAFCo is responsible for reviewing and approving proposed annexations. A LAFCo is established in each county by the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (Government Code 56000 et seq.), which sets out the procedures and standards to be applied when considering the incorporation, annexation, and deannexation of cities and special districts.

The role of the LAFCo is to ensure that local jurisdictional boundary changes and provisions of services are efficient and do not promote urban sprawl. Accordingly, the LAFCo establishes “spheres of influence” for each city and special district in the county. Each sphere identifies those areas that are likely to be annexed to that agency in the future.

The San Joaquin County LAFCo has adopted “Guideline Standards” to encourage planned development (San Joaquin County Local Agency Formation Commission 2006). These include the following pertinent standards.

- Proposals for annexation to cities will include all contiguous public roads that can be included without fragmenting governmental responsibility by alternating city and county road jurisdiction over short sections of the same roadway.
- Annexation to an adjacent city will be favored over a proposal for providing urban services by special districts.
- Annexations to agencies providing urban services will be progressive steps toward filling in the territory designated by the affected agency’s adopted sphere of influence (SOI). Proposed growth will be from inner areas toward outer areas.
- Economical efficiency of a larger annexation will be favored over a proposal for a “single parcel” or “piecemeal” annexation.
- A proposal establishing urban encroachment of areas designated by the County General Plan for open space and agricultural use will be opposed unless it complies with a previously adopted SOI of an incorporated city.

City of Manteca General Plan 2023

The City General Plan identifies the community's land use, transportation, environmental, economic, and social goals and policies as they relate to land use, conservation, and development. The Land Use Element provides the following policy and implementation measures intended to protect important farmland within the study area.

Implementation:

LU-I-1. The City shall maintain a growth management system that provides a mechanism for the annual allocation of the amount of residential, commercial, and industrial development that may occur. The growth management system shall have the following objectives:

- Conserve viable agricultural and open space lands.

Policies:

LU-P-7. All lands within the Primary and Secondary Urban Service Boundary lines to be ultimately developed to urban standards should be developed under the jurisdiction of the City of Manteca. Pending annexation to the City, all such lands should remain in agricultural, open space, or other low intensity uses. The City shall work cooperatively with the County to ensure that development approved by the County on unincorporated lands within the Primary and Secondary Urban Service Boundary lines is developed according to standards consistent with those of the City of Manteca. The City shall request all proposals for development on unincorporated lands within the Primary and Secondary Urban Service Boundary lines be referred to the City for review and comment prior to formal consideration by the County.

LU-P-41. The City shall encourage the continuation of agricultural uses on lands within the Primary and Secondary Urban Services Boundary lines pending their development as urban uses consistent with the General Plan.

LU-P-42. The City will encourage the continuation of small, specialty agricultural operations and demonstration or educational agricultural operations that are compatible with the adjacent urban uses.

The Community Design Element provides the following policies intended to retain agricultural resources within the study area.

Policies:

CD-P-48. Allow pockets of agricultural activity to remain within the urban areas of the city where such uses are compatible with the surrounding urban use.

CD-P-49. Allow use of small under-utilized parcels or undeveloped portions of parcels for temporary, seasonal agricultural activity, such as truck farms, strawberries, and small orchards.

The Resource Conservation Element provides the following goal and policies intended to conserve agricultural resources within the study area.

Goal RC-9. To promote the continuation of agricultural uses in the Manteca area and to discourage the premature conversion of agricultural land to nonagricultural uses, while providing for the urban development needs of Manteca.

Policies: Agricultural Resources

RC-P-19. The City shall support the continuation of agricultural uses on lands designated for urban use, until urban development is imminent.

RC-P-20. The City shall provide an orderly and phased development pattern so that farmland is not subjected to premature development pressure.

RC-P-21. In approving urban development near existing agricultural lands, the City shall take actions so that such development will not unnecessarily constrain agricultural practices or adversely affect the viability of nearby agricultural operations.

RC-P-24. Provide buffers at the interface of urban development and farmland; in order to minimize conflicts between these uses.

RC-P-25. The City shall ensure, in approving urban development near existing agricultural lands, that such development will not unnecessarily constrain agricultural practices or adversely affect the economic viability of nearby agricultural operations.

RC-P-26. The City shall restrict the fragmentation of agricultural land parcels into small rural residential parcels except in areas designated for estate type development in the General Plan Land Use Diagram.

RC-P-28. The City shall not extend water and sewer lines to premature urban development that would adversely affect agricultural operations.

Implementation: Agricultural Resources

RC-I-30. Apply the following conditions of approval where urban development occurs next to farmland.

- Require notifications in urban property deeds that agricultural operations are in the vicinity, in keeping with the City's right-to-farm ordinance.
- Require adequate and secure fencing at the interface of urban and agricultural use.
- Require phasing of new residential subdivisions; so as to include an interim buffer between residential and agricultural use.

City of Manteca Right-to-Farm Ordinance

Chapter 8.24 of the Manteca Municipal Code is a right-to-farm ordinance intended to protect agricultural productivity in the city. The ordinance includes the following statement.

It is the policy of this City to preserve, protect and encourage the use of viable agricultural lands for the production of food and other agricultural products. When nonagricultural land-uses extend into or approach agricultural areas, conflicts often arise between such land-uses and agricultural operations. Such conflicts often result in the involuntary curtailment or cessation of agricultural operations, and discourage investment in such operations. This chapter is intended to reduce the occurrence of conflicts between nonagricultural and agricultural land uses within the city.

Existing Conditions

This section discusses the existing conditions related to land use and agricultural resources in the study area. Information about existing conditions was compiled by reviewing the City General Plan EIR (Wade Associates 2003) and City General Plan (City of Manteca 2003a), a site visit by Jones & Stokes planners, and a review of aerial photographs. Other sources of information are cited in the following text.

Study Area

Region and County

San Joaquin County is centrally located in California's vast heartland, the San Joaquin Valley, an area of relatively level, agriculturally productive land. The foothills of the Diablo Range define the southwest corner of the county, and the foothills of the Sierra Nevada lie along the county's eastern boundary (San Joaquin County 2005).

Level, well-drained soils, however, are also prime areas for urban development. Although urbanized areas compose a relatively small portion of the county, the tremendous growth pressures in the San Francisco Bay Area, coupled with the absence of affordable housing there, have made San Joaquin County a highly attractive location. This fact often results in land use conflicts and the division of large agricultural parcels into smaller lots (San Joaquin County 2005).

San Joaquin County encompasses 912,329 acres, or 1,426 square miles (San Joaquin County 2005). In 2002, approximately 85% of the land was devoted to agricultural use (California Department of Conservation 2004). About 4,000 farms are located in the county, with an average size of 209 acres. In California, San Joaquin County is the top producer of pumpkins, cherries, asparagus, grain corn, apples, and English walnuts and is one of the top five producers of

tomatoes, cucumbers, potatoes, dry beans, sweet corn, safflower, wine grapes, almonds, watermelons, processing tomatoes, vegetable and vine crop seeds, onions, wheat, and apricots (San Joaquin County 2005).

Data from the DOC for 2002 indicate that within the county, Prime Farmland encompassed approximately 54% of the total county agricultural land. The remaining agricultural land comprises Farmland of Statewide Importance (12%), Unique Farmland (8%), Farmlands of Local Importance (7%), and Grazing Land (19%) (California Department of Conservation 2004).

City of Manteca

Manteca has historical roots as an important agricultural center. For much of the twentieth century, the Manteca area was predominantly an agricultural area because of the quality of the soil, the mild climate, and the available access to clean water. While agriculture still plays an important role in Manteca's economy, the city's economic base has become more diversified with the development of industries and the influx of Bay Area workers seeking affordable housing (Wade Associates 2003).

Manteca has tended to grow in a compact form, with few large vacant parcels. Development densities are typical of small, suburban communities. The average residential neighborhood has approximately four to five dwelling units per acre. The density of residential neighborhoods in the older portions of Manteca is comparable to the newer residential neighborhoods. Urban development is not significantly constrained by physical features or terrain in the project area. All natural features, including natural waterways and any native vegetation, have been removed for agriculture (City of Manteca 2003a).

Project Site

The proposed project includes the construction of the Machado Estates subdivision. The project would subdivide 156.8 acres into 575 single-family residential lots and a park that would provide recreation areas. One existing ranch house would be removed for the purposes of the project.

The proposed project is located in San Joaquin County directly south of the Manteca city limits but within the City's primary urban service boundary. The project site is located at the southwestern corner of the Airport Way/Woodward Avenue intersection. The project site is currently used primarily for agriculture (corn fields) and contains one private residence near the northeastern corner. Adjacent land uses include residential land to the north, agricultural land (orchards and row crops) to the east and south, and fallow agricultural land to the west. The Terra Ranch development is proposed directly west of the site on currently fallow agricultural land.

The project site is currently zoned by the County as General Agriculture, with a minimum parcel size of 40 acres for this zone (AG-40). None of the project site is identified as land currently under a Williamson Act contract (California Department of Conservation 2006). The existing County agricultural zoning would be replaced with City urban zoning consistent with the City General Plan upon annexation.

The project site has been identified by the DOC as Farmland of Statewide Importance, Prime Farmland, and Urban and Built-Up Land, as defined by the FMMP (California Department of Conservation 2007) (see Figure 3-1). Table 3-1 summarizes the FMMP land types present on the project site.

Table 3-1. Summary of FMMP Land Types on the Project Site

FMMP Land Type	Area (acres)	Percentage of Project Site
Farmland of Statewide Importance	148.19	94.5
Prime Farmland	9.50	0.06
Urban and Built-Up Land	0.09	0.01

Additional Annexation Area

The 15 parcels proposed for annexation north of the project site are currently in use as residential properties. All except two of the proposed annexation parcels contain single-family dwellings. The remaining two parcels are vacant.

Surrounding Land Uses

The City's Community Development Department has identified 25 residential developments throughout or directly outside Manteca that are slated for construction or are tentatively proposed and pending environmental review (see Table 2-1). They range in size from smaller projects, such as the Westport development (5.27 acres, with 24 total lots), to larger ones, such as the Union Ranch development (356 acres, with 1,960 total lots). Additionally, 13 residential development projects of various sizes have been completed in the past 6 years.

The land directly north is the site of the existing Bella Vista development. The land west of the project site is currently fallow agricultural land and is the site of the proposed Terra Ranch development. The eastern side of the project site is currently bordered by agricultural land (orchards and row crops) and is zoned Agriculture-Urban Reserve with a minimum parcel size of 20 acres (AU-20). This zone is intended to retain in agriculture those areas planned for future urban development in order to facilitate compact, orderly growth and to ensure the proper timing and economical provision of services and utilities. The land bordering the southern side of the project site is also agricultural land (orchards and row crops) and is zoned as AG-40.

All of the land surrounding the project site is planned for development in the City General Plan, and all surrounding land is within the City's SOI and designated as Low Density Residential (LDR) in the City General Plan. LDR is defined as having two to six primary dwelling units per gross acre. This designation is appropriate for single-family neighborhoods and allows for flexibility in selecting dwelling-unit types and parcel configurations to suit particular site conditions and housing needs. The type of dwelling units anticipated in this density range includes small lots and clustered lots as well as conventional large-lot detached residences (San Joaquin County 2005).

Impact Analysis

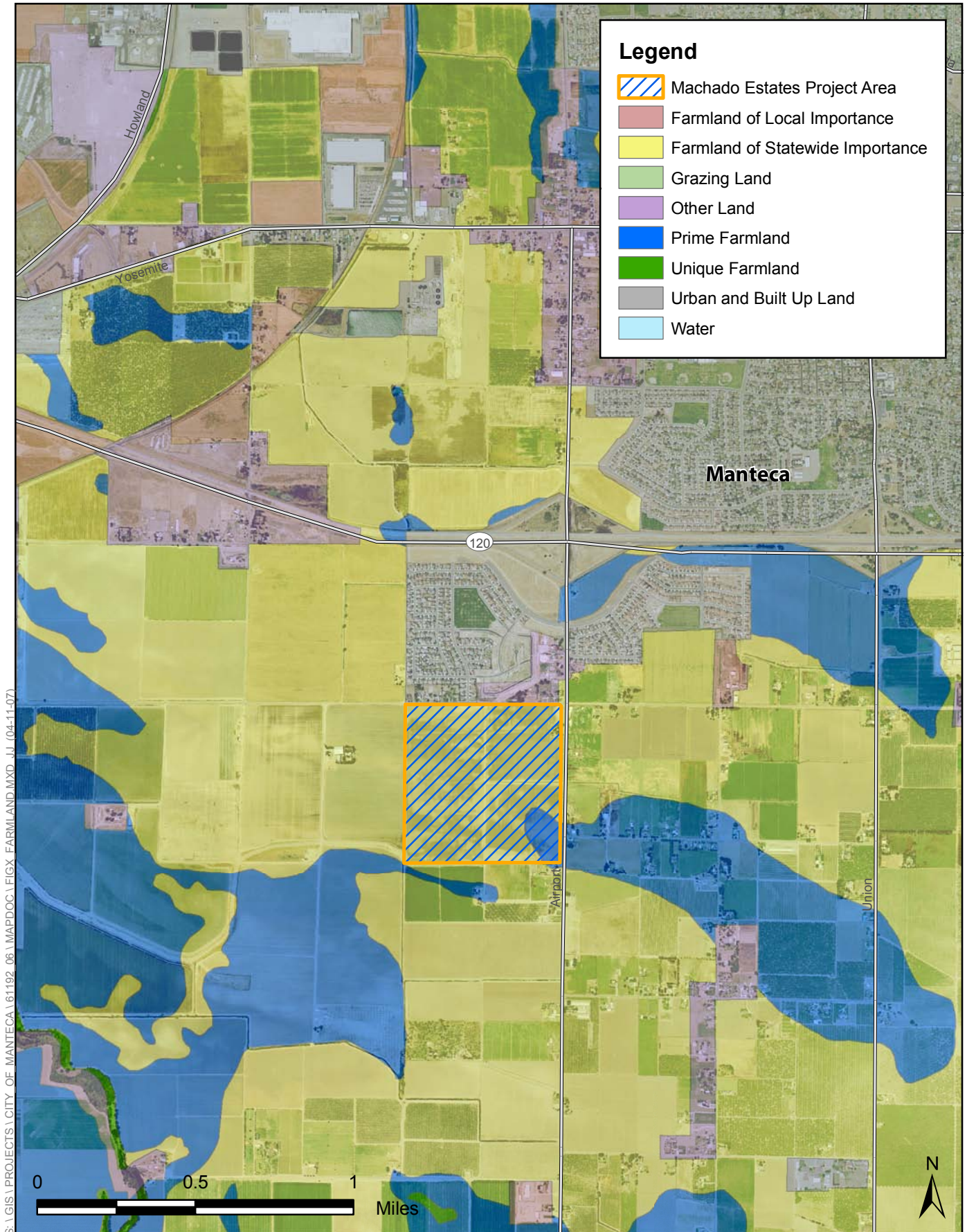
This section discusses the approach and methodology used to assess the impacts of the proposed project; thresholds used to determine whether an impact would be significant; discussions of individual impacts relative to the thresholds; mitigation measures to minimize, avoid, rectify, reduce, eliminate, or compensate for significant impacts; and the overall significance of the impact with mitigation incorporated.

Approach and Methodology

This section describes the CEQA impact analysis relating to land use and agricultural resources for the proposed project. It describes the methods used to determine the proposed project's impacts and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

For the purposes of this analysis, it was assumed the project would adhere to the Manteca Municipal Code and that the project would be rezoned Planned Unit Development Combining Zone District (PUD) and eventually zoned according to City standards. The PUD process will require consideration of the overall planned development by the Manteca Planning Commission and allow the commission (and city council upon final approval) to establish specific zoning regulations that will apply to the project site. For the purposes of this analysis, the proposed project would have a significant impact on land use and public policy if it would:

- physically divide an established community,
- conflict with applicable land-use plans or policies adopted by agencies with jurisdiction over the project for the purpose of avoiding or mitigating an environmental impact, or
- conflict with any applicable habitat conservation plan (HCP) or natural community conservation plan.



For the purposes of this analysis, the proposed project would have a significant effect on agricultural resources if it would:

- convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the FMMP, to nonagricultural use;
- conflict with existing zoning for agricultural use or a Williamson Act contract; or
- involve other changes in the existing environment, which, because of their location or nature, could result in the conversion of farmland to a nonagricultural use.

Impacts and Mitigation Measures

Impact LU-1: Physical Division of an Established Community (No Impact)

Existing land uses in the project area consist primarily of urban development, in the form of new residential subdivisions, and actively farmed lands. A small number of properties contain scattered rural residences and agricultural buildings. The project adjoins existing residential tracts within Manteca on the north and northeast and a planned residential development on the west. The project would extend the existing urban area southward and would not physically divide an established community. Therefore, there would be no impact.

Impact LU-2: Incompatibility with Existing or Future Land Uses (Less than Significant)

The proposed project would extend urban development southward and would be compatible with similar development to the north and west. The project would adjoin existing farmlands to the south and east. In the short term, residential and agricultural land uses could be incompatible, particularly if residents complain about standard agricultural practices.

The City has adopted a right-to-farm ordinance that requires developers of new subdivisions adjacent to agricultural land to notify new homebuyers that agricultural uses may present problems, such as dust, noise, and odors. This will limit the effects of short-term land use conflicts between residential uses and the project site and adjacent agricultural uses, thus minimizing any need for land conversion from agricultural uses to nonagricultural uses. But it will not eliminate the physical impacts.

In the longer term, there would be no incompatibility. Based on the County General Plan land-use map, lands to the north of Woodward Avenue and both west and east of the project site will be the subject of future annexation and development as Low Density Residential development. The City General Plan describes the LDR designation as accommodating single-family residential development at a density of two to six dwellings per acre.

Accordingly, this impact is considered less than significant. No mitigation measures are required.

Impact LU-3: Conflicts with an Applicable Local Habitat Conservation Plan or Natural Community Conservation Plan (No Impact)

The County and the City are signatories to the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) and thereby are bound to carry out its provisions. Potential impacts on SJMSCP-covered species (Swainson's hawk [*Buteo swainsoni*] and migratory birds) are addressed in Chapter 5, "Biological Resources." The project would therefore not conflict with the HCP. Therefore, there is no impact.

Impact AG-1: Direct Conversion of Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or Other Farmland to Nonagricultural Use (Significant and Unavoidable)

The proposed project would result in the direct conversion of 59.9 acres of important farmland to nonagricultural uses. Ninety percent of this farmland is considered Farmland of Statewide Importance, and the remainder is Prime Farmland. This is a significant impact.

To implement the goals and objectives of the General Plan 2023 and mitigate impacts caused by new development in Manteca, the City requires payment of an agricultural mitigation fee. This fee is intended to mitigate the loss of productive agricultural lands converted for urban uses within the city by permanently protecting agricultural lands planned for agricultural use and working with farmers who voluntarily wish to place conservation easements on their land with fair compensation for such easements. This fee is collected by the City before the issuance of building permits and determined by the fee schedule in effect on the date the tentative map or parcel map application is deemed complete or the date a permit is issued. The agricultural mitigation fee schedule is established by Manteca Municipal Code Chapter 13.42, "Agricultural Mitigation Fee." Because the proposed project would convert agricultural land to nonagricultural uses, the project is subject to the agricultural mitigation fee.

Payment of the City's agricultural mitigation fee as identified in Mitigation Measure AG-1 would reduce this impact, but not to a less-than-significant level. No other feasible mitigation is available. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure AG-1a: Agricultural Mitigation Fee

The applicant shall pay the agricultural mitigation fee as required by Manteca Municipal Code Chapter 13.42.

Impact AG-2: Conflicts with a Williamson Act Contract (No Impact)

According to the County, there are no Williamson Act lands within the project area or adjacent to the project area. There would be no impact. No mitigation measures are required.

Additional Annexation Area

There are no currently proposed changes in existing or future land uses, property ownership, or community character associated with the annexation of properties located north of the proposed Machado Estates project area. However, annexation of the parcels brings them within City land-use control and will thus open the possibility of future development on the annexation parcels. Since rezoning of these parcels is not proposed at this time, any future development would require rezoning and potentially other land use approvals, which would trigger further environmental review at that time. The additional parcels proposed for annexation are not zoned for agricultural uses and thus will not convert land from agricultural to non-agricultural uses. The City General Plan designates these parcels for low-density residential and commercial use. Future development of these lands would be consistent with the existing and planned land uses in the surrounding areas.

Chapter 4

Air Quality

Introduction

This chapter describes the impacts on air quality that would result from the project. The key sources of data and information used in the preparation of this chapter are:

- ARB Databases: Aerometric Data Analysis and Management System (ADAM) (California Air Resources Board 2007),
- *Transportation Project Level Carbon Monoxide Protocol* (Garza et al. 1997),
- *Guide for Assessing and Mitigating Air Quality Impacts* (San Joaquin Valley Air Pollution Control District 2002), and
- AirData (U.S. Environmental Protection Agency 2007).

Environmental Setting

This section discusses federal, state, and local regulations related to air quality that would apply to the proposed project. It then describes existing conditions related to air quality in the project area.

Regulatory Setting

This section discusses the local, state, and federal policies and regulations that are relevant to the analysis of air quality in the proposed project area being considered.

Air pollution control programs were established in California before federal requirements were enacted. However, federal Clean Air Act legislation in the 1970s resulted in a gradual merging of state and federal air quality programs, particularly those relating to industrial sources. Air quality management programs developed by California since the late 1980s generally have responded to requirements established by the federal Clean Air Act (CAA).

The enactment of the California Clean Air Act (CCAA) in 1988 and the CAA Amendments of 1990 have produced additional changes in the structure and administration of air quality management programs. The CCAA requires preparation of an air quality attainment plan for any area that violates state standards for carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), or ozone. Locally prepared attainment plans are not required for areas that violate the state standards for particulate matter 10 microns or less in diameter (PM₁₀), but the California Air Resources Board (ARB) currently is addressing PM₁₀ attainment issues.

The air quality management agencies of direct importance in San Joaquin County include the U.S. Environmental Protection Agency (EPA), ARB, and SJVAPCD. The EPA has established federal standards for which the ARB and SJVAPCD have primary implementation responsibility. The ARB and SJVAPCD are responsible for ensuring that state standards are met. The SJVAPCD is responsible for implementing strategies for air quality improvement and recommending mitigation measures for new growth and development. At the local level, air quality is managed through land use and development planning practices, which are implemented in the county through the general planning process. The SJVAPCD is responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws.

California and the federal government have established standards for several different pollutants. For some pollutants, separate standards have been set for different measurement periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). State and federal standards for a variety of pollutants are summarized in Table 4-1.

Federal

The CAA, enacted in 1963 and amended several times thereafter (including the 1990 amendments), establishes the framework for modern air pollution control. The CAA directs the EPA to establish ambient air standards for six pollutants: CO, SO₂, NO₂, particulate matter, ozone, and lead. The standards are divided into primary and secondary standards. Primary standards are designed to protect human health, including the health of “sensitive” populations such as asthmatics, children, and the elderly, within an adequate margin of safety. Secondary standards are designed to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

The primary legislation that governs federal air quality regulations is the CAA Amendments of 1990. The CAA Amendments delegate primary responsibility for clean air to the EPA. The EPA develops rules and regulations to preserve and improve air quality, as well as delegating specific responsibilities to state and local agencies.

Table 4-1. Ambient Air Quality Standards Applicable in California

Pollutant	Symbol	Average Time	Standard (Parts per Million)		Standard (Micrograms per Cubic Meter)		Violation Criteria	
			California	National	California	National	California	National
Ozone ^a	O ₃	1 hour	0.09	N/A	180	N/A	If exceeded	N/A
		8 hours	0.070	0.08	137	157	If exceeded	If fourth highest 8-hour concentration in a year, averaged over 3 years, is exceeded at each monitor within an area
Carbon monoxide (Lake Tahoe only)	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year
		8 hours	6	N/A	7,000	N/A	If equaled or exceeded	N/A
Nitrogen dioxide	NO ₂	Annual average	N/A	0.053	N/A	100	N/A	If exceeded on more than 1 day per year
		1 hour	0.25	N/A	470	N/A	If exceeded	N/A
Sulfur dioxide	SO ₂	Annual average	N/A	0.03	N/A	80	N/A	If exceeded
		24 hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year
		1 hour	0.25	N/A	655	N/A	If exceeded	N/A
Hydrogen sulfide	H ₂ S	1 hour	0.03	N/A	42	N/A	If equaled or exceeded	N/A
Vinyl chloride	C ₂ H ₃ Cl	24 hours	0.01	N/A	26	N/A	If equaled or exceeded	N/A
Inhalable particulate matter	PM ₁₀	Annual arithmetic mean	N/A	N/A	20	50	N/A	If exceeded at each monitor within area
		24 hours	N/A	N/A	50	150	If exceeded	If exceeded on more than 1 day per year
	PM _{2.5}	Annual arithmetic mean	N/A	N/A	12	15	N/A	If 3-year average from single or multiple community-oriented monitors is exceeded
		24 hours	N/A	N/A	N/A	65	N/A	If 3-year average of 98th percentile at each population-oriented monitor within an area is exceeded
Sulfate particles	SO ₄	24 hours	N/A	N/A	25	N/A	If equaled or exceeded	N/A
Lead particles	Pb	Calendar quarter	N/A	N/A	N/A	1.5	N/A	If exceeded no more than 1 day per year
		30-day average	N/A	N/A	1.5	N/A	If equaled or exceeded	N/A

Source: California Air Resources Board 2006.

Notes: All standards are based on measurements at 25°C and 1 atmosphere pressure.

National standards shown are the primary (health effects) standards.

N/A = not applicable.

^a The U.S. Environmental Protection Agency (EPA) recently replaced the 1-hour ozone standard with an 8-hour standard of 0.08 part per million. The EPA issued a final rule that revoked the 1-hour standard on June 15, 2005. However, the California 1-hour ozone standard will remain in effect.

Areas that do not meet the federal ambient air quality standards shown in Table 4-1 are called *nonattainment* areas. For these nonattainment areas, the CAA requires states to develop and adopt State Implementation Plans (SIPs), which are air quality plans showing how air quality standards will be attained. The SIP, which is reviewed and approved by the EPA, must demonstrate how the federal standards will be achieved. Failing to submit a plan or secure approval could lead to the denial of federal funding and permits for such improvements as highway construction and sewage treatment plants. In California, the EPA has delegated authority to prepare SIPs to the ARB, which, in turn, has delegated that authority to individual air districts. In cases where the SIP is submitted by the state but fails to demonstrate achievement of the standards, the EPA is directed to prepare a federal implementation plan.

State

Responsibility for achieving California's air quality standards, which are more stringent than federal standards, is placed on the ARB and local air districts and is to be achieved through district-level air quality management plans that will be incorporated into the SIP. In California, the EPA has delegated authority to prepare SIPs to the ARB, which in turn has delegated that authority to individual air districts.

The ARB traditionally has established state air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving SIPs.

Responsibilities of air districts include overseeing stationary source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality-related sections of environmental documents required by CEQA.

The CCAA of 1988 substantially added to the authority and responsibilities of air districts. The CCAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. The CCAA focuses on attainment of the state ambient air quality standards, which, for certain pollutants and averaging periods, are more stringent than the comparable federal standards.

The CCAA requires designation of attainment and nonattainment areas with respect to state ambient air quality standards. The CCAA also requires that local and regional air districts expeditiously adopt and prepare an air quality attainment plan if the district violates state air quality standards for CO, SO₂, NO₂, or ozone. These Clean Air Plans are specifically designed to attain these standards and must be designed to achieve an annual 5% reduction in district-wide emissions of each nonattainment pollutant or its precursors. Where an air district is unable to achieve a 5% annual reduction in district-wide emissions of each nonattainment pollutant or its precursors, the adoption of "all feasible measures" on an expeditious schedule is acceptable as an alternative strategy

(Health and Safety Code Section 40914[b][2]). No locally prepared attainment plans are required for areas that violate the state PM₁₀ standards, but the ARB is currently addressing PM₁₀ attainment issues.

The CCAA requires that the state air quality standards be met as expeditiously as practicable but, unlike the federal CAA, does not set precise attainment deadlines. Instead, the act established increasingly stringent requirements for areas that will require more time to achieve the standards.

The CCAA emphasizes the control of “indirect and area-wide sources” of air pollutant emissions. The CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish traffic control measures (TCMs). The CCAA does not define *indirect and area-wide sources*. However, Section 110 of the CAA defines an indirect source as:

a facility, building, structure, installation, real property, road, or highway, which attracts, or may attract, mobile sources of pollution. Such term includes parking lots, parking garages, and other facilities subject to any measure for management of parking supply.

TCMs are defined in the CCAA as “any strategy to reduce trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing vehicle emissions.”

The ARB’s *Air Quality and Land Use Handbook: A Community Health Perspective* (2005) provides ARB recommendations for the siting of new sensitive land uses (including residences) near freeways, distribution centers, ports, refineries, chrome-plating facilities, dry cleaners, and gasoline stations. The handbook recommends that new development be placed at distances from such facilities. The recommendations contained in the ARB’s *Air Quality and Land Use Handbook* are not required by any regulations and are entirely voluntary.

Assembly Bill (AB) 1493 of 2002 required the ARB to develop and adopt the nation’s first greenhouse gas (GHG) emission standards for automobiles. The Legislature declared in AB 1493 that global warming was a matter of increasing concern for public health and environment in the state. It cited several risks that California faces from climate change, including a reduction in the state’s water supply; an increase in air pollution caused by higher temperatures; harm to agriculture; an increase in wildfires; damage to the coastline; and economic losses caused by higher food, water, energy, and insurance prices. Further, the Legislature stated that technological solutions to reduce GHG emissions would stimulate California’s economy and provide jobs.

California’s AB 32, the Global Warming Solutions Act of 2006, codifies the state’s GHG emissions target by requiring the state’s global warming emissions to be reduced to 1990 levels by 2020. In the short term, it directs the ARB to enforce the statewide cap that would begin phasing in 2012. AB 32 was signed and passed into law by Governor Arnold Schwarzenegger on September 27, 2006.

Local

The SJVAPCD has adopted emission thresholds to determine the level of significance of a project's emissions. In addition, the proposed project may be subject to the following SJVAPCD rules. This list of rules may not be all encompassing, as additional SJVAPCD rules may apply to the project as specific developments are identified. These are rules that have been adopted by the SJVAPCD to reduce emissions throughout the San Joaquin Valley and are required. Failure to comply with any applicable SJVAPCD rule would be a violation of said rule and is subject to SJVAPCD enforcement action.

SJVAPCD Rule 2201 (New and Modified Stationary Source Review Rule):

This rule applies to all new stationary sources and all modifications of existing stationary sources that are subject to SJVAPCD permit requirements and after construction emit or may emit one or more pollutants regulated by the rule.

SJVAPCD Rule 2020 (Exemptions, Permits): This rule exempts laboratory testing equipment used for chemical and physical analysis from permit requirements in the SJVAPCD, provided that they emit no hazardous air pollutants and less than 2.0 pounds per day (75 pounds per year) of any other pollutant. This means that laboratories that emit even small quantities of hazardous air pollutants would be required to apply for and obtain permits from the SJVAPCD.

SJVAPCD Rule 3110 (Air Toxic Fees): This is a program for facilities that emit toxic air contaminants. It is noted here that hospitals that do not use ethylene oxide for sterilizers are defined as *de minimus* facilities and are not subject to fee requirements.

SJVAPCD Rule 3135 (Dust Control Plan Fees): This rule requires the project applicant to submit a fee in addition to a dust control plan. The purpose of this rule is to recover the SJVAPCD's cost for reviewing these plans and conducting compliance inspections.

SJVAPCD Rule 4002 (National Emission Standards for Hazardous Air Pollutants): This rule applies to any portion of an existing building that will be renovated, partially demolished, or removed. Prior to any demolition activity, an asbestos survey of existing structures on the project site may be required to identify the presence of any asbestos containing building material (ACBM). Any identified ACBM having the potential for disturbance must be removed by a certified asbestos contractor in accordance with California Occupational Safety and Health Administration requirements.

SJVAPCD Rule 4101 (Visible Emissions): This rule prohibits emissions of visible air contaminants to the atmosphere and applies to any source operation that emits or may emit air contaminants.

SJVAPCD Rule 4102 (Nuisance): This rule applies to any source operation that emits or may emit air contaminants or other materials. In the event that the

project or construction of the project creates a public nuisance, it could be in violation and be subject to SJVAPCD enforcement action.

SJVAPCD Rule 4103 (Open Burning): This rule regulates the burning of agricultural material. Rule 4103 explicitly states that agricultural material shall not be burned when the land use is converted from agriculture to nonagricultural purposes.

SJVAPCD Rule 4306 (Boilers, Steam Generators, and Process Heaters, Phase 3): This rule requires all boilers and steam generators with a heat input rating greater than 5 million British thermal units per hour to achieve certain exhaust limits for NO_x and CO. This rule was established in 2003 as part of the strategy for achieving ozone attainment.

SJVAPCD Rule 4601 (Architectural Coatings): This rule limits volatile organic compounds (VOC) from architectural coatings. This rule specifies architectural coatings storage, cleanup, and labeling requirements.

SJVAPCD Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving, and Maintenance Operations): If asphalt paving will be used, paving operations will be subject to this rule. This rule applies to the manufacture and use of cutback asphalt, slow cure asphalt, and emulsified asphalt for paving and maintenance operations.

SJVAPCD Rule 4663 (Organic Solvent Cleaning, Storage, and Disposal): This rule includes restrictions on the types of solvents that may be used and restrictions on the organic content of solvents used for cleaning, especially for cleaning related to medical devices and pharmaceuticals.

SJVAPCD Rule 4701 (Internal Combustion Engines—Phase 1): This rule limits the emissions of NO_x, CO, and VOC from internal combustion engines. These limits are not applicable to standby engines as long as they are used fewer than 200 hours per year (e.g., for testing during non-emergencies).

SJVAPCD Rule 4702 (Internal Combustion Engines—Phase 2): This rule limits the emissions of NO_x, CO, and VOC from spark-ignited internal combustion engines.

SJVAPCD Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters): This rule prohibits the sale of wood heaters that are not EPA-certified and incorporates density limits (devices installed per acre) on the number of wood stoves, wood heaters, and fireplaces in new construction. Specifically, no person shall:

- install a wood-burning fireplace in a new residential development with a density greater than two (2) dwelling units per acre;
- install more than two (2) EPA Phase II-certified wood-burning heaters per acre in any new residential development with a density equal to or greater than three (3) dwelling units per acre;

- install more than one (1) wood-burning fireplace or wood-burning heater per dwelling unit in any new residential development with a density equal to or less than two (2) dwelling units per acre; or
- sell or transfer any real property that contains a wood-burning heater without first ensuring that each wood-burning heater included in the real property is EPA Phase II–certified, a pellet fueled wood burning heater, permanently rendered inoperable, or removed.

SJVAPCD Rule 4902 (Residential Water Heaters): The purpose of this rule is to limit nitrogen oxides emissions from residential water heaters.

SJVAPCD Rule 9510 (Indirect Source Review): This rule fulfills the SJVAPCD’s emission reduction commitments in the PM10 and Ozone attainment plans through emission reductions from the construction and use of development projects through design features and onsite measures. Rule 9510 requires emission reductions construction and operational emissions. For construction emissions, Rule 9510 requires a 20% reduction of total NO_x emissions and a 45% reduction of the total PM10 exhaust emissions. For operational emissions, Rule 9510 requires 33.3% of the project’s operational baseline NO_x and 50% of the project’s operational baseline PM10 emissions be reduced over a period of 10 years. If the required emissions reductions are not achieved through traditional means, projects may purchase offsets on a per ton basis from the SJVAPCD through Rule 9510’s offsite emission reduction fee program to comply with the requirements of Rule 9510. Rule 9510 applies to any applicant that seeks to gain a final discretionary approval for a development project, or any portion thereof, which upon full buildout will include any one of the following:

- 50 residential units;
- 2,000 square feet of commercial space;
- 25,000 square feet of light industrial space;
- 100,000 square feet of heavy industrial space;
- 20,000 square feet of medical office space;
- 39,000 square feet of general office space;
- 9,000 square feet of educational space;
- 10,000 square feet of government space;
- 20,000 square feet of recreational space; or
- 9,000 square feet of space not identified above.

SJVAPCD Regulation VIII (Fugitive PM10 Prohibitions) is a series of rules (Rules 8011–8081) designed to reduce PM10 emissions (predominantly dust/dirt) generated by human activity, including construction, road construction, bulk materials storage, landfill operations, and other activities. These rules correspond to the following categories:

- Rule 8011: General Requirements;
- Rule 8021: Construction, Demolition, Excavation, Extraction and Other Earthmoving Activities;
- Rule 8031: Bulk Materials;
- Rule 8041: Carryout and Trackout;
- Rule 8051: Open Areas;
- Rule 8061: Paved and Unpaved Roads;
- Rule 8071: Unpaved Vehicle/Equipment Traffic Areas; and
- Rule 8081: Agricultural Sources

Existing Conditions

This section discusses the existing conditions related to air quality in the study area.

Regional Climate and Meteorology

The area's climate is considered "inland Mediterranean" and is characterized by warm, dry summers and cool winters. Summer high temperatures often exceed 100°F, averaging in the low 90s in the northern valley and high 90s in the south.

Although marine air generally flows into the basin from the San Joaquin River Delta, the surrounding mountain ranges restrict air movement through and out of the valley. Wind speed and direction influence the dispersion and transportation of ozone precursors, PM10, and CO. The more wind flow, the less accumulation of these pollutants.

The vertical dispersion of air pollutants in the San Joaquin Valley Air Basin (SJVAB) is limited by the presence of persistent temperature inversion (warm air over cool air). Because of differences in air density, the air above and below the inversion does not mix. Ozone and its precursors will mix and react to produce higher concentrations under an inversion and will trap directly emitted pollutants, such as CO.

Precipitation and fog tend to reduce or limit pollutant concentrations. Ozone needs sunlight for its formation, and clouds and fog block the required radiation. Carbon monoxide is slightly water soluble, so precipitation and fog tend to "reduce" CO concentrations in the atmosphere. PM10 is somewhat "washed" from the atmosphere with precipitation. Precipitation in the valley decreases from north to south, with about 20 inches in the north, 10 inches in the middle and less than 6 inches in the southern part of the valley.

Criteria Pollutants

The federal and state governments have established ambient air quality standards for the following six criteria pollutants: ozone, CO, NO₂, SO₂, particulate matter (PM₁₀ and particulate matter smaller than 2.5 microns or less in diameter [PM_{2.5}]), and lead. Ozone, NO₂, and particulate matter generally are considered to be “regional” pollutants, as these pollutants or their precursors affect air quality on a regional scale. Pollutants such as CO, SO₂, lead, and particulate matter are considered to be local pollutants that tend to accumulate in the air locally. Particulate matter is considered to be a localized pollutant as well as a regional pollutant. Within the project area, CO, PM₁₀, and ozone are considered pollutants of concern. Toxic air contaminants (TACs) are discussed below also, although no state or federal ambient air quality standards exist for these pollutants. Brief descriptions of these pollutants are provided below, and a complete summary of California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS) is provided in Table 4-1.

Ozone

Ozone is a respiratory irritant that increases susceptibility to respiratory infections. It is also an oxidant that can cause substantial damage to vegetation and other materials. Ozone is a severe eye, nose, and throat irritant. Ozone also attacks synthetic rubber, textiles, plants, and other materials. Ozone causes extensive damage to plants by leaf discoloration and cell damage.

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors—ROG and NO_x—react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. The ozone precursors, ROG and NO_x, are mainly emitted by mobile sources and by stationary combustion equipment.

State and federal standards for ozone have been set for an 8-hour averaging time. The state 8-hour standard is 0.07 parts per million (ppm), not to be exceeded, while the federal 8-hour standard is 0.08 ppm, not to be exceeded more than three times in any 3-year period. The state has established a 1-hour ozone standard of 0.09 ppm, not to be exceeded, and the federal 1-hour ozone standard of 0.12 ppm recently has been replaced by the 8-hour standard. State and federal standards are summarized in Table 4-1.

Carbon Monoxide

Carbon monoxide is essentially inert to plants and materials but can have significant effects on human health. Carbon monoxide is a public health concern because it combines readily with hemoglobin and reduces the amount of oxygen transported in the bloodstream. Carbon monoxide can cause health problems such as fatigue, headache, confusion, dizziness, and even death.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening

through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

State and federal CO standards have been set for 1- and 8-hour averaging times. The state 1-hour standard is 20 ppm, not to be exceeded, whereas the federal 1-hour standard is 35 ppm, not to be exceeded more than 1 day per year. The state 8-hour standard is 9 ppm, not to be exceeded, and the federal 8-hour standard is 9 ppm, not to be exceeded more than 1 day per year. State and federal standards are summarized in Table 4-1.

Inhalable Particulates

Inhalable particulates can damage human health and retard plant growth. Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Particulates also reduce visibility and corrode materials. Particulate emissions are generated by a wide variety of sources, including agricultural activities, industrial emissions, dust suspended by vehicle traffic and construction equipment, and secondary aerosols formed by reactions in the atmosphere.

The federal and state ambient air-quality standard for particulate matter applies to two classes of particulates: PM₁₀ and PM_{2.5}. The state PM₁₀ standards are 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) as a 24-hour average and 20 $\mu\text{g}/\text{m}^3$ as an annual arithmetic mean. The federal PM₁₀ standards are 150 $\mu\text{g}/\text{m}^3$ as a 24-hour average and 50 $\mu\text{g}/\text{m}^3$ as an annual arithmetic mean. The federal PM_{2.5} standards are 15 $\mu\text{g}/\text{m}^3$ for the annual average and 65 $\mu\text{g}/\text{m}^3$ for the 24-hour average. The state PM_{2.5} standard is 12 $\mu\text{g}/\text{m}^3$ as an annual arithmetic mean. State and federal standards are summarized in Table 4-1.

Toxic Air Contaminants

TACs are pollutants that may be expected to result in an increase in mortality or serious illness or that may pose a present or potential hazard to human health. Health effects include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that lead to death. Although ambient air quality standards exist for criteria pollutants, no standards exist for TACs.

Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or because of their acute or chronic health risks. For TACs that are known or suspected carcinogens, the ARB consistently has found that there are no levels or thresholds below which exposure is risk-free. Individual TACs vary greatly in the risk they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. For certain TACs, a unit risk factor can be developed to evaluate cancer risk. For acute and chronic health risks, a similar factor called a hazard index is used to evaluate risk. In the early 1980s, the ARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Toxic Air Contaminant Identification and Control Act (AB 1807) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a

significant health risk, and facility plans to reduce these risks. The TAC of most concern with regard to the proposed project is diesel exhaust particulate matter, which was identified by the ARB as a TAC in October 2000.

Greenhouse Gases and Climate Change/Global Warming

Global climate change is a problem caused by combined worldwide GHGs, and mitigating global climate change will require worldwide solutions. Combined gases in Earth's atmosphere, called atmospheric GHGs, play a critical role in Earth's radiation budget by trapping infrared radiation emitted from Earth's surface that otherwise could have escaped into space. This phenomenon, known as the "greenhouse effect," keeps Earth's atmosphere near the surface warmer than it would be otherwise and allows for successful habitation by humans and other forms of life. Increases in these gases lead to more absorption of radiation and further warm the lower atmosphere, thereby increasing evaporation rates and temperatures near the surface. Emissions of the GHGs in excess of natural ambient concentrations are thought to be responsible for the enhancement of the greenhouse effect and to contribute to what is termed "global warming," a trend of unnatural warming of Earth's natural climate.

Naturally occurring GHGs include water vapor, carbon dioxide (CO₂), methane, nitrous oxide (N₂O), ozone, and certain fluorocarbons. Certain human activities, however, add to the levels of most of these naturally occurring gases. CO₂ is released to the atmosphere when solid waste, fossil fuels (oil, natural gas, and coal), and wood and wood products are burned. Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of solid waste and fossil fuels. CO₂ and N₂O are the two GHGs released in the greatest quantities from mobile sources burning gasoline and diesel fuel. Because of the relatively long life of primary GHGs in the atmosphere, which results in the accumulation over time and well-mixing of these gases in the atmosphere, their impact on the atmosphere is mostly independent of the point of emission.

Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors) and TACs, which are pollutants of regional and local concern. Worldwide, California is the 12th to 16th largest emitter of CO₂ (California Energy Commission 2006) and is responsible for approximately 2% of the world's CO₂ emissions (California Energy Commission 2006).

The Intergovernmental Panel on Climate Change (IPCC) has been established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC predicts substantial increases in temperatures globally of between 1.1 and 6.4° Celsius (depending on the scenario) (Intergovernmental Panel on Climate Change 2007).

This may affect the natural environment in California by creating the following conditions, among others:

- rising sea levels along the California coastline, particularly in San Francisco and the San Joaquin Delta, as a result of ocean expansion;
- extreme-heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent;
- an increase in heat-related human deaths, infection diseases, and a higher risk of respiratory problems caused by deteriorating air quality;
- reduced snowpack and stream flow in the Sierra Nevada, affecting winter recreation and water supplies;
- a potential increase in the severity of winter storms, affecting peak stream flows and flooding;
- changes in growing season conditions that could affect California agriculture, causing variations in crop quality and yield; and
- changes in distribution of plant and wildlife species due to changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.

These changes in California's climate and ecosystems are occurring at a time when California's population is expected to increase from 34 million to 59 million by the year 2040 (California Energy Commission 2005). As such, the number of people potentially affected by climate change, as well as the amount of anthropogenic GHG emissions expected under a "business as usual" scenario, are expected to increase. Similar changes as those noted above for California also would occur in other parts of the world, with regional variations in resources affected and vulnerability to adverse effects.

GHG emissions in California are attributable to human activities associated with industrial/manufacturing, utilities, transportation, residential, and agricultural sectors (California Energy Commission 2006) as well as natural processes. Transportation is responsible for 41% of the state's GHG emissions, followed by the industrial sector (23%), electricity generation (20%), agriculture and forestry (8%), and other sources (8%) (California Energy Commission 2006). Emissions of CO₂ and N₂O are byproducts of fossil fuel combustion, among other sources. Methane, a highly potent GHG, results from off-gassing associated with agricultural practices and landfills, among other sources. Sinks of CO₂ include uptake by vegetation and dissolution into the ocean.

The SJVAPCD has not yet established significance thresholds or guidance for evaluating impacts associated with GHG emissions and their contribution to climate change.

Monitoring Data

Existing air quality conditions in the project area can be characterized in terms of the ambient air quality standards that the federal and state governments have established for various pollutants (Table 4-1) and by monitoring data collected in the region. Monitoring data concentrations are typically expressed in terms of

ppm or $\mu\text{g}/\text{m}^3$. The nearest air quality monitoring station in the vicinity of the project area is the Stockton-Hazelton monitoring station, located at 1593 East Hazelton Street in Stockton, which monitors for ozone, CO, PM10, PM2.5, and NO₂. Air quality monitoring data from the Stockton-Hazelton monitoring station is summarized in Table 4-2. These data represent air quality monitoring data for the last three years (2004–2006) in which complete data is available.

As shown in Table 4-2, the Stockton-Hazelton monitoring station has experienced no violations of the federal 1-hour ozone standard, 10 violations of the state 1-hour ozone standard, four violations of the federal 8-hour ozone standard, no violations of the federal and state CO standards, 0.9 violations of the state 24-hour PM10 standard, 127.4 violations of the state 24-hour PM10 standard, and no violations for the federal 24-hour PM2.5 standard during the 3-year monitoring period.

Attainment Status

If monitored pollutant concentrations meet state or federal standards over a designated period of time, the area is classified as being in *attainment* for that pollutant. If monitored pollutant concentrations violate the standards, the area is considered a *nonattainment* area for that pollutant. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated unclassified.

The EPA has classified San Joaquin County as an extreme nonattainment area for the 1-hour ozone standard and a serious nonattainment area for the 8-hour ozone standard. However, the EPA revoked the 1-hour ozone standard on June 15, 2005, and San Joaquin County is no longer subject to the standard. For the CO standard, the EPA has classified the Stockton Urbanized Area (5/16/84, 49 FR 20651) as a moderate (≤ 12.7 ppm) maintenance area, while the rest of San Joaquin County is classified as an unclassified/attainment area. The EPA has classified San Joaquin County as a serious nonattainment area for the PM10 standard. San Joaquin County is classified as a nonattainment area for the PM2.5 standard.

The ARB has classified San Joaquin County as a severe nonattainment area for the 1-hour ozone standard. For the CO standard, the ARB has classified San Joaquin County as an attainment area. The ARB has classified San Joaquin County as a nonattainment area for the PM10 and PM2.5 standards. San Joaquin County's attainment status for each of these pollutants relative to the NAAQS and CAAQS is summarized in Table 4-3.

Table 4-3. Federal and State Attainment Status for San Joaquin County

Pollutant	Federal	State
1-hour O ₃	Extreme nonattainment ^a	Severe nonattainment
8-hour O ₃	Serious nonattainment	N/A ^b
CO	Moderate (≤ 12.7 ppm) maintenance area for the Stockton Urbanized Area (5/16/84, 49 FR 20651); unclassified/attainment area for the rest of San Joaquin County	Attainment
PM10	Serious nonattainment for the San Joaquin Valley planning area; unclassified/attainment for the rest of San Joaquin County	Nonattainment
PM2.5	Nonattainment	Nonattainment

^a Previously in nonattainment area; no longer subject to the 1-hour standard because of EPA revocation of the 1-hour standard on June 15, 2005.

^b The ARB approved the 8-hour ozone standard on April 28, 2005, and it became effective on May 17, 2006. However, the ARB has not yet designated areas for this standard.

Sensitive Land Uses

The SJVAPCD generally defines a sensitive receptor as a facility that houses or attracts children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants, and there is reasonable expectation of continuous human exposure according to the averaging period for ambient air quality standards (e.g., 24-hour, 8-hour, 1-hour). One elementary school is proposed in the immediate vicinity, but no construction date has been determined as yet. One existing ranch house is located on the project site and would be removed as part of the project. A number of rural residences and one subdivision are located within 0.25 mile of the project site and would be considered sensitive receptors.

Impact Analysis

Approach and Methodology

This section discusses the approach and methodology used to assess impacts of the proposed project on air quality; thresholds used to determine whether an impact would be significant; discussions of individual impacts relative to the thresholds; mitigation measures to minimize, avoid, rectify, reduce, eliminate, or compensate for significant impacts; and overall significance of the impact with mitigation incorporated.

Table 4-2. Ambient Air Quality Monitoring Data Measured at the Stockton-Hazelton Monitoring Station

Pollutant Standards	2004	2005	2006
Ozone			
Maximum 1-hour concentration (ppm)	0.096	0.009	0.109
Maximum 8-hour concentration (ppm)	0.080	0.086	0.092
Number of days standard exceeded ^a			
NAAQS 1-hour (>0.12 ppm)	0	0	0
CAAQS 1-hour (>0.09 ppm)	1	3	6
NAAQS 8-hour (>0.08 ppm)	0	1	3
Carbon Monoxide (CO)			
Maximum 8-hour concentration (ppm)	2.51	2.86	2.25
Maximum 1-hour concentration (ppm)	3.7	4.3	4.4
Number of days standard exceeded ^a			
NAAQS 8-hour (≥9.0 ppm)	0	0	0
CAAQS 8-hour (≥9.0 ppm)	0	0	0
NAAQS 1-hour (≥35 ppm)	0	0	0
CAAQS 1-hour (≥20 ppm)	0	0	0
Particulate Matter (PM10)^b			
National ^c maximum 24-hour concentration (µg/m ³)	176.1	79.0	82.0
National ^c second-highest 24-hour concentration (µg/m ³)	108.8	76.0	80.0
State ^d maximum 24-hour concentration (µg/m ³)	61.0	84.0	85.0
State ^d second-highest 24-hour concentration (µg/m ³)	57.0	79.0	85.0
National annual average concentration (µg/m ³)	12.7	19.3	32.6
State annual average concentration (µg/m ³) ^e	29.4	29.8	33.4
Number of days standard exceeded ^a			
NAAQS 24-hour (>150 µg/m ³) ^f	0.9	0.0	0.0
CAAQS 24-hour (>50 µg/m ³) ^f	18.0	46.5	62.9
Particulate Matter (PM2.5)			
National ^c maximum 24-hour concentration (µg/m ³)	41.0	63.0	47.0
National ^c second-highest 24-hour concentration (µg/m ³)	39.0	46.0	47.0
State ^d maximum 24-hour concentration (µg/m ³)	41.0	70.0	53.3
State ^d second-highest 24-hour concentration (µg/m ³)	39.0	68.0	51.7
National annual average concentration (µg/m ³)	13.2	12.5	13.1
State annual average concentration (µg/m ³) ^e	13.2	12.5	13.5
Number of days standard exceeded ^a			
NAAQS 24-hour (>65 µg/m ³)	0	0	0

Sources: California Air Resources Board 2007; U.S. Environmental Protection Agency 2007.

Notes: CAAQS = California ambient air quality standards.

NAAQS = national ambient air quality standards.

– = insufficient data available to determine the value.

ppm = parts per million.

µg/m³ = micrograms per cubic meter.

^a An exceedance is not necessarily a violation.

^b Measurements usually are collected every 6 days.

^c National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.

^d State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, State statistics are based on California approved samplers.

^e State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

^f Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored.

Construction-Related Emissions

A review of the SJVAPCD's *Guide for Assessing and Mitigating Air Quality Impacts* indicates that the SJVAPCD considers PM10 to be the primary pollutant of concern from construction activities. The amount of PM10 emitted during construction activities varies greatly depending on the level of activity, the specific operations taking place, the equipment being operated, soil characteristics, and weather conditions. Despite this variability in emissions, experience has shown that several feasible control measures can be reasonably implemented to reduce PM10 emissions during construction.

Construction of the proposed project would result in the temporary generation of emissions of ROG, NO_x, CO, and PM10 that would result in short-term impacts on ambient air quality in the area. Emissions would originate from mobile and stationary construction equipment exhaust, employee vehicle exhaust, dust from clearing the land, exposed soil eroded by wind, and ROG from architectural coatings and asphalt paving. Construction-related emissions would vary substantially depending on the level of activity, length of the construction period, specific construction operations, types of equipment, number of personnel, wind and precipitation conditions, and soil moisture content.

The URBEMIS 2002 (version 8.7.0) model was used to estimate emissions associated with construction of the proposed project. To estimate construction emissions, URBEMIS2002 analyzes the type of construction equipment used and the duration of the construction period associated with construction of each of the land uses. Because construction impacts vary substantially from day to day, construction is expected to be spread over a 5-year period beginning in September 2008. According to the URBEMIS2002 model setup, construction of any project generally is broken down into two phases: an excavation/grading phase and a building construction phase. The building construction phase is further broken down into three subphases: architectural coating, asphalt, and building construction.

A detailed inventory of construction equipment that will be used for the proposed project was not provided. With the lack of information about the construction plans for the proposed project, the SJVAPCD's Construction Fleet Calculator (version 1.1) was used to identify the type and number of equipment that would be operating on a typical 8-hour workday during the construction period for site grading, building construction, and paving activities. Table 4-4 summarizes the anticipated construction equipment and construction vehicle activity data used in the estimation of construction emissions. It was assumed that there would be a maximum of 39.5 acres graded per day (to represent a worst-case scenario), and that 40 acres would be paved. Non-mitigated ROG emissions from architectural coatings were estimated assuming the facility wide average coatings exhibit an ROG content of 0.00602 pounds per square feet (that ROG content corresponds to the use of solvent-based coatings). Emissions associated with worker travel to the construction site and construction truck deliveries were estimated based on default values in the URBEMIS2002 model. The model output for the URBEMIS2002 analysis is provided in Appendix C.

Table 4-4. Anticipated Construction Equipment

Equipment Pieces by Phase	Number of Disturbed Acres and Equipment Pieces Used
Site grading	36.5 acres disturbed per day
Crawler tractor	19.75
Grader	3.95
Off-highway truck	11.85
Rubber tired loader	7.90
Scraper	3.95
Tractor/loader/backhoe	7.90
Building construction	
Other equipment	11.85
Asphalt	
Pavers	3.95
Rollers	3.95
Source: SJVAPCD Construction Fleet Calculator (version 1.1).	

Operation-Related Emissions

Two types of air pollutant sources are expected during operation of the proposed project: area and mobile sources. *Area sources* are sources that can include area-wide, natural, and groups of stationary sources (such as dry cleaners and gas stations). At the proposed project site, area sources include emissions from natural gas combustion for heating requirements (i.e., water heater and furnace), landscaping activities, consumer products (e.g., automotive products, household cleaners, and personal care products), and periodic paint emissions from facility upkeep. Area emissions associated with the proposed project were estimated using the URBEMIS2002 model for 575 single-family dwelling units on 156.8 acres.

Mobile sources are sources of emissions associated with vehicle trips and include employees, deliveries, and maintenance activities. The primary operational emissions associated with the project are ozone precursors, CO, and PM10, emitted as vehicle exhaust. Emissions of ozone precursors, CO, and PM10 were evaluated using the URBEMIS2002 model for 2015 full buildout year conditions, while the effects of CO “hot spot” emissions were evaluated through CO dispersion modeling for existing year (2006) and future year (2015) with- and without-project conditions. Both models are described briefly below.

URBEMIS2002 (version 8.7.0)

URBEMIS2002 is a computer program used to estimate emissions from construction, vehicle trips, and fuel use resulting from land use development

projects. URBEMIS2002 estimates emissions based on the type of land use and area source and vehicular emissions typically associated with the land use.

Carbon Monoxide Hot Spot Emissions

An evaluation to determine whether CO hot spots would occur at roadway intersections in the vicinity of the proposed project was conducted through CO dispersion modeling. The effects of operation-related CO emissions were evaluated using the CALINE4 dispersion model developed by the California Department of Transportation (Caltrans) (Benson 1989). CALINE4 treats each segment of a roadway as a separate emission source producing a plume of pollutants that disperses downwind. Pollutant concentrations at any specific location are calculated using the total contribution from overlapping pollution plumes originating from the sequence of roadway segments. CO modeling was conducted for two conditions: design-year baseline and design-year with-project conditions. Detailed methodology of the CO analysis is provided in Appendix D.

Climate Change/Global Warming

Under CEQA, an environmental impact report must identify and focus on the significant environmental effects of a proposed project. Significant effect on the environment means a substantial, or potentially substantial, adverse change in the environment (PRC 21068). CEQA further states that the State CEQA Guidelines will specify certain criteria that require a finding that a project may have a significant effect on the environment. However, as of the writing of this EIR, the agencies with jurisdiction over air quality regulation and GHG emissions, such as the ARB and the SJVAPCD, have not established regulations, guidance, methodologies, significance thresholds, standards, or analysis protocols for the assessment of GHG emissions and climate change. Thus, the methodology to establish an appropriate baseline, or by which to develop a project-level inventory for the proposed project, that would allow for an appropriate analysis of the project's impact on climate change or the impact of climate change on the project has not yet been established.

Thresholds of Significance

This impact discussion uses the thresholds identified below to determine the level of impacts associated with the proposed project, unless otherwise specified. Criteria for determining the significance of impacts related to air quality were developed based on the environmental checklist form in Appendix G of the State CEQA Guidelines (14 CCR 15000 et seq.). An impact related to air quality was considered significant if it would:

- conflict with or obstruct implementation of the applicable air quality management plan;
- violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or

state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);

- expose sensitive receptors to substantial pollutant concentrations; or
- create objectionable odors affecting a substantial number of people.

The State CEQA Guidelines further state that the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the determinations above. The SJVAPCD has specified significance thresholds within its *Guide for Assessing and Mitigating Air Quality Impacts* (San Joaquin Valley Air Pollution Control District 2002) to determine air quality impacts for projects located within the SJVAB.

The SJVAPCD has determined that compliance with its Regulation VIII Fugitive PM10 Prohibitions, including implementation of all feasible control measures specified in its *Guide for Assessing And Mitigating Air Quality Impacts*, is sufficient mitigation to minimize adverse air quality effects from construction-related PM10 emissions to less-than-significant levels (San Joaquin Valley Air Pollution Control District 2002). Since the publication of the SJVAPCD's guidance manual, the SJVAPCD has revised various rules comprising Regulation VIII. Guidance from SJVAPCD staff indicates that implementation of a dust control plan would satisfy all of the requirements of SJVAPCD Regulation VIII (Cadrett pers. comm.). Further consultation with SJVAPCD staff indicates that, though explicit thresholds for construction-related emissions of ozone precursors are not enumerated in the *Guide for Assessing and Mitigating Air Quality Impacts*, the SJVAPCD considers a significant impact to occur when construction emissions of ROG or NO_x exceed 10 tons per year (Barber pers. comm.).

On December 15, 2005, the SJVAPCD adopted Rule 9510—Indirect Source Review (ISR). This rule fulfills the SJVAPCD's emission reduction commitments in the PM10 and Ozone Attainment Plans through emission reductions from the construction and use of development projects through design features and onsite measures. Rule 9510 requires the implementation of control measures or the purchasing of emissions offsets to mitigate construction-related NO_x and PM10 emissions from roadway projects in excess of 2.0 tons. Compliance with Rule 9510 is separate from the CEQA process, though the control measures used to comply with Rule 9510 may be used to mitigate CEQA impacts (Barber pers. comm.).

In addition, the project applicant may enter into a development mitigation contract (also known as an air quality mitigation agreement) with the SJVAPCD to reduce project emissions to a less-than-significant level (Barber pers. comm.). With this contract, the project applicant may enter into a voluntary agreement with the SJVAPCD to mitigate/reduce project emissions beyond the requirements of Rule 9510, through the payment of fees (on a per-ton basis) to the SJVAPCD. If the fees purchased through the development mitigation contract are sufficient to offset project-related emissions to below the SJVAPCD's thresholds, then project emissions would be considered less than significant (Barber pers. comm.).

The SJVAPCD's thresholds used to determine project significance are summarized below. The proposed project would potentially result in a significant impact on air quality if it would:

- expose sensitive receptors to substantial pollutant concentrations;
- produce greater than 10 tons/year of ROG;
- produce greater than 10 tons/year of NO_x;
- exceed NAAQS or CAAQS for CO (9 ppm 8-hour average; 20 ppm 1-hour average); or
- not comply with the SJVAPCD's Regulation VIII regarding particulate matter emissions from construction activities. Compliance with SJVAPCD Regulation VIII and the local zoning code will reduce particulate emission impacts to levels that are considered less than significant by the SJVAPCD.

Impacts and Mitigation Measures

Impact AIR-1: Temporary Increase in Construction-Related Emissions (Less than Significant with Mitigation)

As noted above, compliance with Regulation VIII through implementation of a dust control plan is sufficient to reduce any potentially significant air quality effects generated by construction-related emissions of PM₁₀ to less-than-significant levels. Failure to comply with Regulation VIII would result in a significant air quality construction impact.

Table 4-5 summarizes construction-related ROG and NO_x emissions and indicates that construction emissions are anticipated to exceed the SJVAPCD's thresholds of 10 tons per year.

Table 4-5. Emissions of Criteria Pollutants from Construction Activities (Tons per Year)

	ROG	NO _x	CO	PM ₁₀
2008	4.8	30.6	40.7	15.5
2009	5.9	37.0	49.5	12.8
2010	3.5	21.3	30.1	0.9
2011	3.5	21.3	29.8	0.9
2012	11.2	15.9	23.3	0.7
Total	28.9	126.1	173.4	30.8
SJVAPCD threshold	10	10	NA	NA

Table 4-5 also indicates that construction activities would trigger mitigation offsets through the requirements of the SJVAPCD's Rule 9510, or ISR. The ISR

rule requires a 20% reduction of total NO_x emissions and a 45% reduction of the total PM₁₀ exhaust emissions from construction activities, compared with the statewide fleet average. This would equate to emissions reductions of 25.2 tons of NO_x and 13.9 tons of PM₁₀. Compliance with the requirements of Rule 9510 would help to minimize construction emissions, while implementation of Mitigation Measures AIR-1a through AIR-1c would reduce this impact, but not to a less-than-significant level. As a result, with the implementation of Mitigation Measures AIR-1a through AIR-1c, this impact would still be considered significant and unavoidable.

As previously indicated, the project applicant may enter into a development mitigation contract (also known as an air quality mitigation agreement) with the SJVAPCD to reduce project emissions to a less-than-significant level (Barber pers. comm.). With this contract, the project applicant may enter into a voluntary agreement with the SJVAPCD to mitigate/reduce project emissions beyond the requirements of Rule 9510 through the payment of fees (on a per-ton basis) to the SJVAPCD. If the fees purchased through the development mitigation contract are sufficient to offset project-related emissions to below the SJVAPCD's thresholds, then project emissions would be considered less than significant (Barber pers. comm.). Consequently, the implementation of Mitigation Measure AIR-1d would reduce project emissions to a less-than-significant level. However, if Mitigation Measure AIR-1d is not implemented, project emissions would be considered significant and unavoidable.

Mitigation Measure AIR-1a: Prepare and Implement a Dust Control Plan

To control the generation of construction-related PM₁₀ emissions, the City will require construction contractors to prepare a dust control plan and submit it to the SJVAPCD at least 48 hours before any earthmoving or construction activities. As previously indicated, implementation of a dust control plan would satisfy the requirements of Regulation VIII (Cadrett pers. comm.). The requirements of the dust control plan are described in Appendix E of this EIR.

Mitigation Measure AIR-1b: Implement Measures to Reduce Construction Emissions

The City will require construction contractors to implement the following measures to reduce construction-related emissions.

- Limit the area subject to excavation, grading, and other construction activity to one activity or phase at a time.
- Limit the hours of operation of heavy-duty equipment to a maximum of 8 hours per day, 5 days per week, or limit the amount of equipment operated concurrently.
- Replace fossil-fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).

- Require that all diesel engines be shut off when not in use to reduce emissions from idling.
- Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing construction activity during the peak hour of vehicular traffic on adjacent roadways and “Spare the Air Days” declared by the SJVAPCD.
- Implement activity management (e.g., rescheduling activities to reduce short-term impacts) to minimize concurrent operation of construction equipment and concurrent construction of project phases.
- During the smog season (May through October), lengthen the construction period to minimize the number of vehicles and equipment operating at the same time.
- Off-road trucks should be equipped with on-road engines when possible.
- Minimize the obstruction of traffic on adjacent roadways.
- Power construction equipment with diesel engines fueled by alternative diesel fuel blends or ultra-low sulfur diesel (ULSD). Only fuels that have been certified by the ARB should be used. The ARB has verified specific alternative diesel fuel blends for NO_x and PM emission reduction. The applicant also should use ARB-certified alternative fueled (compressed natural gas [CNG], liquid propane gas [LPG], electric motors, or other ARB-certified off-road technologies) engines in construction equipment where practicable.
- Use construction equipment that meets the current off-road engine emission standard (as certified by the ARB) or that is re-powered with an engine that meets this standard. Tier I, Tier II, and Tier III engines have significantly less NO_x and PM emissions compared with uncontrolled engines.

Mitigation Measure AIR-1c: Implement Measures to Comply with SJVAPCD Rule 9510, Indirect Source Review

The project applicant will enter into a developer agreement with the SJVAPCD and conduct an air impact assessment, as required by SJVAPCD Rule 9510. Required emissions control measures and offsite emission reduction fees (if necessary) will be calculated by the project applicant through the permitting process, as dictated by Rule 9510, to reduce construction-related NO_x emissions by 20% and PM₁₀ emissions by 45%, compared with the statewide fleet average.

Mitigation Measure AIR-1d: Enter into a Development Mitigation Contract

The project applicant will enter into a development mitigation contract with the SJVAPCD to mitigate or reduce project emissions beyond the requirements of Rule 9510 through the payment of fees (on a per-ton

basis) to the SJVAPCD. The payment of fees will be made to the SJVAPCD based on the fee schedule in the development mitigation contract and the amount of reductions necessary to offset project NO_x and ROG emissions below the SJVAPCD thresholds.

Impact AIR-2: Elevated Health Risk from the Exposure of Nearby Sensitive Receptors to Diesel Particulate Matter (Less than Significant with Mitigation)

Various construction activities are anticipated to involve the operation of diesel-powered equipment. In October 2000, the ARB identified diesel exhaust as a TAC. The SJVAPCD does not consider construction-equipment-diesel-related cancer risks to be an issue because of the short-term nature of construction activities (Guerra pers. comm.). Cancer health risks associated with exposures to diesel exhaust typically are associated with chronic exposure, in which a 70-year exposure period often is assumed. Although elevated cancer rates can result from exposure periods of less than 70 years, acute exposure (i.e., exposure periods of 2 to 3 years) to diesel exhaust typically are not anticipated to result in an increased health risk because acute exposure typically does not result in the exposure concentrations necessary to result in a health risk. Health impacts associated with exposure to diesel exhaust from project construction are not anticipated to be significant because construction activities would occur in phases at different locations in the 157-acre site, rather than being concentrated in any one location for a long period. Therefore, the project would not result in long-term emissions of diesel exhaust at any one location on the project site, and the impact would be less than significant. In addition, Mitigation Measure AIR-1b would further reduce emissions from project activities.

Impact AIR-3: Generation of Emissions of Reactive Organic Gases and Oxides of Nitrogen in Excess of San Joaquin Valley Air Pollution Control District Thresholds (Significant and Unavoidable)

Long-term air quality impacts are associated with the change in permanent use of the project site. Both area and mobile sources must be considered with respect to the proposed project. Area sources include emissions from onsite activities and natural-gas combustion for heating requirements, as well as emissions from personal product use. Mobile sources include vehicle trips, including employees, deliveries, and maintenance activities.

For area sources, URBEMIS2002 was used to predict emissions from natural gas usage and landscape maintenance. For mobile sources, emission calculations for design-year with-project conditions are based on the daily trip generation data provided by Fehr & Peers and URBEMIS2002. Table 4-6 summarizes the results of these calculations for 2025 and 2035 conditions, respectively.

Table 4-6. Emissions of Criteria Pollutants from Year 2015 Project Operations (Tons per Year)

Full Project Buildout	ROG	NO _x	CO	PM10
Area source emissions				
Natural gas	0.1	1.3	0.6	0.0
Hearth	2.2	0.4	2.9	0.1
Landscaping	0.2	0.0	1.6	0.0
Consumer products	5.1	–	–	–
Architectural coatings	2.6	–	–	–
Mobile source emissions				
Vehicular emissions	5.5	7.3	66.0	13.0
Total	15.7	9.0	71.1	13.1
SJVAPCD thresholds for operations	10	10	–	–

As indicated in Table 4-6, project-related operational emissions are anticipated to exceed the SJVAPCD's operational threshold for ROG (10 tons per year). Table 4-6 also indicates that most of these operational emissions result from the use of consumer products and vehicular emissions, both of which are difficult to mitigate. Consumer products are difficult to mitigate on a large scale because they are predominantly made up of many smaller area sources (i.e., sources such as hair sprays and deodorants), while the project applicant has little control (beyond features incorporated into project design) over vehicle activity and people's habits with regard to vehicle trips to sufficiently mitigate emissions from these sources.

SJVAPCD Rule 9510 requires development projects meeting certain criteria to implement control measures or purchase emission offsets to mitigate NO_x and PM10 emissions associated with project construction and operation. Rule 9510 requires reductions of 33.3% of the project's operational baseline NO_x and 50% of the project's operational baseline PM10 emissions over a period of 10 years. This would equate to emissions reductions of 3.0 tons of NO_x and 6.6 tons of PM10. Compliance with Rule 9510 is separate from the CEQA process, although the control measures used to comply with Rule 9510 may be used to mitigate CEQA impacts. Therefore, the control measures listed under Mitigation Measure AQ-6, which are recommended by the SJVAPCD, will help to reduce the generation of ozone precursor concentrations within the air basin and satisfy a portion of the control measures that may be implemented to comply with Rule 9510. In addition, the implementation of Mitigation Measures AIR-3a and AIR-3b could reduce this impact, but not to a less-than-significant level. As a result, with the implementation of Mitigation Measures AIR-3a and AIR-3b, this impact still would be considered significant and unavoidable.

As previously indicated, the project applicant may enter into a development mitigation contract (also known as an air quality mitigation agreement) with the

SJVAPCD to reduce project emissions to a less-than-significant level (Barber pers. comm.). With this contract, the project applicant may enter into a voluntary agreement with the SJVAPCD to mitigate/reduce project emissions beyond the requirements of Rule 9510 through the payment of fees (on a per-ton basis) to the SJVAPCD. If the fees purchased through the development mitigation contract are sufficient to offset project-related emissions to below the SJVAPCD's thresholds, then project emissions would be considered less than significant (Barber pers. comm.). Consequently, the implementation of Mitigation Measure AIR-1d would reduce project emissions to a less-than-significant level. However, if Mitigation Measure AIR-1d is not implemented, then project emissions would be considered significant and unavoidable.

Mitigation Measure AIR-3a: Incorporate Additional Innovative Measures to Reduce Air Quality Impacts

The SJVAPCD encourages innovation in measures to reduce air quality impacts. Several measures will be incorporated into the design and operation of the proposed project to provide additional reductions in the overall level of emissions, where feasible. These measures include the following.

- Energy-efficient design will be provided for homes and buildings, including automated control systems for heating and air conditioning and energy efficiency beyond California Code of Regulations (CCR) Title 24 (California Building Standards Code) requirements, lighting controls and energy-efficient lighting in buildings, increased insulation beyond Title 24 requirements, and light-colored roof materials to reflect heat.
- Large canopy trees will be carefully selected and located to protect buildings from energy-consuming environmental conditions and shade paved areas. Trees will be selected to shade 50% of paved areas within 15 years.
- Plant deciduous trees on the south- and west-facing sides of buildings.
- Plant trees adjacent to all sidewalks 30 foot on center and at a ratio of one tree for each parking space. Structural soil will be used under paved areas to improve tree growth in locations where street trees are located or planned.
- The City will implement measures to reduce the amount of vehicle traffic to and from the project area to further reduce air pollution in the valley. This could include provisions such as encouraging employees to rideshare or carpool to the project site, or incentives for employees to use alternative transportation.
- If transit service is available to the project site, improvements will be made to encourage its use. If transit service is not currently available but is planned for the area in the future, easements will be reserved to provide for future improvements. These include bus turnouts, loading areas, route signs, and shade structures. Pedestrian access

will be directed to the main entrance of the project from existing or potential public transit stops, and appropriately designed sidewalks will be provided. Such access will consist of paved walkways or ramps and will be separated physically from parking areas and vehicle access routes. Appropriations made to facilitate public or mass transit will help mitigate trips generated by the project.

- Sidewalks and bicycle paths will be provided throughout as much of the project as possible and connect to any nearby open space areas, parks, schools, and commercial areas to encourage walking and bicycling. Connections to nearby public uses and commercial areas will be made as direct as possible to promote walking for some trips. Sidewalks and bikeways will be designed to separate pedestrian and bicycle pathways from vehicle paths. Sidewalks and bikeways will be designed to be accommodating and appropriately sized for anticipated future pedestrian and bicycle use. Such pathways will be easy to navigate and designed to facilitate pedestrian movement through the project and create a safe environment for all potential users (pedestrian, bicycle, and disabled) from obstacles and automobiles. Pedestrian walkways will be created to connect all buildings throughout the project. The walkways will create a safe and inviting walking environment for people wishing to walk from one building to another. Walkways will be installed to direct pedestrians from the street sidewalk to the buildings. Safe and convenient pathways will be provided for pedestrian movement in large parking lots. Mid-block paths will be installed to facilitate pedestrian movement through long blocks (more than 500 feet in length) and cul-de-sacs. Sidewalks will be designed for high visibility (e.g., brightly painted or a different color of concrete) when crossing parking lots, streets, and similar vehicle paths. Pathways through the project will be built in anticipation of future growth/development.
- Exits to adjoining streets will be designed to reduce time to re-enter traffic from the project site.
- Efficient interior circulation and pedestrian access within the project area and logical connection points for future development on the surrounding properties will be provided.
- Measures will be implemented to reduce the amount of vehicle traffic to and from the residential area(s) that further reduce air pollution in the SJVAB. This could include providing an information center for residents to coordinate carpooling.
- As many energy-conserving features as possible will be incorporated into the design and operation of the proposed project. These include:
 - increased energy efficiency;
 - increased wall and ceiling insulation (beyond building code requirements);
 - energy-efficient windows (double-paned or Low-E);

- ❑ high-albedo (reflecting) roofing materials;
- ❑ cool paving;
- ❑ radiant heat barriers;
- ❑ energy-efficient lighting, appliances, and heating and cooling systems;
- ❑ installation of solar water-heating systems;
- ❑ provision of low NO_x-emitting or high-efficiency, energy-efficient water heaters;
- ❑ installation of clean-energy features that promote energy self-sufficiency (e.g., photovoltaic cells, solar thermal electricity systems and small wind turbines);
- ❑ installation of geothermal heat pump systems;
- ❑ installation of programmable thermostats for all heating and cooling systems;
- ❑ awnings or other shading mechanisms for windows;
- ❑ porch, patio, and walkway overhangs;
- ❑ ceiling fans or whole-house fans;
- ❑ passive solar cooling and heating designs (e.g., natural convection and thermal flywheels);
- ❑ daylighting (natural lighting) systems such as skylights, light shelves, and interior transom windows;
- ❑ electrical outlets around the exterior of units to encourage the use of electric landscape maintenance equipment;
- ❑ bicycle parking facilities for patrons and employees in covered secure areas (conveniently located at each destination point);
- ❑ use of low and no-VOC coatings and paints;
- ❑ natural gas fireplaces (instead of wood burning fireplaces or heaters) and natural gas lines (if available to the project area) in backyard or patio areas to encourage the use of gas barbecues;
- ❑ onsite employee cafeterias or eating areas;
- ❑ pre-wired units with high-speed modem connections/DSL and extra phone lines;
- ❑ employee shower and locker areas for bicycle and pedestrian commuters; and
- ❑ use of low or nonpolluting landscape maintenance equipment (e.g., electric lawn mowers, reel mowers, leaf vacuums, and electric trimmers and edgers).

Mitigation Measure AIR-3b: Implement Measures to Comply with SJVAPCD Rule 9510, Indirect Source Review

The City will conduct an air impact assessment, as required by SJVAPCD Rule 9510. Required emissions-control measures and offsite emission reduction fees (if necessary) will be calculated, as dictated by Rule 9510, to reduce 33.3% of the project's operational baseline NO_x and 50% of the project's operational baseline PM₁₀ emissions over a period of 10 years. The control measures indicated in Mitigation Measure AIR-3a may be implemented to help achieve the emissions reductions required by Rule 9510.

Impact AIR-4: Exposure of Sensitive Receptors to Substantial Concentrations of Carbon Monoxide (Less than Significant)

CO modeling following the Caltrans CO protocol (Garza et al. 1997) was conducted to evaluate whether the project would cause or contribute to localized violations of the state or federal ambient standards in the project vicinity. CO concentrations at sensitive receptors near congested roadways and intersections were estimated using CALINE4 dispersion modeling. Table 4-7 summarizes CO modeling results for existing year (2006), existing plus project, and full buildout year (2015) with-project and without-project conditions. No violations of the state or federal 1- or 8-hour CO standards are anticipated in the project area under design-year with-project conditions. Although roadway volumes increase in future years, intersection congestion and volumes are not sufficient to result in elevated CO levels. In addition, it is anticipated that vehicle emissions in future years will be lower than existing years because of continuing improvements in engine technology and the retirement of older, higher-emitting vehicles. Therefore, the impact of project traffic conditions on ambient CO levels in the project area is considered less than significant. No mitigation is required.

Impact AIR-5: Increase in Greenhouse Gas Contaminant Emissions (Less than Significant)

Currently, the EPA, ARB, and SJVAPCD have not established any thresholds or guidance to evaluate impacts associated with GHG emissions. This is because GHGs, especially CO₂, do not pose any health risks at ambient concentrations. The impacts associated with GHGs are long-term climatic changes, which are beyond the regulatory purview of the air district. As previously noted, GHG contaminant emissions tend to accumulate in the atmosphere because of their relatively long lifespan. As a result, their impact on the atmosphere is mostly independent of the point of emission; GHG contaminant emissions are more appropriately evaluated on a regional, state, or even national scale than on an individual project level.

However, automobiles are a major source of GHG emissions, and the quantity of GHG emissions from automobiles is directly correlated with the amount of vehicle miles traveled. Because GHG emissions are more appropriately evaluated on a regional, state, or even national scale rather than at an individual project level, project-specific GHG emissions are considered less than significant, as climate change would not occur directly from project emissions.

Additional Annexation Area

No construction or changes in anticipated traffic patterns or emissions are associated with the annexation of properties located north of the proposed Machado Estates project area. Annexation of this additional annexation area will not result in new development in that area in the foreseeable future and therefore will not generate new traffic and associated emissions. For this reason, annexation of these parcels will not result in an exposure of sensitive receptors to substantial pollutant concentration, create objectionable odors affecting a substantial number of people, result in a cumulatively considerable net increase in criteria pollutants, conflict with or obstruct implementation of the applicable air quality plan, or violate any air quality standards. Therefore, there are no impacts associated with the annexation portion of the project.

Table 4-7. Modeled Carbon Monoxide Levels Measured at Receptors in the Vicinity of the Project Area

Intersection ^a	Receptor	Existing (2006)		Existing Plus Project (2006)		2015 No Project		2015 with Project	
		1-Hour CO ^b	8-Hour CO ^c	1-Hour CO ^b	8-Hour CO ^c	1-Hour CO ^b	8-Hour CO ^c	1-Hour CO ^b	8-Hour CO ^c
Yosemite Avenue/ Airport Way	1	6.9	4.2	6.9	4.2	6.0	3.7	6.1	3.7
	2	6.7	4.1	6.8	4.2	6.1	3.7	6.1	3.7
	3	6.7	4.1	6.8	4.2	6.1	3.7	6.1	3.7
	4	6.8	4.2	6.9	4.2	6.1	3.7	6.1	3.7
Daniels Street/ Airport Way	5	6.5	4.0	6.7	4.1	6.9	4.2	6.9	4.2
	6	6.6	4.0	6.7	4.1	6.6	4.0	6.6	4.0
	7	6.5	4.0	6.6	4.0	6.7	4.1	6.8	4.2
	8	6.5	4.0	6.6	4.0	6.4	3.9	6.4	3.9
SR 120 eastbound onramps/offramps/ Airport Way	9	6.2	3.8	7.3	4.5	6.7	4.1	7.0	4.3
	10	6.2	3.8	6.9	4.2	6.4	3.9	6.7	4.1
	11	6.3	3.9	6.8	4.2	6.3	3.9	6.6	4.0
	12	6.5	4.0	7.2	4.4	6.5	4.0	6.7	4.1

^a Receptors 1 through 12 are located 35.4 feet from the center of each intersection diagonal, 25 feet from the roadway centerline, and 3 feet from the boundary of the mixing zone.

^b Background concentrations of 4.1 ppm and 2.5 ppm were added to the modeling 1-hour and 8-hour results, respectively.

^c The federal and state 1-hour standards are 35 and 20 ppm, respectively.

^d The federal and state 8-hour standards are 9 and 9.0 ppm, respectively.

Chapter 5

Biological Resources

Introduction

This chapter describes the impacts on biological resources that would result from the Machado Estates project. The key sources of data and information used in the preparation of this chapter are listed and briefly described below.

- California Natural Diversity Database (CNDDDB) records search of the Lathrop, Manteca, Avena, Holt, Peters, Ripon, Salida, Solyo, Stockton East, Stockton West, Tracy, Union Island, Vernalis, and Westley Geological Survey (USGS) 7.5-minute quadrangles (California Natural Diversity Database 2007);
- California Native Plant Society's (CNPS's) 2007 online *Inventory of Rare and Endangered Plants of California* (California Native Plant Society 2007);
- San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (San Joaquin Council of Governments 2000);
- U.S. Fish and Wildlife Service's (USFWS) list of endangered, threatened, and proposed species for the Lathrop and Manteca quadrangles and San Joaquin County obtained from the USFWS website (U.S. Fish and Wildlife Service 2007);
- published and unpublished reports; and
- Jones & Stokes file information.

This information was used to develop lists of special-status species and other sensitive biological resources that could be present in the project area.

A previous habitat-based assessment was conducted by a Jones & Stokes botanist/wetland ecologist and wildlife biologist for the Initial Study document for this project on August 31, 2005. A current field assessment was conducted for this EIR by a Jones & Stokes botanist/wetland ecologist and wildlife biologist on February 19, 2007. The assessment was conducted by driving around the perimeter of the project area and along agricultural access roads through the project area. The biologists stopped at regular intervals to examine the area and map habitat types.

The general purpose of the habitat-based field assessment was to:

- determine if biological communities and their associated wildlife habitat uses had changed since the 2005 site visit,
- determine whether suitable habitat is present for special-status species that have the potential to occur in the project region, and
- identify potential waters of the United States (including wetlands).

Environmental Setting

This section discusses federal, state, and local regulations related to biological resources that would apply to the proposed project. Existing conditions related to the biological resources in the project area are also discussed in this section.

Regulatory Setting

Federal

Endangered Species Act

The Endangered Species Act (ESA) of 1973 and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems on which they depend. The USFWS (with jurisdiction over plants, wildlife, and resident fish) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) (with jurisdiction over anadromous fish and marine fish and mammals) oversee ESA.

Section 7 of ESA mandates that all federal agencies consult with USFWS and NOAA Fisheries if they determine that a proposed project may affect a listed species or its habitat. The purpose of consultation with USFWS and NOAA Fisheries is to ensure that the federal agencies' actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species.

Section 9 of ESA prohibits the *take* of any fish or wildlife species listed as endangered. *Take* is defined as the action of or attempt to hunt, harm, harass, pursue, shoot, wound, capture, kill, trap, or collect a species. Section 9 prohibitions also apply to threatened species unless a special rule has been defined with regard to take at the time of listing.

Under Section 9 of ESA, the take prohibition applies only to wildlife and fish species. However, Section 9 does prohibit the unlawful removal and reduction to possession, or malicious damage or destruction of, any endangered plant from federal land. Section 9 prohibits acts to remove, cut, dig up, damage, or destroy an endangered plant species in nonfederal areas in knowing violation of any state

law or in the course of criminal trespass. Candidate species and species that are proposed or under petition for listing receive no protection under Section 9.

Section 10 of ESA requires the issuance of an incidental take permit before any public or private (i.e. non-federal) action may be taken that would potentially harm, harass, injure, kill, capture, collect, or otherwise hurt (i.e., take) any individual of an endangered or threatened species. The permit requires preparation and implementation of a habitat conservation plan, incidental to implementation of the project, which would offset the take of individuals that may occur by providing for the overall preservation of the affected species through specific mitigation measures.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703; 50 CFR 10, 21). Most actions that result in taking or in permanent or temporary possession of a protected species constitute violations of the MBTA. Examples of permitted actions that do not violate the MBTA are the possession of a hunting license to pursue specific game birds, legitimate research activities, display in zoological gardens, bird-banding, and other similar activities. The USFWS is responsible for overseeing compliance with the MBTA, and the U.S. Department of Agriculture's Animal Damage Control Officer makes recommendations on related animal protection issues.

Clean Water Act: Section 401 and Section 404

Clean Water Act (CWA) Section 401 requires that applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a CWA Section 404 permit) must also comply with CWA Section 401.

After the CEQA process is complete, the project sponsor would apply for water quality certification from the Regional Water Quality Control Board (RWQCB) to comply with CWA Section 401. The U.S. Army Corps of Engineers (USACE) would require compliance with Section 401 as a prerequisite to authorization of the project under Section 404.

The USACE and the EPA regulate the placement of fill into waters of the United States under CWA Section 404. *Waters of the United States* include lakes, rivers, streams and their tributaries, and wetlands. Wetlands are defined for regulatory purposes as areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3, 40 CFR 230.3).

Project proponents must obtain a permit from the USACE for all discharges of fill material into waters of the United States, including wetlands, before proceeding with a proposed project.

Rivers and Harbors Act of 1899

The Rivers and Harbors Act prohibits the obstruction or alteration of any navigable water of the United States. It requires authorization from the USACE for any excavation or deposition of materials into these waters or for any work that could affect the course, location, condition, or capacity of rivers or harbors.

State

California Environmental Quality Act

CEQA defines a significant effect on the environment as a substantial or potentially substantial adverse change in the physical conditions within the area affected by the project. It is the policy of the state to prevent the elimination of fish or wildlife species due to human activities and to ensure that these species do not decline below self-perpetuating levels in order to preserve them for future generations.

California Endangered Species Act

The California Endangered Species Act (CESA) (California Fish and Game Code Section 2050 et seq.) establishes state policy to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that state agencies should not approve projects that jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. For projects that would affect a species that is federally and state-listed, compliance with ESA satisfies CESA if the California Department of Fish and Game (DFG) determines that the federal incidental take authorization is consistent with CESA under California Fish and Game Code (CFGF) Section 2080.1. For projects that would result in take of a species that are only state-listed, the project proponent must apply for a take permit under Section 2081(b).

California Fish and Game Code Sections 1603

Under these sections of the CFGC, agencies are required to notify DFG before any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, the DFG is required to propose reasonable changes to the project to protect the resources. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project.

California Fish and Game Code Sections 3503 and 3503.5

Under these sections of the CFGC, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, or to take, possess, or destroy any birds of prey or their nest or eggs.

Natural Community Conservation Planning Act

The Natural Community Conservation Planning Act provides long-term protection of species and habitats through regional, multi-species planning before the special measures of the CESA become necessary.

California Native Plant Protection Act

The California Native Plant Protection Act preserves, protects, and enhances endangered native plants in California. The Act gave the California Fish and Game Commission the power to designate native plants as endangered, threatened, or rare, and to require permits for collecting, transporting, or selling such plants.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act authorizes the State Water Resources Control Board to regulate state water quality and protect beneficial uses.

Local

San Joaquin County General Plan 2010

The County General Plan outlines goals and policies related to natural resources within the project area. The following objectives, policies, and implementation procedures apply.

Vegetation, Fish and Wildlife Habitat

Objectives

1. To protect and improve the County's vegetation, fish and wildlife resources.
2. To provide undeveloped open space for nature study, protection of endangered species, and preservation of wildlife habitat.

Policies

1. Resources of significant biological and ecological importance in San Joaquin County shall be protected. These include wetlands; riparian areas; rare, threatened, and endangered species and their habitats as well as potentially rare or commercially important species; vernal pools; significant oak groves and heritage trees.
2. No public action shall significantly diminish the wildlife and vegetative resources of the County; cumulatively significant impacts shall be avoided.
3. The County shall encourage the protection of those habitat areas that are of a size or quality so that they are no more than minimally affected by adjacent development. Connection to habitat areas shall be encouraged.
4. Development in the vicinity of significant oak groves shall be designed and sited to maximize the long-term preservation of the trees and the integrity of their natural setting.
5. No net loss of riparian or wetland habitat or values shall be caused by development.
6. Development projects which have the potential to destroy wetlands, shall not be permitted, unless:
 - a. no suitable alternative site exists for the land use and the use is considered necessary to the public;
 - b. there is no degradation of the habitat or numbers of any rare, threatened, or endangered plant or animal species as a result of the project;
 - c. habitat of superior quality and superior or comparable quality will be created or restored to compensate for the loss.
7. The County shall support feeding areas and winter habitat for migratory waterfowl.
8. Strips of land along waterways shall be protected for nesting and foraging habitat and protected for waterway quality.

9. Fisheries shall be protected by:
 - a. reducing the level of pesticides and fertilizers and other harmful substances in agricultural and urban runoff;
 - b. designing and timing waterway projects to protect fish populations; and
 - c. operating water projects to provide adequate flows for spawning or anadromous fish.
10. The County shall support restoration plans for anadromous fisheries and shall work with the California Department of Fish and Game and other agencies or organizations in developing such plans.
11. The County shall encourage the restoration of once-productive degraded ecosystems, such as historic Chinook salmon runs on the Mokelumne and Calaveras Rivers.
12. The County shall support the establishment and maintenance of ecological preserves and accessibility to areas for nature study.
13. Replacement vegetation generally shall be native vegetation. Landscaping with native trees and shrubs shall be encouraged in urban areas to provide suitable habitat for native wildlife, particularly in proposed open space uses of future development.
14. Habitat is required to be protected, restored, or created as mitigation for a project's impact shall be monitored and maintained in accordance with a County-approved program.

Implementation

1. Natural Diversity Database. The Natural Diversity Database shall be used to determine location of significant species for environmental assessment of projects.
2. Trees. The County shall:
 - a. adopt regulations to protect native oaks and heritage trees and
 - b. require street trees as a condition of residential development.
3. Species Protection. The County shall:
 - a. prepare and adopt regulations to protect special-status taxa;
 - b. address protection and preservation of special-status taxa in review of development applications; and
 - c. work with the California Department of Fish and Game to develop methods to save listed species such as the Swainson's hawk.
4. Habitat Protection, Preservation, and Restoration Program.
 - a. The County shall develop and implement, with the California Department of Fish and Game, a program to protect, restore, and manage wildlife and habitat resources. The project shall include establishment of financing by project mitigation funds.
 - b. The County shall support habitat conservation and restoration plans for special-status taxa and shall work with the California Department of Fish and Game and other agencies or organizations in developing such plans.

- c. The County shall develop and implement an integrated management plan for County-owned and maintained properties which will serve to reduce the extent of long-term maintenance, reduce the need for pesticide applications, and enhance the wildlife habitat value of these areas.
 - d. The County shall educate and encourage farmers and other land owners to preserve and enhance natural vegetation in and adjacent to cultivated areas.
 - e. In the Delta region of the County, the County shall encourage management practices that will preserve and enhance wildlife habitat value of the area. These include:
 - i. planting of corn, milo, wheat, and other grain crops with a high wildlife value;
 - ii. management and harvest techniques that leave some waste grain and stubble or unharvested strips or patches in fields;
 - iii. experimental planting and flooding to maximize waterfowl use at selected locations in the Delta; and
 - iv. establishment and long-term maintenance of hedgerows along field edges, irrigation channels, and on the outboard side of levees in the Delta region, consistent with the recommended integrated vegetation management program.
 - f. The County shall study locations for ecological reserves and preserves.
5. Wetland and Riparian habitat. The County shall protect and restore wetlands and riparian habitat by:
- a. assessing potential project impacts to the resources;
 - b. requiring project proponents to mitigate impacts and fund habitat restoration and post-project monitoring;
 - c. preparing and adopting wetland regulations;
 - d. prohibiting the use of riprap above the high-water line; and
 - e. supporting independent ongoing projects by the Department of Fish and Game or other agencies to create or restore wetlands and riparian habitat and establish jurisdictional control for project monitoring.
6. Natural Area Acquisition. The County shall support the protection of valuable ecological lands by:
- a. acquiring conservation easements along the Mokelumne River;
 - b. supporting conservation easements of Brovello woods;
 - c. supporting acquisition and development of lands for wildlife and habitat protection and easement;
 - d. encouraging the involvement of private land trusts such as the Nature Conservancy;
 - e. supporting a State study of mitigation banking for habitat; and
 - f. seeking State acquisition of ecological reserves.

7. Boating Speed Limits. The County shall establish, in coordination with the State division of Boating and Waterways, operating restrictions such as boating speed limits in environmentally sensitive and hazardous areas of the Delta.
8. Project Referral to Environmental Organizations. The County shall encourage review and comments from private resources and conservation organizations, particularly for projects that could affect the County's biotic resources.
9. Ecological Information Program. The County shall support programs that encourage and teach respect for the environment.

San Joaquin County Multi-Species Habitat and Open Space Conservation Plan

The San Joaquin County Multi-Species Habitat and Open Space Conservation Plan (SJMSCP), adopted in November 2000, covers all of San Joaquin County. Permit holders under the SJMSCP include the County; the cities of Escalon, Lodi, Manteca, Stockton, Lathrop, Ripon, and Tracy; the San Joaquin Council of Governments; and others. The SJMSCP is designed to provide a regional approach to mitigating development impacts on the 97 listed and non-listed plant, fish, and wildlife species addressed in the SJMSCP and compensating for the conversion of open space lands to non-open space uses. The plan provides incidental take authorization for covered projects and provides compensation for habitat losses primarily through collection of fees that are used to purchase mitigation lands elsewhere.

The mitigation ratios and fees are determined on the basis of the type of lands that are being converted. Different fees are charged for the following four land cover types:

- multipurpose open space lands (\$6,511 per acre),
- agricultural land (\$13,022 per acre),
- natural lands (\$13,022), and
- vernal pools (\$34,958 per acre for upland habitat and \$69,858 per acre for wetted habitat).
- The proposed project site is located within the Central Zone off the SJMSCP coverage area.

Native and Heritage Tree Ordinances

San Joaquin County has a tree ordinance that preserves native or heritage oak trees, or historical trees. Currently, the City of Stockton is the only city within the county that has a heritage tree ordinance.

San Joaquin County Tree Ordinance

The County's natural resources regulations contain provisions to preserve the County's tree resources (Chapter 9-1505). The removal of a native oak, heritage oak tree, or historical tree requires an approved improvement plan application (Chapter 9-1505.3), which requires replacement of the tree subject to requirements described in Chapter 9-1505.4. These provisions do not cover horticultural trees proposed for removal. Native oaks are defined as valley oaks with stem diameters of 15.2–81.3 centimeters (6–32 inches) for single-trunk trees and a minimum combined trunk diameter of 20.3 centimeters (8 inches) for multitrunk trees; and interior live oaks or blue oaks with stem diameters of 10.2–81.3 centimeters (4–32 inches) for single-trunk trees and a minimum combined diameter of 15.2 centimeters (6 inches) for multitrunk trees. Heritage oaks are defined as native oaks with a single-trunk diameter of 81.3 centimeters (32 inches) or more. (All stem diameters are measured 1.4 meters [4.5 feet] above the average ground elevation of the tree.) Historical trees are defined as any trees or groups of trees given special recognition by the County Planning Commission because of size, age, location, or history. These provisions do not cover the horticultural or orchard trees that could be removed as part of proposed projects.

Existing Conditions

This section discusses the existing conditions related to the project area.

Study Area

The project site encompasses 156.8 acres and is located within a mostly agricultural setting southwest of Manteca. The site is bordered by Woodward Avenue to the north, Airport Way to the east, and agricultural lands to the south and west.

The site consists primarily of wheat fields, and it contains one private residence near the northeast corner (Figure 5-1). Several large trees surround the residence and include black locust (*Robinia pseudoacacia*), willow (*Salix* sp.), and eucalyptus (*Eucalyptus* sp.). The vegetative composition during the 2005 site visit along the edges of the agricultural fields consisted mostly of ruderal grass species dominated by sorghum (*Sorghum halapense*), ripgut brome (*Bromus diandrus*), and wild oats (*Avena fatua*). During the February 19, 2007 site visit, common plant species growing around the perimeter of the agricultural fields consisted of common chickweed (*Stellaria media*), common fiddleneck (*Amsinckia menziesii*), common groundsel (*Senecio vulgaris*), annual bluegrass (*Poa annua*), dead nettle (*Lamium amplexicaule*), and jointed charlock (*Raphanus raphanistrum*). An underground irrigation system forms a berm that runs north-south and divides the project site.

An open U-shaped agricultural ditch extends east from the center of this berm and divides the eastern portion of the project site. A pump station with a regularly spaced series of irrigation gate valve abutments is located on the north-



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Figure 5-1
Study Area Plant Communities

south portion of the irrigation system atop the berm. A detailed description of the agricultural ditch follows below in the Plant Communities and Associated Wildlife Habitats section.

A list of plant species observed during the 2005 and 2007 field visits was compiled and is shown in Table 5-1.

Table 5-1. Plant Species Observed in the Project Area

Common Name	Scientific Name
Amaranthus	<i>Amaranthus</i> sp.
Common fiddleneck	<i>Amsinckia menziesii</i>
Wild oats	<i>Avena fatua</i>
Ripgut brome	<i>Bromus diandrus</i>
Shepherd's purse	<i>Capsella bursa-pastoris</i>
Miner's lettuce	<i>Claytonia perfoliata</i>
Horseweed	<i>Conyza</i> sp.
Bermuda grass	<i>Cynodon dactylon</i>
Tall flatsedge	<i>Cyperus eragrostis</i>
Cut-leaved filaree	<i>Erodium cicutarium</i>
Eucalyptus	<i>Eucalyptus</i> sp.
Common sunflower	<i>Helianthus annuus</i>
Telegraph weed	<i>Heterotheca grandiflora</i>
Meadow barley	<i>Hordeum murinum</i> ssp. <i>leporinum</i>
Prickly lettuce	<i>Lactuca serriola</i>
Dead nettle	<i>Lamium amplexicaule</i>
Cheeseweed	<i>Malva neglecta</i>
Bur-clover	<i>Medicago polymorpha</i>
Narrowleaf plantain	<i>Plantago lanceolata</i>
Annual bluegrass	<i>Poa annua</i>
Jointed charlock	<i>Raphanus raphanistrum</i>
Black locust	<i>Robinia pseudoacacia</i>
Willow	<i>Salix</i> sp.
Russian thistle	<i>Salsola tragus</i>
Common groundsel	<i>Senecio vulgaris</i>
Field sowthistle	<i>Sonchus arvensis</i>
Sorghum	<i>Sorghum halapense</i>
Corn spurry	<i>Spergula arvensis</i> ssp. <i>arvensis</i>
Common chickweed	<i>Stellaria media</i>
White clover	<i>Trifolium repens</i>
Wheat	<i>Triticum aestivum</i>
Stinging nettle	<i>Urtica dioica</i>
Persian speedwell	<i>Veronica persica</i>
Vulpia	<i>Vulpia myuros</i>
Corn	<i>Zea mays</i>

Plant Communities and Associated Wildlife Habitats

Three types of agricultural habitats were identified and mapped in the project area: fallow agricultural lands, ruderal lands, and an agricultural ditch. Developed/landscaped land was also mapped in the project area. The distribution of biological communities throughout the project site is shown in Figure 5-1.

The project area supports only common natural communities. Common natural communities are habitats that have low species diversity, are widespread, reestablish naturally after disturbance, or support primarily nonnative species. These communities are not generally protected by regulatory agencies unless the specific site is habitat for or supports sensitive species (e.g., raptor foraging or nesting habitat, upland habitat in a wetland watershed).

Agricultural Land

Agricultural habitats generally have low species diversity and support primarily common nonnative species because of lack of cover and frequent disturbance by human activity. Crop types on the 153.81 acres of agricultural fields in the project area are rotated from year to year. During the 2005 site visit, corn (*Zea mays*) was grown on the project site. At the time of the February 19, 2007 site visit, wheat was the only crop being grown. Active agricultural lands provide important foraging habitat for several special-status raptors, including Swainson's hawk (*Buteo swainsoni*), northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), and western burrowing owl (*Athene cunicularia*). Additionally, fallow or ruderal agricultural lands often provide suitable nesting habitat for western burrowing owl and are also used for foraging by many raptors and other migratory birds.

Fallow Agricultural Lands

There is a small area of approximately 0.90 acres of fallow agricultural land located on the northeastern corner of the project site, adjacent to a rural residential property along South Airport Road (Figure 5-1). This area is frequently disturbed by discing or mowing. Species common to the fallow agricultural land are corn spurry (*Spergula arvensis* ssp. *arvensis*), common chickweed, common fiddleneck, common groundsel, annual bluegrass, dead nettle, and jointed charlock.

While the fallow agricultural land is not currently under intensive agricultural regimes, it is subject to periodic disturbance and provides low-quality habitat for many wildlife species. Common wildlife species often associated with fallow agricultural lands include red-tail hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), and American kestrel (*Falco sparverius*), mourning dove (*Zenaidura macroura*), American crow (*Corvus brachyrhynchos*), Brewer's blackbird (*Euphagus cyanocephalus*), black-tailed hare (*Lepus californicus*), and many species of rodents, including California ground squirrel (*Spermophilus beecheyi*), California meadow vole (*Microtus californicus*), and deer mice (*Peromyscus maniculatus*).

Ruderal

The ruderal biological community occurs throughout the project area at the edges of agricultural fields, on the banks of irrigation ditches, and along roads. This community type consists of a sparse cover of weedy plant species that grow in areas that are disturbed frequently. Common plant species found in this community are similar to those that occur in the fallow agricultural field described above. The ruderal areas are small and scattered throughout the study area and are not mapped as a separate cover type from agricultural land, agricultural ditch, or developed/landscaped.

Because ruderal areas typically are disturbed on a regular basis by human activity, they provide low-quality habitat for wildlife. Wildlife species commonly found in ruderal and disturbed areas are similar to those found in fallow agricultural land.

Agricultural Ditch

A 0.87 acre U-shaped agricultural ditch occurs in the center of the eastern half of the project site. The ditch is approximately 700 feet long, approximately 20 feet wide from top of bank to top of bank, and 6 feet wide at the ditch bottom (Figure 5-1). The ditch is unlined and during the 2005 site visit, contained areas of open water (water was present throughout drainage and was flowing westward). The ditch was dry during the February 19, 2007 site visit. During the 2005 site visit, the vegetation along the banks was non-native grassland species dominated by wild oat and sorghum, with wetland species such as tall flatsedge (*Cyperus eragrostis*) occurring in the ditch bottom. During the February 19, 2007 site visit, the common species along the banks were annual bluegrass, common groundsel, dead nettle, miner's lettuce (*Claytonia perfoliata*), common chickweed, tall flatsedge, and shepherd's purse (*Capsella bursa-pastoris*). The ditch bottom was not vegetated during this recent site visit. Although there are no apparent surface hydrologic connections to waters of the United States, the presence of wetland vegetation has potential to be considered a jurisdictional wetland by the USACE under Section 404 of the CWA. Other than the agricultural ditch, no other potential waters of the United States or nonjurisdictional wetlands appear to occur on the project site.

Rural Residential Area

There is a 1.22-acre rural residential area with landscaping located along Airport Road and is described above in the "Study Area" section (Figure 5-1). Rural residential areas are disturbed on a regular basis by human activity, and so they provide low-quality habitat for wildlife. Wildlife species commonly found in these areas include European starling (*Sturnus vulgaris*), Brewer's blackbird, yellow-billed magpie (*Pica nuttalli*), mourning dove, and a few small rodent species. Mourning doves were observed during the Jones & Stokes reconnaissance survey.

Special-Status Species

Special-status species are plants and animals that are legally protected under the CESA, ESA, or other regulations, as well as species considered sufficiently rare by the scientific community to qualify for such listing. For the purposes of this EIR, special-status species include:

- species listed or proposed for listing as threatened or endangered under ESA (50 Code of Federal Regulations [CFR] 17.12 [listed plants], 50 CFR 17.11 [listed animals], and various notices in the Federal Register [FR] [proposed species]);
- species that are candidates for possible future listing as threatened or endangered under ESA (69 FR 24876, May 11, 2005);
- species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 CCR 670.5);
- species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines Section 15380);
- plants listed as rare under the California Native Plant Protection Act (CFGF Section 1900 et seq.);
- plants considered by CNPS to be “rare, threatened, or endangered in California” (Lists 1B and 2, California Native Plant Society 2007);
- plants listed by CNPS as plants about which more information is needed to determine their status, and plants of limited distribution (Lists 3 and 4, California Native Plant Society 2007), which may be included as special-status species on the basis of local significance or recent biological information;
- animal species of special concern to the DFG (Remsen 1978 [birds], Williams 1986 [mammals], and Jennings and Hayes 1994 [amphibians and reptiles]); and
- animals fully protected in California (CFGF Sections 3511 [birds], 4700 [mammals], and 5050 [amphibians and reptiles]).

Special-Status Plants

- A CNDDDB search (2007) indicated that nine special-status plants have documented occurrences within an approximately 10-mile radius of the project site. These special-status species are listed in Table 5-2.

All of these species have specific microhabitat requirements (e.g., riparian scrub, marshes, swamps, alkaline soils, clay soils) that are not present within the habitats on site. Habitats in the project area are undergoing constant disturbance from agricultural practices. Thus, these special-status plants are unlikely to occur on the project site.

Table 5-2. Special-Status Plants Identified during the Prefield Investigation as Having the Potential to Occur in the Project Area

Common and Scientific Names	Legal Status ^a		Geographic Distribution	Habitat Requirements	Blooming Period	Likelihood to Occur within Project Area ^b
	Federal/State/CNPS					
Suisun Marsh aster <i>Aster lentus</i>	–/–/1B.2		Sacramento-San Joaquin Delta, Suisun Marsh, Suisun Bay; Contra Costa, Napa, Sacramento, San Joaquin, and Solano Counties	Brackish and freshwater marshes and swamps; below 3 meters	May–November	Low; closest occurrence 3 miles north of project area—no suitable habitat conditions
Lesser saltscare <i>Atriplex minuscula</i>	–/–/1B.1		Sacramento and San Joaquin Valleys; Butte County, and from Merced to Kern Counties	Sandy alkaline soils in chenopod scrub, playas, valley and foothill grassland below between 15 and 200 meters	May–October	Low; closest occurrence within 10 miles southeast of project area—no suitable habitat conditions
Big tarplant <i>Blepharizonia plumosa</i>	–/–/1B.1		San Francisco Bay area; Alameda, Contra Costa, San Joaquin*, Stanislaus and Solano Counties	Valley and foothill grasslands between 30 and 505 meters	July–October	Low; closest occurrence within 10 miles west of project area—no suitable habitat conditions due to ongoing disturbance from agricultural practices
Slough thistle <i>Cirsium crassicaule</i>	–/–/1B.1		San Joaquin Valley; Kings, Kern, and San Joaquin Counties	Freshwater sloughs and marshes; 3-100 m	May–August	Low; closest occurrence within 4 miles northwest of project area—no suitable habitat conditions
Recurved larkspur <i>Delphinium recurvatum</i>	–/–/1B.2		Central Valley; Colusa to Kern Counties	Alkaline soils in chenopod scrub, cismontane woodland, valley and foothill grassland below 750 meters	March–May	Low; closest occurrence within 10 miles northeast of project area—no suitable habitat conditions
Round-leaved filaree <i>Erodium macrophyllum</i>	–/–/1B.1		Scattered occurrences in the Great Valley, southern north Coast Ranges, San Francisco Bay area, south Coast Ranges, Channel Islands, Transverse and Peninsular Ranges	Cismontane woodland, valley and foothill grassland on clay soils between 15 and 1200 meters	March–May	Low; closest occurrence within 9 miles of project area—no suitable habitat conditions
Delta button-celery <i>Eryngium racemosum</i>	–/E/1B.1		San Joaquin River delta floodplains and adjacent Sierra Nevada foothills; Calaveras, Merced, San Joaquin, and Stanislaus Counties	Riparian scrub, seasonally inundated depressions along floodplains on clay soils; below 75 m	June–August	Low; closest occurrence within 3 miles west of project area—no suitable habitat conditions

Table 5-2. Continued

Common and Scientific Names	Legal Status ^a		Geographic Distribution	Habitat Requirements	Blooming Period	Likelihood to Occur within Project Area ^b
	Federal/State/CNPS					
Wright's trichocoronis <i>Trichocoronis wrightii</i> var. <i>wrightii</i>	—/—/2.1		Scattered locations in the Central Valley, southern coast of Texas	Floodplains, moist places, on alkaline soils; below 450 m	May–September	Low; closest occurrence within 3 miles west of project area—no suitable habitat conditions
Caper-fruited tropidocarpum <i>Tropidocarpum capparideum</i>	—/—/1B.1		Historically known from the northwest San Joaquin Valley and adjacent Coast Range foothills; currently known from Fresno, Monterey and San Luis Obispo Counties.	Valley and foothill grasslands on alkaline hills below 455 meters	March–April	Low; closest occurrence within 10 miles west of project area—no suitable habitat conditions

^a Status explanations:

Federal

— = no listing.

State

E = listed as endangered under the California Endangered Species Act.

— = no listing.

California Native Plant Society (CNPS)

1B = List 1B species: rare, threatened, or endangered in California and elsewhere.

2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.

Threat Code Extentions

.1 = seriously endangered in California (over 80% of occurrences threatened-high degree and immediacy of threat).

.2 = fairly endangered in California (20-80% occurrences threatened).

^b Definitions of levels of occurrence likelihood:

High: Known occurrence of plant in region from Natural Diversity Database, or other documents in the vicinity of the project; or presence of suitable habitat conditions and suitable microhabitat conditions.

Moderate: Known occurrence of plant in region from Natural Diversity Database, or other documents in the vicinity of the project; or presence of suitable habitat conditions but suitable microhabitat conditions are not present.

Low: Plant not known to occur in the region from the Natural Diversity Database, or other documents in the vicinity of the project; or habitat conditions of poor quality.

None: Plant not known to occur in the region from the Natural Diversity Database, or other documents in the vicinity of the project; or suitable habitat not present in any condition.

Special-Status Wildlife

Based on a review of existing information, including a search of the CNDDDB (2007), species lists obtained from the USFWS (2007), and species distribution and habitat requirements data, 20 special-status wildlife species were identified as occurring within the project region. Table 5-3 contains a list of these 20 special-status species along with information regarding California distribution, habitat requirements, and likelihood of occurrence in the project area. Based on the results of the habitat-based field assessment, six special-status wildlife species were identified as having the potential to occur in the project area. Non-special-status migratory birds, including raptors, also have potential to nest on or adjacent to the project site. Although these species are not considered special-status wildlife species, their occupied nests and eggs are protected under either CFGC Section 3503 or 3503.5 and the MBTA.

The six special-status species with potential to occur in the project area include:

- California tiger salamander (*Ambystoma californiense*)—federal threatened and DFG species of special concern;
- Western pond turtle (*Clemmys mamorata*)—DFG species of special concern;
- Swainson's hawk (*Buteo swainsoni*)—state threatened;
- White-tailed kite (*Elanus leucurus*)—DFG fully protected species
- Northern harrier (*Circus cyaneus*)—DFG species of special concern;
- Tricolored blackbird (*Agelaius tricolor*)—DFG species of special concern; and
- Western burrowing owl (*Athene cunicularia hypugea*)—DFG species of special concern.

One occurrence for California tiger salamander exists approximately 0.8 mile northwest of the project site (California Natural Diversity Database 2007). This occurrence was recorded in 1996 in a seasonal pond on the south side of SR 120. The agricultural ditch on the project site drains stormwater and agricultural runoff. Within the Central Valley of California, California tiger salamander aquatic breeding sites consist of vernal pools and seasonal ponds, in addition to stock ponds for cattle, sheep, and horses (U.S. Fish and Wildlife Service 2003). Drainage canals do not provide suitable breeding habitat for California tiger salamander because these resources frequently conduct heavy water flows during storm events. Therefore, the agricultural ditch on the project site would not provide suitable aquatic breeding habitat for California tiger salamanders. Additionally, due to the frequent disturbance of fallow and ruderal areas within the project site, the site does not provide suitable upland dispersal habitat for this species.

Western pond turtles require a permanent to semi-permanent water source. Because of the variability in the duration and intensity of water flow and the lack of suitable basking sites, agricultural ditches typically do not provide suitable aquatic habitat for western pond turtle. The agricultural ditch contained flowing

water on the day of the 2005 survey but was dry in 2006. No pond turtles were observed in the project area.

Swainson's hawk and other non-special-status migratory birds and raptors could potentially nest in trees located around the private residence in the northeastern corner of the project site (Figure 5-1). No potential raptor nests were identified in any of the trees present on the project site. A yellow-billed magpie nest was observed in a tree located northeast of the project site on a residential lot.

Swainson's hawk and other migratory birds and raptors are addressed in the SJMSCP. The SJMSCP defines habitat for Swainson's hawk as large trees along permanent waterways or otherwise isolated with nearby grasslands or agricultural lands for foraging. Thus, the fallow and ruderal agricultural areas in the project area are considered suitable foraging habitat for this species. Numerous Swainson's hawk nests are recorded to occur within 10 miles of the project site. The nearest nest site for Swainson's hawk is located approximately 2 miles northwest of the project site (California Natural Diversity Database 2007).

Northern harrier is a ground nesting species that nests in marshes but forages in a variety of open habitats, including grasslands and agricultural lands. The project site does not contain suitable nesting habitat for northern harrier but would support foraging for this species. A northern harrier was observed foraging in a fallow agricultural field adjacent to the project site.

White-tailed kite nests along riparian corridors or within wooded areas. These habitats do not occur on or adjacent to the project site; however, white-tailed kite could forage in the project site.

The fallow and ruderal areas on the project site could provide suitable nesting and foraging habitat for breeding or wintering burrowing owls. Numerous burrowing owl nests are recorded to occur within 10 miles of the project site. The nearest nest site is located approximately 1.5 miles north of the project site (California Natural Diversity Database 2007). No California ground squirrel burrows or other suitable burrows or manmade structures that could provide nesting areas were observed on the project site on either survey date; however, there is potential for burrowing owl to move onto the site prior to project construction.

Impact Analysis

Approach and Methodology

This biological resource analysis is based on information collected during 2005 and 2007 site visits and on data sources and information listed in the first section of this chapter. Descriptions of potential impacts to biological resources are quantitative in nature. Mitigation measures provided are consistent with those required under the SJMSCP and comply with standard mitigation measures required by the resource agencies.

Table 5-3. Special-Status Wildlife Species Identified as Having the Potential to Occur in the Project Area

Species	Status ^a		California Distribution	Habitats	Likelihood for Occurrence in the Project Area ^b
	Federal	State			
Invertebrates					
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	T	—	Streamside habitats below 900 meters (3,000 feet) above sea level through the Central Valley	Riparian and oak savanna habitats with elderberry shrubs; elderberries are host plant	None—elderberry shrubs do not occur in the project area.
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	T	—	Central Valley, central and southern Coast Ranges from Tehama County to Santa Barbara County; isolated populations also in Riverside County	Common in vernal pools; also found in sandstone rock outcrop pools	None—there is no suitable habitat (vernal pools or seasonal wetlands) in the project area.
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	E	—	Shasta County south to Merced County	Vernal pools and ephemeral stockponds	None—there is no suitable habitat (vernal pools or ephemeral water bodies) in the project area.
Amphibians					
California tiger salamander <i>Ambystoma californiens</i> (= <i>A. tigrinum c.</i>)	T	SSC	Central Valley, including Sierra Nevada foothills, up to approximately 300 meters (1,000 feet) above sea level and coastal region from Butte County south to Santa Barbara County	Small ponds, lakes, or vernal pools in grasslands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy	None—there is no suitable aquatic breeding or upland dispersal habitat in the project area.
Western spadefoot toad <i>Scaphiopus hammondi</i>	—	SSC	Sierra Nevada foothills, Central Valley, Coast Ranges, coastal counties in southern California	Shallow streams with riffles and seasonal wetlands, such as vernal pools in annual grasslands and oak woodlands	None—there is no suitable habitat (vernal pools or seasonal wetlands water bodies) in the project area.
Reptiles					
Giant garter snake <i>Thamnophis gigas</i>	T	T	Central Valley from Fresno north to the Gridley/Sutter Buttes area; has been extirpated from areas south of Fresno	Sloughs, canals, and other small waterways where there is a prey base of small fish and amphibians; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter	None—the agricultural ditch in the project area has no prey base and does not contain adequate protective vegetation.

Table 5-3. Continued

Species	Status ^a		California Distribution	Habitats	Likelihood for Occurrence in the Project Area ^b
	Federal	State			
Western pond turtle <i>Clemmys marmorata</i>	–	SSC	Oregon border of Del Norte and Siskiyou Counties south along the coast to San Francisco Bay, inland through the Sacramento Valley, and on the western slope of Sierra Nevada	Ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests	None—occurs within streams, canals, and natural and artificial ponds with year-round water; agricultural ditch in project area does not contain water year round.
Birds					
Bald eagle <i>Haliaeetus leucocephalus</i>	T	E	Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin; reintroduced into central coast; winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierra Nevada and east of the Sierra Nevada south of Mono County; range expanding.	In western North America, nests and roosts in coniferous forests within 1.6 kilometer (1 mile) of a lake, a reservoir, a stream, or the ocean.	None—the project area does not provide suitable nesting or foraging habitat; could migrate through the program area.
Cooper's hawk <i>Accipiter cooperii</i>	–	SSC	Throughout California except high altitudes in the Sierra Nevada; winters in the Central Valley, southeastern desert regions, and plains east of the Cascade Range; permanent residents occupy the rest of the state	Nests primarily in riparian forests dominated by deciduous species; also nests in densely canopied forests from grey pine–oak woodland up to ponderosa pine; forages in open woodlands.	None—nests in mature riparian woodlands and forages in woodlands openings; no nesting or foraging habitat occurs in project area.
Ferruginous hawk <i>Buteo regalis</i>	–	SSC	Does not nest in California; winter visitor along the coast from Sonoma County to San Diego County, eastward to the Sierra Nevada foothills and southeastern deserts, the Inyo-White Mountains, the plains east of the Cascade Range, and Siskiyou County.	Open terrain in plains and foothills where ground squirrels and other prey are available	None—winter visitor, does not nest in California; could migrate through and forage in the project area.
Loggerhead shrike <i>Lanius ludovicianus</i>	–	SSC	Resident and winter visitor in lowlands and foothills throughout California; rare on coastal slope north to Mendocino County, occurring only in winter	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches	Low—suitable foraging habitat is present within agricultural areas in the project area.

Table 5-3. Continued

Species	Status ^a		California Distribution	Habitats	Likelihood for Occurrence in the Project Area ^b
	Federal	State			
Northern harrier <i>Circus cyaneus</i>	–	SSC	Throughout lowland California; has been recorded in fall at high elevations	Nests and forages in grasslands, meadows, marshes, and seasonal and agricultural wetlands providing tall cover.	High—northern harrier was observed foraging in an adjacent fallow agricultural field. Fallow agricultural lands in the project area provide suitable foraging habitat; no nesting habitat is present.
Sharp-shinned hawk <i>Accipiter striatus</i>	–	SSC	Permanent resident on the Sierra Nevada, Cascade, Klamath, and north Coast Ranges at mid-elevations and along the coast in Marin, San Francisco, San Mateo, Santa Cruz, and Monterey Counties; winters over the rest of the state except very high elevations	Dense canopy ponderosa pine or mixed-conifer forest and dense riparian habitats	None—winter visitor to area, no suitable nesting or foraging habitat is present in project area.
Swainson's hawk <i>Buteo swainsoni</i>	–	T	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley; the state's highest nesting densities are near Davis and Woodland, Yolo County.	Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields	High—numerous nest sites within ten miles of the project area, closest nest site approximately two miles from project area. Project area contains suitable foraging habitat for this species.
Tri-colored blackbird <i>Agelaius tricolor</i>	–	SSC	Largely endemic to California; permanent residents in the Central Valley from Butte County to Kern County; at scattered coastal locations from Marin County south to San Diego County; breeds at scattered locations in Lake, Sonoma, and Solano Counties; rare nester in Siskiyou, Modoc, and Lassen Counties	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields; nesting habitat must be large enough to support 50 pairs; probably requires water at or near the nesting colony; requires large foraging areas, including marshes, pastures, agricultural wetlands, dairies, and feedlots, where insect prey is abundant.	Moderate—documented nest sites occur within one mile of the project area. No nesting habitat is present in the project area, but species could forage in agricultural lands on site.

Table 5-3. Continued

Species	Status ^a		California Distribution	Habitats	Likelihood for Occurrence in the Project Area ^b
	Federal	State			
Western burrowing owl <i>Athene cunicularia hypugea</i>	–	SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast	Rodent burrows in sparse grassland, desert, and agricultural habitats	High—numerous documented nest sites occur within 10 miles and nearest site is located 1.5 miles from project area. Ruderal areas and edges of agricultural fields in project area provide suitable nesting habitat, agricultural lands provide suitable foraging habitat.
White-tailed kite <i>Elanus caeruleus</i>	–	FP	Lowland areas west of Sierra Nevada, from head of Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging	Moderate—there are no documented nest sites within 10 miles from the project area. Agricultural lands in project area provide suitable foraging habitat.
Mammals					
San Joaquin Valley (riparian) woodrat <i>Neotoma fuscipes riparia</i>	E	SSC	Known only in Stanislaus and San Joaquin Counties along the San Joaquin, Stanislaus, and Tuolumne Rivers; Caswell State Park, San Joaquin County	Riparian habitats where trees and brush are available for cover and nesting	None—no riparian areas exist in the project area.
Riparian brush rabbit <i>Sylvilagus bachmani riparius</i>	E	E	Limited to San Joaquin County at Caswell State Park, near the confluence of the Stanislaus and San Joaquin Rivers	Dense thickets of brush associated with riparian or chaparral habitats	None—no riparian areas exist in the project area.
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	E	T	Principally occurs in the San Joaquin Valley and adjacent open foothills to the west; recent recorded observations in 17 counties, extending from Kern County north to Contra Costa County	Saltbush scrub, grassland, oak, savanna, agricultural fields, irrigated pastures, and freshwater scrub	None—the program area is outside the known range of this species (U.S. Fish and Wildlife Service 1998).

Note: CNDDDB = California Natural Diversity Database.

^a Status explanations:

– = no listing.

Federal

E = listed as endangered under the federal Endangered Species Act.

T = listed as threatened under the federal Endangered Species Act.

State

E = listed as endangered under the California Endangered Species Act.

T = listed as threatened under the California Endangered Species Act.

FP = fully protected under the California Fish and Game Code.

SSC = species of special concern in California.

^b Definitions of levels of potential occurrence:

Moderate: CNDDDB or other documents record the known occurrence of the species in the vicinity of the project, or the presence of suitable habitat conditions, but the area lacks suitable microhabitat conditions.

Low: CNDDDB or other documents do not record the occurrence of the species in the vicinity of the project, or the habitat conditions in the area are of poor quality.

None: CNDDDB or other documents do not record the occurrence of the species in the vicinity of the project, or suitable habitat is not present in any condition.

Thresholds presented in State CEQA Guidelines Appendix G and standard professional practice were used to determine whether the proposed project would have a significant impact related to biological resources. The project would cause a significant impact if it would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the DFG, USFWS, or NOAA Fisheries;
- introduce or spread noxious weeds;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the DFG, USFWS, or NOAA Fisheries;
- have a substantial adverse effect on federally protected wetlands as defined by CWA Section 404 (including marsh, vernal pool, coastal, and so on) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as tree preservation policies or ordinances; or
- conflict with the provisions of the SJMSCP.

This impact analysis assumes that biological resources could be indirectly or directly affected during construction activities associated with the proposed project. The following types of construction activities could potentially cause impacts on biological resources:

- filling of existing irrigation ditch;
- grading and paving activities during construction;
- soil compaction, dust generation, and water runoff from the construction area;
- construction-related noise from equipment; and
- degradation of water quality in the agricultural ditch resulting from construction and development runoff containing sediments and petroleum products.

Assumptions

This analysis assumes proposed development within the project area would result in permanent direct impacts on biological resources located within the project footprint and indirect impacts on biological resources located within the project area but outside the project footprint. The study area is defined to be the project

footprint including a 100-foot buffer outside the perimeter of the project footprint. In assessing the magnitude of potential impacts, the following assumptions were made regarding the proposed project and potential impacts on biological resources.

- All vegetation would be removed in areas proposed for development. Wildlife in these areas would be displaced or destroyed during construction.
- The removal of agricultural lands and of common and widespread habitat types in the project region would not result in impacts on sensitive botanical resources but could have impacts on wildlife habitat. The study area has no potential to support any special-status plants based on the level of previous and ongoing disturbance. Therefore, this analysis assumes that the proposed project would not result in impacts on special-status plant species.
- This analysis assumes that the project area could support special-status wildlife species for which there is suitable habitat and for which focused surveys have not been conducted.
- Conversion of the project site will result in the removal of foraging habitat for raptors and other migratory bird species addressed in the SJMSCP.

Impacts and Mitigation Measures

Impact BIO-1: Potential Introduction or Spread of Noxious Weeds (Less than Significant with Mitigation)

Construction activities associated with project would introduce or spread noxious weeds into currently uninfested areas, possibly resulting in the displacement of special-status plant species and degradation of habitat for special-status wildlife. Plants or seeds may be dispersed via construction equipment if the appropriate measures are not implemented. This impact is considered significant because the introduction or spread of noxious weeds could result in a substantial reduction or elimination of species diversity or abundance. Implementation of the following mitigation measures would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-1a: Conduct a Noxious Weed Survey and Document Noxious Weed Infestation

Prior to construction of program elements on undisturbed lands or adjacent to agricultural areas, the City will address noxious weed impacts. The City will hire a qualified botanist to determine whether noxious weeds are an issue for the program and whether they could displace native plants and natural habitats, affect the quality of forage on rangelands, or affect cropland productivity. Alternatively, the City may use certified environmental documentation to determine noxious weed impacts on well sites within proposed development areas.

If noxious weeds are an issue, the City will review the County Agricultural Commission's noxious weed list; California Department of Food and Agriculture's A, B, and C lists of noxious weeds; and California Exotic Pest Plant Council's list of pest plants of ecological

concern. These lists will be used to identify weeds that will be targeted during field surveys by the botanist. Surveys will focus on target weed species that are considered locally important for documentation and control purposes.

If noxious weed infestations are located during the field surveys, they will be mapped and documented. The City will implement Mitigation Measure BIO-1b to avoid the dispersal of noxious weeds into uninfested areas.

Mitigation Measure BIO-1b: Avoid the Dispersal of Noxious Weeds into Uninfested Areas

To avoid the introduction or spread of noxious weeds into uninfested areas, the City will incorporate the following measures into construction project plans and specifications:

- use certified, weed-free, imported erosion-control materials (or rice straw in upland areas);
- coordinate with the County Agricultural Commissioner and land management agencies to ensure that the appropriate BMPs are implemented;
- educate construction supervisors and managers about weed identification and the importance of controlling and preventing the spread of noxious weeds;
- clean equipment at designated wash stations after leaving noxious weed infestation areas; and
- include the noxious weed avoidance measures in contract documents and ensure that they are implemented by the program contractor.

Impact BIO-2: Disturbance or Loss of Waters of the United States (Including Wetlands) (Less than Significant with Mitigation)

Development of the project site would directly affect (by the placement of fill) the agricultural ditch located in the center of the eastern portion of the site. The agricultural ditch could support seasonal wetland habitat that would be considered a sensitive natural community. The agricultural ditch may also be considered waters of the United States and could be regulated under the CWA.

This impact is considered potentially significant. Implementation of Mitigation Measure BIO-2a would reduce this impact to a less-than-significant level.

Indirect impacts on water quality downstream of the agricultural ditch could result from sedimentation during construction of the proposed development. Because project construction would result in the disturbance of an area larger than 1 acre, the project developer would be required to comply with the State Water Resources Control Board's general permit for construction activities, including the filing of a notice of intent and a Storm Water Pollution Prevention Plan (SWPPP) with the RWQCB, as described in Chapter 9, "Hydrology and Water Quality," which would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-2a: Identify and Delineate Waters of the United States and Obtain and Comply with State, Federal, and Local Permits

Before construction begins, the City will require that a delineation of waters of the United States within the project area be conducted and a report and map of the results be submitted to the USACE for verification. If the USACE determines that the ditch is not waters of the United States, the applicant will not need to obtain a CWA Section 404 permit. If the USACE decides that the ditch is waters of the United States and therefore is under its jurisdiction, the City will require that the applicant obtain a Section 404 permit from the USACE for placement of fill within waters of the United States and a Section 401 certification from the RWQCB.

In addition, the extent of the ditch that is within jurisdiction of DFG will be identified for the purpose of obtaining a CFGC Section 1602 streambed alteration agreement. All conditions that are attached to the state and federal permits would be implemented as part of the project. The conditions would be clearly identified in the construction plans and specifications and monitored during and after construction to ensure compliance.

Impact BIO-3: Impacts to Nesting Swainson's Hawk and Non-Special-Status Migratory Birds (Less than Significant with Mitigation)

Development of the project site could affect, either directly or through habitat modifications, the state-threatened Swainson's hawk and other non-special-status migratory birds and raptors. Tree removal, grading, or other construction activities during the nesting season (generally March 1 through August 15) could remove or cause abandonment of active nests of Swainson's hawk and other migratory birds and raptors if they are found nesting on or adjacent to the project site. Suitable bird and raptor nesting habitat (trees) was identified on the project site. Impacts on a state-listed species (Swainson's hawk) and species protected under the MBTA and CFGC are considered potentially significant. Implementation of Mitigation Measure BIO-3a (consistent with the SJMSCP) would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-3a: Conduct Tree Removal Activities during Nonbreeding Season for Swainson's Hawk and Non-Special-Status Migratory Birds and Raptors or Conduct Nesting Bird Survey Prior to Tree Removal Activities

To avoid removing any active Swainson's hawk or non-special-status migratory bird and raptor nests protected under the MBTA and the CFGC, tree removal activities will be conducted during the nonbreeding season for these species (generally August 16 through February 28) or after a qualified biologist determines that fledglings have left the nest, as described in the SJMSCP (Sections 5.2.3.1[G], 5.2.4.11, 5.2.4.18, and 5.2.4.19). If tree removal activities will be conducted before August 16 or after February 28, a qualified biologist will be retained to survey for nesting birds in all trees that will be removed and any tree located within

500 feet (or 0.25 mile for Swainson's hawk) of construction activities, including grading. The nesting bird survey will be conducted no more than 48 hours before tree removal activities. If the biologist determines that the area surveyed does not contain any active nests, tree removal activities can commence without any further mitigation. If active nests are found, construction will not occur until nesting activities have ceased (after a qualified biologist determines that fledglings have left the nest).

Impact BIO-4: Loss of Swainson's Hawk Foraging Habitat (Less than Significant with Mitigation)

The project site is located within the incorporated City of Manteca. The City is a signatory to the SJMSCP. The proposed project would result in the conversion of approximately 157 acres of agricultural habitat lands (non-orchard crops) to residential development. These lands provide suitable foraging habitat for Swainson's hawk. Numerous records for active Swainson's hawk nests are located within 10 miles of the project site, the closest nest record occurring approximately 2 miles from the project site. Because the availability of foraging habitat has been closely tied to the breeding success of this species, projects that will adversely modify suitable Swainson's hawk foraging habitat within a 10-mile radius of active Swainson's hawk nests are considered to adversely affect this species (California Department of Fish and Game 1994). Therefore, the loss of suitable foraging habitat in the project area would be considered a potentially significant impact. Implementation of Mitigation Measure BIO-4a would fully mitigate for potential adverse impacts to Swainson's hawk and would reduce this potential impact to a less-than-significant level.

Mitigation Measure BIO-4a: Compensate for Loss of Swainson's Hawk Foraging Habitat as Outlined in the SJMSCP

The City will provide compensation for the conversion of approximately 157 acres of agricultural habitat lands (i.e., fund acquisition of preserve lands) at a ratio of 1:1 (acres acquired to acres lost), as outlined in the SJMSCP (Section 4.1.2[A]). For 2007, the cost to provide 1 acre of compensation for agricultural habitat lands is \$13,022. The final cost to fulfill project compensation requirements will be determined during coordination with SJCOG. Compensation fees must be paid before any ground-disturbing activities commence, including grading (SJMSCP Section 5.3.2.3[A]).

Impact BIO-5: Loss of Potential Foraging Habitat for Other Special-Status Birds (Less than Significant with Mitigation)

The project site contains potential foraging habitat for other special-status birds, including white-tailed kite, northern harrier, western burrowing owl, and tricolored blackbird. Mitigation Measure BIO-3a is sufficient to mitigate for the loss of potential foraging habitat for these species. No additional mitigation is recommended. This impact is less than significant.

Impact BIO-6: Impacts to Western Burrowing Owl (Less than Significant with Mitigation)

Development of the project site could affect, either directly or through habitat modifications, the DFG species of special concern, burrowing owl. Grading or other construction activities during the nesting season (February 1 through August 31) could destroy or cause abandonment of active nests on or adjacent to the project site. Although no burrowing owl sign (burrows, white wash, feathers, or pellets) was observed on or within 50 feet of the project site, this species could move onto the project site prior to construction of the proposed project. Impacts to this species are considered potentially significant. Implementation of Mitigation Measures BIO-6a, BIO-6b, and BIO 6c would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-6a: Conduct Preconstruction Survey and Adhere to DFG Guidelines

DFG (1995) recommends that preconstruction surveys be conducted to locate active burrowing owl burrows in the construction work area and within a 250-foot-wide buffer zone around the construction area. The project proponent or its contractor will retain a qualified biologist to conduct preconstruction surveys for active burrows according to DFG's Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game 1995). The preconstruction surveys will include a breeding season survey and wintering season survey. If no burrowing owls are detected, no further mitigation is required.

Mitigation Measure BIO-6b: Avoid and Minimize Impacts on Nesting Burrowing Owl

If active burrowing owls are detected, the project proponent will implement the following measures.

- Occupied burrows will not be disturbed during the breeding season (February 1–August 31).
- If owls must be moved away from the project site during the nonbreeding season, passive relocation techniques (e.g., installing one-way doors at burrow entrances) will be used instead of trapping, as described in DFG guidelines. At least 1 week will be necessary to complete passive relocation and allow owls to acclimate to alternate burrows.

Mitigation Measure BIO-6c: Compensate for Loss of Burrowing Owl Habitat

- When destruction of occupied burrows is unavoidable during the nonbreeding season (September 1–January 31) the following actions must be taken.
- Unsuitable burrows will be enhanced (enlarged or cleared of debris) or new burrows created (by installing artificial burrows) at a ratio of 2:1 on protected lands approved by DFG. Newly created burrows will follow guidelines established by DFG.

- Loss of foraging and burrowing habitat on the project site will be offset by acquiring and permanently protecting a minimum of 6.5 acres of foraging habitat per occupied burrow identified on the project site. The protected lands should be located adjacent to the occupied burrowing owl habitat on the project site or in other occupied habitat near the project site. The location of the protected lands will be determined in coordination with DFG.

Additional Annexation Area

The annexation of the properties north of the Machado Estates project area will not involve disturbance of habitat, potential habitat, wetlands, or other waters of the U.S. Annexation will not further the spread of noxious weeds or other invasive species. This element of the project will result in less-than-significant impacts, and no mitigation measures are required.

Chapter 6

Cultural Resources

Introduction

This chapter describes the impacts on cultural resources that would result from the project. The key sources of data and information used in the preparation of this chapter are:

- the City General Plan (City of Manteca 2003a),
- the City General Plan EIR (Wade Associates 2003),
- the County General Plan (San Joaquin County 2005),
- a records search conducted at the Central California Information Center (CCIC) of the California Historical Resources Information System (CHRIS),
- contacts with the Native American Heritage Commission (NAHC), and
- a pedestrian survey of the project area.

Environmental Setting

The study area is located in San Joaquin County, situated directly south of the Manteca city limits. Specifically, the project site is located at the southeastern corner of the Union Road/Woodward Avenue intersection. The study area includes agricultural and residential development. Most of the study area contains land used for walnut and almond crops and is landscaped or paved.

Regulatory Setting

State

CEQA and Cultural Resources

Section 15064.5 of the State CEQA Guidelines requires that proponents of public and private projects financed or approved by public agencies assess the effects of

the project on significant historical resources and unique archaeological resources (as defined in Section 21083.2). *Historical resource* is a CEQA term that includes buildings, sites, structures, objects, or districts that may have historical, prehistoric, architectural, archaeological, cultural, or scientific importance and be eligible for listing or be listed in the California Register of Historical Resources (CRHR). According to State CEQA Guidelines Section 15064.5(a), a resource can qualify as a significant historical resource for the purposes of CEQA review if it meets any of the following criteria.

- It is listed in or determined to be eligible for listing in the CRHR.
- It is included in a local register of historical resources, as defined in PRC 5020.1(k), or identified as significant in a historical resource survey that meets the requirements of PRC 5024.1[g], unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- The lead agency determines it is significant, as supported by substantial evidence in light of the whole record.

CEQA requires lead agencies to use specific criteria in evaluating the significance of historical resources potentially affected by a proposed project. The criteria required under CEQA are the same as the CRHR significance criteria discussed in the following section.

California Register of Historical Resources

The CRHR was created by the California Legislature in 1992 and is intended to serve as an authoritative listing of historical and archaeological resources in California. Additionally, the eligibility criteria for the CRHR are intended to serve as the definitive criteria for assessing the significance of historical resources for the purposes of CEQA compliance, establishing a consistent set of criteria for use by all public agencies statewide.

For a historical resource to be eligible for listing in the CRHR, it must be significant at the local, state, or national level under one or more of the following criteria from State CEQA Guidelines Section 15064.5(a)(3)(A–D).

- It is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.
- It is associated with the lives of persons important in our past.
- It embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of an important creative individual or possesses high artistic values.
- It has yielded, or may be likely to yield, information important in prehistory or history.

Historical resources automatically listed in the CRHR include those historic properties listed in, or formally determined to be eligible for listing in, the National Register of Historic Places (NRHP) (PRC 5024.1).

Local

San Joaquin County General Plan 2010

The County General Plan (San Joaquin County 2005) includes a Heritage Resources Element designed to assist the County in its objective to “[p]rotect San Joaquin County’s valuable architectural, historical, archaeological, and cultural resources.” The following policies are noted in the General Plan.

1. The County shall continue to encourage efforts, both public and private, to preserve its historical and cultural heritage.
2. Significant archaeological and historical resources shall be identified and protected from destruction. If evidence of such resources appears after development begins, an assessment shall be made of the appropriate actions to preserve or remove the resources.
3. No significant architectural, historical, archaeological or cultural resources shall be knowingly destroyed through County action.
4. Reuse of architecturally interesting or historical buildings shall be encouraged.
5. The County shall promote public awareness of and support for historic preservation.

The County General Plan states that these policies will be implemented in the following ways.

1. Heritage Information Program: The County shall establish an educational program to be administered through the County Museum to acquaint the County’s population with its landmark programs and preservation issues.
2. Promotion of Historic Preservation
 - a. The County shall continue to support and fund historical preservation efforts, such as the County Museum complex at Micke Grove, Harmony Grove Church, and Haggin Museum.
 - b. A Historic Preservation Commission shall be established to promote heritage preservation programs.
3. Historic Resource Inventory: The County shall inventory heritage resources in the unincorporated area and shall encourage inventories in the cities.
4. Historic Preservation Regulation: The County Development Title shall include archaeological and historic preservation regulations that will specify procedures to be followed in the event that significant resources are discovered during the development process.
5. Registration of Historic Properties: Owners of eligible historic properties shall be encouraged to apply for State and federal registration and to

participate in tax incentive programs for historic restoration (San Joaquin General Plan 2010, vol. 1, Countywide General Plan, adopted by the San Joaquin County Board of Supervisors on July 29, 1992, VI-37, 38).

City of Manteca General Plan 2023

The City General Plan (City of Manteca 2003a) contains a cultural resources element that outlines policies in support of the City's goals to preserve and enhance Manteca's archaeological and historic resources for their aesthetic, educational, and cultural values as well as protect Manteca's Native American heritage. The City's policies for the preservation of cultural resources generally follow CEQA guidelines, including conducting a records search through the CHRIS as well as requiring an inventory and evaluation of cultural resources prior to approving public or private projects. The City also has a policy to prepare and adopt a historical preservation ordinance and work with the redevelopment agency to support efforts of property owners to preserve historic and architecturally significant buildings (City of Manteca 2003a).

Existing Conditions

Prehistoric Setting

The prehistory of the Sacramento–San Joaquin Valley has been described in terms of archaeological patterns. A pattern is a general mode of life characterized archaeologically by technology, particular artifacts, economic systems, trade, burial practices, and other aspects of culture. Although the Sacramento–San Joaquin Valley may have been inhabited by humans as early as 10,000 years ago, little reliable evidence indicates widespread occupation until about 4,000 years ago. This early culture has been called the Windmill Pattern. The Windmill Pattern may be linked with the arrival of peoples from outside California and is characterized by distinctive burial practices, the use of baked clay artifacts, possibly a heavier reliance on hunting rather than gathering plant foods, certain forms of shell ornaments, and the use of basketry (Moratto 1984).

The Windmill Pattern appears to have been replaced by the Berkeley Pattern by around 500 BC. The Berkeley Pattern may be associated with the movement of Miwok groups into the Central Valley from coastal areas. Archaeologically, the Berkeley Pattern is characterized by relatively more pestles and mortars than are found in Windmill sites, a well-developed bone artifact technology, distinctive flaked-stone technology, specific shell ornament types, and distinctive burial practices (Moratto 1984).

The Augustine Pattern replaced the Berkeley Pattern in the Sacramento Valley in approximately AD 600 and lasted until the historic period. This pattern appears to mark the arrival of ethnographically documented peoples. It is thought that the Augustine Pattern is associated with a movement of Wintuan peoples from the north into the Sacramento Valley. This pattern is distinguished by the use of the

bow and arrow, shaped mortars and pestles, intensive trade, large populations, social stratification, and distinctive burial practices (Moratto 1984).

Ethnographic Setting

The project area was aboriginally inhabited by the Northern Valley Yokuts. Ethnographic work with this group is lacking in comparison with other groups within California. Because of the early decimation of the aboriginal populations in the lower San Joaquin Valley, most information regarding this group is gleaned from accounts of Spanish military men and missionaries. A summary of these sources has been compiled by W. J. Wallace (1978), and it is upon that work that this brief ethnographic setting is based.

Northern Valley Yokuts territory is defined roughly by the crest of the Diablo Range on the west and the foothills of the Sierra Nevada on the east. The southern boundary is approximately where the San Joaquin River bends northward, and the northern boundary is roughly halfway between the Calaveras and Mokelumne Rivers. The Yokuts may have been fairly recent arrivals in the San Joaquin Valley, perhaps being pushed out of the foothills about 500 years ago.

Population estimates for the Northern Valley Yokuts vary from 11,000 to more than 31,000 individuals. Populations were concentrated along waterways and on the more hospitable east side of the San Joaquin River. Villages, or clusters of villages, made up tribelets (miniature tribes) led by headmen. The number of tribelets is estimated at 30 to 40; each tribe spoke its own dialect of the Yokuts language. Combined with the Southern Valley Yokuts and the Foothill Yokuts dialects, these tongues formed the Yokutsan linguistic family of the Penutian Stock (Shipley 1978).

Principal settlements were located on the tops of low mounds, on or near the banks of the larger watercourses. Settlements were composed of single-family dwellings, sweathouses, and ceremonial assembly chambers. Dwellings were small and lightly constructed, semisubterranean, and oval. The public structures were large and earth-covered. Sedentism was fostered by the abundance of riverine resources in the area.

Subsistence among the Northern Valley Yokuts revolved around the waterways and marshes of the lower San Joaquin Valley. Fishing with dragnets, harpoons, and hook and line yielded salmon, white sturgeon, river perch, and other species of edible fish. Waterfowl and small game attracted to the water also provided a source of protein. The contribution of big game to the diet was probably minimal. Vegetal staples included acorns, tule roots, and seeds.

Goods not available locally were obtained through trade. Paiute and Shoshone groups on the eastern side of the Sierra were suppliers of obsidian. Shell beads and mussels were obtained from Salinan and Costanoan groups. Trading relations with Miwok groups yielded baskets and bows and arrows. Overland transport was facilitated by a network of trails, and tule rafts were used for water transport.

Most Northern Valley Yokuts groups had their first contact with Europeans in the early 1800s when the Spanish began exploring the Sacramento River–San Joaquin River Delta (Delta). The gradual erosion of Yokuts culture began during the mission period when Spanish priests and soldiers forced local Yokuts to work and live at the missions and convert to Christianity. Escaped neophytes brought foreign (European and Native American) habits and tastes back with them, as well as Spanish expeditions to recover escapees, which led to Spanish influence on the culture of the Yokuts. Epidemics of European diseases played a large role in the decimation of the native population. With the secularization of the mission and the release of neophytes, tribal and territorial adjustments were set in motion. People returned to other groups, and a number of polyglot “tribes” were formed. The final blow to the aboriginal population came with the Gold Rush and its aftermath. In the rush to the southern mines, native populations were pushed out of the way and out of their territories. Former miners settling in the fertile valley applied further pressure on the native groups and altered the landforms and waterways of the valley. Many Yokuts resorted to wage labor on farms and ranches. Others were settled on land set aside for them on the Fresno and Tule River Reserves (Wallace 1978).

Historic Setting

Early History: Exploration and Settlement

The study area is located in San Joaquin County, just south of Manteca. Established with statehood in 1850, San Joaquin County was one of California’s original 27 counties. The county takes its name from the San Joaquin River, which was named by Gabriel Moraga for Saint Joachim in 1813. Stockton, which lies north of Manteca but is centrally located within the county, has been the county seat since its inception (Hoover et al. 1990).

Although a number of Spanish and Mexican explorers ventured into the Delta region during the late 1700s and early 1800s in search of potential mission sites, the first Euro-American to traverse the Manteca area specifically was likely Jedediah Strong Smith, who opened the Sacramento Trail in the late 1820s. Smith reported the quantity and quality of furs available in California to the Hudson’s Bay Company and, in 1828, the company sent its first trapping expedition into the region. Trappers working for the Hudson’s Bay Company established the settlement of French Camp (1832 to 1845) south of the modern location of Stockton and Manteca (Hoover et al. 1990; Thompson 1980; Thompson and West 1968).

The American annexation of California, the discovery of gold in 1848, the resulting Gold Rush, and California statehood in 1850 all contributed to a change in the area that would come to be known as Manteca in the mid- and late nineteenth century. During the Gold Rush, many argonauts turned their attention to the verdant soil of the Central Valley, as agricultural endeavors often provided a more stable income than mining for gold. The rich farmlands of the Central Valley, including Manteca, ensured the continued growth of the region during the

post-Gold Rush era (Thompson 1980; Stockton Savings and Loan Association n.d.).

Agricultural Development

What is now Manteca was once a small farming community populated by a few families whose homes sat on large tracts of land scattered throughout the area. One prominent early settler, Joshua Cowell, considered the “Father of Manteca,” farmed much of the land currently occupied by downtown Manteca, while another settler, John McMullin (a longtime landowner of the study area), a veteran of the Mexican-American War, ran a lucrative cattle ranching operation south of the city. These early settlers were typical for the area from the 1850s through the 1860s. Although cattle ranching was popular in the region for a short time, a drought in the early 1860s caused many ranchers to turn to farming. These early farmers initially grew wheat and barley but later, after the introduction of irrigation in 1885, switched to almonds, alfalfa, melons, and grapes. Dairy farming also became prominent after the introduction of irrigation. As a result, by the turn of the twentieth century, grain was no longer the staple crop of the region (Thompson 1980; Thompson and West 1968; Stockton Savings and Loan Association n.d.).

City of Manteca

Manteca proper began as flag stop on the Southern Pacific Railroad (SPRR). In 1869, the Central Pacific Railroad (CPRR) established a line that passed through the region. The SPRR, successor to the CPRR, continued to operate in the area until the twentieth century. Known as Cowell’s Station, the flag stop was originally a discarded boxcar located near the junction of the railroad line and Yosemite Avenue. Around 1896, local dairymen and farmers established a cooperative skimming station for raw milk at the stop. With the establishment of the creamery during this period, the railroad renamed Cowell’s Station “Monteca,” an adaptation of the Spanish word for butter, mantequilla. However, the railroad misprinted the name as “Manteca,” Spanish for lard, on the first tickets produced for the stop. Thus, it was by accident that Manteca received its name (Thompson 1980).

By the early 1900s, Manteca began to grow, and locals established amenities, including a telephone exchange, a post office, a bank, and electricity. City officials set up a board of trade in 1909, and Cowell, a longtime booster of local irrigation, pushed for the establishment of the South San Joaquin Irrigation District. By 1914, local businessmen Achille Baccilieri, T. A. Nelson, F. M. Cowell, and Louis Vistica recognized that the agricultural products produced in the Manteca region could support the creation of a local cannery; consequently, they opened the Manteca Canning Company. In 1916, the board of trade succeeded in bringing a Spreckels Sugar refinery to the town, which opened in 1918. On May 28, 1916, the City of Manteca was formally incorporated. Within two decades, Manteca had grown from a small railroad stop to a full-fledged city, with public services and manufacturing facilities (Thompson 1980).

In the early 1920s, insect-infested crops, along with a significant drop in sugar prices, caused the Spreckels Sugar refinery to close. Manteca was no exception to the economic downturn of the Great Depression of the 1930s, felt in communities nationwide. In a joint effort to revive Manteca's local economy, the U.S. Department of Agriculture and Spreckels produced a more disease-resistant sugar-beet seed, and the local refinery reopened in 1931. The restart of the Spreckels Sugar refinery, along with the opening of the Kraft Foods cheese factory, served to boost the local economy during the mid-1930s and into the early 1940s. During World War II, the Spreckels Sugar refinery closed once again, and the company's machine shop was used by the U.S. Navy to store supplies. The sugar production facility reopened in 1946 and remained a profitable enterprise throughout the twentieth century (Hillman and Covello 1985).

Manteca, along with the nation as a whole, enjoyed a period of prosperity following the end of World War II. During the 1950s, commuters moved to the city because of its proximity to Tracy, Modesto, and Stockton. At the end of the 1960s, the influx of people brought more prosperity to the town as the downtown commercial district expanded to support the needs of the town's 16,000 residents. Overall growth has been relatively slow; nevertheless, Manteca remains a community based primarily in agriculture but with a number of businesses, including manufacturers (Stockton Savings and Loan Association n.d.; Hillman and Covello 1985).

Development in the Study Area

The study area is located south of Lathrop and West Manteca along the southwestern corner of the intersection of Woodward Avenue and South Airport Avenue (Durham Ferry Road). Though the property's ownership changed over the course of time, it remained in the hands of only a few families. One of the earliest owners of the property was J. M. Barber, who acquired the rural property sometime prior to 1870 (Wallace 1870). Barber held the land until 1895, when H. B. Knight became the new property owner (Reid 1883). The property remained in the Knight family for the early part of the twentieth century, passing from L. Knight to R. N. Knight by 1917, when that family member apparently constructed a residence on the parcel (Budd & Widdows 1917; Quail 1905; Quail 1912; U.S. Geological Survey 1912). By 1952, property owners constructed two additional structures on the property. Development and removal of buildings and structures within the parcels continued until the late 1980s (U.S. Geological Survey 1952, PR 1968, PR 1976, and PR 1987).

The project area remains semirural in character. To accommodate the growing regional population of Manteca in recent years, a number of new residential developments have been built near the study area.

Impact Analysis

Approach and Methodology

Jones & Stokes conducted an investigation of the cultural resources within the cultural resources study area, which consists of the project site. The investigation included a records search, Native American consultation, field surveys, and additional research. The result of this investigation is described below.

Records Search

A Jones & Stokes architectural historian conducted archival research at the California Room of the California State Library and the Manteca Public Library. In addition, property-specific information was obtained through the San Joaquin County Assessor's Office. The purpose of this research was to identify important historic people, events, and architectural trends that may have been associated with the study area.

A records search was conducted at the CCIC at California State University, Stanislaus, on August 31, 2005. The state's database of previous studies and recorded cultural resources was consulted, as were pertinent historical inventories and historic maps. The records search indicated that no previous archaeological surveys have been conducted within or immediately adjacent to the project area. No recorded cultural resources are located within the project area. The records search indicates that portions of the current project area along Union Road and Woodward Avenue are sensitive for historic-period cultural resources. A review of historic maps and historical inventories did not indicate any previously recorded resources within the project area.

Field Survey

On March 22, 2007, a Jones & Stokes archaeologist conducted a pedestrian survey of the study area. Transects were spaced no wider than 15 meters to ensure maximum ground coverage. Ground visibility ranged from excellent to good (100% to 75%) throughout the study area. On April 13, 2007, a Jones & Stokes architectural historian conducted a field survey of the entire study area. As part of the field process, buildings and structures 50 years old or older were inspected, photographed, and documented.

Three potential resources were formally recorded and evaluated for historic significance. Residence buildings at 20329 Airport Avenue and 20333 Airport Avenue were recorded and evaluated, as were irrigation features (ditches, laterals, and a pump) associated with the Southern San Joaquin Irrigation District. However, none of these potential resources were determined to be historical resources for the purposes of CEQA. The adjacent Rustic School

building was not evaluated as part of this study as it is not within the proposed project area and will not be directly affected by the proposed project.

Native American Consultation

A search of the NAHC sacred lands database and list of potentially interested Native American representatives was requested on August 30, 2005. The NAHC responded on September 2, 2005, stating that the search of its sacred lands database had failed to indicate the presence of Native American cultural resources in the immediate project area and providing a list of one Native American representative. A contact letter explaining the project and indicating the project location was sent to the Native American representative on September 6, 2005. A telephone call was made to the Native American representative on April 9, 2007, and a message was left asking for a return call if there were any issues or concerns about the current project. As of July 2, 2007, no responses had been received.

Summary of Cultural Resources Investigation Results

The following section describes known archaeological and historical cultural resources in, or directly adjacent to, the cultural resources study area and also describes their significance findings. The completed California Department of Parks and Recreation (DPR) forms for these resources are included in Appendix F.

Archaeological Resources

No archaeological resources are located within the study area.

Architectural Resources

Three architectural resources (two residences and a ditch and associated pump) 50 years old or older are located in the study area. The three resources were evaluated for the CRHR as part of this project. The results of the survey and evaluation of the three architectural properties are documented in Appendix F. The basic findings are summarized below.

20329 Airport Avenue and 20333 Airport Avenue: Residences are located at 20329 Airport Avenue (residence A) and at 20333 Airport Avenue (residence B). Residence A dates from circa 1940, and Residence B dates from circa 1950. Neither property is known to be associated with events or people important to San Joaquin County or the state, overall. Because the properties do not appear to

be historically or architecturally significant, neither appears to meet the criteria for CRHR eligibility.

Ditch and pump: A ditch and associated pump are located in the project area. The resources likely date to circa 1955. They are not known to be associated with events or people significant to the area or state, overall, nor do they display distinctive architecture or construction methods. For these reasons, the resources do not appear to meet the criteria for CRHR eligibility.

Impact Analysis

Approach and Methodology

CEQA requires project proponents to assess a project's potential effects on significant historical resources (i.e., those that are listed or eligible for listing in the CRHR or in a local register or survey that meets the requirements of PRC 5020.1[k] and 5024.1[g]). This entails the following steps.

- Identify potential historical resources.
- Evaluate the significance of identified historical resources.
- Evaluate the anticipated effects of a project on all significant historical resources.

Under CEQA, only effects on significant resources are considered potentially significant, so only those impacts need to be analyzed in detail.

Thresholds presented in State CEQA Guidelines Section 15064.5(b)(1–2) and standard professional practice were used to determine whether the proposed project would cause a substantial adverse change in the significance of a historical resource. The significance of a historical resource is materially impaired when a project would result in:

- demolition, or material alteration in an adverse manner (including relocation), of those physical characteristics of a historical significance that justify its inclusion in, or eligibility for inclusion in, the CRHR;
- demolition, or material alteration in an adverse manner, of those physical characteristics that account for its inclusion in a local register of historical resources pursuant to PRC 5020.1(k) or its identification in a historical resources survey meeting the requirements of PRC 5024.1(g) unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
- demolition, or material alteration in an adverse manner (including relocation), of those physical characteristics of a historical resource that convey its historical significance and justify its eligibility for inclusion in the CRHR as determined by a lead agency for the purposes of CEQA.

Impacts and Mitigation Measures

Impact CR-1: Potential Destruction of Unknown Buried Archaeological Resources (Less than Significant with Mitigation)

No archaeological resources were identified as a result of this study, but it is still possible that significant buried archaeological materials are present within the project area. Disturbance or destruction of these resources may result from ground-disturbing activities associated with construction of the project. This impact would be significant, but implementation of Mitigation Measure CR-1a would reduce this impact to a less-than-significant level.

Mitigation Measure CR-1a: Stop Work in Case of Accidental Discovery of Buried Archaeological Resources

If buried cultural resources, such as chipped or ground stone, historic debris, building foundations, or human bone, are inadvertently discovered during ground-disturbing activities, work will stop in that area and within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with the City and other appropriate agencies. (See also implementation measure RC-I-46 of the City General Plan [City of Manteca 2003a]).

Impact CR-2: Destruction or Disturbance of Human Remains (Less than Significant with Mitigation)

No known human remains are present within the project area. It is possible that buried human remains would not be located as a result of this study due to a lack of surficial evidence. However, it is possible that human remains, particularly those outside a designated cemetery, may be encountered during ground-disturbing activities associated with project construction. This impact would be significant, but implementation of Mitigation Measure CR-2a would reduce this impact to a less-than-significant level.

Mitigation Measure CR-2a: Stop Work in Case of Accidental Discovery of Buried Human Remains

If human remains of Native American origin are discovered during project construction, it is necessary to comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the NAHC (PRC 5097). If any human remains are discovered or recognized in any location other than a dedicated cemetery, there will be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:

- the county coroner has been informed and has determined that no investigation of the cause of death is required; and
- if the remains are of Native American origin,
 - the descendants of the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of, with

appropriate dignity, the human remains and any associated grave goods as provided in PRC 5097.98; or

- ❑ the NAHC was unable to identify a descendant, or the descendant failed to make a recommendation within 24 hours after being notified by the commission.

According to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052). Section 7050.5 requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the NAHC.

Impact CR-3: Disturbance or Destruction of Significant Historic Resources (No Impact)

No architectural resources located in the study area or its vicinity that meet the criteria of significance under CEQA would be affected by the proposed project. There is no impact.

Additional Annexation Area

The annexation of properties north of the Machado Estates project area will not involve the alteration, disturbance, or accidental discovery of archaeological or historic resources. This element of the project will result in less-than-significant impacts, and no mitigation measures are required.

Chapter 7

Geology, Soils, and Paleontology

Introduction

This section describes geology, soils, and paleontological resources in the project area. It also summarizes the federal, state, and local policies and regulations that govern mitigation requirements, and identifies potential impacts associated with geologic and soil resources, and geologic hazards, including seismicity.

The key sources of data and information used in the preparation of this section are listed below. Specific reference information is provided in the text.

- *Geotechnical Services Report, Proposed Machado Estates, Manteca, California* (Kleinfelder 2007a)
- Maps and reports by the U.S. Geological Survey (USGS) and California Geological Survey (CGS)
- University of California, Berkeley Museum of Paleontology (UCMP) database
- City General Plan (City of Manteca 2003a)

Environmental Setting

This section discusses the federal, state, and local regulations related to geology, soils, and paleontology that would apply to the proposed project. It then describes existing geologic and soil conditions and paleontological resources (e.g., fossilized remains of vertebrates, invertebrates, and plants, as well as fossil tracks) in the project area.

Regulatory Setting

Federal

Section 402 of the Clean Water Act/National Pollutant Discharge Elimination System

The federal CWA is discussed in detail in Chapter 9, “Hydrology and Water Quality.” Because CWA Section 402 is directly relevant to excavation and grading, additional information is provided here.

Amendments in 1987 to the federal CWA added Section 402p, which establishes a framework for regulating municipal and industrial stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) program. As described in Chapter 9 of this EIR, the EPA has delegated to the State Water Resources Control Board (SWRCB) the authority for the NPDES program in California, which is implemented by the state’s nine RWQCBs. Under the NPDES Phase II Rule, any construction activity disturbing 1 acre or more must obtain coverage under the state’s General Permit for Stormwater Discharges Associated with Construction Activity (General Permit). General Permit applicants are required to prepare a notice of intent and a SWPPP, and implement and maintain BMPs to avoid adverse effects on receiving water quality as a result of construction activities, including earthwork.

Antiquities Act

The federal Antiquities Act of 1906 was enacted with the primary goal of protecting cultural resources in the United States. As such, it explicitly prohibits appropriation, excavation, injury, and destruction of “any historic or prehistoric ruin or monument, or any object of antiquity” located on lands owned or controlled by the federal government, without permission of the secretary of the federal department with jurisdiction. It also establishes criminal penalties, including fines or imprisonment, for these acts. Neither the Antiquities Act itself nor its implementing regulations (43 CFR 3) specifically mentions paleontological resources. However, several federal agencies—including the National Park Service, U.S. Bureau of Land Management, and U.S. Forest Service—have interpreted objects of antiquity as including fossils. Consequently, the Antiquities Act represents an early cornerstone for efforts to protect the nation’s paleontological resources.

State

Alquist-Priolo Earthquake Fault Zoning Act

California’s Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (PRC 2621 et seq.), originally enacted in 1972 as the Alquist-Priolo Special

Studies Zones Act and renamed in 1994, is intended to reduce the risk to life and property from surface fault rupture during earthquakes. The Alquist-Priolo Act prohibits the location of most types of structures intended for human occupancy across the traces of active faults and strictly regulates construction in the corridors along active faults (Earthquake Fault Zones). It also defines criteria for identifying active faults, giving legal weight to terms such as *active*, and establishes a process for reviewing building proposals in and adjacent to Earthquake Fault Zones.

Under the Alquist-Priolo Act, faults are zoned, and construction along or across them is strictly regulated if they are “sufficiently active” and “well defined.” A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for purposes of the act as referring to approximately the last 11,000 years). A fault is considered well defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment (Hart and Bryant 1997).

Seismic Hazards Mapping Act

Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) is intended to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong groundshaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act: the state is charged with identifying and mapping areas at risk of strong groundshaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped Seismic Hazard Zones.

Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for sites within Seismic Hazard Zones until appropriate site-specific geologic and/or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans.

California Building Code

The California Building Code (CBC) is included in 24 CCR. The CBC was based on the Uniform Building Code (UBC), a widely adopted model building code in the United States. The CBC incorporates most of the UBC’s requirements, but provides more stringent standards for seismic design.

Portions of the CBC that are particularly relevant to geology and geologic hazards include Chapter 16, Division IV (Structural Design Requirements—Earthquake Design), and Appendix Chapter 16 (Structural Forces [including

seismic loading]); Chapter 18 (Foundations and Retaining Walls); Appendix Chapter 18 (Waterproofing and Dampproofing Foundations); and Chapter 33 (Site Work, Demolition, and Grading), together with Appendix Chapter 33 (Excavation and Grading). The requirements of Appendix Chapter 33 apply only if they are explicitly adopted by a jurisdiction, even if the remainder of the CBC is used. The City has adopted Appendix Chapter 33 and incorporated its requirements by reference into its Municipal Code.

California Public Resources Code

Several sections of the PRC protect paleontological resources. Section 5097.5 prohibits “knowing and willful” excavation, removal, destruction, injury, and defacement of any paleontologic feature on public lands (lands under state, county, city, district, or public authority jurisdiction, or the jurisdiction of a public corporation), except where the agency with jurisdiction has granted express permission. Section 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands. The sections of the California Administrative Code relating to the State Division of Beaches and Parks afford protection to geologic features and “paleontological materials” but grant the director of the state park system authority to issue permits for specific activities that may result in damage to such resources, if the activities are in the interest of the state park system and for state park purposes (California Administrative Code 4307–4309).

Local

Seismic Safety Element—City of Manteca General Plan 2023

The Seismic Safety Element of the City General Plan stresses the importance of preventing the loss of lives, injury, or property damage due to geologic hazards, including seismic activity. In order to achieve this goal, the City identifies the building plan review process as the mechanism to enforce the following requirements:

- compliance with current CBC requirements regarding building structural material and reinforcement;
- preparation of geological reports and/or geological engineering reports for proposed new developments located in areas of potentially significant geological hazards;
- development of appropriate mitigation for geologic hazards, such as seismically induced liquefaction and settlement;
- seismic-resistant design for public facilities, such as buildings, water tanks, and reservoirs; and

- compliance with current California state seismic building standards in design and siting of critical facilities such as police and fire stations, school facilities, hospitals, hazardous materials manufacturing and storage facilities, and large public assembly halls.

The City General Plan also identifies the need to maintain an inventory of potentially hazardous buildings within the City and develop a program to mitigate the hazards they pose, through occupancy restrictions, retrofitting, or demolition. A separate policy recommends that the City maintain an inventory of its pre-1940 unreinforced masonry buildings and restrict changes in their occupancy and use pending results of engineering investigations.

Existing Conditions

This section discusses existing conditions related to geology, soils, and paleontology in the study area.

San Joaquin Valley Geologic Framework

The San Joaquin Valley is a deep, structurally controlled trough flanked by the Coast Ranges uplift on the west and by the Sierra Nevada on the east (Norris and Webb 1990).

The San Joaquin Valley is floored by a thick sequence of sedimentary deposits that range in age from Jurassic through Quaternary. Under the eastern and central portions of the valley, the base of the sequence likely rests on Mesozoic crystalline rock allied to the plutons of the Sierra Nevada; to the west, basement rocks are believed to be Franciscan metasediments and/or *mélange*. Mesozoic sedimentary rocks now in the subsurface record marine deposition. They are overlain by Tertiary strata reflecting marine, estuarine, and terrestrial conditions, which are in turn overlain by Quaternary fluvial and alluvial strata recording uplift and erosion of the Sierra Nevada and Coast Ranges to approximately their present shape (e.g., Norris and Webb 1990).

To the west, the Coast Ranges geomorphic province is characterized by an echelon northwest-trending mountain ranges formed over the past 10 million years or less by active uplift related to complex tectonics of the San Andreas fault/plate boundary system (Norris and Webb 1990, Busing and Walker 1995, Atwater and Stock 1998). The eastern range front is defined by faults that have been interpreted as contractile features associated with shortening along an axis approximately normal to the range front (Wong et al. 1988, Sowers et al. 1992, Unruh et al. 1992; see also Jennings 1977 for regional mapping), but may also locally accommodate a right-lateral component of motion (Richesin 1996).

East of the San Andreas fault, the Coast Ranges are broadly antiformal. The core of the uplift consists primarily of metasedimentary rocks and *mélange* of the Mesozoic Franciscan Complex (Jennings 1977). Outcrops of mafic and

ultramafic units belonging to the Jurassic Coast Range Ophiolite are also locally present, and are particularly well developed along the Ortigalita fault in the vicinity of Del Puerto Canyon (Wagner et al. 1990, Evarts et al. 1999). Mesozoic ultramafic rocks are also well exposed in the vicinity of San Benito Mountain. The eastern Coast Range range front is flanked by a generally eastward-younging sequence of Cretaceous through Quaternary clastic sedimentary strata. The lower portion of this sequence, where it is present, typically records deep marine deposition, while the upper portion reflects progressive growth and erosional dissection of the Coast Range uplift (Unruh et al. 1992, Richesin 1996). Quaternary alluvial strata accumulated on essentially modern topography buttress against the range front, and are locally folded and/or faulted, particularly along the southern portion of the range front. Active alluvium and older Quaternary terrace deposits are present in the larger active stream valleys throughout the eastern portion of the Coast Ranges (Jennings 1977, Wagner et al. 1990, Richesin 1996).

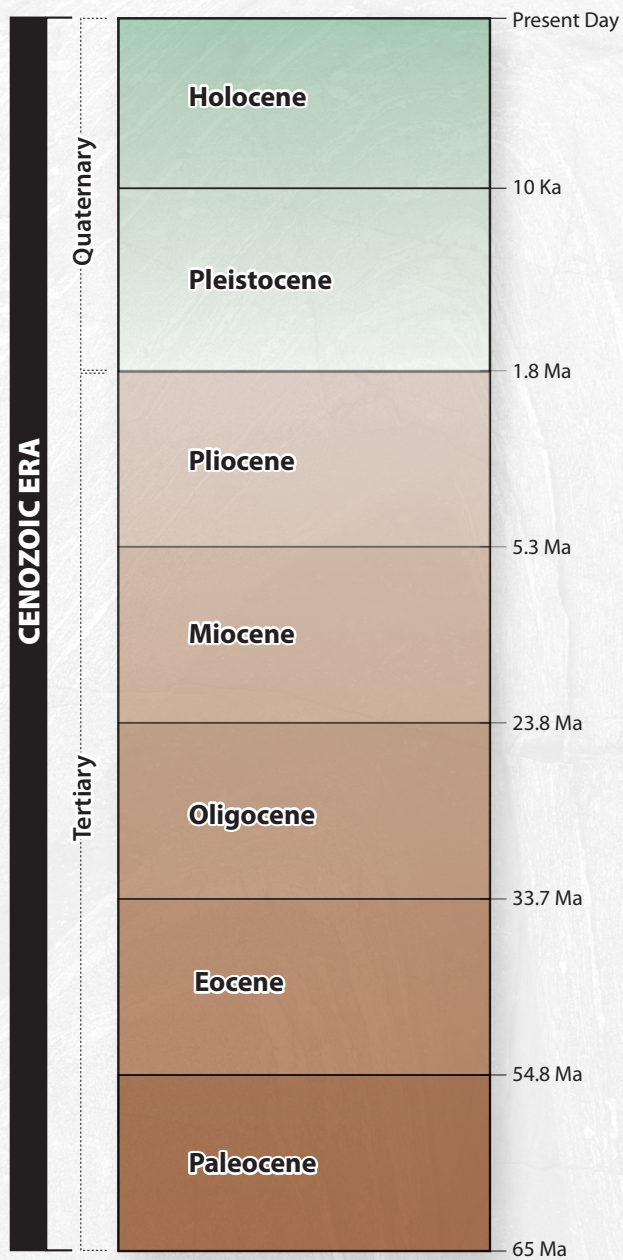
To the east of the San Joaquin Valley, the Sierra Nevada preserves the dissected remnants of a Mesozoic volcanic arc system similar to the modern Andes. The core of the range consists of plutonic rocks representing the roots of the arc. It is bordered on the eastern margin of the action area by generally westward-younging metavolcanic and metasedimentary rocks ranging in age from Paleozoic to Mesozoic. These strata are in turn overlain by Miocene through Quaternary fluvial and alluvial sediments that pass laterally into valley floor strata, and reflect erosional dissection of the progressively uplifting Sierran massif (Jennings 1977, Bartow 1991).

Manteca Area Geology and Paleontology

The City and surrounding area are immediately underlain by sedimentary units of Quaternary age, including the Modesto Formation of probable Late Pleistocene (Rancholabrean) age, and overlying deposits of Holocene age (Bartow 1985, Wagner et al. 1990, Marchand and Allwardt 1981) (see Figure 7-1 for a geologic time scale illustration).

The Modesto Formation consists of poorly indurated and sorted brown sandstone and siltstone with interbeds of pebble to cobble conglomerate, and has been interpreted as recording alluvial/fluvial deposition (Marchand and Allwardt 1981). It has yielded vertebrate fossils at a number of localities outside the immediate project vicinity, including remains of the extinct giant ground sloth (*Megalonyx jeffersonii*), Columbian mammoth (*Mammuthus columbi*), and giant Ice Age bison (*Bison latifrons*), as well as a variety of rodents and at least one species of snake (University of California, Berkeley, Museum of Paleontology 2007). Because of its potential to contain vertebrate fossils, the Modesto Formation is considered highly sensitive for paleontological resources.

The Modesto Formation is overlain by sandy deposits interpreted as recording sand dune deposition. Because Holocene units are too young to contain fossil materials, which are by definition older than 10,000 years, their paleontological sensitivity is considered low except in unusual circumstances. No fossil finds



Ka = 1,000 Years Ago
Ma = 1,000,000 Years Ago

Source for dates: University of California Museum of Paleontology 2007

have been reported from Holocene units in San Joaquin County (University of California, Berkeley, Museum of Paleontology 2007). Thus, the paleontological sensitivity of the dune sands is considered low.

Soils

The proposed project site is located on soils assigned to the Bisgani loamy coarse sand, partially drained, 0–2% slopes; Veritas fine sandy loam, 0–2% slopes; Delhi loamy sand, 0–2% slopes; and Galt clay, 0–2% slopes (McElhiney 1992).

The Bisgani loamy coarse sand, partially drained, 0–2% slopes formed on nearly level low-elevation alluvial fan surfaces. The parent material was alluvium derived from granitic source rocks. The surface layer typically consists of approximately 11 inches of gray loamy coarse sand, overlying approximately 49 inches of mottled light gray and light brownish gray loamy coarse sand. Locally, the surface layer consists of loamy sand. The mottled texture suggests that the Bisgani loamy coarse sand was poorly drained under natural conditions, but levee and reclamation projects have improved drainage. Permeability in this soil is rapid, runoff is very slow, and water erosion hazard is slight, though wind erosion hazard is high. Shrink-swell potential is low (McElhiney 1992).

The Veritas fine sandy loam, 0–2% slopes is a deep soil formed on nearly level low-elevation alluvial fan terraces. The parent material was alluvium derived from a variety of types of source rocks. The surface layer typically consists of approximately 15 inches of grayish brown fine sandy loam. This overlies a subsoil consisting of approximately 25 inches of pale brown and light brownish gray fine sandy loam. Below the subsoil is a hardpan deposit 20–30 inches thick. The Veritas fine sandy loam is well drained. Permeability is moderately rapid, with a local perched water table developing above the hardpan following heavy rainfall or irrigation. Runoff is slow and water erosion hazard is slight. Shrink-swell potential is low (McElhiney 1992).

The Delhi loamy sand, 0–2% slopes is also a very deep soil formed on nearly level and gently sloping surfaces of former sand dunes complexes, in aeolian sediment derived from granitic sources. The surface layer typically consists of grayish brown and light brownish gray loamy sand approximately 16 inches deep, overlying approximately 10 inches of grayish brown loamy sand, which in turn overlies approximately 34 inches of pale brown sand. The surface layer locally consists of loamy fine sand or fine sand. The Delhi loamy sand is somewhat excessively drained. Permeability is rapid, runoff is slow, and water erosion hazard is slight. Shrink-swell potential is low (McElhiney 1992).

The Galt clay, 0–2% slopes is a moderately deep soil formed on nearly level basin and basin rim surfaces. The surface layer typically consists of approximately 25 inches of grayish brown and dark grayish brown clay, overlying a subsoil consisting of approximately 9 inches of dark grayish brown clay. The subsoil in turn overlies a hardpan approximately 26 inches thick. The Galt clay, 0–2% slopes is moderately well drained. Permeability is slow, with a perched water table developing above the hardpan for brief periods following

heavy rainfall or irrigation. Runoff is slow and water erosion hazard is slight. Shrink-swell hazard is high (McElhiney 1992).

Geologic Hazards

Primary Seismic Hazards—Surface Fault Rupture and Groundshaking

The project site is not located within any Earthquake Fault Zone delineated by the State of California pursuant to the Alquist-Priolo Act (Hart and Bryant 1997), nor is it traversed by any faults recognized by the UBC as active (International Conference of Building Officials 1997). The project site is thus considered unlikely to undergo surface fault rupture.

However, a number of active faults are present in the Coast Ranges and San Francisco Bay Area to the west of the site, close enough that the site and surrounds are likely to experience substantial seismic groundshaking during the lifespan of the proposed project. Although not zoned by the State of California, the San Joaquin fault and allied structures that demarcate the east margin of the Coast Ranges may be active (Unruh et al. 1992, Sowers et al. 1992). Farther west, state-zoned structures known to pose a groundshaking hazard for the site include, from east to west, the Ortigalita, Greenville, Calaveras, Hayward, and San Andreas faults.

Recent studies estimate a 62% probability of at least one earthquake with a magnitude of 6.7 or greater occurring on one of the faults of the greater San Francisco Bay Area in the next 30 years, and a 10% probability of a magnitude 7.0 or greater event during the same time frame (U.S. Geological Survey Working Group on California Earthquake Probabilities 2003). Table 7-1 summarizes current information on earthquake recurrence intervals and maximum credible earthquake (MCE) for key structures west of the project site. The City, including the proposed project site, is located in the UBC's Seismic Zone 3.

Table 7-1. Maximum Credible Earthquake and Recurrence Interval for Principal Active Faults West of Proposed Project Site

Fault	Magnitude of Maximum Credible Earthquake	Approximate Recurrence Interval
Ortogonalita	6.5–6.75 ^b , 6.9 ^a	2,000–5,000 years ^b
Greenville	6.9 ^a	Southern segment: 623 years ^c Northern segment: 644 years ^c
Calaveras (southern)	6.2 ^a	75 years ^c
Hayward	Entire fault: 7.1 ^a Southern segment: 6.5 ^a –6.9 ^c	Entire fault: 330 years ^a Southern segment: 161 ^c –167 ^b years
San Andreas	7.0–7.9 ^a	210–400 ^a

^a Source: International Conference of Building Officials 1997.

^b Source: Anderson et al. 1982.

^c Source: U.S. Geological Survey Working Group on California Earthquake Probabilities 2003.

Secondary Seismic Hazards—Liquefaction and Ground Failure

Secondary seismic hazards refers to liquefaction and related types of ground failure, as well as seismically induced landsliding. *Liquefaction* occurs when the strength and stiffness of a soil are reduced by earthquake shaking or other rapidly applied loading, and is of greatest concern in areas where well-sorted sandy unconsolidated sediments are present in the subsurface and the water table is comparatively shallow. State seismic hazards maps have not been issued for the Manteca 7.5-minute quadrangle, where the City (including the proposed project site) is located. Based on the subsurface investigation performed for the project by Kleinfelder (2007a), materials in the shallow subsurface at the project site consist of silty sand, sandy silt, and clayey silt to depths of 5 to 7 feet, which are underlain by loose, fine- to coarse-grained, relatively “clean” sand to depths of 7 to 16.5 feet. Groundwater was generally encountered at depths of 6 to 9 feet below the ground surface. Due to the combination of shallow groundwater and loose, sandy soils at the site, the top 9 feet of sand may be susceptible to liquefaction. However, no substantial hazard related to liquefaction risk has been identified (Kleinfelder 2007a).

Landslide and Other Slope Stability Hazards

Manteca, including the proposed project site, is located on very gentle valley floor topography. Consequently, the existing potential for slope failure, including seismically induced landsliding, is considered minimal to low.

Impact Analysis

This section discusses the approach and methodology used to assess the impacts of the proposed project, beginning with the CEQA thresholds used to determine whether an impact would be significant and a discussion of how the thresholds were applied within the specific resource areas. This section also includes discussions of individual impacts relative to the thresholds; mitigation measures to minimize, avoid, rectify, reduce, eliminate, or compensate for significant impacts; and the overall significance of the impact with mitigation incorporated.

Based on the State CEQA Guidelines, the proposed project would result in a significant impact if it would:

- expose people or structures to increased risk from rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist for the area or based on other substantial evidence of a known fault;
- expose people or structures to increased risk related to strong seismic ground shaking;
- expose people or structures to increased risk related to seismically induced ground failure, including liquefaction;
- expose people or structures to increased risk of landslides or other slope failure;
- result in substantial soil erosion or the loss of topsoil;
- be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse;
- be located on expansive soil, as defined in Table 18-1-B of the UBC (International Conference of Building Officials 1997), creating substantial risks to life or property;
- have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater; or
- substantially damage or destroy significant paleontological resources, as defined by the Society of Vertebrate Paleontology (SVP) (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995). (The SVP definition of *significant paleontological resources* is discussed in detail under “Approach and Methodology” below.)

Approach and Methodology

Geology, Seismicity, and Soils

Potential impacts related to geology, seismicity, and soils were analyzed qualitatively, based on a review of available existing data for the project area. Analysis focused on the proposed project's potential to increase the risk of personal injury, loss of life, and damage to property, including project facilities, as a result of existing or reasonably foreseeable geologic, seismic, and soil conditions and processes in the project area.

Paleontological Resources

Analysis of impacts on paleontological resources followed the methodology recommended by the SVP (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995). These guidelines were developed in response to a recognized need for standardized methods to assess and mitigate impacts on paleontological resources, and are now widely accepted as an industry standard.

Because many fossil materials are buried in subsurface geologic units rather than exposed at the ground surface, it is often uncertain until project earthwork has made substantial progress whether any such resources will actually be encountered. Thus, impact analysis for paleontological resources operates based on probabilities of impact, with the goal of developing flexible strategies to support adaptive management based on information that may literally “come to light” during project construction. Consistent with these uncertainties, the SVP guidelines delineate a two-phase process, as follows.

- Assess the likelihood that the project's area of potential effect contains significant nonrenewable paleontological resources that could be directly or indirectly impacted, damaged, or destroyed as a result of the project. This is referred to as an area's paleontological sensitivity or sensitivity for paleontological resources. Note that the paleontological sensitivity of an area depends on the sensitivity of the individual geologic units present.
- Based on the identified degree of sensitivity, formulate and implement measures to mitigate potential adverse impacts.

Table 7-2 defines the SVP's sensitivity categories for paleontological resources and summarizes its recommended treatments to avoid adverse impacts in each sensitivity category.

Table 7-2. Society of Vertebrate Paleontology's Recommended Treatment for Paleontological Resources, by Sensitivity Category

Sensitivity Category	Definition	Recommended Treatment
High sensitivity	Geologic units from which vertebrate or significant invertebrate fossils or suites of plant fossils have been recovered	▪ Preliminary survey and surface salvage before construction begins ▪ Monitoring and salvage during construction ▪ Specimen preparation; identification, cataloging, curation, and storage of materials recovered ▪ Preparation of final report describing finds and discussing their significance ▪ <i>All work should be supervised by a professional paleontologist who maintains the necessary collecting permits and repository agreements.</i>
Undetermined sensitivity	Areas underlain by geologic units for which little information is available	▪ Preliminary field surveys by a qualified vertebrate paleontologist to assess project area's sensitivity ▪ Design and implementation of mitigation if needed, based on results of field survey
Low sensitivity	Areas underlain by geologic units that are not known to have produced a substantial body of significant paleontologic material	Protection and salvage are generally not required. However, a qualified paleontologist should be contacted if fossils are discovered during construction, in order to salvage finds and assess the need for further mitigation.

Source: Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995.

As used in Table 7-2 and the significance criteria adopted for this analysis, the term *significant* refers to paleontological resources that fulfill one or more of the following criteria (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995):

- provides important information shedding light on evolutionary trends or helping to relate living organisms to extinct organisms;
- provides important information regarding the development of biological communities;
- demonstrates unusual circumstances in the history of life;
- represents a rare taxon or a rare or unique occurrence;
- is in short supply and in danger of being destroyed or depleted;
- has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
- provides important information used to correlate strata for which it may be difficult to obtain other types of age dates.

Consistent with these criteria, paleontological resources considered significant in California typically include vertebrate remains but may also include invertebrate fossils and plant fossils in some areas.

Impacts and Mitigation Measures

Impact GEO-1: Rupture of a Known Earthquake Fault, as Delineated on the Most Recent Alquist-Priolo Earthquake Fault Zoning Map Issued by the State Geologist for the Area or Based on Other Substantial Evidence of a Known Fault (Less than Significant)

As discussed above in “Existing Conditions,” the project site is not located within any Earthquake Fault Zone delineated by the State of California pursuant to the Alquist-Priolo Act, nor is it traversed by any faults recognized as active by the UBC (Hart and Bryant 1997, International Conference of Building Officials 1997). Accordingly, the risk of surface fault rupture at the project site is considered low, and the potential for impacts related to surface fault rupture is evaluated as less than significant. No mitigation is required.

Impact GEO-2: Potential for Increased Exposure of People or Structures to Hazards Related to Strong Seismic Groundshaking (Less than Significant)

During the lifespan of the proposed project, the project site is likely to experience strong seismic groundshaking as a result of earthquakes on any of several active faults located at varying distances to the west of the site, including the Ortigalita, Greenville, Calaveras, Hayward, and San Andreas faults. The principal concern related to seismic groundshaking is the potential for structural damage and related hazards to life and safety, which represent a potentially significant impact. However, all new structures would be designed and constructed to meet or exceed relevant requirements of the current CBC, as required by the General Plan 2023 and Municipal Code. Adherence to CBC requirements would not entirely eliminate risks related to groundshaking damage, but would mitigate such risks consistent with the prevailing standard of care. Consequently, this impact is considered less than significant, and no mitigation is required.

Impact GEO-3: Potential for Increased Exposure of People or Structures to Hazards Related to Liquefaction and Ground Failure (Less than Significant)

The project site could be subject to strong seismic groundshaking as a result of earthquakes on a number of active faults located at varying distances to the west of the site, including the Ortigalita, Greenville, Calaveras, Hayward, and San Andreas faults. As discussed above, there is some potential for liquefaction at the site, but no substantial hazard has been identified (Kleinfelder 2007a). Therefore, impacts related to liquefaction, if any, are expected to be less than significant. No mitigation is required.

Impact GEO-4: Potential for Increased Exposure of Persons or Structures to Landslide Hazards (Less than Significant)

Topography at and surrounding the project site is very gentle, and the existing risk of landslide at the site is considered minimal. Creation of cut slopes and fill embankments during project construction could lead to a risk of localized slope failure if the slopes are improperly designed or implemented. However, design and construction of the proposed project would conform with Appendix Chapter 33 requirements of the CBC, along with any specific recommendations of the site-specific geotechnical investigation (Kleinfelder 2007a). Conformance to the Appendix Chapter 33 standards and good grading and excavation practices would minimize the potential for failure of cut slopes and fill embankments, and impacts are expected to be less than significant. No mitigation is required.

Impact GEO-5: Contribution to Substantial Soil Erosion or Loss of Topsoil (Less than Significant with Mitigation)

At approximately 155 acres, the Machado site is large enough that the project proponent will be required to prepare and implement a SWPPP that provides BMPs to control soil erosion during project construction. Compliance with CBC standards regarding finished site contouring and drainage is expected to effectively manage post-construction (operational) runoff to avoid excessive erosion once the proposed development is in use. Consequently, impacts related to increased soil erosion are expected to be less than significant.

There are two principal concerns related to loss of topsoil: (1) topsoil is a key component of a healthy, functional ecosystem, and (2) topsoil is an essential resource to support agriculture. In the case of the Machado site, which is currently under cultivation and has been cultivated for some time, the most apparent loss would be topsoil as an agricultural resource. However, maintaining a site's soil profile intact retains the maximum flexibility of options in terms of future land uses; removing topsoil substantially hinders any future use as natural open space, so the loss of topsoil as an ecosystem resource is also important for this site. The proposed project would result in the conversion of some 155 undeveloped acres to developed uses. Much or all of the project site's existing topsoil resource would be removed during project earthwork, though some of it may be redistributed onsite. Removal of topsoil from an area this large would represent a substantial loss of topsoil resources and is a significant impact. Implementation of the following mitigation measure, in combination with Mitigation Measures HYD-1a, HYD-1b, and HYD-1c, would reduce this impact to the extent feasible, and any residual impact is considered less than significant.

Mitigation Measure GEO-5a: Stockpile Excavated Topsoil for Onsite Reuse

The project proponent will require the contractor(s) retained for project construction and landscaping to stockpile excavated topsoil so it can be reused for revegetation and landscaping on the project site. Topsoil will be stockpiled separately from other excavated materials.

Impact GEO-6: Location on a Geologic Unit or Soil that is Unstable or that Would Become Unstable as a Result of Construction (Less than Significant)

Potential soil instability issues at the site include the presence of compressible soils and the potential for seismic settlement in loose, sandy soils. Based on the subsurface investigation performed for the project by Kleinfelder (2007a), near surface sands ranging from about 4 to 12.5 feet below ground surface were identified as being loose, relatively weak, and moderately compressible. However, implementation of the recommendations of the site-specific geotechnical investigation (Kleinfelder 2007a) would reduce impacts related to compressible soils to a less-than-significant level. No mitigation is required.

Seismic settlement was not identified as a significant hazard by the geotechnical investigation performed for the project. Consequently, impacts related to seismic settlement are expected to be less than significant. No mitigation is required.

Impact GEO-7: Location on Expansive Soils (Less than Significant)

Although Galt clay has been regionally identified as having a high-shrink swell potential (McElhiney 1992), none of the site soils has been identified as expansive (Kleinfelder 2007a). Impacts related to expansive soils are therefore expected to be less than significant, and no mitigation is required.

Impact GEO-8: Damage to Paleontological Resources (Less than Significant with Mitigation)

This site is underlain by the Modesto Formation, which is known to contain vertebrate fossils, including remains of mammoth, bison, rodents, and reptiles. Thus, the formation is considered highly sensitive for paleontological resources.

Earthwork required to construct the proposed Machado Estates project would involve the Modesto Formation, with the potential to damage and/or disturb vertebrate and other fossil resources. Depending on the degree of loss, disturbance, or damage affecting vertebrate fossils could represent a significant impact. Implementation of Mitigation Measures GEO-8a through 8d would reduce impacts on paleontological resources to a less-than-significant level and would be consistent with the current standard of care for paleontological resources. Any residual impact would be considered less than significant.

Mitigation Measure GEO-8a: Conduct Preconstruction Survey, Salvage, and Protection

Before site preparation (including vegetation clearing) and project earthwork begin, the project proponent will retain a qualified professional paleontologist as defined by the SVP Conformable Impact Mitigation Guidelines Committee (1995) to conduct a pedestrian surface survey and, if necessary, a paleontological salvage operation. The goal of the salvage operation, if needed, will be to ensure that any paleontological materials exposed at the surface are recovered and properly prepared and curated, or protected from damage using exclusion fencing or other appropriate means. The completed survey will be submitted to the City. Protection will be designed and installed in consultation with the City and the project engineering consultant to

ensure that it is appropriate and effective but does not unduly impede construction activities.

Mitigation Measure GEO-8b: Retain a Qualified Professional Paleontologist to Monitor during Ground-Disturbing Activities

The project proponent will retain a qualified professional paleontologist as defined by the SVP Conformable Impact Mitigation Guidelines Committee (1995) to monitor during any activities with the potential to disturb the Modesto Formation or any other substrate units of Pleistocene age.

Mitigation Measure GEO-8c: Provide Worker Sensitivity Training for Paleontological Resources

The project proponent will ensure that all construction personnel receive training provided by a qualified professional paleontologist, experienced in teaching nonspecialists, to ensure that they can recognize fossil materials in the event any are discovered during construction.

Mitigation Measure GEO-8d: Stop Work and Implement Evaluation and Treatment Measures if Macrofossil Remains are Encountered during Construction

If paleontological materials are discovered during any site preparation, excavation, or project-related activities, work will stop in the area of the find, and the contractor will notify the City's project manager and the qualified paleontologist retained to perform project monitoring. The paleontologist will assess the nature and importance of the find and recommend appropriate treatment, consistent with the SVP's 1995 guidelines and all other applicable standards of care. If the paleontologist identifies a need, a state-licensed professional geologist (California PG) will also be retained to assist with evaluating the potential for project work to further disturb the geologic units in which the find was made. Work will not resume in the area of the find until the find has been assessed by the paleontologist and any treatment identified as necessary has been implemented. However, with the paleontologist's approval, work may resume on other portions of the site during evaluation and treatment of the find. Depending on the nature of the find, site-specific geologic conditions, and the project activities planned for the site, treatment may include paleontological monitoring, preparation, and recovery of fossil materials so that they can be housed in an appropriate museum or university collection, preparation of a report for publication describing the finds, or other approaches developed for the site. The project proponent will be responsible for ensuring that the paleontologist's recommendations regarding treatment and reporting are implemented.

Additional Annexation Area

The annexation of properties north of the Machado Estates project area will not increase seismic or geological hazards or contribute to the exposure of persons to landslide hazards or unstable soils. Annexation will not contribute the accidental discovery or damage of paleontologic resources. There are no impacts associated with the annexation portion of the project, and no mitigation is required.

Chapter 8

Hazards and Hazardous Materials

Introduction

This chapter describes the impacts from hazards and hazardous materials that would result from the project. The key sources of data and information used in the preparation of this chapter are listed and briefly described below.

- Phase I Environmental Site Assessment (Phase I ESA) (Kleinfelder 2007b)
- City General Plan (City of Manteca 2003a)
- City General Plan EIR (Wade Associates 2003)

Environmental Setting

This section discusses federal, state, and local regulations related to hazards and hazardous materials that would apply to the proposed project. It then describes existing conditions related to agricultural resources in the project area.

Concepts and Terminology

Hazard: 1) Potential for radiation, a chemical, or other pollutant to cause human illness or injury. 2) In the pesticide program, the inherent toxicity of a compound. Hazard identification of a given substance is an informed judgment based on verifiable toxicity data from animal models or human studies. (U.S. Environmental Protection Agency 2006a.)

Hazardous Substance: 1) Any material that poses a threat to human health and/or the environment. Typical hazardous substances are toxic, corrosive, ignitable, explosive, or chemically reactive. 2) Any substance designated by EPA to be reported if a designated quantity of the substance is spilled in the waters of the United States or is otherwise released into the environment (U.S. Environmental Protection Agency 2006a). In the workplace, hazardous and toxic substances are generally in the form of chemicals that are capable of causing harm. In this definition, chemicals include dusts, mixtures, and common materials such as paints, fuels, and solvents (U.S. Department of Labor 2006).

Hazardous Waste: Waste substances that can pose a substantial or potential hazard to human health or the environment when improperly managed. Waste is hazardous if it possesses at least one of these four characteristics—ignitability, corrosivity, reactivity, or toxicity—or appears on special EPA lists (U.S. Environmental Protection Agency 2006b).

Household Hazardous Waste: Common, everyday products (e.g., paint, paint thinner, herbicides, and pesticides) that people use in and around their homes, which, due to their chemical nature, can be hazardous if not properly disposed. Other household items that are considered less hazardous to handle, but which contain hazardous materials, are batteries, lamps, televisions, and computer monitors. Such items are classified by the EPA and the California Department of Toxic Substances Control (DTSC) as Universal Waste (Wade Associates 2003).

Household Waste (Domestic Waste): Solid waste, composed of garbage and rubbish, that normally originates in a private home or apartment house. Domestic waste may contain a significant amount of toxic or hazardous waste (U.S. Environmental Protection Agency 2006a).

Non-household Hazardous Waste: Hazardous waste can also be generated by small businesses, industry, and government facilities. Small businesses and government facilities may be classified as small quantity generators (SQGs) or conditionally exempt small quantity generators (CESQGs). Industries are typically classified as either SQGs or large quantity generators (LQGs) (Wade Associates 2003).

Pesticide: Substances, or a mixture thereof, intended for preventing, destroying, repelling, or mitigating any pest. The term also refers to any substance or mixture intended for use as a plant regulator, defoliant, or desiccant (U.S. Environmental Protection Agency 2006a). Pesticides are also a general term for insecticides, herbicides, and fungicides. Insecticides kill or prevent the growth of insects. Herbicides control or destroy plants. Fungicides control or destroy fungi. Some pesticides can accumulate in the food chain and contaminate the environment (California Department of Toxic Substances Control 2003).

Pollutant: Generally, any substance introduced into the environment that adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems (U.S. Environmental Protection Agency 2006a).

Toxicity: Ability to harm human health (injury, death, or cancer) or the environment. One of the criteria used to determine whether a waste is a hazardous waste (the “toxicity characteristic”) (California Department of Toxic Substances Control 2003). Acute toxicity involves harmful effects in an organism through a single or short-term exposure. Chronic toxicity is the ability of a substance or mixture of substances to cause harmful effects over an extended period, usually upon repeated or continuous exposure, sometimes lasting for the entire life of the exposed organism. Subchronic toxicity is the ability of the substance to cause effects for more than 1 year but less than the lifetime of the exposed organism (U.S. Environmental Protection Agency 2006a).

Toxic Substance: A chemical or mixture that may present an unreasonable risk of harm to health or the environment (U.S. Environmental Protection Agency 2006a).

Toxic Wastes: Substances that are harmful or fatal when ingested or absorbed (e.g., mercury, lead). When toxic wastes are land disposed, contaminated liquid may leach from the waste and pollute groundwater (U.S. Environmental Protection Agency 2006a).

Regulatory Setting

Federal

The EPA is the principal federal regulatory agency responsible for the safe use and handling of hazardous materials.

1976 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) enables the EPA to administer a regulatory program that extends from the manufacture of hazardous materials to their disposal, thereby regulating the generation, transport, treatment, storage, and disposal of hazardous waste at all facilities and sites in the nation. The 1986 amendments to the RCRA enabled the EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. The RCRA focuses only on active and future facilities and does not address abandoned or historical sites.

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

In 1980, Congress conditionally exempted oil and gas exploration and production (E&P) wastes from the hazardous waste management requirements of Subtitle C of RCRA (Section 3001[b][2] [A] of RCRA and Section 8002[m] of RCRA). In 1988, the EPA published its Regulatory Determination for Oil and Gas and Geothermal Exploration, Development, and Production Wastes in the Federal Register (FR) at 53 FR 25447 (July 6, 1988), along with lists of wastes determined to be either exempt or non-exempt. Examples of exempt wastes included drilling fluids and drill cuttings.

1980 Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) and 1986 Superfund Amendment and Reauthorization Act Title III

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), or Superfund, was passed to facilitate the cleanup of the nation's toxic waste sites. In 1986, Superfund was amended by the Superfund Amendment and Reauthorization Act Title III (community right-to-know laws), also called the Emergency Planning and Community Right-to-Know Act, which states that past and present owners of land contaminated with hazardous substances can be held liable for the entire cost of cleanup even if the material was dumped illegally when the property was under different ownership. These regulations also establish reporting requirements that provide the public with information on hazardous chemicals in their communities to enhance community awareness of chemical hazards and facilitate development of state and local emergency response plans.

National Primary Drinking Water Regulations

National Primary Drinking Water Regulations (NPDWRs) are legally enforceable standards that apply to public water systems (large-scale municipal water systems that rely on surface water sources such as rivers, lakes, and reservoirs). NPDWRs protect public health by limiting the levels of contaminants in drinking water.

State

California regulations are generally equal to or more stringent than federal regulations. The EPA has granted the DTSC primary oversight responsibility to administer and enforce hazardous waste management programs. State regulations require planning and management to ensure that hazardous wastes are handled, stored, and disposed of properly to reduce risks to human health and the environment. Several key state laws pertaining to hazardous wastes and other wastes are discussed below.

Title 27 California Code of Regulations Section 20210

Solid waste classifications at 27 CCR 20210 are used to determine applicability of waste management requirements. Designated waste, as defined in California Water Code (CWC) 13173, shall be discharged only at Class I waste management units (for information regarding Class I units, see Chapter 15, Division 3, Title 23 of this code) and at Class II waste management units that comply with the applicable SWRCB-promulgated provisions of this subdivision and have been approved by the Central Valley RWQCB for containment of the particular kind of waste to be discharged. Decomposable wastes in this category

can be discharged to Class I and II land treatment units (CWC 1058, 13172, 43103).

California Water Code Section 13173 (Designated Waste)

Designated waste is either of the following:

- a. Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to Section 25143 of the Health and Safety Code.
- b. Nonhazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state as contained in the appropriate state water quality control plan.

1985 Hazardous Materials Release Response Plans and Inventory Act

The Hazardous Materials Release Response Plans and Inventory Act requires businesses using hazardous materials to prepare a Hazardous Materials Business Plan that describes their facilities, inventories, emergency response plans, and training programs. Hazardous materials are defined as raw or unused materials that are part of a process or manufacturing step. They are not considered hazardous waste. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous waste.

1972 Hazardous Waste Control Act

The Hazardous Waste Control Act created the state hazardous waste management program, which is similar to, but more stringent than, the federal RCRA program. The act is implemented by regulations contained in 26 CCR, which describes the following required aspects for the proper management of hazardous waste: identification and classification; generation and transport; design and permitting of recycling, treatment, storage, and disposal facilities; treatment standards; operation of facilities and staff training; and closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of them. Under this Act and 26 CCR, a generator of hazardous waste must complete a manifest that accompanies the waste from the generator to the transporter to the ultimate disposal location. Copies of the manifest must be filed with the DTSC.

California has adopted a much narrower Exploration and Production Waste (drilling fluids and drill cuttings) exemption than at the federal level. The exemption applies in California if the waste displays the toxicity characteristic for hazardous waste based solely on the Toxicity Characteristic Leaching Procedure. Under Title 22, Division 4.5, Chapter 11, Article 5, Section 66261.120 (8) drilling mud resulting from the drilling of gas and oil wells may be classified as special waste. The intent of potentially classifying drilling mud as a special waste is to ensure proper classification, transportation, and disposal, and protection of construction workers and the public.

1970 Emergency Services Act

Under the Emergency Services Act, the state developed an emergency response plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an important part of the plan, which is administered by the California Office of Emergency Services. The office coordinates the responses of other agencies, including the EPA, California Highway Patrol, RWQCBs, air quality management districts, and County disaster response offices.

California Occupational Safety and Health Administration Standards

Worker exposure to contaminated soils, vapors that could be inhaled, or groundwater containing hazardous constituents would be subject to monitoring and personal safety equipment requirements established in Title 8 of the California Occupational Safety and Health Administration (Cal-OSHA) regulations (CCR 1532.1). The primary intent of the Title 8 requirements is to protect workers, but compliance with some of these regulations would also reduce potential hazards to nonconstruction workers and program area occupants because required controls related to site monitoring, reporting, and other activities would be in place.

Local

City of Manteca General Plan 2023

The City General Plan Safety Element (S) contains the following policies (P) and implementation measures (I) related to hazards and hazardous materials.

S-P-15: The City shall maintain an awareness of hazardous materials throughout the Manteca region.

S-P-16: City approvals of all new development shall consider the potential for the production, use, storage, and transport of hazardous materials and provide for reasonable controls on such hazardous materials.

S-P-17: Within its authority, the City shall regulate the production, use, storage, and transport of hazardous materials to protect the health of Manteca residents.

S-I-11: Work with San Joaquin County and other public agencies to inform consumers about household use and disposal of hazardous materials.

S-I-12: Cooperate fully with Union Pacific Railroad and other public agencies, such as the California Highway Patrol (CHP), in the event of a hazardous material emergency.

Existing Conditions

This section discusses the existing conditions related to hazards and hazardous materials in the study area.

Much of the following information is derived from the City General Plan EIR and the Phase I ESA. The objectives of this assessment included evaluating existing and potential environmental impacts of hazards and hazardous materials at or near the project site. The Phase I ESA included site visits, review of available records, and interviews.

City of Manteca and Surrounding Areas

Hazardous materials and wastes are currently stored, used, and transported within Manteca by businesses and industry (Wade Associates 2003). According to the City General Plan EIR, no sites within Manteca have been classified as a confirmed hazardous materials or waste site. Additionally, Manteca does not contain sites that are identified on the Cortese List (Wade Associates 2003).

The groundwater basin beneath the city contains both naturally occurring and introduced contaminants that can exceed federal and state drinking water standards. Naturally occurring contaminants include manganese and arsenic, while introduced contaminants include nitrate and dibromochloropropane (DBCP) (Wade Associates 2003).

Recent changes in the Federal Drinking Water Standard have lowered the maximum contaminant level for arsenic in drinking water from 50 micrograms per liter ($\mu\text{g/l}$) to 10 $\mu\text{g/l}$. Manteca's wells average about 12.4 $\mu\text{g/l}$ and will require treatment for reduction of arsenic. Sixteen of the existing 18 wells exceed the new arsenic standard and will need treatment to continue operation.

Onsite hydrology and drainage is described in detail in Chapter 9.

Onsite Hazards and Hazardous Materials

The project site is located directly south of the Manteca city limits but within the Primary Urban Service Boundary (PUSA). The 156.8-acre project site is currently used for agricultural production and is made up of a single parcel, APN 241-32-018. The parcel is located south of Woodward Avenue and west of South Airport Way in Manteca, San Joaquin County.

A site reconnaissance was conducted on April 16, 2007 and is documented in the Phase I ESA (Kleinfelder 2007b). Four structures, a domestic well, an agricultural well, and two pole-mounted transformers were noted on the parcel. The structures consist of two residences, a pump house and an animal pen, located in the northwestern portion of the parcel, just south of an area of undisturbed ground in the northeastern corner. An approximate one-cubic-yard debris pile was located on the northern border of the project area. The debris pile included concrete, approximately eight tires, and a 5-gallon bucket of oil. A soil pile (approximately 5 cubic yards) and an adjacent burn area were observed north of the residential area. Scattered household debris was noted in the vicinity of the residences. A pile of wood debris was located west of the residences. A domestic well is located east of the pump house. Two 55-gallon drums filled with an unknown substance were noted south and west of the residences. A ditch is located along the northern border of the property. The remainder of the sites is in agricultural use.

An irrigation structure is located along the northern boundary of the parcel. An irrigation ditch runs east-west from the eastern boundary of the parcel, approximately halfway down the north-south axis of the parcel. An agricultural well and two pole-mounted transformers are located near the western end of the ditch and approximately seven irrigation valves are located north of the well and transformers. No soil staining was observed in the vicinity of the transformers.

According to the Phase I ESA, site reconnaissance, historical information, and aerial photographs revealed the site property is now and has been a rural residence and/or agricultural land since at least 1957. Also, the Phase I ESA reported but did not observe that one closed and abandoned oil/gas well is located on the parcel approximately 1100 feet west and 1350 feet south of the intersection of Airport Way and Woodward Avenue (Kleinfelder 2007b, Appendix D). The well was drilled between October 1 and October 9, 1981, to a depth of 5,986 feet. It was plugged by October 12, 1981 and abandoned later that month.

The project site has been used for agricultural purposes since 1957. The area was likely treated with residual organochlorine pesticides (OCPs) such as dichlorodiphenyltrichloroethane (DDT). It is assumed that the surface soils may still contain these substances.

Given the relative age of the buildings on site, as well as the past existence of buildings on site, it is possible that lead-based paints or asbestos may have been used in their construction and that chemicals may have been applied for weed/insect control. Thus, these buildings could have residual concentrations of

lead or asbestos or pesticides/herbicides in the soil around their former perimeters.

Though not observed, it is assumed that a septic system has been in use on the property.

Solid waste, such as tires, concrete debris, and old household goods, was observed on the property. Other debris on the project site includes ash, burn piles or trash piles, old tires, woodpiles, soil, concrete piles, and used oil.

Offsite Hazards and Hazardous Materials

The surrounding land uses are residential, rural residential, and agricultural. No known hazardous materials sites are located on adjacent parcels.

Prevailing Winds

According to the SJVAPCD, during summer, wind speed and direction data indicate that summer wind usually originates at the north end of the San Joaquin Valley and flows in a south-southeasterly direction through the San Joaquin Valley, through Tehachapi Pass, into the Southeast Desert Air Basin.

During winter, wind speed and direction data indicate that wind occasionally originates from the south end of the San Joaquin Valley and flows in a north-northwesterly direction. Also during winter, the San Joaquin Valley experiences light, variable winds of less than 10 mph. Low wind speeds, combined with low inversion layers in the winter, create a climate conducive to high CO and PM10 concentrations (San Joaquin Valley Air Pollution Control District 2002).

Superimposed on this seasonal regime is the diurnal wind cycle. In the San Joaquin Valley, this cycle takes the form of a combination of sea breeze-land breeze and mountain-valley regimes. The sea breeze-land breeze regime has a sea breeze flowing into the San Joaquin Valley from the north during the day and a land breeze flowing out of the San Joaquin Valley at night. The mountain-valley regime has an upslope (mountain) flow during the day and a downslope (valley) flow at night. These phenomena add to the complexity of regional wind flow and pollutant transport within the SJVAB (San Joaquin Valley Air Pollution Control District 2002).

Sensitive Receptors

Sensitive receptors are individuals who have the potential to come into direct or indirect contact with a released substance. Sensitive receptors include nearby schools (less than 0.25 mile away) and residential populations likely to be affected by project activities or operation. There are no existing schools located within 0.25 mile of the project site. One elementary school is proposed in the

immediate vicinity, but no construction date has been determined as yet. One existing ranch house is located on the project site and would be removed as part of the project. A number of rural residences and one subdivision are located within 0.25 mile of the project site and would be considered sensitive receptors.

Airport

The nearest existing airport facility is Stockton Metropolitan Airport, which is located on the southern boundary of Stockton, approximately 11 miles from Manteca (San Joaquin County 2002). Due to the airport's distance from the project site, it is not considered a sensitive receptor, nor does it present hazards to the future residents of the project site.

Impact Analysis

Approach and Methodology

Thresholds of significance were determined based on Appendix G of the State CEQA Guidelines and by using professional judgment and standard practices. An impact was considered to be significant if it would:

- expose the public or the environment to a significant hazard through the routine transport, use, or disposal of hazardous materials;
- create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;
- be located on a site that is included on a list of hazardous materials sites compiled pursuant to California Government Code 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;
- expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands; or
- be located within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, or a private airstrip, and result in a safety hazard for people residing or working in the project area.

Impacts and Mitigation Measures

This section alternately describes each impact related to hazards and hazardous materials that would result from the proposed project, including its significance, and then the measure(s) to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) the significant impact previously described.

Impacts and Mitigation Measures

Impact HAZ-1: Potential Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials during Operation (Less than Significant)

Operation of the project would not include the use or transportation of significant amounts of potentially hazardous materials, including fuels and other hazardous liquids. Residential uses do not typically result in the generation, routine transport, treatment, storage, and use of significant quantities of hazardous materials or wastes. The project would therefore not result in a significant hazard to workers, the public, or the environment through the routine transport, use, or disposal of hazardous materials. Compliance with applicable regulations and hazardous materials plans would minimize potential exposure and risk. This impact is considered less than significant. No mitigation is required.

Impact HAZ-2: Potential Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials during Construction (Less than Significant with Mitigation)

Construction of the proposed project could expose construction workers, the public, or the environment to hazardous materials through the use or disposal of hazardous materials. Small amounts of hazardous materials, including fuels and other hazardous liquids will be used during project construction. However, the small quantities involved and the incorporation of safety standards (see below) make this impact less than significant.

Construction of the proposed project would involve clearing the project site, which would entail the demolition of several structures, the removal of existing refuse, debris, and soil piles, and the removal of two pole-mounted transformers. Additionally, grading and excavation associated with construction may result in the discovery of unmapped underground features.

Because the project area includes agricultural lands, the potential exists that hazardous levels of agricultural chemicals are present on isolated portions of the site. Underground pipelines that contain asbestos are not uncommon on properties with a history of agricultural use and thus may be present on the project site. Demolition of the structures on the site that may contain asbestos or lead-based paint will take place. These chemicals have the potential to significantly affect construction workers.

Other potential sources of hazardous chemicals or materials are present on the project site. An abandoned oil well, which may have been associated with

drilling mud pits, is also located on the parcel. Debris and soil piles of unknown origin, as well as a 5-gallon bucket of used oil and two 55-gallon drums with unknown contents, are present on the parcel and will be removed prior to construction. Two pole-mounted transformers that may contain polychlorinated biphenyls (PCBs) are located on the project site and will be removed. Finally, it is assumed that a septic system is located on the property. These facilities and refuse deposits all have the potential to expose workers and the environment to hazardous materials during their removal.

This impact is potentially significant. Mitigation Measures HAZ-2a through 2f would reduce this impact to a less-than-significant level.

Mitigation Measure HAZ-2a: Screen Surface Soils in Project Area for Residuals from Agricultural Chemicals and Other Hazardous Materials

As described under “Environmental Setting” above, potentially contaminated soils located in the proposed project area could create a hazard by exposing the public to hazardous materials such as pesticides and other chemicals. To reduce the potential for human exposure to potentially harmful pesticide, fertilizer, and other chemical residues during construction in areas with potential for harmful pesticide and fertilizer residues, surface soils in the area will be sampled or field screened by a qualified hazardous materials consultant for residuals from agricultural chemicals during construction. The structure dripline soils around the existing buildings and any remaining foundations of former buildings will be tested for lead, asbestos, and pesticides prior to development.

The San Joaquin County Environmental Health Department (SJCEHD) will review the results of soils sampling or screening and, in the event that soil sampling or field screening indicates the presence of hazardous concentrations of agricultural chemicals and other hazards, the soils will be excavated and properly disposed of before development begins.

Mitigation Measure HAZ-2b: Proper Removal of Hazardous Materials and Hazardous Material Containers from the Site

The project applicant will require the removal of drums and containers of known hazardous substances from the site. If an underground storage tank is found during development of the site, the project applicant will obtain a permit from the SJCEHD for proper removal. The 55-gallon drums and the 5-gallon bucket of used oil will be removed and recycled in accordance with federal, state, and local regulations. In addition, debris piles and tires will be properly disposed of prior to grading. If any hazardous materials are discovered, a qualified environmental health and safety specialist will be contacted to assess the situation and determine proper removal and disposal procedures.

Mitigation Measure HAZ-2c: Proper Disposal of Asbestos by Certified Asbestos Abatement Contractor

Any asbestos containing materials (from the structures or any underground pipes) will be removed and disposed of by a licensed and certified asbestos abatement contractor prior to grading, excavation, construction, or any other activities that would disturb the material.

Mitigation Measure HAZ-2d: Notification of Contractors of Presence of Asbestos and Lead Paint

Contractors that will be working on the site will be notified of the presence of asbestos and lead paint prior to work. The contractors will be provided with a copy of the Asbestos and Lead Paint Survey Reports and a list of asbestos removed by the asbestos abatement contractor during abatement activities. The contractors will be instructed not to disturb asbestos during their work. Contractors will be responsible for informing the landfill of the contractor's intent to dispose of lead paint and asbestos waste and segregating and characterizing waste streams prior to disposal.

Mitigation Measure HAZ-2e: Prepare Site Construction Plan for Work in Vicinity of Oil/Gas Well/Drilling Mud Pit

Contractor(s) working to prepare the site for development will be notified of the presence of the abandoned oil/gas well, and the potential to uncover a buried drilling mud disposal pit in the area of the abandoned well. The contractor(s) will be provided with a copy of the Phase I Environmental Site Assessment Report for the Proposed Machado Estates. In accordance with the Department of Conservation, Oil and Gas, & Geothermal Resources Division (Division), the contractor(s) will be responsible for preparing and submitting to the Division a Construction Site Plan, County Assessor's Parcel map, with parcel numbers, and a completed Construction Site Plan Review Application, prior to any clearing and grading activities. A Division representative will review the application and conduct a site inspection to check the integrity of the abandoned well and check for gas leaks. Following the site inspection, the Division may make recommendations regarding well protection and/or further testing. Site clearing activities will not commence until the Division approves the Construction Site Plan Application. Although no records could be found regarding the chemical composition of the drilling mud used to install the oil/gas well, it is assumed that the mud was not an oil-based compound and therefore would not be classified as a special hazardous waste. The contractor(s) will, however, notify the Department of Conservation, District 6, Oil and Gas Division should the mud pit be discovered, and the soil is discolored and smells of hydrocarbons or other potentially hazardous substances.

Mitigation Measure HAZ-2f: Proper Abandonment of Septic Systems

Septic systems are also present on the project site, and the project applicant must abandon the systems by following the proper procedures. The project applicant will obtain a permit from the SJCEHD, and

licensed sewage haulers will pump and remove the sewage. The project applicant will be responsible for collapsing and removing the top of the septic systems and will then backfill the empty septic tanks with clean fill material (soil, sand, or pea gravel) to the upper edge of the tank. The SJCEHD will inspect the site to ensure that the septic systems have been properly abandoned.

Impact HAZ-3: Potential Hazard to the Public or the Environment through Upset or Accident Conditions (Less than Significant with Mitigation)

Construction of the proposed project could expose construction workers, the public, or the environment to hazardous materials through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Small quantities of potentially toxic substances (e.g., petroleum and other chemicals used to operate and maintain construction equipment) would be used at the project site and transported to and from the site during construction. Accidental releases of small quantities of these substances could contaminate soils and degrade the quality of surface water and groundwater, resulting in a public safety hazard.

This impact is potentially significant. The project applicant would need to comply with Cal-OSHA and federal standards for the storage and handling of fuels, flammable materials, and common construction-related hazardous materials, and for fire prevention. Cal-OSHA requirements are found in California Labor Code, Division 5, Chapter 2.5. Federal standards are found in federal OSHA regulations and standards (29 CFR). Refer to the SWPPP regulations and mitigation (Mitigation Measure HYD-1a) in Chapter 9, which will mitigate for water quality impacts.

Mitigation Measures HAZ-3a through 3c would further reduce this impact to a less-than-significant level.

Mitigation Measure HAZ-3a: Develop and Implement Plans to Reduce Exposure to Hazardous Conditions

A site-specific safety plan and operations and maintenance plan will be prepared by the project applicant for review and approval by the Manteca Fire Department (MFD). A fire safety plan will also be prepared by the project applicant for review and approval by the MFD. The applicant will also develop and implement a hazardous materials management plan that addresses public health and safety issues by providing safety measures, including release-prevention measures; employee training, notification, and evacuation procedures; and adequate emergency response protocols and cleanup procedures. This plan will be submitted prior to the approval of grading permits for review and approval by the MFD.

Mitigation Measure HAZ-3b: Follow Manteca Fire Department and Other Guidelines for Storage and Handling of Hazardous Materials

The project applicant will require that contractors transport, store, and handle hazardous materials required for construction in a manner

consistent with relevant regulations and guidelines, including those recommended and enforced by the MFD.

Mitigation Measure HAZ-3c: Immediately Contain Spills, Excavate Spill-Contaminated Soil, and Dispose of It at Approved Facility

In the event of a spill of hazardous materials in an amount reportable to the MFD (as established by Fire Department guidelines), the project applicant will immediately control the source of the leak and contain the spill. If required by the MFD or other regulatory agencies, contaminated soils will be excavated and disposed of at an offsite facility approved to accept such soils.

Impact HAZ-4: Potential Exposure of School Children to Hazardous Materials (No Impact)

As previously noted under “Sensitive Receptors” above, the proposed project is located within 0.25 mile of the site of a proposed elementary school on Airport Way, 500 feet south of Peach Avenue. However, there is no proposed construction date for the school, and it will not be constructed or occupied when the project is constructed. The operation of the proposed project will not result in the potential for release of hazardous materials. Therefore, there would be no impact.

Impact HAZ-5: Significant Hazard from Location on a Site that Is Included on a List of Hazardous Materials Sites (No Impact)

The records review search documented in the Phase I ESA indicated that no facilities listed on regulatory agency databases researched by Environmental Data Resources (EDR) are located within the project area. Six unmapped sites in the EDR report appear to be located outside the project area boundaries. No environmental liens or known recorded land-use environmental deed restrictions pertaining to the project area were noted. Because no listed hazardous materials sites are located in the project area, there would be no impact.

Impact HAZ-6: Potential Impairment or Interference with an Adopted Emergency Response Plan (Less than Significant)

The project area is not located in the immediate vicinity of any emergency services providers, nor do any arterial routes pass through the project. Project construction is not likely to result in any road closures or detours. There would be no impact.

Impact HAZ-7: Potential Exposure of People or Structures to Risk from Wildfires (Less than Significant)

The project area is currently in an agricultural area, which provides little fuel for wildfires. Additionally, the terrain is relatively flat, enabling easy access for emergency vehicles. The project would result in locating people and structures in the area, which would increase the risk level from wildfires over the current conditions. However, the risk is low; this impact would be less than significant. No mitigation is required.

Impact HAZ-8: Be Located within an Airport Land-Use Plan Area or within 2 Miles of an Existing Airport (No Impact)

The nearest airport is approximately 11 miles from the project area. Thus, there would be no impact on future residents of the proposed project. There would be no impact.

Additional Annexation Area

The annexation of properties north of the Machado Estates project area will not expose the public to hazardous materials associated with construction activities or inadvertent discovery of hazardous materials because there are ground disturbing activities associated with the annexation portion of the project. Thus there is little or no likelihood of exposure of children or other residents to hazardous materials, or impairment of an emergency response system, or increased likelihood of wildfires. Thus, no mitigation is required.

Chapter 9

Hydrology and Water Quality

Introduction

This chapter describes the impacts on hydrology and water quality that would result from the proposed project. The key sources of data and information used in the preparation of this chapter were:

- the City General Plan (City of Manteca 2003a);
- the City General Plan EIR (Wade Associates 2003);
- *California's Groundwater—Bulletin 118, Update 2003* (Bulletin 118) (California Department of Water Resources 2006);
- *Draft 2005 Water Master Plan* (City of Manteca 2005a); and
- *Machado Estates Water Supply Assessment/Verification* (WSA), Appendix G (Conarro 2007).

Environmental Setting

This section discusses federal, state, and local regulations related to hydrology and water quality that would apply to the proposed project. It then describes existing conditions related to agricultural resources in the project area.

Regulatory Setting

Federal

Federal Clean Water Act

The CWA is the primary federal law to protect the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. It operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool. The following paragraphs provide additional details on specific sections of the CWA.

Permits for Stormwater Discharge (Section 402)

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the NPDES program, administered by the Environmental Protection Agency (EPA). In California, the State Water Resources Control Board (SWRCB) is authorized by the EPA to oversee the NPDES program through the RWQCBs (see related discussion under “Porter-Cologne Water Quality Control Act” below). The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits. Relevant NPDES permits are discussed in more detail under “State Regulations,” below.

Water Quality Certification (Section 401)

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as the issuance of a Section 404 permit) also must comply with CWA Section 401.

Safe Drinking Water Act

The Safe Drinking Water Act, as amended in 1986 and 1996, requires the protection of drinking water and its sources (i.e., rivers, lakes, reservoirs, springs, and groundwater wells). The act authorizes the EPA to set national standards for drinking water to protect against pollutants. The EPA, states, and local agencies work together to enforce these standards.

State**Porter-Cologne Water Quality Control Act**

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act), also known as the California Water Code, is California’s statutory authority for the protection of water quality. Under this act, the state must adopt water quality policies, plans, and objectives that protect the state’s waters. The act sets forth the obligations of the SWRCB and RWQCBs pertaining to the adoption of water quality control plans (basin plans) and establishment of water quality objectives. Unlike the federal CWA, which regulates only surface water, the Porter-Cologne Act regulates both surface water and groundwater.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers state water rights and water quality functions. The SWRCB and its nine RWQCBs administer water rights and enforce pollution control standards. The SWRCB and RWQCBs are responsible for ensuring implementation and compliance with the provisions of the federal CWA and California's Porter-Cologne Act.

The proposed project is situated within the jurisdiction of the Central Valley RWQCB, which has the authority to implement water quality standards through the issuance of permits for discharges to waters within its jurisdiction. It also is responsible for preparing a basin plan that identifies beneficial uses of the San Joaquin River and its tributaries and water quality objectives for the protection of beneficial uses.

Central Valley Regional Water Quality Control Board Basin Plan

The basin plan for the Sacramento and San Joaquin River basins provides water quality objectives and standards for waters of these two river basins. The plan contains specific water quality objectives for bacteria, dissolved oxygen, pH, pesticides, electrical conductivity, total dissolved solids (TDS), temperature, turbidity, and trace elements. It also includes objectives for groundwater quality that pertain to bacteria, chemical constituents, radioactivity, taste, color, and toxicity.

California and Clean Water Act Section 303(d)

Section 303(d) of the federal CWA requires states to develop lists of water bodies that will not attain water quality standards after implementation of the minimum required levels of treatment by point-source dischargers (municipalities and industries). Section 303(d) requires states to develop a total maximum daily load (TMDL) for each of the listed pollutants and water bodies. A TMDL is the amount of loading that the water body can receive and still meet water quality standards. The relevant 303(d) listings for water bodies in the project vicinity are described under "Surface Water Quality."

National Pollution Discharge Elimination System Permitting

The RWQCB issues permits under the NPDES program, the relevant aspects of which are described below.

Construction Activities

Most construction projects that disturb 1 acre of land or more are required to obtain coverage under the NPDES General Permit for Construction Activities (General Construction Permit), which requires the applicant to file a public notice of intent (NOI) to discharge stormwater and prepare and implement a SWPPP.

The SWPPP includes a site map and a description of proposed construction activities, along with a demonstration of compliance with relevant local ordinances and regulations and an overview of the BMPs that will be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. Permittees are further required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants. Projects constructed in Caltrans facilities or rights-of-way must comply with the requirements of Caltrans' statewide NPDES permit, which has requirements similar to those of the General Construction Permit.

Dewatering Activities

While small amounts of construction-related dewatering are covered under the General Construction Permit, the RWQCB also has adopted a General Dewatering Permit. This permit applies to various categories of dewatering activities and likely would apply to the proposed project if construction required dewatering in quantities greater than those allowed by the General Construction Permit and discharging the effluent to surface waters. The General Dewatering Permit contains waste discharge limitations and prohibitions similar to those in the General Construction Permit. To obtain coverage, the applicant must submit an NOI and a pollution prevention and monitoring program (PPMP). The PPMP must include a description of the discharge location, discharge characteristics, primary pollutants, receiving water, treatment systems, spill prevention plans, and other measures necessary to comply with discharge limits. A representative sampling and analysis program must be prepared as part of the PPMP and implemented by the permittee, along with record keeping and quarterly reporting requirements during dewatering activities. For dewatering activities that are not covered by the General Dewatering Permit, an individual NPDES permit and waste discharge requirements (WDRs) must be obtained from the RWQCB. The General Dewatering Permit may be applicable to the City and its contractors where excavation activities may explore the water table.

Local

City of Manteca Municipal Stormwater Program

The City's municipal stormwater NPDES permit and *Storm Water Management Program* (SWMP) (Stantec 2003) outline the City's standards for maintaining water quality and detail a comprehensive set of priorities, activities, and strategies that constitute the City's minimum control measures and BMPs, which are designed to reduce pollutants in stormwater to the maximum extent practicable. This includes both construction and post-construction measures that would be applicable to the proposed project.

City of Manteca Public Facilities Implementation Plan

The City of Manteca Public Facilities Implementation Plan (PFIP) (City of Manteca 1993) identifies a series of specific improvements required to accommodate drainage of the existing urban areas of the city. In addition, the PFIP identifies other measures that apply to future development. The PFIP requires that, wherever possible, the land ultimately required for each improvement (included in the drainage master plan) will be preserved before development occurs in an area. Storm drainage and flood protection facilities should be constructed when each new development begins. Manteca has relied predominantly on the SSJID lateral and drain facilities for terminal drainage. In concert with development, the SSJID facilities have been realigned into rights-of-way or structurally upgraded to be compatible with land conversion from agricultural to urban use.

As in the past, drainage improvements will be constructed in a timely manner in order to maintain the level-of-service (LOS) standard. This is accomplished by constructing the storm drainage and flood protection facilities for each new project and by having the necessary facilities in place at the time of occupancy. The City presently administers a variety of regulations designed to prevent flooding and address stormwater management. These include a flood ordinance, various provisions of the zoning ordinance and subdivision ordinance, and construction codes for residential and nonresidential developments.

City of Manteca General Plan 2023

The Resource Conservation Element of the City General Plan provides the following policy and implementation measures to help reduce urban contaminants from polluting receiving water bodies.

Policies: Water Quality

RC-P-13: Protect the quality of Manteca's groundwater.

Implementation: Water Quality

RC-I-21. The City shall regularly monitor water quality in City wells for evidence of toxics, saltwater intrusion, and other contaminants.

RC-I-24. Comply with the Regional Water Quality Control Board's regulations and standards to maintain and improve groundwater quality in Manteca.

In addition, the City General Plan has the following goals and policies to protect Manteca's groundwater supplies.

Goal RC-1. Minimize the consumption of water to reasonable levels consistent with a high level of amenities and quality of life for City residents and visitors.

Goal RC-2. Maximize the beneficial uses of water by recycling water for irrigation and other non-potable uses.

Goal RC-7. To Protect water quality in the San Joaquin River and in the area's groundwater basin.

Policies: Water Conservation

RC-P-1. The City shall continue to implement water conservation standards for all commercial and industrial development, and for all existing and new residential development.

RC-P-2. The City shall explore potential uses of treated wastewater when such opportunities become available.

RC-P-4. The City shall require water conservation in both City operations and private development to minimize the need for the development of new water sources.

RC-P-5. Development of private water wells within the city limits shall be allowed only where the City makes a finding that municipal water service is not readily and feasibly available, and such private well systems shall only be allowed to be used until such time as City water service becomes available.

Implementation: Water Conservation

RC-I-1. Continue to implement standards for water-conserving landscape practices, including the use of drought-tolerant plants, for both public and private projects.

RC-I-2. Continue efforts to increase public participation in water conservation.

RC-I-3. Require large commercial and industrial water users to submit a use and conservation plan as part of the project entitlement review and approval process, and develop a program to monitor compliance with and effectiveness of that plan.

RC-I-4. Cooperate with other agencies and jurisdictions to expand water conservation programs, and to develop methods of water reuse.

RC-I-5. Actively pursue the use of treated wastewater in irrigation and industrial applications, including development of appropriate infrastructure.

RC-P-12. Minimize pollution of waterways and other surface water bodies from urban runoff.

RC-I-22. Maintain buffer areas between waterways and urban development to protect water quality and riparian areas.

RC-I-23. Utilize cost-effective urban runoff controls, including Best Management Practices, to limit urban pollutants from entering the water courses.

RC-P-13. Protect the quality of Manteca's groundwater.

RC-P-14. Encourage participation by the County and surrounding communities in a basin-wide groundwater management study.

RC-I-19. The City shall work with the County and surrounding communities to develop an action plan and/or create an agency to manage and protect local and regional groundwater resources.

RC-I-20. The City shall not approve new industrial or commercial development that has a significant potential for adversely affecting water quality in the San Joaquin River or in the area's groundwater basin.

The Safety Element of the City General Plan addresses the issue of flooding potential from development within the 100-year floodplain. The following are policies intended to reduce the associated flooding potential as a result of development within the 100-year floodplain.

Policies: Flood Safety

S-P-7. Regulate all uses and development in areas subject to potential flooding through zoning and other land use regulations.

S-P-8. Cooperate with other agencies in the pursuit of a regional approach to flood issues.

S-P-9. Combine flood control, recreation, water quality, and open space functions where feasible.

S-P-10. Ensure that any existing structures subject to the 100-year flood provide adequate protection from flood hazards.

S-P-11. Ensure that the impacts of potential flooding are adequately analyzed when considering areas for future urban expansion.

S-P-12. New residential development, including mobilehomes, shall be constructed so that the lowest floor is at least one foot above the 100-year flood level.

The Safety Element of the City General Plan addresses the issue of impervious surfaces and flooding potential. The following are implementation measures intended to reduce impervious surfaces and the associated flooding potential.

Implementation: Flood Safety

S-I-6. Discourage large continuous paved areas unless provided with engineered drainage facilities.

S-I-7. Where feasible, require the use of pervious paving materials, such as brick or stepping stones with sand joints.

S-I-8. New development shall be required to maintain natural stream courses and adjacent habitat and combine flood control, recreation, water quality, and open space functions.

Existing Conditions

This section discusses the existing conditions related to hydrology and water quality in the study area.

Surface Water Hydrology

The San Joaquin River is the major drainage feature in the area. Manteca is located on the relatively higher ground between Lone Tree Creek to the north and the Stanislaus River to the south, with the San Joaquin River to the southwest and west. Walthall Slough is a tributary to the San Joaquin River and is the southwestern boundary for Manteca. The SSJID operates drainage facilities that pass through Manteca and carry a portion of the city's drainage. Because of topography, drainage facilities generally follow an east-to-west alignment. Storm drainage is gravity-discharged from the project area north to French Camp Canal, which eventually drains to the French Camp Slough. The Delta is the ultimate destination of drainage carried by French Camp Canal.

Groundwater Hydrology

The proposed project lies within the Eastern San Joaquin Subbasin, which is part of the San Joaquin Valley Groundwater Basin. The Eastern San Joaquin Subbasin has a surface area of 707,000 acres, or 1,110 square miles (California Department of Water Resources 2006). The subbasin is drained by the San Joaquin River and several of its major tributaries, including the Stanislaus, Calaveras, and Mokelumne Rivers (California Department of Water Resources 2006). Water bearing formations of significance in this subbasin include: Alluvium and Modesto/Riverbank Formations; flood basin deposits; Laguna Formation; and Mehrten Formation (California Department of Water Resources 2006).

Groundwater levels have seen a decline over the last 40 years of monitoring. Data show that levels have declined at an average rate of 1.7 feet per year and have dropped as much as 100 feet in some areas (California Department of Water Resources 2006). According to Bulletin 118, overdraft during the last 40 years has reduced storage by as much as 2 million acre-feet (af). Manteca contains areas of locally high groundwater, with shallow groundwater encountered in certain locations at depths of 2 to 10 feet below ground surface (California Department of Water Resources 2006). At the proposed project site, groundwater levels have been shown to vary at depths between 10 and 20 feet (San Joaquin County 2006).

Surface Water Quality

Beneficial use impairments result from several factors but generally are due to point-source and non-point-source pollutants. Point-source pollutants include discharges of wastewater from municipal sewage treatment plants, and industrial and commercial facilities. Non-point sources include urban runoff containing oils, greases, and toxic chemicals; construction runoff; livestock and animal wastes; and runoff from agricultural and residential areas.

Generally, surface water quality in Manteca's boundaries is considered sufficient for municipal and agricultural activities, wildlife, and recreation; however, the San Joaquin and Stanislaus Rivers that surround Manteca are listed as impaired according to Section 303(d) of the CWA (see the "Regulatory Setting" section). CWA Section 303(d) establishes the TMDL process to assist in guiding the application of state water quality standards, requiring states to identify streams with "impaired" water quality (those affected by the presence of pollutants or contaminants) and establish the TMDL or the maximum quantity of a particular constituent that a water body can assimilate without experiencing adverse effects. The San Joaquin River from the Merced River to the south Delta boundary (the reach that passes to the west of Manteca) is 303(d) listed for boron, DDT, electrical conductivity, Group A pesticides, mercury, and unknown toxicity (Central Valley Regional Water Quality Control Board 2006). The lower Stanislaus River is 303(d)-listed as impaired for Diazinon, Group A pesticides, and mercury (Central Valley Regional Water Quality Control Board 2006).

Groundwater Quality

The majority of the groundwater in the Eastern San Joaquin Subbasin is characterized by calcium-magnesium-bicarbonate- or calcium-sodium-bicarbonate-type water. Large areas of chloride-type water are located along the western portion of the subbasin (California Department of Water Resources 2006). Water quality samples were taken from 174 wells in the subbasin. The results showed that the TDS ranged from 30 to 1,632 milligrams per liter (mg/l) and averaged about 310 mg/l. Specific conductance or electromagnetic conductivity (EC) in the groundwater ranged from 78 to 5,390 micromhos per centimeter ($\mu\text{mhos/cm}$) (California Department of Water Resources 2006). Some of the highest EC values were found along the western part of the subbasin along the San Joaquin River alignment.

As a result of declining water levels, poor-quality water has been moving east along a 16-mile front on the east side of the Delta (California Department of Water Resources 2006). This saline water has continued to move eastward from the Stockton area. In addition, large areas of elevated nitrate in the groundwater exist within the subbasin located southeast of Lodi, south of Stockton, and east of Manteca (California Department of Water Resources 2006). The elevated nitrate is likely a source of dairy practices.

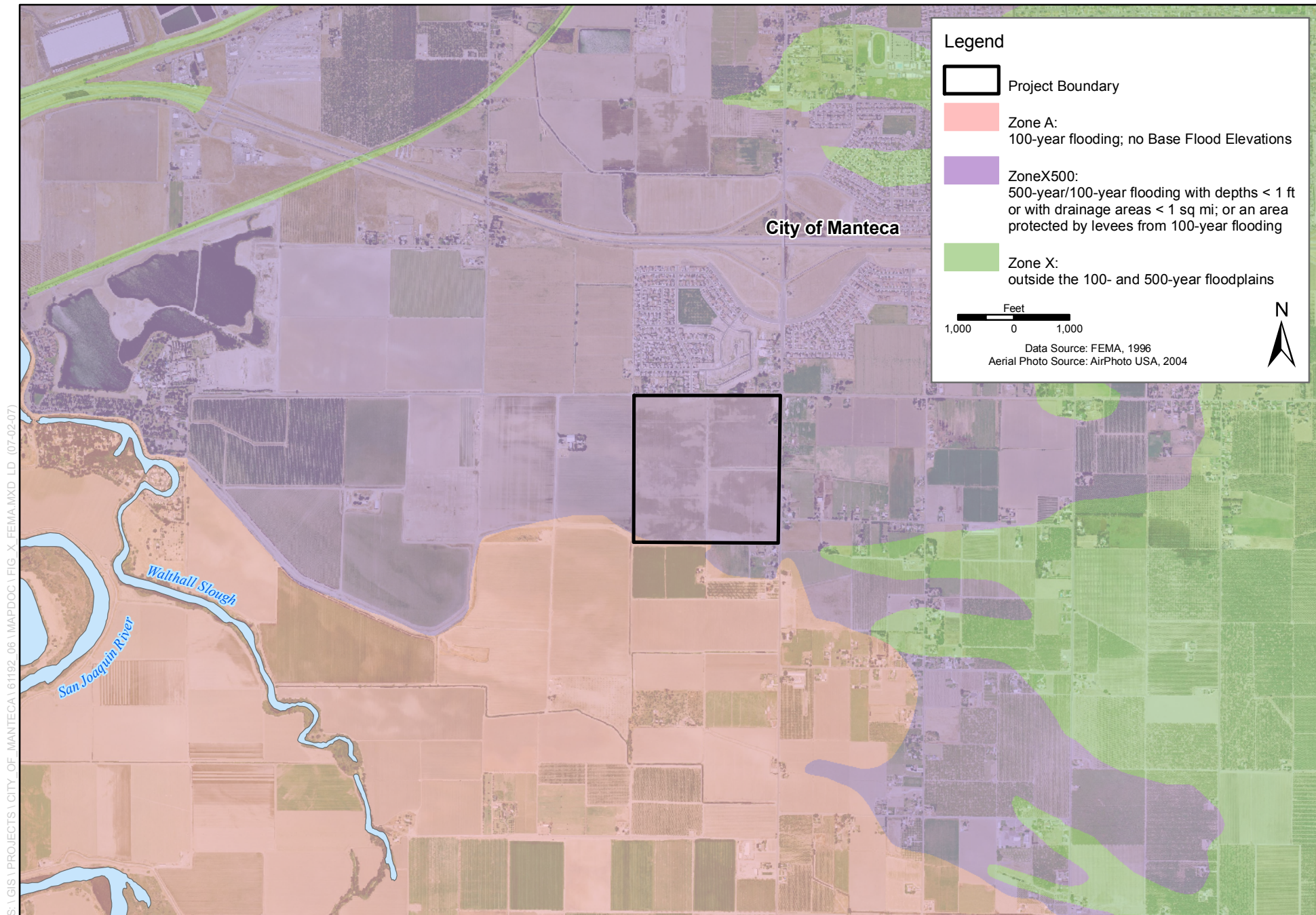
In the Manteca area, groundwater wells produce water that generally meets or exceeds all 22 CCR Reclamation Criteria primary drinking-water standards. Some wells have exhibited taste and odor problems as a result of high iron and manganese levels. In addition, one well in the eastern portion of Manteca has produced water containing dibromochloropropane (DBCP), an agricultural pesticide; however, a wellhead treatment system has been installed on this well so that it meets state drinking water standards. Finally, recent changes in federal drinking water standards have reduced the maximum contaminant level for arsenic from 50 micrograms per liter ($\mu\text{g/l}$) to 10 $\mu\text{g/l}$; Manteca's wells average about 12.4 $\mu\text{g/l}$ and will require additional treatment.

Flooding

The Federal Emergency Management Agency (FEMA) categorizes flood prone areas based on the frequency of occurrence. Figure 9-1 shows the location of the FEMA-defined 100-year area of potential inundation and the 500-year area of potential inundation nearest to Manteca. The primary flood hazard is the San Joaquin River (approximately 2 miles from the project area) and its tributaries, most notably Walthall Slough.

Approximately 1.95 acres of the southern portion of the proposed project site are located within the 100-year flood zone, on the edge of the proposed site. A levee that runs from Williamson Road east to Airport Way provides flood protection for the land north and east of Walthall Slough, including the proposed project area, which is approximately 1.2 miles from the slough. During the 100-year flood event, this levee would overtop and flood the surrounding area, including the proposed project site. This levee is maintained and under the jurisdiction of Reclamation District 17. In addition, the southeastern portion of Manteca, including the entire project site, is mapped as being within the 500-year floodplain.

Portions of the proposed project would be subject to inundation in the event of dam failure. The risk of dam failure is relatively small. The areas subject to inundation within the city are not specifically defined but generally would coincide with the area delineated as the 100-year floodplain, which includes the proposed project site. Despite the number of dams near San Joaquin County, the risk of dam failure, inundating portions of the county, is considered low, and the degree and nature of risk for each dam is unknown. Dam failure can occur under three general conditions: as a result of an earthquake, as a result of an isolated incident due to structural instability, or because of intense rain in excess of design capacity. Section 8589.5 of the California Government Code requires local jurisdictions to adopt emergency procedures for the evacuation of populated inundation areas identified by dam owners. The San Joaquin County Office of Emergency Services has prepared a plan for dam failure. The *Dam Failure Plan* includes a description of dams, the direction of floodwaters, the responsibilities of local jurisdictions, and evacuation plans.



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Water Supply

Manteca receives its water supply from two sources: groundwater from local wells and surface water supplied by the SSJID. The local groundwater basin is considered to be subject to “critical conditions of overdraft.” Overdraft conditions have existed for many years. The maximum sustained yield of the basin is estimated at 1 af per acre per year (afa/yr); currently, groundwater pumping in the Manteca area is approximately 2.4 afa/yr, contributing to this condition of overdraft.

The SSJID’s surface-water supplies are obtained from the Stanislaus River through pre-1914 water rights and post-1914 appropriative rights for direct diversion and diversion to storage. The SSJID operates a water treatment plant near the SSJID’s Woodward Reservoir; treated water is conveyed to Manteca through a series of pipelines. The planned use of surface water will reduce Manteca’s demand for groundwater to the safe aquifer yield of 1 afa/yr.

Historically, the city has relied upon groundwater as its sole supply of potable water. Groundwater has provided a safe, reliable, and sustainable supply for decades. However, as growth has continued, the groundwater basin has exhibited overdraft, resulting in declining water tables throughout San Joaquin County. The SSJID, in conjunction with the Cities of Manteca, Tracy, Lathrop, and Escalon, has undertaken the construction of a surface water supply project, including a new water treatment plant and transmission infrastructure, to address basin overdraft.

According to the City of Manteca’s WSA (Appendix G), water demand, based on gross residential demand, is 0.474 gallons per minute (gpm) per dwelling unit (Conarroe 2007). The WSA memo summarizes that surface water (buildout of 18,500 af from SSJID by 2027) in combination with existing and planned groundwater supplies will provide adequate potable water for the proposed project. The WSA memo also states that the 2005 *Urban Water Management Plan* (UWMP) includes water supply and demand through 2030 and so relies on that analysis for its projections.

Impact Analysis

Approach and Methodology

Thresholds of significance were determined based on Appendix G of the State CEQA Guidelines and by using professional judgment and standard practices. An impact was considered to be significant if it would:

- result in insufficient water supplies available to serve the project from existing entitlements and resources or require new or expanded entitlements;
- violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality;

- substantially deplete groundwater supplies or substantially interfere with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on site or off site;
- create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- place within a 100-year flood hazard area structures that would impede or redirect floodflows;
- expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- expose people, structures, or facilities to increased risks of inundation by seiche, tsunami, or mudflow.

Impacts and Mitigation Measures

Impact HYD-1: Reduced Water Quality as a Result of Construction-Related Earth Disturbing Activities (Less than Significant with Mitigation)

Construction-related earth disturbing activities would occur during the development of the Machado Estates project and would introduce the potential for increased erosion and sedimentation, with subsequent effects on water quality and storm drain capacity. During site grading, trenching, and other construction activities, areas of bare soil are exposed to erosive forces for long periods of time. Bare soils are much more likely to erode than vegetated areas because of the lack of dispersion, infiltration, and retention properties created by covering vegetation, such as the existing almond orchard. Construction activities involving soil disturbance, excavation, cutting/filling, stockpiling, and grading could result in increased erosion and sedimentation to surface waters, such as the San Joaquin River.

While existing agricultural activities at the project site may result in the release of sediment already, the extent of earth disturbance resulting from construction of the project is anticipated to result in a new and intensified potential for the release of sediments. Specific proposed activities with the potential to generate

construction-related water quality effects include the construction of the housing developments, parking lots, roads, and community facilities; trenching for sewer and stormwater facilities; the realignment of the existing agricultural canal; and the installation of the municipal well.

If precautions are not taken to contain or capture sediments, earth-disturbing construction activities could produce substantial sediments in stormwater runoff and result in a significant impact on the existing surface water quality. The implementation of Mitigation Measures HYD-1a, HYD-1b, and HYD-1c would minimize the potential erosion- and sedimentation-related water quality impacts and would reduce this impact to a less-than-significant level.

Mitigation Measure HYD-1a: Comply with NPDES Requirements

To reduce or eliminate construction-related turbidity or sediment water quality effects, the City will require the project contractors to comply with the requirements of the City's *Storm Water Management Program* (Stantec 2003). In addition, the City will require the project contractors to obtain coverage under the General Construction Permit before the onset of any construction activities, where the disturbed area is 1 acre or greater in size. A SWPPP will be developed by a qualified engineer or erosion control specialist in accordance with the Central Valley RWQCB requirements for NPDES compliance and implemented prior to the issuance of any grading permit before construction. The SWPPP will be kept on site during construction activity and will be made available upon request to representatives of the RWQCB.

Compliance and coverage with the *Storm Water Management Program* and General Construction Permit will require controls of pollutant discharges that use BMPs and technology to reduce erosion and sediments to meet water quality standards. BMPs may consist of a wide variety of measures taken to reduce pollutants in stormwater and other non-point-source runoff. Measures range from source control, such as reduced surface disturbance, to the treatment of polluted runoff, such as detention basins.

BMPs to be implemented as part of the *Storm Water Management Program* and General Construction Permit (and SWPPP) may include the following practices.

- Temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) will be employed to control erosion from disturbed areas.
- Use a dry detention basin (which is typically dry except after a major rainstorm, when it will temporarily fill with stormwater), designed to decrease runoff during storm events, prevent flooding, and allow for off-peak discharge. Basin features will include maintenance

schedules for the periodic removal of sediments, excessive vegetation, and debris that may clog basin inlets and outlets.

- Cover, or apply nontoxic soil stabilizers to, inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways.
- Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways.
- Ensure that no earth or organic material will be deposited or placed where it may be directly carried into a stream, marsh, slough, lagoon, or body of standing water.
- Prohibit the following types of materials from being rinsed or washed into the streets, shoulder areas, or gutters: concrete, solvents and adhesives, thinners, paints, fuels, sawdust, dirt, gasoline, asphalt and concrete saw slurry, and heavily chlorinated water.
- Ensure that grass or other vegetative cover will be established on the construction site as soon as possible after disturbance.

The City, its contractors, or applicants for specific development projects within the Machado Estates project will select a combination of BMPs that is expected to minimize runoff flows and remove contaminants from stormwater discharges. The final selection of BMPs will be subject to approval by the RWQCB. The City will verify that an NOI has been filed with the SWRCB and that a SWPPP has been developed before allowing construction to begin. The City will perform inspections of the construction area, to verify that the BMPs specified in the SWPPP are properly implemented and maintained. The City will notify contractors immediately if there is a noncompliance issue and will require compliance. If necessary, the City will require that additional BMPs be designed and implemented if those originally constructed do not achieve the identified performance standard.

Mitigation Measure HYD-1b: Clean Paved Areas with Street Sweeping Equipment

To minimize the amount of pollutants entering the storm drain system during construction, project roadways and other paved areas will be cleaned regularly using street-sweeping equipment. Additionally, litter and debris that may accumulate on the streets of the project site will be collected regularly and disposed of properly. These activities will be the responsibility of the developer or its contractors, subject to review by the City.

Mitigation Measure HYD-1c: Employ Other Provisions for Work in Surface Waters

If construction occurs when flows are present in onsite drainages, the contractor will implement measures to protect surface water quality, such as flow diversions, impoundments (e.g., coffer dams), or other methods to avoid the direct exposure of surface water to sediment created as part

of construction activity. As a performance standard, the measures will maintain basin plan standards for turbidity, as follows.

- Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases will not exceed 1 NTU.
- Where natural turbidity is between 5 and 50 NTUs, increases will not exceed 20%.
- Where natural turbidity is between 50 and 100 NTUs, increases will not exceed 10 NTUs.
- Where natural turbidity is greater than 100 NTUs, increases will not exceed 10%.

Where the project has potential to result in elevated turbidity, monitoring will be performed at least twice daily at upstream and downstream locations to determine whether the standards outlined above have been met. In the event that they are not being met, the turbidity-generating activities will cease until turbidity is within the identified limits, and construction methods or turbidity control measures will be modified to ensure that turbidity limits continue to be met.

Impact HYD-2: Water Quality Impacts as a Result of Construction-Related Hazardous Materials (Less than Significant with Mitigation)

Construction equipment and activities for the proposed project would have the potential to leak hazardous materials, such as oil and gasoline, and potentially affect surface or groundwater quality. Improper use or accidental spills of fuels, oils, and other construction-related hazardous materials, such as pipe sealant, solvents, and paints, also could pose a threat to the water quality of local water bodies. While water quality at the project site may currently be affected by toxic substances in agricultural runoff, construction of the project would represent a different type of potential contaminant release, that associated with construction-related hazardous materials.

Leaks or spills of the construction-related materials described above, if not contained, would be considered a potentially significant impact on groundwater and surface water quality. The implementation of Mitigation Measure HYD-2a would reduce this impact to a less-than-significant level.

Mitigation Measure HYD-2a: Implement a Spill Prevention and Control Program

As part of requiring compliance with the NPDES General Construction Permit, the City will require that project contractors develop and implement a spill prevention and control program to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during all construction activities. The NPDES General Construction Permit requires the spill prevention and control program. The program will be completed before any construction activities begin.

The City will review and approve the spill prevention and control program before the onset of construction activities. The City will inspect the construction area routinely to verify that the measures specified in the spill prevention and control program are properly implemented and maintained. The City will notify contractors immediately if there is a noncompliance issue and will require compliance.

The federal reportable spill quantity for petroleum products, as defined in 40 CFR 110, is any oil spill that:

- violates applicable water quality standards,
- causes a film or sheen upon or discoloration of the water surface or adjoining shoreline, or
- causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

If a spill is reportable, the contractor will notify the City's fire department and the State Department of Toxic Substances Control (DTSC), which have spill response and cleanup ordinances to govern emergency spill response. A written description of reportable releases must be submitted to the Central Valley RWQCB and the DTSC. This submittal must include a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases would be documented on a spill report form.

Impact HYD-3: Water Quality Impacts from Construction below the Water Table (Less than Significant with Mitigation)

Because of the presence of shallow groundwater within the project area (approximately 10 to 20 feet below surface), trenching and excavation activities associated with the various project facilities could reach a depth that could expose the water table, which immediately and directly would become available for contaminants to enter the groundwater system. Similarly, if construction is initiated in an area with direct contact with surface water, then the potential for contaminants to enter the surface water system increases. The discharge of construction-related dewatering effluent also could result in the release of contaminants to surface water. Primary construction-related hazardous materials that could be discharged include oil and grease and construction-related hazardous materials. In addition, short-term water quality impacts are possible, such as local changes in turbidity and possibly changes in dissolved oxygen. This impact would be significant, but the implementation of Mitigation Measure HYD-3a, as applicable, would reduce this impact to a less-than-significant level.

Mitigation Measure HYD-3a: Implement Provisions for Dewatering

Dewatering effluent will be discharged to the SSJID drainage system and is subject to the SSJID-City storm drainage agreement (Environmental Science Associates 1999). Before discharging any substance that could

reach surface waters, the applicant's contractors will obtain an NPDES permit and WDRs from the Central Valley RWQCB. Depending on the volume and characteristics of the discharge, coverage under the RWQCB's General Construction Permit or General Dewatering Permit is possible. As part of the permit, the contractors will design and implement measures as necessary so that the discharge limits identified in the relevant permit are met. As a performance standard, these measures will be selected to achieve the maximum sediment removal and represent the best available technology (BAT) that is economically achievable. Implemented measures may include the retention of dewatering effluent until particulate matter has settled before it is discharged, the use of infiltration areas, and other BMPs. The final selection of water quality control measures will be subject to review by the City.

The City will verify that coverage under the appropriate NPDES permit has been obtained before allowing dewatering activities to begin. The City or its agent will perform routine inspections of the construction area to verify that the water quality control measures are properly implemented and maintained. The City will notify the contractors immediately if there is a noncompliance issue and will require compliance.

Impact HYD-4: Change in Drainage Patterns and Surface Runoff (Less than Significant with Mitigation)

The proposed project, when complete, would result in new impervious surfaces and thus an incremental reduction in the amount of natural soil surfaces available for the infiltration of rainfall and runoff, potentially generating additional runoff during storm events. Additional runoff can contribute to the flood potential of natural stream channels, accelerate soil erosion and stream channel scour, and provide a more lucrative means of transport for pollutants to enter waterways.

Because the design of the required stormwater facilities on site has not been determined on a subdivision-level basis, runoff from the project potentially could contribute to an exceedance of the capacity of the City's stormwater facilities or to the onsite flood potential. Therefore, this impact is considered significant. The implementation of Mitigation Measure HYD-4a would reduce this impact to a less-than-significant level.

Mitigation Measure HYD-4a: Develop and Implement a Master Drainage Plan

Prior to the commencement of construction, the applicant will develop and implement a master drainage plan, subject to prior review and approval by the City. This plan will address the following requirements:

- refined calculations of predevelopment runoff conditions and post-development runoff scenarios, using appropriate engineering methods, to evaluate potential changes to runoff through specific design criteria and account for increased surface runoff;

- a refined assessment of existing drainage facilities within the project area and an inventory of necessary upgrades, replacements, redesigns, and rehabilitation;
- a proposed maintenance program for the onsite drainage system; and
- phasing standards for drainage systems to be installed on a project-/parcel-specific basis.

Drainage systems, including any possible detention basin(s), will be designed in accordance with the City's and other applicable flood control design criteria. As a performance standard, measures to be implemented from the master drainage plan will provide for no net increase in peak stormwater discharge relative to current conditions, ensure that 100-year flooding and its potential impacts are maintained at or below current levels, and ensure that people and structures are not exposed to additional flood risk.

Prior to issuing a grading permit, the City will require the project applicant to demonstrate that the portion of the project subject to the grading permit is consistent with the recommendations and conclusions of the master drainage plan and will implement the measures identified in the plan. If the plan does not adequately address the drainage impacts of the specific development, the City will require the applicant to prepare additional analysis and incorporate measures consistent with the scope and performance standards associated with the plan to ensure that drainage and flooding impacts are avoided.

Impact HYD-5: Increased Amounts of Surface Runoff and Associated Impacts on Water Quality and Drainage Facilities during Operation (Less than Significant with Mitigation)

The project facilities (e.g., homes, paved driveways, and roads) would involve a substantial amount of new impervious surface, which could increase the amount of surface runoff as well as convey non-point-source contaminants to surface waters via SSJID facilities during storm events. Additional runoff could contribute to the flood potential of natural stream channels, accelerate soil erosion and stream channel scour, and provide a more lucrative means of transport for pollutants to enter the waterways. As previously discussed, when complete, the project would result in a net increase in impervious surfaces. As such, the proposed project could increase stormwater and non-stormwater runoff, transporting contaminants to adjacent receiving waters. Contaminated runoff waters could flow into Walthall Slough or ultimately to the San Joaquin River and could degrade the water quality of those water bodies.

During the dry season, vehicles and other urban activities release contaminants onto the impervious surfaces, where they will accumulate until the first storm event. During this initial storm event, or first flush, the concentrated pollutants will be transported via runoff to stormwater drainage systems. Anticipated runoff contaminants associated with the proposed project include sediment, pesticides, oil and grease, nutrients, metals, bacteria, and trash. It bears noting

that some of these contaminants may be expected in the existing agricultural runoff from the project site.

This impact is considered potentially significant. However, the proposed project would implement the requirements of the City's *Storm Water Management Program*, which would include BMPs to maximize stormwater quality and would be consistent with the City's NPDES Phase II Stormwater Permit. The BMPs would include a combination of source control, structural improvements, and treatment systems to the extent required to ensure compliance with the applicable CWA regulations. In addition, the implementation of Mitigation Measure HYD-5a would reduce the impact to a less-than-significant level.

Mitigation Measure HYD-5a: Implement Best Management Practices to Maximize Stormwater Quality

To reduce or eliminate water quality effects from polluted runoff from the project, the developer or applicant will implement multiple BMPs in areas with a potential to drain into storm drainage systems or surface waters. The BMPs may include a combination of source control, structural elements, and treatment systems. BMPs may include the practices below.

- The streets and sidewalks create new impervious surfaces. To help minimize the amount of pollutants entering the storm drain system, paved project roadways and parking areas will be cleaned regularly using street sweeping equipment. Additionally, litter and debris that may accumulate on the project site will be regularly collected and properly disposed of. These measures will be carried out at least monthly if construction occurs during the rainy season (October–April).
- Dry detention basins—which are typically dry except after a major rainstorm, when they temporarily fill with stormwater—will be created and designed to decrease runoff during storm events, prevent flooding, and allow for off-peak discharge. Basin features will include maintenance schedules for the periodic removal of sedimentation, excessive vegetation, and debris that may clog basin inlets and outlets.
- Grass buffer strips, high infiltration substrates, and grassy swales will be used where feasible throughout the project site to reduce runoff, serve as biofilters, and provide initial stormwater treatment. This type of treatment will apply particularly to parking lots.
- Physical devices will be placed at outlets of pipes and channels to reduce the velocity or the energy of exiting water. Outlet protection helps to prevent scour and minimize the potential for downstream erosion by reducing the velocity or energy of concentrated stormwater flows.

The City, contractors, or the applicant will select a combination of BMPs that is expected to remove contaminants from stormwater discharges. The final selection and design of BMPs will provide maximum contaminant removal, represent the BAT that is economically achievable,

and explicitly identify the expected level of effectiveness at contaminant removal.

The City will conduct inspections following the construction to ensure that all identified BMPs have been properly installed. The project will adopt a regular maintenance and monitoring schedule to ensure that these BMPs function properly during project operations. If necessary, the City will require that additional BMPs be designed and implemented if those originally constructed do not achieve the identified performance standard.

Impact HYD-6: Decrease in Groundwater Recharge (Less than Significant)

The proposed project would involve an increase in impervious surfaces (e.g., roads, driveways, and homes), which would reduce the infiltration of groundwater to the underlying aquifer on the project site. However, the project area is less than 1% of the total Eastern San Joaquin Subbasin surface area and would not interfere significantly with the overall recharge of the subbasin. Some deep percolation of applied irrigation water to groundwater is thought to occur; however, the City General Plan does not identify any notable groundwater recharge areas within the project area. The majority of runoff from the project area would drain to local drainage facilities and the San Joaquin River, which are where the majority of recharge to the subbasin occurs. Therefore, this impact is considered less than significant.

Impact HYD-7: Substantial Depletion of Groundwater Supplies (Less than Significant)

Groundwater is a significant source of potable water supply for the city, and the project is anticipated to use groundwater as a water supply. As described in the WSA prepared by the Manteca Department of Public Works Engineering Division (Appendix G), the proposed project would be consistent with the *Water Master Plan* and UWMP prepared for the City (City of Manteca 2005a). The plan includes the implementation of a conjunctive use program, which will reduce Manteca's water supply demand and use of groundwater to a safe aquifer yield of 1 afa/yr (from 2.4 afa/yr). Previous environmental documentation, including the EIR for the *Water Master Plan*, recognized the severe state of overdraft of the underlying aquifer basin described above under "Environmental Setting." Because the *Water Master Plan* has taken into account the proposed project by incorporation of the UWMP prepared for the City, it would not cause a substantial depletion of groundwater supplies. This is considered a less-than-significant impact; no mitigation is required.

Impact HYD-8: Insufficiency of Water Supply (No Impact)

The WSA states that the proposed project would have a water demand of approximately 875 gpm, or 1,411 af per year. As described above, the project would receive its water supply from the City, which participates in a conjunctive use program, using groundwater and surface water from the SSJID, through the SCSWSP, as sources. As described in the WSA, there is sufficient groundwater (at a sustainable yield of 1 afa/yr) combined with SSJID surface water to serve the City and therefore the project as accounted for in the *Water Master Plan* and the UWMP. The SSJID currently holds all necessary water supply

rights/entitlements to serve water to the City. As a result, the program would not result in the need for any new or expanded water supply entitlements.

Impact HYD-9: Impacts on Groundwater and Surface Water from Infrastructure Failure (Less than Significant)

The proposed project would include the installation of infrastructure such as water supply and wastewater pipelines. The possibility of a pipeline rupturing because of exceedances of pipeline capacity, improper design, installation, maintenance, seismic activity, or other catastrophic events could pose a temporary negative impact on water quality resulting from increased erosion and sediment, as well as discharge of any contaminants contained in the water released from the pipeline (e.g., sewage from influent pipelines). However, the infrastructure system(s) would be designed and engineered with sufficient capacity to accommodate anticipated peak flows, minimizing the potential for upset. In addition, infrastructure would be designed to relevant seismic and other standards to minimize the potential for upset from seismic activity or other geologic hazards. Because all facilities would be adequately sized, and designed and constructed to current standards that are considered adequately protective (i.e., the Uniform Building Code), including standards related to seismic safety and geologic hazards, these impacts are considered less than significant. No mitigation measures are required.

Impact HYD-10: Water Quality Impacts from Discharges to CWA 303(d)-Listed Surface Water Bodies (Less than Significant)

Surface water runoff from the proposed project ultimately could be discharged into the San Joaquin River—which is on the CWA 303(d) list of impaired water bodies for boron, DDT, electrical conductivity, toxaphene, mercury, and Group A pesticides—and could contribute to the river's concentrations of these constituents. Because of the impairments, the San Joaquin River has no remaining assimilative capacity or ability to accommodate additional quantities of these contaminants, irrespective of concentration.

Sources of these constituents include lawn runoff, rooftops, and agricultural runoff. As such, existing agricultural activities at this site could be contributing to the listed impairments. Once the project is implemented, the concentrations of these constituents are expected to be relatively low because DDT and several other Group A pesticides are no longer commercially available. In addition, all drainage from the project would be captured in a detention basin, which would treat the runoff and reduce the potential for such contaminants to reach the San Joaquin River at concentrations that would contribute to the impairment. As a result, this impact is considered less than significant. No mitigation measures are required.

Impact HYD-11: Impacts on Floodflows from Structures in a 100-Year Floodplain or Impacts on Housing from Placement in a 100-Year Floodplain (Less than Significant)

As shown in Figure 9-1, sections of the project area are within a 100-year floodplain. The floodplain generally follows Walthall Slough, along Williamson Road east to Airport Way, and covers an extensive area near the southern border of Manteca. Construction of the housing and commercial structures in the

floodplain would expose people, structures, and facilities to a significant risk from flooding. However, the tentative site plan prepared for the project does not include any structures or housing in the 100-year floodplain, only park/open space, and therefore would not affect floodflows. This impact is considered less-than-significant.

Impact HYD-12: Flood Hazards Associated with Levee or Dam Failure (Less than Significant)

Flooding as a result of the failure of one or more of the San Joaquin or Stanislaus Rivers' dams could result from structural failure or a major and catastrophic seismic event. The most extensive potential of dam inundation would result from the failure of the New Melones Dam. Although the risk of dam failure, and its potential effect on the project site, is remote, it could occur.

As a result of this risk, the San Joaquin County Office of Emergency Services has prepared the *Dam Failure Plan*, which includes a description of local dams, the predicted pattern/direction of floodwaters, the responsibilities of local jurisdictions, evacuation plans, and designated City evacuation routes. Because of the relatively small potential for such failure, and the existing emergency evacuation procedures, this impact is less than significant.

Impact HYD-13: Be Subject to Inundation by Seiche, Tsunami, or Mudflow (No Impact)

Tsunamis originating in the Pacific Ocean would dissipate in San Francisco Bay and therefore would pose a negligible hazard to the project site, which is approximately 40 miles inland from the Bay. It is unlikely a seiche would occur in the San Joaquin River or potentially affect the project area, which is approximately less than a mile from the river. The project area is relatively flat (elevations range from 30 to 38 feet above mean sea level) with little risk of mudflow. The project would not be subject to any inundation. Therefore, there is no impact. No mitigation measures are required.

Additional Annexation Area

The annexation of properties north of the Machado Estates project area will not increase impervious surfaces, causing additional runoff that may impact water quality. No additional demands on water supplies, or increase in potential pollutants affecting water quality, are associated with the annexation. The additional annexation area is not located within the 100-year floodplain, and no new flooding hazards are associated with the annexation. There are no impacts associated with this element of the project, and no mitigation is necessary.

Introduction

This chapter addresses noise impacts associated with the construction and added vehicle traffic associated with the Machado Estates development project in the City of Manteca. This study includes a discussion of existing conditions, a summary of local policies and regulations related to noise issues, and an analysis of direct, indirect, and cumulative environmental impacts of the project. Where significant impacts are identified, mitigation measures, if feasible, are identified.

The key sources of data and information used in the preparation of this section are listed below:

- City of Manteca Noise Ordinance, Title 17, Chapter 13 of the City Code.
- City of Manteca General Plan Noise Element, October 2003 (City of Manteca 2003a).
- Traffic Study—Machado Estates Project (see Chapter 12, *Transportation and Traffic*).

Noise Terminology

The following is a brief background discussion of noise terminology.

- **Sound.** A vibratory disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (dB).** A unitless measure of sound. A sound level measurement in decibels describes the logarithmic ratio of a measured sound pressure level to a reference sound pressure level of 20 micropascals.
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level that approximates the frequency response of the human ear.

- **Sound Level Percentiles (L_n).** The sound level exceeded a certain percentage of time during a specified interval, where the subscript “n” is the percentile value. For example, L_{90} is the sound level exceeded 90% of the time, and L_{10} is the sound level exceeded 10% of the time.
- **Maximum and Minimum Sound Levels ($L_{\max}$ and $L_{\min}$).** The maximum or minimum sound level measured during a specified interval.
- **Equivalent Sound Level (L_{eq}).** L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The duration of the measurement is commonly indicated in the subscript; for example, a one-hour L_{eq} sound level would be indicated as dBA $L_{eq,1h}$.
- **Day-Night Level (L_{dn}).** The energy average of A-weighted sound levels occurring during a 24-hour period, with a 10-dB penalty added to sound levels occurring between 10:00 p.m. and 7:00 a.m.
- **Community Noise Equivalent Level (CNEL).** Similar to L_{dn} , CNEL is the energy average of A-weighted sound levels occurring during a 24-hour period, with a 10-dB penalty added to sound levels occurring between 10:00 p.m. and 7:00 a.m. In addition, a 5-dB penalty is applied to sound levels during the evening hours of 7:00 p.m. to 10:00 p.m.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels, when exposed to steady, single-frequency (“pure-tone”) signals in the mid-frequency (1,000 Hz to 8,000 Hz) range. However, it is widely accepted that people are able to begin to detect sound level changes of 3 dB for typical noisy environments. Further, a 10-dB increase is generally perceived as a doubling of loudness. Therefore, doubling sound energy (e.g., doubling the volume of traffic on a highway) would generally be perceived as a detectable, but not substantial, increase in sound level.

Environmental Setting

Surrounding Noise-Sensitive Land Uses

Sensitive land uses are generally defined as locations where people reside or where the presence of noise could adversely affect the use of the land. Typical sensitive receptors include residents, school children, hospital patients, the elderly, and so on. Sensitive land uses in the project area that could be affected by the project include scattered single-family residences and residential subdivisions located along roadways leading to the project area (Airport Way, Woodward Avenue, and McKinley Avenue).

Existing Noise Environment

The project area includes residential and commercial land uses located within the City of Manteca. The existing noise environment in the project area is dominated by traffic on primary roadways in the area, such as Woodward Avenue.

The existing noise environment in the project area has been characterized both with sound level measurements taken in the project area and traffic noise modeling as described below.

Noise Monitoring

In order to characterize the existing noise environment in the project study area, short-term measurements, 15 minutes in duration, were conducted in the vicinity of the proposed Machado Estates subdivision.

Jones & Stokes selected the noise monitoring sites. Sites were selected to document existing ambient noise levels at representative locations in the project area where noise-sensitive land uses would be located. The noise monitoring sites are described below.

Short-Term Monitoring

Short-term monitoring was conducted on Tuesday March 19, 2007, using a Larson-Davis Model 812 Precision Type 1 sound level meter (serial number 0239). The meter was positioned on a tripod at a microphone height of 1.5 meters (5 feet) above the ground. Sound levels and audible noise sources were recorded on field data sheets in order to characterize the noise environment at each position. The noise monitoring focused on areas where residential land uses would be located. The short-term measurement positions are the positions indicated as ST-1 through ST-3 in Figure 10-1.

Measurements were conducted at three locations on the perimeter of the Machado Estates project site. Local traffic noise was the dominant noise source observed during the measurement periods. Measured L_{eq} noise levels for the measurement periods at each site ranged from 65.5 to 70.3 dBA. Temperature, wind speed, and humidity were recorded manually during the short-term monitoring session using a Kestrel 3000 portable weather station. During the short-term measurement session, skies were partly cloudy. Wind speeds were typically in the range of 3 to 8 miles per hour. Temperatures were in the range of 68 to 77° F, with relative humidity typically in the range of 55 to 70%. Table 10-1 summarizes the short-term monitoring results.

Table 10-1. Summary of Short-Term Sound Level Measurements, March 19, 2007

Receivers	Location	Time	Duration (minutes)	Measured Sound Level dBA L_{eq}
ST-1	Woodward Avenue at McKinley Street	5:29 p.m.	15	65.5
ST-2	Woodward Avenue at Airport Way	4:56 p.m.	15	69.1
ST-3	Airport Way	5:55 p.m.	15	70.3

Traffic Noise Modeling

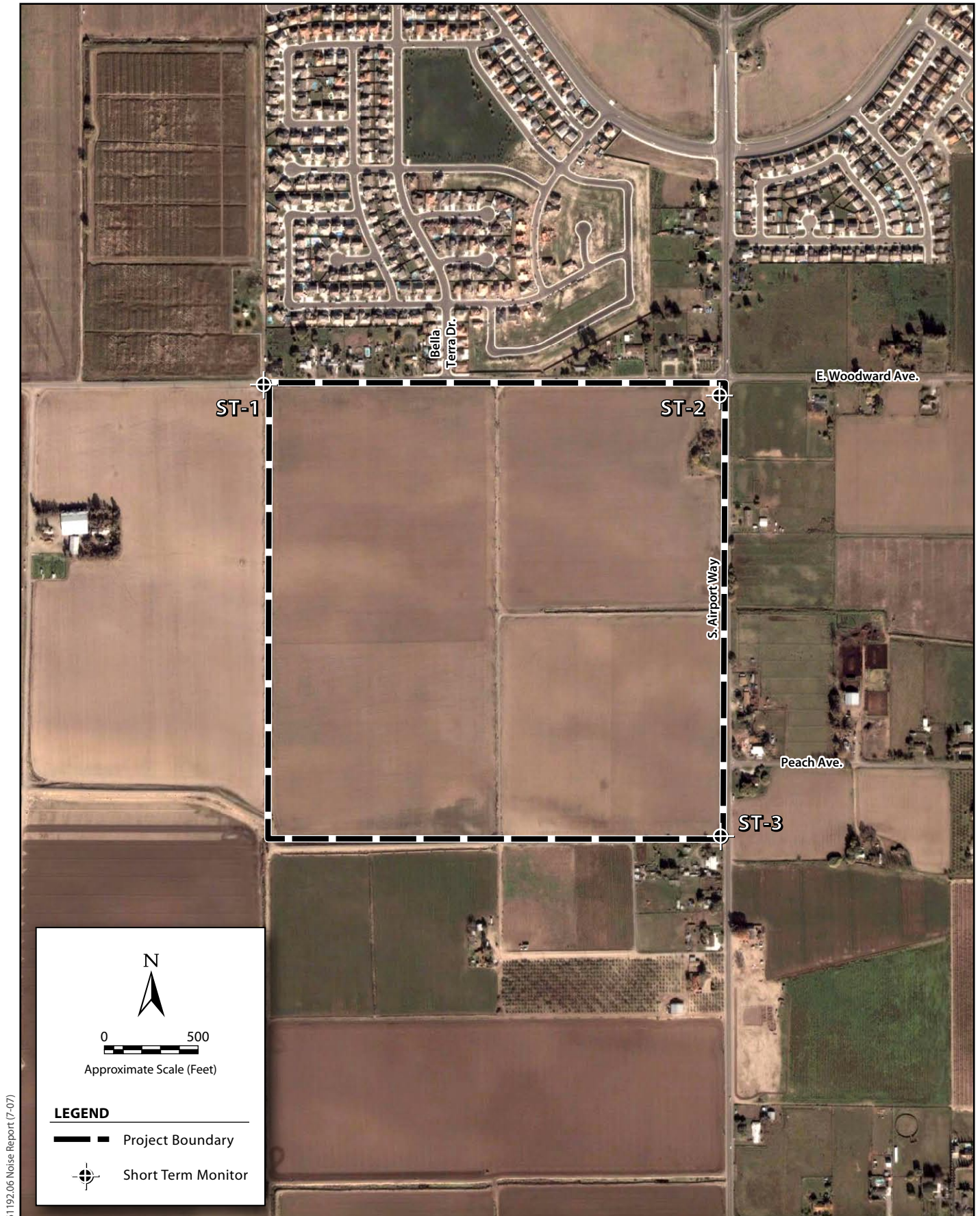
Existing traffic noise levels were calculated using the Federal Highway Administration Traffic Noise Model Version 2.5 (TNM) and existing traffic volumes provided by the project traffic engineers, Fehr & Peers Associates (see Chapter 12). Table 10-2 summarizes the traffic noise modeling results based on existing traffic conditions. As shown in the table, the existing traffic noise level at areas adjacent to Yosemite Avenue, between Airport Way and Union Road, currently exceed the City's noise compatibility standard of 60 dBA L_{dn} at residential locations.

Table 10-2. Traffic Noise Modeling Results, Existing Conditions

Roadway	Segment	Existing Land Use Description	Existing L_{dn} ^a
Airport Way	Yosemite Avenue to Wawona Street	Residential	60
Airport Way	Wawona Street to Daniels Street	Residential	60
Airport Way	Atherton Road to Woodward Avenue	Residential	57
Airport Way	Woodward Avenue to Peach Avenue	Residential	59
Airport Way	South of Peach Avenue	Residential	59
Yosemite Avenue	McKinley Avenue to Airport Way	Residential	60
Yosemite Avenue	Airport Way to Union Road	Commercial/residential	62
Woodward Avenue	McKinley Avenue to Bella Terra Drive	Residential	51
Woodward Avenue	Bella Terra Drive to Airport Way	Residential	52
Woodward Avenue	East of Airport Way	Residential	54
Peach Avenue	East of Airport Way	Residential	44
SR120		Residential	59 ^b

^a 100 feet from roadway centerline

^b A nominal 5 dB of noise reduction was applied to noise levels to account for acoustical shielding provided by the existing subdivision wall.



Regulatory Setting

Local Regulations and Standards

The City has established policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise-sensitive land uses. The City General Plan is a document required by state law that serves as the City's "blueprint" for land use and development. The City General Plan provides an overall framework for development in Manteca and protection of its natural and cultural resources by enumerating details for the physical development of the city, setting forth policies, and identifying ways to put the policies into action. The Noise Element of the City General Plan contains planning guidelines relating to noise and identifies goals and policies to support achievement of those goals. Noise Element guidelines relate primarily to land use compatibility with noise sources that are not regulated at the local level, such as traffic, aircraft, and trains.

The City's noise ordinance, part of the City's zoning ordinance, is the primary noise enforcement tool for noise generated by locally regulated noise sources, such as mechanical equipment and construction activity.

Noise standards in the City of Manteca are defined in the City General Plan Noise Element and in the noise guidelines contained in Chapter 17.13 of the City's Municipal Code. The following is a brief discussion of each as it applies to the project.

City of Manteca General Plan Noise Element

The City's Noise Element establishes policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise-sensitive land uses. The City has established performance standards for exposure from mobile/transportation and stationary noise sources. The City's standards for mobile/transportation noise sources are indicated in Table 10-3, while Table 10-4 summarizes the City's standards for stationary noise sources. The standards indicated in Table 10-4 also apply to construction-related noise on adjacent land uses.

Table 10-3. City of Manteca Maximum Allowable Noise Exposure from Mobile/Transportation Noise Sources^a

Land Use ^b	Outdoor Activity Areas ^c L _{dn} , dBA	Interior Spaces	
		L _{dn} , dBA	L _{eq} , dBA ^d
Residential	60 ^e	45	–
Transient lodging	60 ^e	45	–
Hospitals, nursing homes	60 ^e	45	–
Theaters, auditoriums, music halls	–	–	35
Churches, music halls	60 ^e	–	40
Office buildings	65	–	45
Schools, libraries, museums	–	–	45
Playgrounds, neighborhood parks	70	–	–

Source: City of Manteca 2003a.

^a Noise from new transportation projects, such as rail or public transit routes, may be allowed to exceed these standards if the City Council finds that there are special overriding circumstances.

^b Where a proposed use is not specifically listed on the table, the use will comply with the noise exposure standards for the nearest similar use as determined by the City.

^c Outdoor activity areas for residential development are considered to be backyard patios or decks of single-family dwellings and the common areas where people generally congregate for multifamily developments. Outdoor activity areas for non-residential developments are considered to be those common areas where people generally congregate, including pedestrian plazas, seating areas, and outside lunch facilities. Where the location of outdoor activity areas is unknown, the exterior noise level standard will be applied to the property line of the receiving land use.

^d Determined for a typical worst-case hour during periods of use.

^e In areas where it is not possible to reduce exterior noise levels to 60 dB L_{dn} or below using a practical application of the best noise-reduction technology, an exterior noise level of up to 65 dB L_{dn} will be allowed.

Table 10-4. City of Manteca Performance Standards for Stationary Noise Sources and Construction Noise^{a, b}

Noise Level Descriptor	Daytime 7:00 a.m. to 10:00 p.m.	Nighttime 10:00 p.m. to 7:00 a.m.
Hourly L _{eq} , dB	50	45
Maximum level, dB	70	65

Source: City of Manteca 2003a.

^a Each of the noise levels specified above should be lowered by 5 dB for simple noise tones, noises consisting primarily of speed or music, or recurring impulsive noises. Such noises are generally considered by residents to be particularly annoying and are a primary source of noise complaints.

^b No standards have been included for interior noise levels. Standard construction practices should, with the exterior noise levels identified, result in acceptable interior noise levels.

The City's Noise Element further stipulates that new development in residential areas with noise levels in excess of 60 dBA L_{dn} must incorporate mitigation measures to reduce noise levels below 60 dBA L_{dn} . In addition, when determining impacts under CEQA, the City has identified a substantial noise increase as being a 10 dB or greater increase in the ambient noise level. In addition, an increase in noise levels between 5 and 10 dB may also be substantial. For increases in noise between 5 and 10 dB, the following factors should be taken into account when determining whether a substantial noise increase would occur:

- the resulting noise levels;
- duration and frequency of the noise;
- the number of people affected;
- the land use designation of the affected receptor sites;
- public reactions or controversy as demonstrated at workshops or hearings, or by correspondence; and
- prior CEQA determinations by other agencies specific to the program.

City of Manteca Noise Ordinance

The City's noise ordinance states that noise levels may not exceed the City's maximum permissible sound pressure levels (Table 10-5) at the lot line of any establishment or use for all districts, except M-1 and M-2 districts. For M-1 and M-2 districts, this standard applies at the district boundary or 500 feet from the exterior wall of the establishment or use, whichever is less (refer to the City's General Plan map for a definition of these districts). However, normal household appliances or equipment in use during the hours of 7:00 a.m. to 7:00 p.m. are not subject to this requirement. The proposed Machado Estates subdivision is not located within a district designated M-1 or M-2.

Table 10-5. City of Manteca Maximum Permissible Sound Pressure Levels

Receiving Land Use Category	Time Period	Maximum Exterior Noise Level (dBA)
Single and limited multiple family	10:00 p.m. – 7:00 a.m.	50
	7:00 a.m. – 10:00 p.m.	60
Multiple family, public institutional, and neighborhood commercial	10:00 p.m. – 7:00 a.m.	55
	7:00 a.m. – 10:00 p.m.	60
Medium and heavy commercial	10:00 p.m. – 7:00 a.m.	60
	7:00 a.m. – 10:00 p.m.	65
Light industrial	Anytime	70
Heavy industrial	Anytime	75

Source: City of Manteca Municipal Code.

Notes: The following corrections are applicable:*

1. Daytime operation only (7:00 a.m. – 7:00 p.m.)	+5 decibels
2. Noise source operates less than:	
a. 20% of any 1-hour period	+5 decibels
b. 5% of any 1-hour period	+10 decibels
c. 1% of any 1-hour period	+15 decibels
3. Noise of impulsive character (hammering, etc.)	-5 decibels
4. Noise rising or falling in pitch or volume (hum, screech, etc.)	-5 decibels

*Apply only one of these corrections.

Further, the City's Municipal Code also establishes limits for groundborne vibration. The ordinance requires that no vibration will be produced that is transmitted through the ground and is discernible without the aid of instruments at the lot line of any establishment or use for all districts, except M-1 and M-2 districts. For M-1 and M-2 districts, this standard applies at the district boundary of 500 feet to the exterior wall of the establishment or use, whichever is less. In addition, vibration may not exceed an acceleration of 0.002g (acceleration due to gravity) peak for frequencies up to 50 cycles per second, as measured at the distances referenced above using either seismic or electronic vibration measuring equipment. Vibration occurring at higher frequencies than 50 cycles per second frequency of a periodic vibration will not induce accelerations exceeding 0.001g. Single-impulse periodic vibrations occurring at an average interval greater than 5 minutes will not induce accelerations exceeding 0.01g.

Impact Analysis

Approach and Methodology

CEQA requires the significance of noise impacts to be determined for proposed projects. The process of assessing the significance of noise impacts associated with a proposed project starts by establishing thresholds at which significant impacts are considered to occur. Next, noise levels associated with project-related activities are predicted and compared to the significance thresholds. A significant impact occurs when a predicted noise level exceeds a threshold.

Traffic Noise

Noise from traffic on roadways in the project area has been evaluated under the following conditions:

- existing conditions,
- cumulative no-project conditions, and
- cumulative with-project conditions.

TNM was used to calculate future traffic noise levels using traffic information provided by Fehr & Peers (see Chapter 12). Noise levels were calculated along roadway segments potentially affected by the project.

Construction Noise and Vibration

Construction noise and vibration impacts were estimated using analysis methods recommended by the U.S. Department of Transportation (Federal Transit Administration 2006). Noise and vibration source levels for various types of construction equipment that may be used during construction were obtained from the U.S. Department of Transportation. Noise and vibration levels as a function of distance were then estimated for these equipment pieces and compared to the City's noise and vibration thresholds.

The State CEQA Guidelines (Appendix G) state that a project would normally have a significant effect on the environment if it would:

- expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies;
- expose persons to or generate excessive groundborne vibration or groundborne noise levels;
- result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

- result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- be located within an airport land use plan area, or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels; or
- be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels.

The following criteria were used to determine the significance of impacts under CEQA. These criteria are based on the City General Plan Noise Element and the other relevant standards discussed above. For the purposes of this analysis, an impact was considered to be significant if it would result in any of the following:

- construction noise would exceed the thresholds indicated in the City General Plan (Table 10-4) between the hours of 7:00 p.m. and 7:00 a.m.;
- vibration levels would exceed the standards specified in the City's noise ordinance;
- operational noise would exceed the thresholds indicated in the City General Plan (Table 10-3);
- new noise-sensitive land uses would be exposed to noise exceeding 60 dBA L_{dn} ;
- traffic noise at existing noise-sensitive land uses would increase by 10 dB or more relative to existing conditions; or
- traffic noise at existing noise-sensitive land uses would increase 3 dB or more relative to future no-project conditions when the future with-project noise level is 60 dBA L_{dn} or greater.

Impacts and Mitigation Measures

Impact NOI-1: Exposure of Noise-Sensitive Land Uses to Vibration and Noise and during Construction Activities (Less than Significant with Mitigation)

Vibration. Construction activities associated with the project may cause a small amount of groundborne vibration. Vibration from these activities would be short-term. The use of high-impact construction activities such as pile driving is not anticipated. Therefore, no adverse vibration effects are expected from construction.

Noise. The assessment of potential construction noise levels was based on methodology developed by the Federal Transit Administration (FTA) (Federal Transit Administration 2006). Table 10-6 summarizes noise levels produced by typical construction equipment expected to be used for this project. Individual types of construction equipment are expected to generate noise levels ranging from 74 to 89 dBA at a distance of 50 feet. The construction noise level at a

given receiver depends on the type of construction activity, the noise level generated by that activity, and the distance and shielding between the activity and noise-sensitive receivers.

Table 10-6. Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA) 50 feet from Source
Scraper	89
Backhoe	80
Concrete Truck	85
Paver	89
Roller	74
Rough Terrain Forklift	85
Source: Federal Transit Administration 2006.	

Potential noise levels resulting from construction of the proposed project were evaluated by summing the noise levels of the three loudest pieces of equipment that would likely operate at the same time (scraper, paver, and concrete truck), and multiplying by a usage factor (percentage of time equipment is in operation). The combined noise level is 89 dBA at 50 feet. Table 10-7 shows the estimated sound levels from construction activities as a function of distance, based on calculated point-source attenuation over “soft” (i.e., acoustically absorptive) ground.

Residential land use is located adjacent to the Machado Estates project site, and construction activities are expected to occur within 1,000 feet of noise-sensitive receivers at any given time. The results in Table 10-7 indicate that residences located within about 1,600 feet of an active construction site could be exposed to construction noise in excess of the City’s daytime noise standard of 50 dBA and that residences within 2,500 feet of active construction could be exposed to construction noise in excess of the nighttime standard of 45 dBA. This impact is considered to be significant because construction noise levels could exceed the City’s performance standards between the hours of 7:00 p.m. and 7:00 a.m.

Table 10-7. Construction Noise

Source Data		Maximum Sound Level (dBA)	Utilization Factor	L _{eq} Sound Level (dBA)
Source 1: Scraper—Sound Level (dBA) at 50 feet		89	0.4	85
Source 2: Paver—Sound Level (dBA) at 50 feet		89	0.4	85
Source 3: Concrete Truck—Sound Level (dBA) at 50 feet		85	0.4	81
All Sources Combined—L _{eq} Sound Level (dBA) at 50 feet				89
Distance Between Source and Receiver (feet)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated L _{eq} Sound Level (dBA)	
50	0	0	89	
100	-6	-2	81	
200	-12	-4	73	
300	-16	-5	68	
400	-18	-6	65	
500	-20	-6	63	
600	-22	-7	61	
700	-23	-7	59	
800	-24	-7	57	
900	-25	-8	56	
1,000	-26	-8	55	
1,200	-28	-9	53	
1,400	-29	-9	51	
1,600	-30	-9	49	
1,800	-31	-10	48	
2,000	-32	-10	47	
2,500	-34	-10	44	
3,000	-36	-11	42	

Notes: Calculations based on Federal Transit Administration 2006.

This calculation does not include the effects, if any, of local shielding from walls, topography, or other barriers, which may reduce sound levels further.

Implementation of the following mitigation measures would reduce this impact to a less-than-significant level by limiting noise from construction activity between the hours of 7:00 p.m. and 7:00 a.m. to construction noise limits specified in the City's noise ordinance.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices

The project applicant will employ noise-reducing construction practices so that construction noise does not exceed 50 dBA L_{eq} between the hours of 7:00 p.m. and 10:00 p.m., or 45 dBA L_{eq} between the hours of 10:00 p.m. and 7:00 a.m.

Measures that can be used to limit noise include but are not limited to:

- prohibiting noise-generating construction activity between the hours of 7:00 p.m. and 7:00 a.m.;
- locating equipment as far as practical from noise sensitive uses;
- requiring that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation;
- prohibiting gasoline or diesel engines from having unmuffled exhaust;
- selecting haul routes that affect the fewest number of people;
- using noise-reducing enclosures around noise-generating equipment; and
- constructing barriers between noise sources and noise sensitive land uses or taking advantage of existing barrier features (terrain, structures) to block sound transmission.

Mitigation Measure NOI-1b: Disseminate Essential Information to Residences and Implement a Complaint/Response Tracking Program

Before construction begins, the construction contractor will notify residences within 500 feet of the construction areas of the construction schedule in writing. The construction contractor will designate a noise disturbance coordinator who will be responsible for responding to complaints regarding construction noise during the full term of construction. The coordinator will determine the cause of the complaint and will ensure that reasonable measures are implemented to correct the problem. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the written notification of the construction schedule sent to nearby residents. The noise disturbance coordinator will submit to the City of Manteca a weekly summary of any noise complaints that have been received. The summary will include, but is not limited to, the name of the complainant and their location, the nature of their complaint, and the action being taken to address the complaint.

Impact NOI-2: Exposure of Existing Noise-Sensitive Land Uses on Project Approach Roadways to Increased Traffic Noise (Significant and Unavoidable)

Table 10-8 summarizes the predicted traffic noise levels along roadway segments approaching the Machado Estates project, where future increases in traffic volumes are expected to result from implementation of the project.

The comparison between cumulative plus-project conditions and existing conditions gives an indication of the cumulative increase in noise associated with the project and background growth. The comparison between cumulative plus-project conditions and cumulative no-project conditions indicates the increase in noise caused directly by the project.

Residential subdivisions in the project area along SR-120 are separated from SR-120 by existing solid privacy fences 6 to 7 feet in height. These walls are effective as sound barriers; therefore, a nominal 5 dB of noise reduction was deducted from predicted SR-120 sound levels in this analysis. Table 10-8 indicates roadway segments where such walls exist.

Cumulative sound levels are predicted to increase by up to 9 dB relative to existing conditions on approach roadways to the project. Cumulative with-project noise levels are no more than 1 dB greater than cumulative no-project noise levels.

Noise levels along the segment of McKinley Avenue, between Yosemite Avenue and Woodward Avenue, will increase by 12 dB, relative to existing conditions. Because noise increases along roadway segments approaching the project area are greater than 10 dB, this impact is considered to be significant.

Because driveway access to the approximately 17 existing residences located along McKinley Avenue must be maintained, construction of soundwalls along these roadways is not considered feasible. Future redevelopment of this area may lead to land use changes that would allow construction of soundwalls; however, this is not known at this time, and therefore the impact is considered significant and unavoidable.

Impact NOI-3: Exposure of Future Noise-Sensitive Land Uses within the Machado Estates Project to Traffic Noise (Less than Significant with Mitigation)

The following roadways are adjacent to noise sensitive land uses proposed as part of the proposed project:

- Woodward Avenue between McKinley Avenue and Airport Way; and
- Airport Way between Woodward Avenue and Peach Avenue.

Table 10-8 summarizes predicted traffic noise levels along these roadways under existing, cumulative no-project, and cumulative plus-project conditions. These results indicate that proposed noise-sensitive land uses in the Machado Estates subdivision along Woodward Avenue and Avenue Road would be exposed to traffic noise equaling or exceeding the county threshold of 60 dBA L_{dn} .

Table 10-8. Traffic Noise Modeling Results, Existing and Cumulative Conditions

Roadway	Segment	Existing Land Use Description	Existing L _{dn}	Cumulative No Project dBA L _{dn}	Cumulative With Project dBA L _{dn}	Cumulative With Project minus Existing dB	Cumulative With Project minus Cumulative No Project dB
McKinley Avenue	Yosemite Avenue to Woodward Avenue	Residential/Open Space	52	64	64	+12	0
Airport Way	Yosemite Avenue to Wawona Street	Residential	60	63	63	+3	0
Airport Way	Wawona Street to Daniels Street	Residential	60	63	63	+3	0
Airport Way	Atherton Road to Woodward Avenue	Residential	57	62	63	+6	+1
Airport Way	Woodward Avenue to Site Access (Plus Project)	Residential	59	63	64 ^b	+6	+1
Airport Way	Site Access (Plus Project) to Peach Avenue	Residential	59	63	64 ^b	+5	+1
Airport Way	South of Peach Avenue	Residential	59	63	63	+4	0
Yosemite Avenue	McKinley Avenue to Airport Way	Residential	60	63	63	+3	0
Yosemite Avenue	Airport Way to Union Road	Commercial/Residential	62	63	63	+1	0
Woodward Avenue	McKinley Avenue to Bella Terra Drive	Residential	52	61	61 ^b	+9	0
Woodward Avenue	Bella Terra Drive to Airport Way	Residential	52	61	61 ^b	+9	0
Woodward Avenue	Airport Way to Union Road	Residential	54	60	60	+6	0
Woodward Avenue	Union Road to Main Street	Residential	57	60	60	+3	0
Peach Avenue	East of Airport Way	Residential	44	53	53	+9	0
SR 120		Residential	59 ^a	61 ^a	61 ^a	+2	0

^a A nominal 5 dB of noise reduction was applied to noise levels to account for acoustical shielding provided by the existing subdivision wall.

^b Predicted traffic noise levels at Machado Estates receiver locations.

New construction designed to meet current thermal insulation standards would typically provide at least 20 dB of exterior-to-interior noise reduction. Accordingly, interior noise levels are predicted to be below the City's interior noise standard of 45 dBA L_{dn} .

Because predicted noise levels at proposed noise-sensitive land uses exceed the County performance standard of 60 dBA L_{dn} for new residential land use, this impact is considered significant.

Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure NOI-3a: Construct Noise Barriers along Woodward Avenue and Airport Way so that Traffic Noise Does Not Exceed 60 dBA L_{dn} in Outdoor Use Areas

The project applicant will construct noise barriers along Woodward Avenue and Airport Way so that traffic noise in primary outdoor use areas at residences does not exceed 60 dBA L_{dn} . A preliminary analysis indicates that barriers 6 to 8 feet high will reduce traffic noise to 60 dBA L_{dn} or less. Once the tentative map and roadway alignments are finalized, the project applicant will prepare a report identifying final wall heights and materials necessary to reduce noise at outdoor residential use areas to 60 dBA L_{dn} or less.

Additional Annexation Area

Land use changes are not proposed for the additional annexation properties, so no increase in construction activities that would increase exposure of existing noise-sensitive land uses on roadways within the additional annexation area is anticipated. There would be no increase in vehicular traffic that would increase exposure of existing noise-sensitive land uses on roadways within the additional annexation area, as no new development is proposed in association with the annexation. Therefore, there are no impacts associated with the annexation portion of the project, and no mitigation is required.

Chapter 11

Population and Housing

Introduction

This chapter describes the impacts on population and housing that would result from the project. The key sources of data and information used in the preparation of this chapter are:

- the Housing Element of the City General Plan (City of Manteca 2003a);
- the “Population and Housing” chapter of the City General Plan EIR (Wade Associates 2003); and
- population estimates and projections for California, San Joaquin County, and Manteca from the California Department of Finance (2004) and San Joaquin Council of Governments (SJCOG) (2004).

Environmental Setting

This section discusses state and local regulations related to population and housing that would apply to the proposed project. It then describes existing conditions related to population and housing in the project area. Because the U.S. Department of Housing and Urban Development is not involved in funding or implementing the project, its regulations do not apply to this analysis.

Regulatory Setting

State

According to state law, a general plan must include a housing element, which must incorporate policies and programs that will allow sufficient housing to be built to meet the community’s share of the region’s projected housing need. It also must include policies and programs for housing for all economic sectors, including residents with very low, low, and moderate incomes.

As stated in the City General Plan EIR, the California Department of Housing and Community Development provides regional housing-need projections to regional councils of government (e.g., the SJCOG) approximately every 5 years. The councils are responsible for preparing a regional housing needs assessment (RHNA) that specifically enumerates each city's and county's fair share of the regional housing need by economic segment. Each city or county then must amend its housing element to recognize that fair share. SJCOG prepares the RHNA for San Joaquin County, including Manteca.

Local

Consistent with state law, the City General Plan's Housing Element is required to incorporate policies and programs that will allow sufficient housing to be built to meet the community's share of the region's projected housing need. Goal H-1 is particularly applicable to this requirement.

Goal H-1. Encouraging New Development

The City seeks to encourage the development of housing units affordable to all segments of the population through financial and regulatory incentives and aggressive land use planning.

To provide a range of housing types, densities, designs, and meet existing and projected housing needs for all economic segments of the community.

The proposed project would construct 575 low-density residential units on a site designated for low-density residential use (like much of the surrounding area). This type of housing is generally consistent with Goal H-1 because low-density, single-family homes are one part of the "range of housing types, densities, [and] designs" indicated under the goal.

According to the City General Plan's Housing Element, the Manteca growth-management ordinance limits Manteca's annual population-growth rate to 3.9%. If this growth rate were followed, the city population would be about 75,000 in 2010 and 110,000 in 2020.

Existing Conditions

This section discusses the existing conditions related to population and housing in the study area. The study area corresponds to the City's planning area, which includes the project site. Table 11-1 lists population levels, projections, and growth rates for Manteca, as well as the state and county for comparison, as calculated by the California Department of Finance (DOF) and SJCOG.

Table 11-1. Population Levels, Projections, and Growth Rates

Area	Population			10-Year Increase		Average Annual Increase	
	2000	2010	2020	2000– 2010	2010– 2020	2000– 2010	2010– 2020
California	34,043,198	39,246,767	43,851,741	15.3%	11.7%	1.43%	1.12%
San Joaquin County	563,598	708,364	888,536	25.7%	25.4%	2.31%	2.29%
Manteca	49,258	66,210	85,605	34.4%	29.2%	3.00%	2.60%

Sources: California Department of Finance 2004; San Joaquin Council of Governments 2004.

According to the Manteca Economic Development Division (City of Manteca 2007a), the city's population was 63,703 in January 2006 and currently increases by more than 3% per year on average, indicating that the actual increase from 2000 to 2010 may be more than projected by SJCOG. However, the 3% growth rate is still less than the 3.9% limit established in the Manteca growth-management ordinance.

According to the City General Plan's Housing Element, in 2003, there were 17,509 total housing units in Manteca, about 71.5% (12,500) of which are single-family detached homes. The Housing Element also states that, per the RHNA from the SJCOG, Manteca is expected to accommodate 3,823 new housing units in the 2004–2008 period: 785 very low-income, 651 low-income, 745 moderate-income, and 1,643 upper-income and market-rate.

Impact Analysis

Approach and Methodology

Thresholds of significance were determined based on Appendix G of the State CEQA Guidelines and by using professional judgment and standard practices. An impact was considered to be significant if it would:

- induce substantial population growth in an area (directly or indirectly), or
- displace a substantial number of existing housing units or people, necessitating the construction of replacement housing elsewhere.

Impacts and Mitigation Measures

Impact PH-1: Direct and Indirect Inducement of Substantial Population Growth (Less than Significant)

As discussed in more detail in the growth-inducement section of Chapter 14, “Other CEQA Considerations,” the proposed project would not induce substantial growth, either directly or indirectly. It would have less-than-significant impacts with respect to fostering economic or population growth, contributing additional housing, removing potential obstacles to growth, or taxing community services or facilities to the extent that new services or facilities are necessary. Therefore, overall, this impact would be less than significant. No mitigation is required.

Impact PH-2: Displacement of a Substantial Number of Housing Units or People (Less than Significant)

The proposed project is not expected to displace a substantial number of housing units or people. As described in Chapter 2, the proposed project would convert the 156.8-acre project site from agricultural use to low-density residential use. It would displace one residence and about three residents, assuming the City General Plan’s stated average household size of 3.07. This level of displacement would not constitute a substantial number of housing units or people. This impact is considered less than significant. No mitigation is required.

Additional Annexation Area

The annexation of properties north of the Machado Estates project area will not induce population growth or displace housing units or people. The majority of the additional properties proposed for annexation contain existing single-family dwellings. There are no proposed changes to these dwellings or the parcels themselves. There are no impacts associated with the annexation portion of the project, and no mitigation is required.

Chapter 12

Transportation and Traffic

Introduction

This section presents the results of the transportation impact analysis prepared by Fehr & Peers for the proposed Machado Estates Project, which includes construction of 575 single-family homes in Manteca, California. The project site is approximately 157 acres and is located on the southwest corner of the Airport Way/Woodward Avenue intersection. The purpose of this analysis is to identify potential transportation impacts caused by the proposed project and to determine required measures to mitigate project-generated significant impacts. Figure 12-1 presents the location of the project site and study intersections, and Figure 12-2 presents the tentative project site plan.

Existing and future conditions were evaluated with level of service (LOS) calculations for the key intersections and roadway segments near the project site. Project impacts were determined according to guidelines provided by the City and the California Department of Transportation (Caltrans).

In addition to analyzing intersections and roadway segments, existing and future conditions were evaluated for the freeway mainline segments and ramp junctions near the project site. Project impacts were determined according to Caltrans guidelines for the SR 120 mainline, on-ramps, and off-ramps. The operations of study intersections and freeway facilities were evaluated during weekday morning (AM) and evening (PM) peak periods. The operations of the roadway segments were evaluated using Average Daily Traffic (ADT) volumes. Each intersection, roadway, freeway, on-ramp, and off-ramp was evaluated under the following four scenarios.

- **Scenario 1, Existing Conditions:** Existing volumes obtained from traffic counts.
- **Scenario 2, Existing Plus Project Conditions:** Existing volumes plus traffic generated by the proposed Machado Estates Project.
- **Scenario 3, Cumulative No-Project Conditions:** Volumes obtained from the City General Plan Transportation Analysis (GPTA) model for the future horizon year (2015).

- **Scenario 4, Cumulative Plus Project Conditions:** Machado Estates Project generated traffic added to Scenario 3 traffic volumes.

Environmental Setting

Background and Terminology

The operations of roadway facilities are described in terms of Level of Service (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels are defined, from LOS A, which represents optimal operating conditions, to LOS F, which represents oversaturated operating conditions. LOS E represents at-capacity operations. Operations are designated as LOS F when volumes exceed capacity, resulting in stop-and-go conditions.

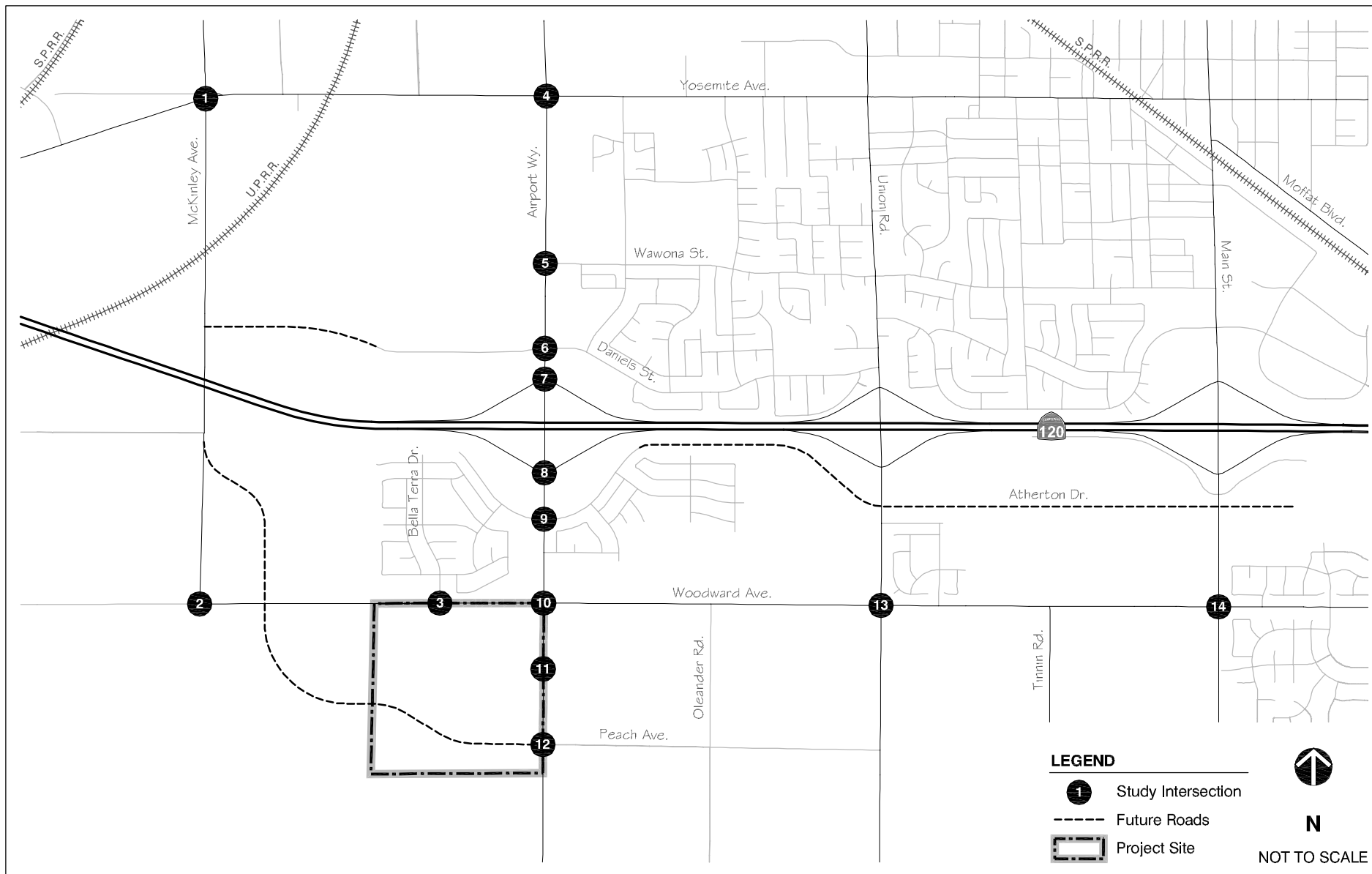
Level of Service

Signalized Intersections

The LOS methodology approved by the City analyzes a signalized intersection's operation based on average control vehicular delay, as calculated using the method described in Chapter 16 of the *Highway Capacity Manual* (HCM) (Transportation Research Board 2000). *Control delay* includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay for signalized intersections was calculated using the Synchro analysis software and is correlated to a LOS designation, as shown in Table 12-1.

Unsignalized Intersections

Operations of the unsignalized study intersections were evaluated using the methodology contained in Chapter 17 of the HCM. LOS ratings for stop sign-controlled intersections are based on the average control delay expressed in seconds per vehicle. At two-way or side-street stop-controlled intersections, the control delay is calculated for each movement, not for the intersection as a whole, and the LOS is based on movement with the highest delay. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. For all-way stop-controlled locations, a weighted average delay for the entire intersection is calculated. Table 12-2 summarizes the relationship between delay and LOS for unsignalized intersections.



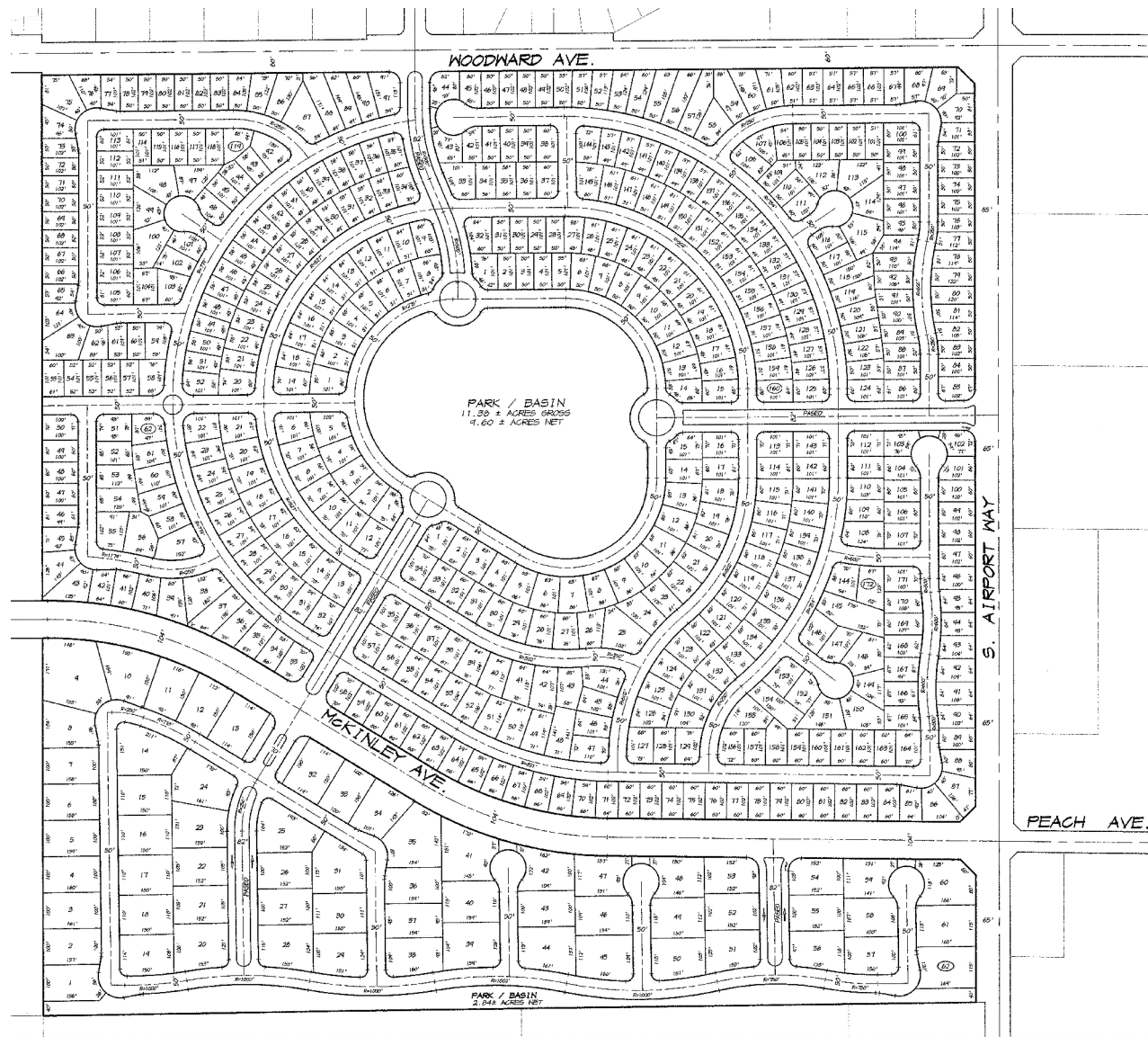


Table 12-1. Signalized Intersection Level of Service Criteria

Level of Service	Description	Average Control Delay per Vehicle (seconds)
A	Operations with very low delay occurring with favorable progression or short cycle lengths.	≤10.0
B	Operations with low delay occurring with good progression or short cycle lengths.	>10.0–20.0
C	Operations with average delays resulting from fair progression or longer cycle lengths. Individual cycle failures begin to appear.	>20.0–35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Many vehicles stop, and individual cycle failures are noticeable.	>35.0–55.0
E	Operations with long delays indicating poor progression, long cycle lengths, or high V/C ratios. Individual cycle failures are frequent. This is considered the limit of acceptable delay.	>55.0–80.0
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	>80.0

Source: Transportation Research Board 2000.

Table 12-2. Stop-Controlled Intersection Level of Service Criteria

Level of Service	Description	Average Control Delay per Vehicle (seconds)
A	Little or no delay	≤10.0
B	Short traffic delays	>10.0–15.0
C	Average traffic delays	>15.0–25.0
D	Long traffic delays	>25.0–35.0
E	Very long traffic delays	>35.0–50.0
F	Extreme traffic delays with intersection capacity exceeded	>50.0

Source: Transportation Research Board 2000.

Peak-Hour Signal Warrants

A peak-hour signal warrant analysis was conducted for all unsignalized study intersections. The analysis applied the peak-hour traffic signal warrant recommended in the Federal Highway Administration's (FHWA's) *Manual on Uniform Traffic Control Devices* (MUTCD) (2003) and associated Caltrans guidelines. It should be noted that the peak-hour signal warrant is only one of eight warrants that are evaluated to determine the need for a traffic signal.

Even when the peak-hour signal warrant is satisfied, the decision to install a signal should not be based solely upon this factor. The responsible state or local agency should regularly monitor traffic conditions and accident data, and evaluate the full set of warrants in order to prioritize and program intersections for signalization.

Roadway Segments

Roadway segment operations were evaluated using the ADT volume thresholds outlined in the City General Plan EIR (Wade Associates 2003), which are based on research conducted by the Florida Department of Transportation. Table 12-3 presents the relationships between daily traffic volumes and LOS ratings.

Table 12-3. Daily Traffic Volume Levels of Service

Lanes	Level of Service C Threshold	Level of Service D Threshold	Level of Service E Threshold
2	9,100	14,600	15,600
4	21,400	31,100	32,900
6	33,400	46,800	49,300

Source: Wade Associates 2003.

Freeway Mainline, Off-Ramp Diverge, and On-Ramp Merge Segments

Freeway-segment operations were evaluated using the methodology contained in Chapter 21 of the HCM. The average density, in passenger cars per mile per lane, was calculated using the Highway Capacity Software (HCS+) analysis software and is correlated to an LOS designation for both mainline segments and ramp junctions, as shown in Table 12-4.

Table 12-4. Density-Based Freeway Mainline, Off-Ramp Diverge, and On-Ramp Merge Segments Level of Service Criteria

Level of Service	Mainline Density ^a	Ramp Junction Density ^a
A	≤11.0	≤10.0
B	11.1–18.0	10.1–20.0
C	18.1–26.0	20.1–28.0
D	26.1–35.0	28.1–35.0
E	35.1–45.0	>35.0
F	>45.0	Demand exceeds capacity

Source: Transportation Research Board 2000.

^a Measured in vehicles per mile per lane.

Acceptable LOS Standards

This section presents the LOS standards based on the City of Manteca General Plan Transportation Element (City of Manteca 2003a) and the SJCOG Regional Transportation Plan (RTP) (San Joaquin Council of Governments 1996).

Intersections

Based on the City's General Plan Transportation Element, Manteca's target for transportation LOS is to provide city-wide average LOS of C or better, and a minimum of LOS D at any individual location. This "C average, D minimum" shall be accomplished by attempting to provide LOS C at all locations, though accepting LOS D under the following circumstances:

- a. Where constructing facilities with enough capacity to provide LOS C is found to be unreasonably expensive. This applies to facilities, for example, on which it would cost significantly more per dwelling unit equivalent to provide LOS C than to provide LOS D.
- b. Where it is difficult or impossible to maintain LOS C because surrounding facilities in other jurisdictions operate at LOS D or worse.

Because of the proximity of the proposed project to the state highway system and the expense related to achieving an LOS C standard, a LOS D standard will be applied for this study.

Freeway Mainline, Off-Ramp Diverge, and On-Ramp Merge Segments

The LOS standard for all freeways in San Joaquin County is defined in the County's Congestion Management Plan (CMP) (San Joaquin Council of Governments 1996). For the most part, the LOS standard on freeways is LOS D; however, because of existing congestion on SR 120, its LOS standard is set at LOS F.

Study Area

This section describes the existing conditions of the local roadway facilities, regional freeway system, pedestrian and bicycle facilities, transit service, traffic volumes, and traffic operations.

Roadway System

Figure 12-1 presents the project site and the surrounding local and regional roadway network. Interstate 5 (I-5), SR 99, and SR 120 provide regional access. The Airport Way interchange with SR 120 provides the primary access to the

regional freeway network. Woodward Avenue, Airport Way, and other local roads provide local access. Descriptions of these roadways are provided below.

SR 120 is an east-west, four-lane freeway that primarily serves as a freeway connection between I-5 and SR 99. SR 120 provides interchanges at Airport Way in the vicinity of the project site. SR 120 has an existing average daily traffic (ADT) volume of 60,000 vehicles in the vicinity of the Airport Way interchange.

I-5 is a major north-south freeway in the state and is located west of the project site. I-5 connects the cities of San Joaquin County to major metropolitan areas to the north and south. The section of I-5 near the project site currently has three lanes in each direction north of SR 120 and four to five lanes in each direction between SR 120 and I-205.

SR 99 is another major north-south freeway and is located approximately four miles east of the project site. SR 99 provides a connection between all the major cities in the Central Valley, from Sacramento and Stockton in the north, and the cities of Manteca, Modesto, Merced, Fresno, and Bakersfield in the south. SR 99 has three lanes in each direction south of SR 120 and two lanes in each direction north of SR 120.

Airport Way is a north-south, two-lane local street located immediately east of the project site. It extends from Stockton in the north to Rainbow Lake in the south. Airport Way has an existing ADT volume of 12,250 vehicles north of SR 120 and 4,400 vehicles south of SR 120.

Woodward Avenue is an east-west, two-lane roadway that passes just north of the project site. It extends from Oakwood Lake in the west to Moffat Boulevard in the east. The roadway is primarily rural in nature and provides access to farmland and nearby homes. Woodward Avenue has an existing ADT volume of 2,050 vehicles west of Airport Way and 1,675 vehicles east of Airport Way.

Peach Avenue is an east-west, two-lane local street in the unincorporated area just south of Manteca. It extends from Airport Way in the west to Union Road in the east. This roadway provides access to farms and orchards in the area. Peach Avenue has an existing ADT volume of 225 vehicles east of Airport Way.

McKinley Avenue is a north-south, two-lane local street that extends from Louise Avenue in the north, to Woodward Avenue in the south. McKinley Avenue primarily serves farms and residences along the street and has an existing ADT of 1,000 vehicles just north of Woodward Avenue.

Yosemite Avenue is an east-west, four-lane roadway that provides access to the central portion of the City of Manteca. It extends from SR 120/Yosemite Avenue in the west, to SR 99 in the east, where it becomes SR 120, a two-lane highway. This roadway is a primary commercial/retail/office corridor for the City of Manteca. Yosemite Avenue has an existing ADT volume of 9,700 vehicles in the vicinity of Airport Way.

Pedestrian and Bicycle System

Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals at signalized intersections. Woodward Avenue, Airport Way, and Peach Avenue generally do not have sidewalks in the project site vicinity, except for a short section of sidewalk on the north side of the Woodward Avenue/Bella Terra Drive intersection. Airport Way and Atherton Drive have sidewalks near the Airport Way/Atherton Drive intersection and the Bella Terra subdivision located north of Woodward Avenue also has sidewalks. Neither Airport Way nor Woodward Avenue has signalized intersections or pedestrian crossings in the project site vicinity.

Bicycle facilities include bike paths, lanes, and routes. Bike paths are paved pathways for use by bicycles; they are separated from roadways. Bike lanes are lanes on roadways designated for use by bicycles with special lane markings, pavement legends, and signage. Bike routes are designated with signs only. A bike path parallels Atherton Drive. A bicycle lane exists on Airport Way south of Atherton Drive. Additional bike lanes and bike routes are located north of SR 120. Neither Woodward Avenue nor Peach Avenue has existing bicycle facilities in the project site vicinity. Figure 12-3 shows the existing bicycle facilities.

Transit System

No existing transit facilities serve the project site. However, several transit routes provide service to the City of Manteca, as described below. These routes include Manteca Transit, which provides two fixed-route services and a Dial-A-Ride component; the San Joaquin Regional Transit District (SJRTD) with fixed-route and flexible-response bus service in San Joaquin County; the Altamont Commuter Express (ACE), which operates a commuter rail service; and the Modesto Area Express (MAX), which operates fixed-route bus service between Modesto and the Lathrop-Manteca ACE Rail Station. Figure 12-4 shows the existing transit facilities near the project site. Each existing transit route is described below.

Manteca Transit provides two fixed-route services and a Dial-A-Ride component. Manteca Transit provides bus service to destinations throughout the City of Manteca. Common stops shared by Route 1 and Route 2 are located at the Manteca Senior Center, Center Street/Trevino Avenue, and Center Street/Main Street.

Route 1 operates in a counter-clockwise direction. Popular destinations on Route 1 include the Manteca Branch Library, Manteca Senior Center, and Kaiser Hospital. Route 2 operates in a clockwise direction. Popular destinations on Route 2 include Mervyn's, Wal-Mart, and the Manteca Senior Center.

Weekday service operates from 6:00 AM to 7:00 PM with 60-minute headways. Saturday service operates from 9:00 AM to 4:00 PM and service is not provided on Sunday. Pursuant to ADA regulations, demand-response services will extend

3/4 of a mile beyond fixed-route services to accommodate persons who may not be able to access fixed-route services. Additional fixed routes are anticipated to be added within the city limits. The Manteca Transit stops closest to the project site are along Wawona Street.

The SJRTD Hopper is a fixed-route bus service connecting Ripon, Escalon, Manteca, Lathrop, Thornton, Woodbridge, Acampo, Victor, Lockeford, Morada, and Linden, with the Cities of Stockton, Tracy, and Lodi. The Hopper replaces SJRTD Countywide General Public Dial-A-Ride (DAR), Rural Elderly and Disabled DAR, and County Area Transit (CAT) Fixed Route during Hopper service hours, in the areas covered by the Hopper service. Most SJRTD Hopper Routes will deviate up to 3/4 of a mile for Americans with Disabilities Act (ADA) certified elderly and disabled passengers who cannot reach the fixed-route stops.

RTD Route 26 provides intercity fixed-route service between Tracy, Lathrop, Stockton, and Manteca with limited service to Ripon. Service operates Monday to Friday from 6:00 AM to 10:30 PM with 75-minute headways.

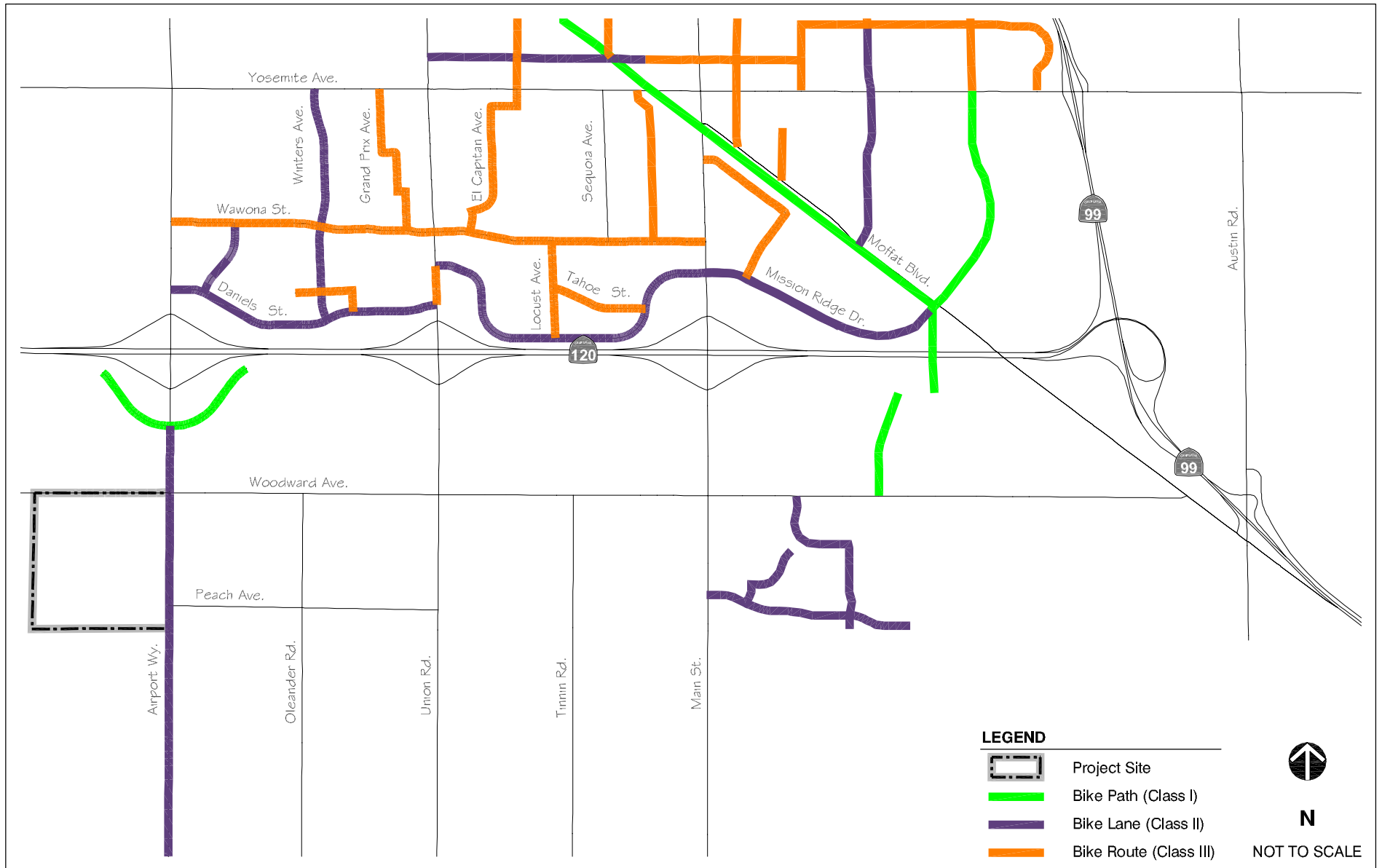
RTD Route 91 provides intercity flexible-response service between Stockton, Manteca, and Lathrop. Weekday service operates from 6:00 AM to 6:00 PM with 60- to 180-minute headways. Weekend service operates from 9:00 AM to 4:45 PM with three northbound and four southbound trips. Scheduled service operates along Union Road and Wawona Street.

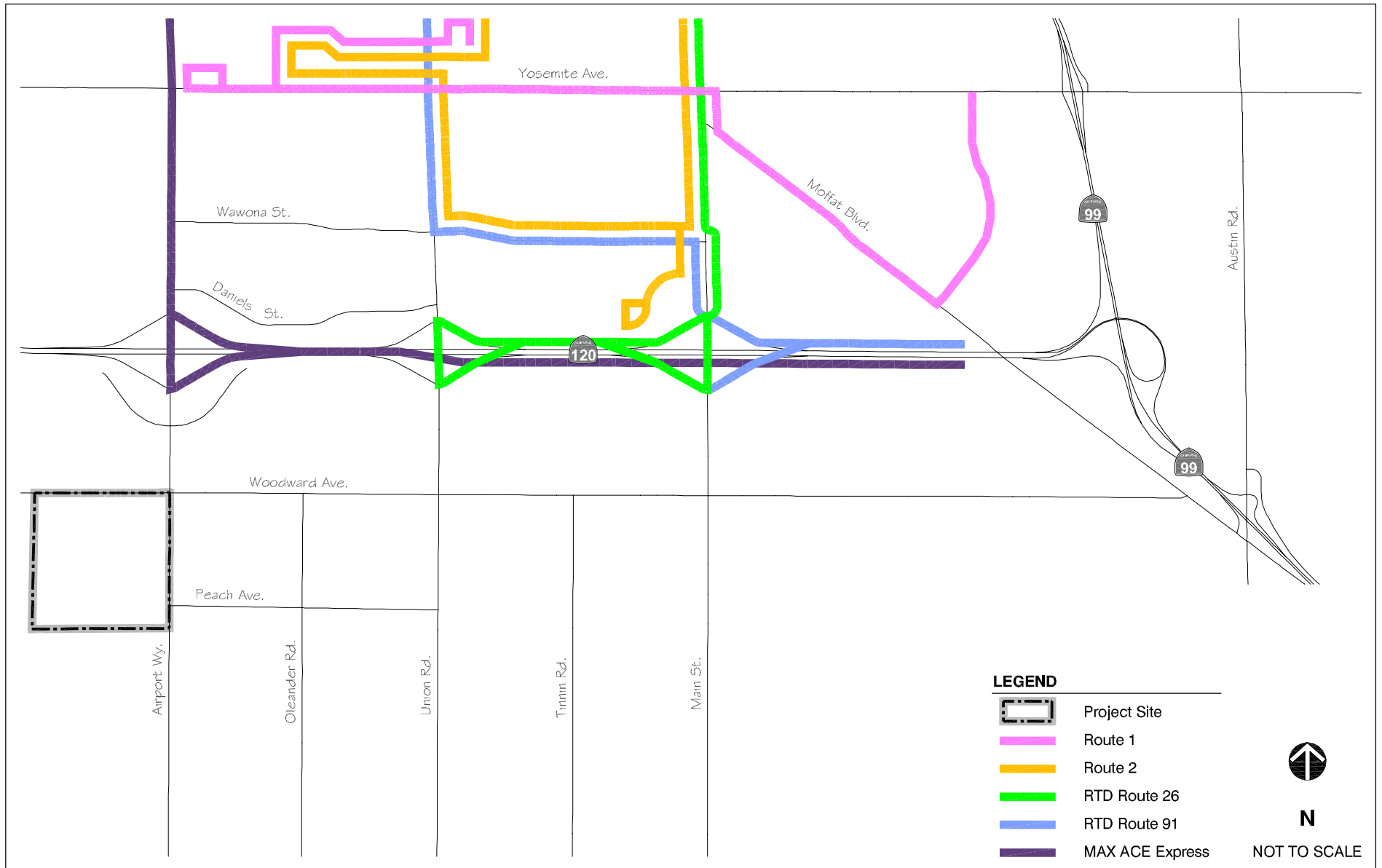
The SJRTD also operates a number of commuter bus lines that connect cities in San Joaquin County with major employment locations in the San Francisco Bay Area, including the cities of Pleasanton, Dublin, Livermore, Mountain View, Palo Alto, and Sunnyvale. SJRTD Routes 53, 54, and 55 connect the City of Manteca to the Cities of Tracy and Livermore. The pick-up times vary from 4:00 AM to 6:00 AM, with drop-offs ranging from 4:00 PM to 6:00 PM. Commuters access the bus service at the Lathrop Park and Ride lot, which is located between Lathrop Road and Louise Avenue on 5th Street.

MAX ACE Express provides commuter service between Modesto and the Lathrop-Manteca ACE Rail Station. Service operates Monday to Friday with three northbound AM and three southbound PM trips. Although this route passes through the Airport Way and SR 120 interchange, the area has no posted bus stops.

Locations Analyzed

The analysis evaluated the operations of the following key intersections, roadway segments, and freeway facilities.





Intersections

- Yosemite Way and McKinley Avenue
- Woodward Avenue and McKinley Avenue
- Woodward Avenue and Bella Terra Drive
- Yosemite Avenue and Airport Way
- Wawona Street and Airport Way
- Daniels Street and Airport Way
- SR 120 westbound ramps and Airport Way
- SR 120 eastbound ramps and Airport Way
- Atherton Road and Airport Way
- Woodward Avenue and Airport Way
- Site Access (Plus Project Conditions) and Airport Way
- Peach Avenue-McKinley Avenue and Airport Way
- Woodward Avenue and Union Road
- Woodward Avenue and Main Street

Roadway Segments

- Airport Way between Yosemite Avenue and Wawona Street
- Airport Way between Wawona Street and Daniels Street
- Airport Way between Daniels Street and SR 120 westbound ramps
- Airport Way between SR 120 westbound ramps and SR 120 eastbound ramps
- Airport Way between SR 120 eastbound ramps and Atherton Road
- Airport Way between Atherton Road and Woodward Avenue
- Airport Way between Woodward Avenue and Site Access (Plus Project Conditions)
- Airport Way between Site Access (Plus Project Conditions) and Peach Avenue
- Yosemite Avenue between McKinley Avenue and Airport Way
- Yosemite Avenue between Airport Way and Union Road
- Woodward Avenue between McKinley Avenue and Bella Terra Drive
- Woodward Avenue between Bella Terra Drive and Airport Way
- Woodward Avenue east of Airport Way
- Peach Avenue east of Airport Way

Freeway Mainline Segments

- Eastbound SR 120 between Yosemite Avenue and Airport Way
- Eastbound SR 120 between Airport Way and Union Road
- Westbound SR 120 between Yosemite Avenue and Airport Way
- Westbound SR 120 between Airport Way and Union Road

Freeway Merge/Diverge

- Westbound SR 120 on-ramp from Airport Way
- Westbound SR 120 off-ramp to Airport Way
- Eastbound SR 120 off-ramp to Airport Way
- Eastbound SR 120 on-ramp from Airport Way

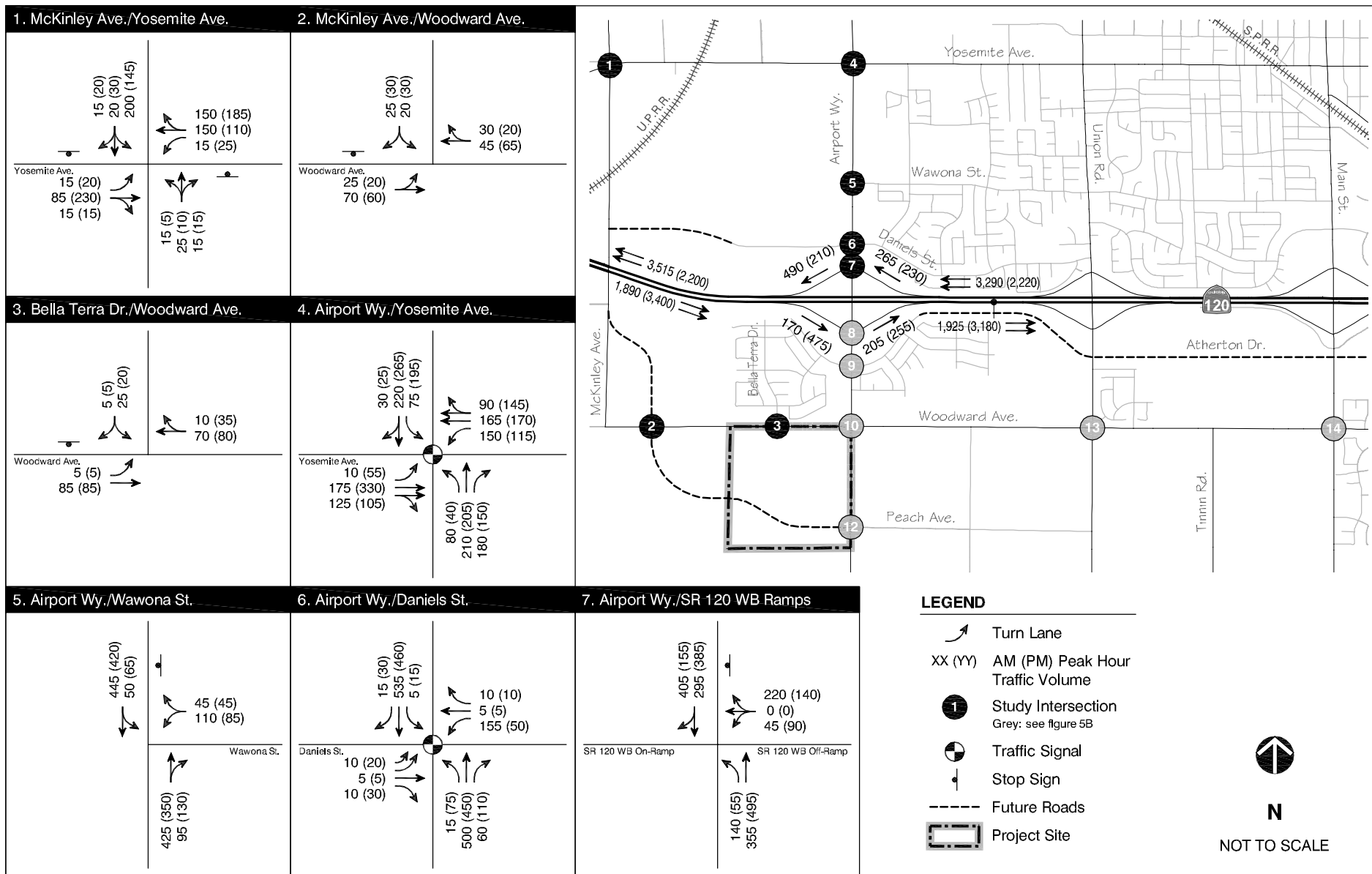
Existing and Cumulative Conditions

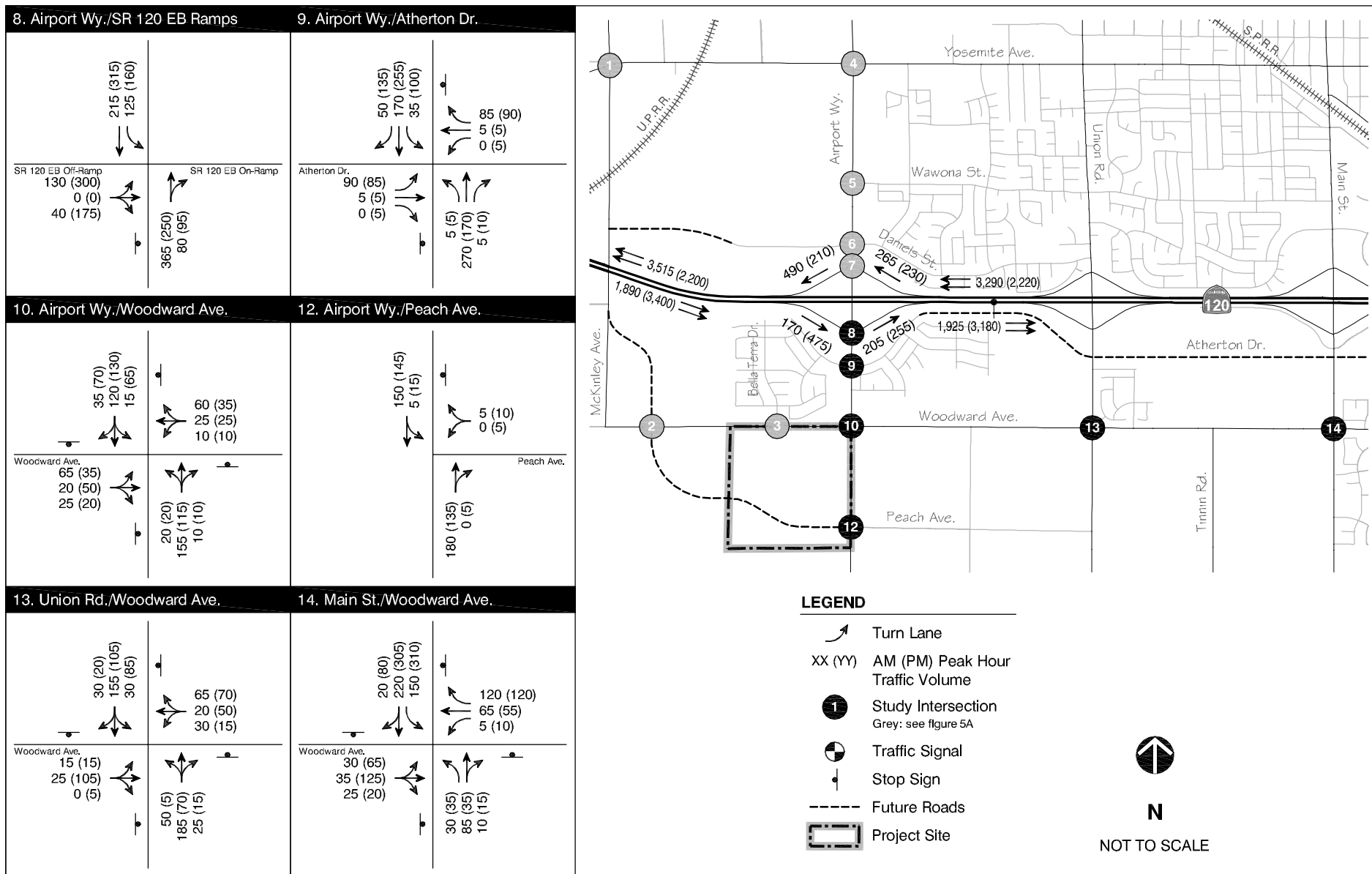
Existing Conditions

The operations of the local study intersections and regional freeway system were evaluated during weekday AM and PM peak-hour conditions. The AM and PM peak hours for the surrounding regional and local transportation system occur from 7:30 AM to 8:30 AM and 5:00 PM to 6:00 PM, respectively. Figures 12-5A and 12-5B present the existing AM and PM peak-hour turning-movement volumes at the study intersections, as well as existing intersection lane configurations and traffic control devices. Figures 12-5A and 12-5B also present existing AM and PM peak-hour freeway-mainline, on-ramp, and off-ramp traffic volumes. The traffic volumes used in the SR 120 freeway mainline analysis were obtained from traffic counts conducted in March 2006. The ramp volumes used in the merge/diverge analysis were taken from the counts conducted at the ramp intersections, together with the mainline volumes provided by Caltrans.

Intersections

Existing intersection lane configurations, traffic control devices, and peak hour turning-movement volumes were used to calculate the LOS for the 11 existing study intersections during the AM and PM peak hours. Table 12-4 presents the results of the LOS analysis for existing conditions. Appendix G contains the corresponding calculation sheets. The results of the LOS calculations indicate that eight of the 11 study intersections currently operate at acceptable LOS conditions during both AM and PM peak hours. The following three intersections operate at an unacceptable LOS conditions during the AM and PM peak hours.





- Wawona Street and Airport Way
- SR 120 westbound ramps and Airport Way
- SR 120 eastbound ramps and Airport Way

The high delay shown in Table 12-5 is a result of vehicles waiting for a gap in north-south traffic at the shared turn lanes on the stop-controlled approaches. During the PM peak hour, vehicles on the stop-controlled approach of the intersections listed above again experience long delays, particularly at the SR 120 eastbound and westbound off-ramps.

Peak-Hour Signal Warrants

Peak-hour signal warrant analyses were conducted for the eleven unsignalized study intersections. The analysis applied the peak-hour traffic signal warrant recommended in the MUTCD and associated State of California (Caltrans) guidelines. Table 12-5 also summarizes the signal warrant analysis. Appendix G includes the corresponding calculation sheets. Because of heavy traffic volumes, the Airport Way/SR 120 ramp terminal intersections meet the MUTCD warrant at the westbound ramps during the AM peak hour and at both westbound and eastbound ramps during the PM peak hour. Vehicles exiting SR 120 experience long delays as they wait for gaps in northbound and southbound Airport Way traffic to safely make a left- or right-turn movement.

Table 12-5. Existing Intersection Levels of Service and Signal Warrants

Intersection	Peak Hour ^a	Intersection Control	Delay ^b	LOS ^c	Meets Warrant
1. Yosemite Avenue and McKinley Avenue	AM PM	All-way stop-controlled	10.9 11.1	B B	No No
2. Woodward Avenue and McKinley Avenue	AM PM	Side-street stop-controlled	9.3 (2.9) 9.5 (3.2)	A (A) A (A)	No No
3. Woodward Avenue and Bella Terra Drive	AM PM	Side-street stop-controlled	9.5 (1.6) 9.6 (1.2)	A (A) A (A)	No No
4. Yosemite Avenue and Airport Way	AM PM	Signal	25.1 27.5	C C	N/A
5. Wawona Street and Airport Way	AM PM	Side-street stop-controlled	72.4 (10.3) 35.3 (5.1)	F (B) E (A)	No No
6. Daniels Street and Airport Way	AM PM	Signal	20.3 17.9	C B	N/A
7. SR 120 westbound ramps and Airport Way	AM PM	Side-street stop-controlled	95.7 (18.5) >100 (26.8)	F (C) F (D)	Yes Yes
8. SR 120 eastbound ramps and Airport Way	AM PM	Side-street stop-controlled	45.4 (9.2) >100 (>100)	E (A) F (F)	No Yes
9. Atherton Road and Airport Way	AM PM	Side-street stop-controlled	21.3 (4.5) 27.4 (5.0)	C (A) D (A)	No No

Intersection	Peak Hour ^a	Intersection Control	Delay ^b	LOS ^c	Meets Warrant
10. Woodward Avenue and Airport Way	AM PM	All-way stop-controlled	9.0 9.4	A A	No No
12. Peach Avenue and Airport Way	AM PM	Side-street stop-controlled	9.3 (0.3) 9.6 (0.9)	A A	No No
13. Woodward Avenue and Union Road	AM PM	All-way-stop-controlled	9.6 9.0	A A	No No
14. Woodward Avenue and Main Street	AM PM	All-way-stop-controlled	10.4 16.5	B C	No No

Note: **Bold** highlighting denotes intersections with unacceptable operations (LOS E or F) and that also meet peak-hour volume warrants.

^a AM = morning peak hour, PM = evening peak hour.

^b Whole-intersection weighted average control delay is expressed in seconds per vehicle using methodology described in the 2000 HCM. For side-street stop-controlled intersections, total control delay for the worst movement is presented in parentheses.

^c LOS = level of service. For side-street stop-controlled intersections, LOS for the worst movement is shown in parentheses. LOS calculations were conducted using the Synchro software package.

Roadway Segments

Table 12-6 presents the results of the LOS analysis for existing roadway conditions. The LOS calculations indicate that all roadway segments currently operate at an acceptable LOS.

Table 12-6. Existing Roadway Segment Levels of Service

Roadway Segment	Lanes	Average Daily Traffic Volume	Level of Service
1. Airport Way, between Yosemite Avenue and Wawona Street	2	9,225	D
2. Airport Way, between Wawona Street and Daniels Street	2	10,300	D
3. Airport Way, between Daniels Street and SR 120 westbound ramps	2	12,250	D
4. Airport Way, between SR 120 westbound ramps and SR 120 eastbound ramps	2	9,300	D
5. Airport Way, between SR 120 eastbound ramps and Atherton Road	2	7,675	C
6. Airport Way, between Atherton Road and Woodward Avenue	2	4,500	C
7. Airport Way, between Woodward Avenue and Peach Avenue	2	3,225	C
8. Airport Way, south of Peach Avenue	2	3,100	C
9. Yosemite Avenue, between McKinley Avenue and Airport Way	2	6,700	C
10. Yosemite Avenue, between Airport Way and Union Road	2	11,750	D
11. Woodward Avenue, between McKinley Avenue and Bella Terra Drive	2	1,700	C

Roadway Segment	Lanes	Average Daily Traffic Volume	Level of Service
12. Woodward Avenue, between Bella Terra Drive and Airport Way	2	2,050	C
13. Woodward Avenue, between Airport Way and Oleander Road	2	1,675	C
14. Peach Avenue, between Airport Way and Oleander Road	2	225	C
15. McKinley Avenue, between Yosemite Avenue and SR 120	2	1,025	C
16. McKinley Avenue, between SR 120 and Woodward Avenue	2	1,000	C

Freeway Mainline, Off-Ramp Diverge, and On-Ramp Merge Segments

Table 12-7 presents the results of the LOS analysis for existing freeway mainline conditions. Appendix G contains the corresponding calculation sheets. The LOS calculations indicate that all eastbound and westbound mainline segments of SR 120 currently operate at an acceptable LOS during both the AM and PM peak hours.

Table 12-7. Existing State Route 120 Mainline Levels of Service

Travel Direction	Segment	Peak Hour ^a	Density (passenger cars per mile per lane) ^b	Level of Service
Eastbound	Yosemite Avenue/Guthmiller Road to Airport Way	AM	19.0	C
		PM	35.0	E
	Airport Way to Union Road	AM	19.4	C
		PM	32.2	D
Westbound	Airport Way to Union Road	AM	33.5	D
		PM	22.3	C
	Yosemite Avenue/Guthmiller Road to Airport Way	AM	37.7	E
		PM	22.1	C

^a AM = morning peak hour, PM = evening peak hour.

^b Density is based on HCS+ analysis and results are in passenger cars per mile per lane.

Table 12-8 presents the results of the LOS analysis for existing ramp-junction conditions. Appendix G contains the corresponding calculation sheets. The LOS calculations indicate that all ramp junctions currently operate at acceptable LOS D or better during both AM and PM peak hours.

Table 12-8. Existing State Route 120 Ramp Junction Levels of Service

Travel Direction	Ramp	Merge/Diverge	Peak Hour ^a	Density (passenger cars per mile per lane) ^b	Level of Service
Eastbound	Airport Way	Diverge (off-ramp)	AM	18.7	B
			PM	33.9	D
		Merge (on-ramp)	AM	19.7	B
			PM	31.1	D
Westbound	Airport Way	Diverge (off-ramp)	AM	32.8	D
			PM	22.0	C
		Merge (on-ramp)	AM	34.4	D
			PM	22.2	C

^a AM = morning peak hour, PM = evening peak hour.

^b Density is based on HCS+ analysis and results are in passenger cars per mile per lane for the on-ramp merge section or off-ramp diverge section.

Cumulative Conditions

Cumulative No-Project Conditions are based on traffic volumes obtained from the 2015 version of the City of Manteca/San Joaquin Council of Governments (City of Manteca/SJCOG) travel demand forecasting model. The following sections describe the procedure used to determine the cumulative traffic volumes and the results of the LOS analysis for cumulative conditions.

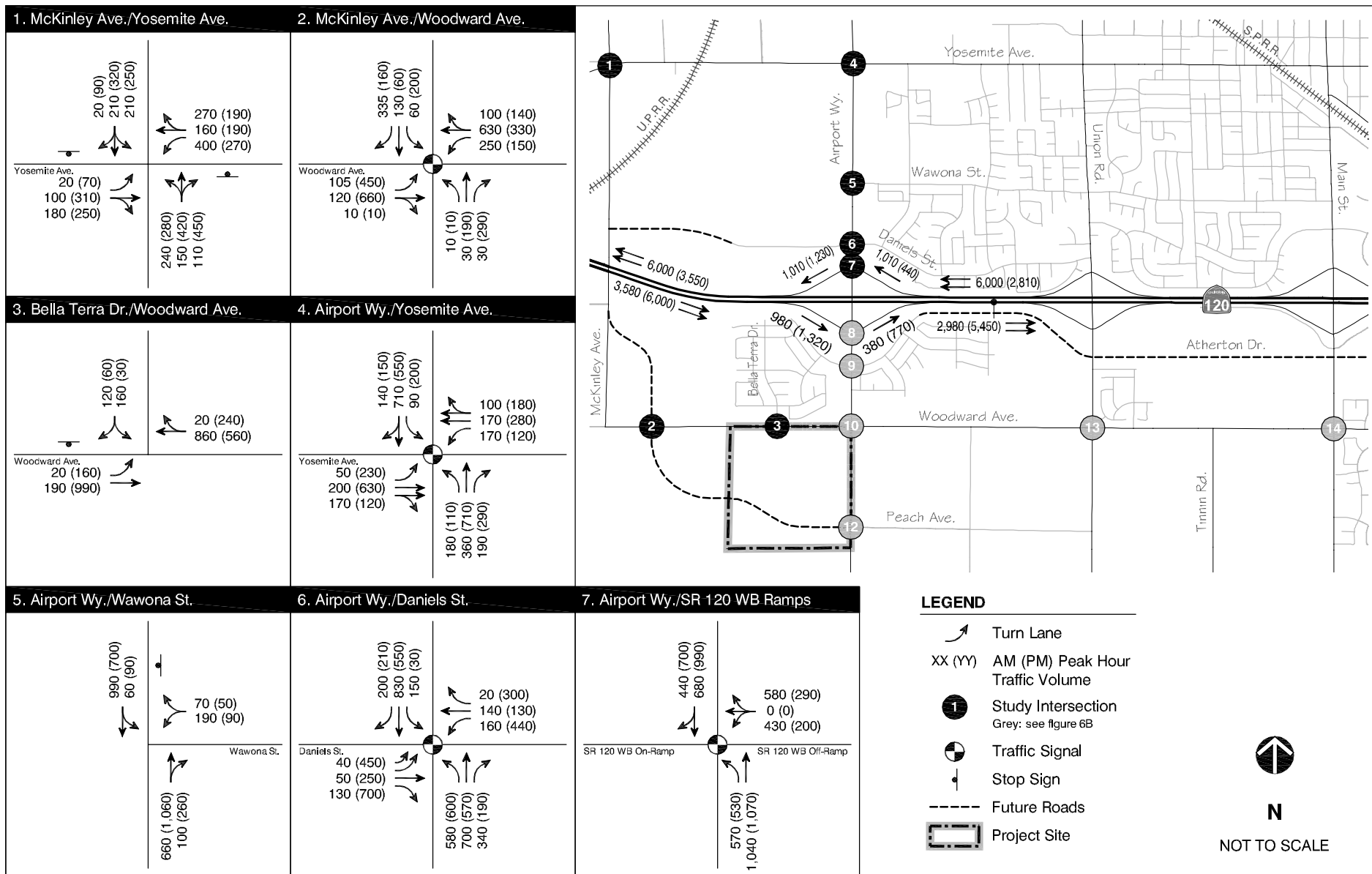
Traffic Estimates

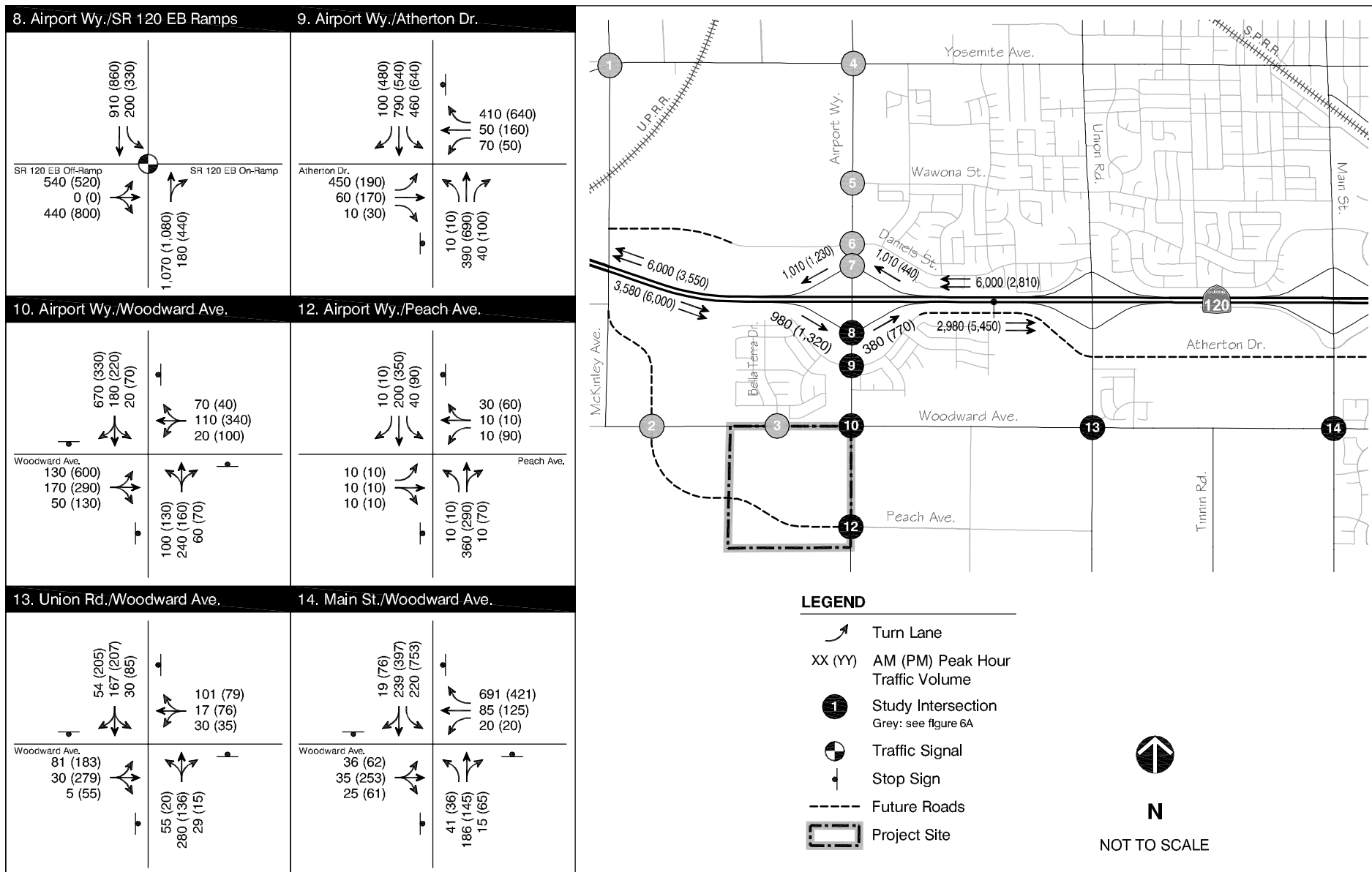
The City of Manteca/SJCOG model was used to develop traffic volumes under Cumulative No-Project Conditions. The model contains a high level of detail within the cities of Manteca, Lathrop, and Ripon to more accurately represent travel patterns in these cities. In addition to the projected land uses under 2015 conditions, a list of approved and pending projects provided by City of Manteca staff was used to estimate 2015 traffic volumes. The SJCOG land-use inputs were updated to include these approved and pending projects.

To account for model error, a technique known as the *difference method* was used to develop Cumulative No-Project traffic volume forecasts. The difference method adds model turning-movement forecasts to existing traffic count data based on the following formula:

Existing Turning Movement Volumes + (2015 SJCOG Turning Movement – 2005 SJCOG Turning Movement)

Figures 12-6A and 12-6B present the volumes for Cumulative No-Project Conditions at the study intersections, as well as intersection lane configurations





and traffic control devices. Figures 12-6A and 12-6B also present the Cumulative No-Project AM and PM peak-hour freeway mainline, on-ramp, and off-ramp traffic volumes.

Roadway Improvements

The City General Plan has identified a set of roadway improvements that correspond to buildout of the Land Use Element. However, based on discussions with City staff, the current Public Facilities Implementation program (PFIP) fee for local roadways covers only a portion of the total cost of designing and constructing these improvements. Therefore, adequate funding is not being collected to fully construct all the improvements included in the City General Plan Environmental Impact Report (Wade Associates 2003). Since full funding for future roadway improvements has not been identified and it is unknown when these improvements would be constructed, they could not be assumed to be constructed before completion of the proposed Machado Estates Project.

The only roadway project within the project vicinity that has a funding source identified is the installation of traffic signals at the eastbound and westbound ramp terminal intersections at SR 120 and Airport Way. These signals are expected to be operational in December 2007.

Additionally, based on current and expected development trends in southwest Manteca, it was assumed that McKinley Drive would be extended between Woodward Avenue and Airport Way. With McKinley Drive extended, a signal would be required at the Woodward Avenue/McKinley Drive intersection to accommodate projected traffic volumes. Based on Cumulative No-Project traffic volumes, it is assumed that a signal would be in place at this intersection under Cumulative Conditions.

Cumulative Plus Project Conditions incorporated the same limited set of roadway improvements that were assumed under Cumulative No-Project Conditions. As part of the project's frontage improvements, it is assumed that three site access intersections would be built to their ultimate configuration on the minor-street approach (i.e., Woodward Avenue/Bella Terra Drive, Site Access and Airport Way, and McKinley Avenue-Peach Avenue/Airport Way).

In addition to local roadway improvements, SJCOG has included the widening of SR 120 from four to six lanes as a Tier 1 project in the RTP. This improvement will be funded through a combination of regional transportation impact fees and the recently passed Measure K local option transportation sales tax. However, since the implementation schedule for this improvement is unknown, it was not assumed under Cumulative Conditions.

The City, in cooperation with Caltrans District 10 and SJCOG, has initiated a Project Study Report (PSR) for the SR 120/Airport Way interchange. The interchange project will determine the required interchange design to serve full buildout of the City General Plan (six lanes on Airport Way) and the planned widening of SR 120 from four to six lanes. The on-ramp and off-ramp designs

will provide the necessary deceleration and storage lengths to serve projected morning and evening peak-hour volumes at acceptable LOS conditions. However, since a full funding source has not been identified and an implementation schedule has not been established, the improvement was not assumed under Cumulative Conditions.

Intersections

Intersection operations were evaluated under Cumulative No-Project AM and PM peak-hour conditions and the results are summarized in Table 12-9. Appendix G contains the corresponding calculation sheets. The intersection LOS analysis indicates that the majority of the study intersections are expected to operate at unacceptable levels during one or both of the peak hours, as shown below.

- Yosemite Avenue and McKinley Avenue
- Woodward Avenue and McKinley Avenue
- Yosemite Avenue and Airport Way
- Wawona Street and Airport Way
- Daniels Street and Airport Way
- SR 120 westbound ramps and Airport Way
- SR 120 eastbound ramps and Airport Way
- Atherton Road and Airport Way
- Woodward Avenue and Airport Way
- Woodward Avenue and Union Road
- Woodward Avenue and Main Street

Peak-Hour Signal Warrants

A peak-hour signal warrant analysis was conducted for each of the eight unsignalized study intersections. The analysis applied the peak-hour traffic signal warrant recommended in the MUTCD and associated state (Caltrans) guidelines. Table 12-9 also summarizes the signal warrant analysis. Appendix G contains the corresponding calculation sheets. The analysis indicates that under Cumulative Conditions, all of the unsignalized study intersections would meet signal warrant criteria during either the AM or PM peak hour, except for the Peach Avenue and Airport Way intersection.

Table 12-9. Cumulative No-Project Intersection Levels of Service

Intersection	Peak Hour ^a	Intersection Control	Delay ^b	LOS ^c	Meets Warrant
1. Yosemite Avenue and McKinley Avenue	AM PM	All-way stop-controlled	> 100 > 100	F F	Yes Yes
2. Woodward Avenue and McKinley Avenue	AM PM	Signal	32.5 62.1	C E	N/A
3. Woodward Avenue and Bella Terra Drive	AM PM	Side-street stop-controlled	> 100 (40.4) >100 (7.8)	F (E) F (A)	Yes No
4. Yosemite Avenue and Airport Way	AM PM	Signal	82.9 > 100	F F	N/A
5. Wawona Street and Airport Way	AM PM	Side-street stop-controlled	> 100 (>100) > 100 (68.0)	F (F) F (F)	Yes Yes
6. Daniels Street and Airport Way	AM PM	Signal	91.6 > 100	F F	N/A
7. SR 120 westbound ramps and Airport Way	AM PM	Signal	> 100 > 100	F F	N/A
8. SR 120 eastbound ramps and Airport Way	AM PM	Signal	> 100 > 100	F F	N/A
9. Atherton Road and Airport Way	AM PM	Side-street stop-controlled	> 100 (>100) > 100 (>100)	F (F) F (F)	Yes Yes
10. Woodward Avenue and Airport Way	AM PM	All-way stop-controlled	> 100 > 100	F F	Yes Yes
12. Peach Avenue and Airport Way	AM PM	Side-street stop-controlled	18.0 (2.1) 37.5 (5.6)	C (A) E (A)	No No
13. Woodward Avenue and Union Road	AM PM	All-way-stop-controlled	12.2 59.9	B F	No Yes
14. Woodward Avenue and Main Street	AM PM	All-way-stop-controlled	86.5 > 100	F F	Yes Yes

Note: **Bold** highlighting denotes intersections with unacceptable operations (LOS E or F). If the intersection is unsignalized, unacceptable operations are defined by LOS E or F conditions and meeting signal warrant criteria.

^a AM = morning peak hour, PM = evening peak hour.

^b Whole-intersection weighted average control delay is expressed in seconds per vehicle using methodology described in the 2000 HCM. For side-street stop-controlled intersections, total control delay for the worst movement is presented in parentheses.

^c LOS = level of service. For side-street stop-controlled intersections, LOS for the worst movement is shown in parentheses. LOS calculations were conducted using the Synchro software package.

Roadway Segments

Table 12-10 presents the results of the LOS analysis under Cumulative No-Project Conditions. The LOS calculations indicate that all roadway segments are expected to operate at an acceptable LOS except for the following locations.

- Airport Way, between Yosemite Avenue and Atherton Road
- Woodward Avenue, between McKinley Avenue and Airport Way

Table 12-10. Cumulative No-Project Roadway Segment Levels of Service

Roadway Segment	Lanes	Average Daily Traffic Volume	Level of Service
1. Airport Way, between Yosemite Avenue and Wawona Street	2	18,400	F
2. Airport Way, between Wawona Street and Daniels Street	2	20,250	F
3. Airport Way, between Daniels Street and SR 120 westbound ramps	2	28,950	F
4. Airport Way, between SR 120 westbound ramps and SR 120 eastbound ramps	2	27,550	F
5. Airport Way, between SR 120 eastbound ramps and Atherton Road	2	28,900	F
6. Airport Way, between Atherton Road and Woodward Avenue	2	13,650	D
7. Airport Way, between Woodward Avenue and Peach Avenue	2	7,300	C
8. Airport Way, south of Peach Avenue	2	7,100	C
9. Yosemite Avenue, between McKinley Avenue and Airport Way	2	14,550	D
10. Yosemite Avenue, between Airport Way and Union Road	2	13,100	D
11. Woodward Avenue, between McKinley Avenue and Bella Terra Drive	2	14,800	E
12. Woodward Avenue, between Bella Terra Drive and Airport Way	2	15,250	E
13. Woodward Avenue, between Airport Way and Oleander Road	2	6,800	C
14. Peach Avenue, between Airport Way and Oleander Road	2	2,200	C
15. McKinley Avenue, between Yosemite Avenue and SR 120	2	16,400	F
16. McKinley Avenue, between SR 120 and Woodward Avenue	2	9,800	D

Note: **Bold** highlighting denotes intersections with unacceptable operations (LOS E or F). If the intersection is unsignalized, unacceptable operations are defined by LOS E or F conditions and meeting signal warrant criteria.

Freeway Mainline, Off-Ramp Diverge, and On-Ramp Merge Segments

The operations of the freeway mainline facilities were analyzed under Cumulative No-Project Conditions and the results are presented in Table 12-11. Appendix G contains the corresponding calculation sheets.

Table 12-11. Cumulative No-Project State Route 120 Mainline Levels of Service

Travel Direction	Segment	Peak Hour ^a	Density (passenger cars per mile per lane) ^b	Level of Service
Eastbound	Yosemite Avenue/Guthmiller Road to Airport Way	AM	37.8	E
		PM	>45	F
	Airport Way to Union Road	AM	30.0	D
		PM	>45	F
Westbound	Airport Way to Union Road	AM	>45	F
		PM	28.3	D
	Yosemite Avenue/Guthmiller Road to Airport Way	AM	>45	F
		PM	37.3	E

^a AM = morning peak hour, PM = evening peak hour.

^b Density is based on HCS+ analysis and results are in passenger cars per mile per lane.

The LOS analysis shows that the many of the freeway mainline segments are expected to operate at LOS F under AM and PM peak hour conditions. However, because the CMP defines LOS F as the standard on SR 120, all the segments are judged to be operating at or better than the LOS standard.

The operations of the freeway on-ramp merge and off-ramp diverge segments were analyzed under Cumulative No-Project Conditions and the results presented in Table 12-12. Appendix G contains the corresponding calculation sheets.

The LOS analysis shows that the westbound SR 120 on- and off-ramps are expected to operate at LOS F during the AM peak hour. The eastbound SR 120 on-ramp is expected to operate at LOS F in the PM peak hour. However, because of the LOS F standard for SR 120, all freeway on- and off-ramps meet the LOS standard.

Table 12-12. Cumulative No-Project State Route 120 Ramp Junction Levels of Service

Travel Direction	Ramp	Merge/Diverge	Peak Hour ^a	Density (passenger cars per mile per lane) ^b	Level of Service
Eastbound	Airport Way	Diverge (off-ramp)	AM	35.7	E
			PM	>45	F
		Merge (on-ramp)	AM	29.1	D
			PM	>45	F
Westbound	Airport Way	Diverge (off-ramp)	AM	>45	F
			PM	27.9	C
		Merge (on-ramp)	AM	>45	F
			PM	33.6	D

^a AM = morning peak hour, PM = evening peak hour.

^b Density is based on HCS+ analysis and results are in passenger cars per mile per lane for the on-ramp merge section or off-ramp diverge section.

Impact Analysis

This section presents the thresholds of significance criteria based on the City General Plan Transportation Element (City of Manteca 2003a) and the SJCOG RTP (San Joaquin Council of Governments 1996).

Thresholds of Significance

Signalized Intersections

A significant impact at a signalized intersection is defined to occur when the addition of project traffic causes intersection operations to deteriorate from an acceptable level (LOS D or better) under existing conditions to an unacceptable level (LOS E or F) under project conditions.

Unsignalized Intersections

A significant impact at an unsignalized intersection is defined to occur when:

- the addition of project traffic causes intersection operations to deteriorate from an acceptable level (LOS D or better) under existing conditions to an unacceptable level (LOS E or F) under project conditions, and
- the turning-movement volumes exceed the peak-hour traffic signal warrant criteria from the MUTCD.

Unsignalized intersections that operate at an unacceptable LOS do not have a significant impact when the intersection does not meet or exceed the peak-hour signal warrant.

Freeway Mainline, Off-Ramp Diverge, and On-Ramp Merge Segments

While the CMP defines an LOS F standard for SR 120, a significant impact to freeway mainline and ramp facilities is defined to occur when:

- the addition of project traffic increases density on a freeway facility already operating at LOS F.

Pedestrian, Bicycle, and Transit Systems

The pedestrian, bicycle, and transit operations were analyzed to determine whether the project would create a significant impact on any of these facilities. The following criteria were used to analyze the impacts.

- Transit System
 - Create a demand for public transit service above that which is provided or planned to be provided.
 - Disrupt or interfere with existing or planned public transit services or facilities.
 - Create an inconsistency with policies concerning transit systems set forth in the City General Plan.
- Bicycle and Pedestrian
 - Disrupt or interfere with existing or planned bicycle or pedestrian facilities.
 - Create an unmet need for bicycle or pedestrian facilities.
 - Create an inconsistency with policies related to bicycle or pedestrian systems set forth in the City General Plan.

CEQA Thresholds of Significance

Thresholds of significance were determined based on Appendix G of the State CEQA Guidelines and by using professional and standard practices. An impact was considered significant if it would:

- cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in

the number of vehicle trips, the v/c ratio on roads, or congestion at intersections);

- cause, either individually or cumulatively, exceedance of an LOS standard established by the county congestion management agency for designated roads or highways;
- result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- result in inadequate emergency access;
- result in inadequate parking capacity; or
- conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

Approach and Methodology

The impacts of the proposed residential development on the surrounding local and regional roadway system, pedestrian and bicycle facilities, and transit service are discussed in this chapter. First, the methodology used to estimate the amount of traffic generated by the project is described. Then, the results of the LOS calculations for Existing Plus Project and Cumulative Plus Project Conditions are presented. A comparison of intersection operations and the impacts of the project on the study intersections are discussed. Site access and onsite circulation also are addressed in this section.

The proposed project includes construction of 575 new single-family homes in Manteca, California. The project site is located at the southwest corner of the Airport Way/Woodward Avenue intersection. The site plan shows access from the project via a southerly extension of Bella Terra Drive, a new roadway connecting to Airport Way between Woodward Avenue and McKinley-Peach Avenue, and access directly to the McKinley Avenue extension through the project site.

Traffic Estimates

The amount of traffic added to the roadway system by the proposed development is estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. The first step estimates the amount of added traffic to the roadway network. The second step estimates the direction of travel to and from the project site. The trips are assigned to specific street segments and intersection turning movements during the third step. The following sections describe the results of the process for the proposed project.

Trip Generation

The amount of traffic added to the surrounding roadway system by the proposed residential uses (ITE Single-Family Residential 210) was estimated by applying trip-generation rates appropriate for the AM and PM peak hours as published in *Trip Generation* (7th Edition, Institute of Transportation Engineers 2003).

Table 12-13 presents the peak hour trip-generation rates and trip estimates. The proposed project is estimated to generate 5,503 daily trips, 431 AM peak hour trips (108 inbound and 323 outbound), and 581 PM peak hour trips (366 inbound and 215 outbound).

Table 12-13. Machado Estates Project Trip-Generation Rates and Estimates

Land Use	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Trip Rates^a							
575 single-family residential units	9.57	0.18	0.57	0.75	0.64	0.37	1.01
Trip Estimates							
575 single-family residential units	5,503	108	323	431	366	215	581

Source: Institute of Transportation Engineers 2003.

^a Trip rates are expressed as trips per dwelling unit.

^b Five existing single-family homes are located in the project site, two of which would be removed as part of the project.

Trip Distribution

The directions of approach and departure for project traffic were estimated based on the City of Manteca/SJCOG model TDF Model for Existing Plus Project and Cumulative Plus Project Conditions. Figure 12-7 illustrates the Existing Plus Project trip distribution pattern. Figure 12-8 illustrates the Cumulative Plus Project trip distribution pattern.

Trip Assignment

The project trips generated from the development were assigned to the roadway system based on the trip distribution patterns discussed above to develop Existing Plus Project and Cumulative Plus Project AM and PM peak-hour traffic volumes.

Existing Plus Project Conditions

Figures 12-9A and 12-9B present the project trips assigned to each turning movement for local and ramp terminal intersections, on-ramps, off-ramps, and SR 120 freeway mainline sections for Existing Plus Project Conditions.

Intersections

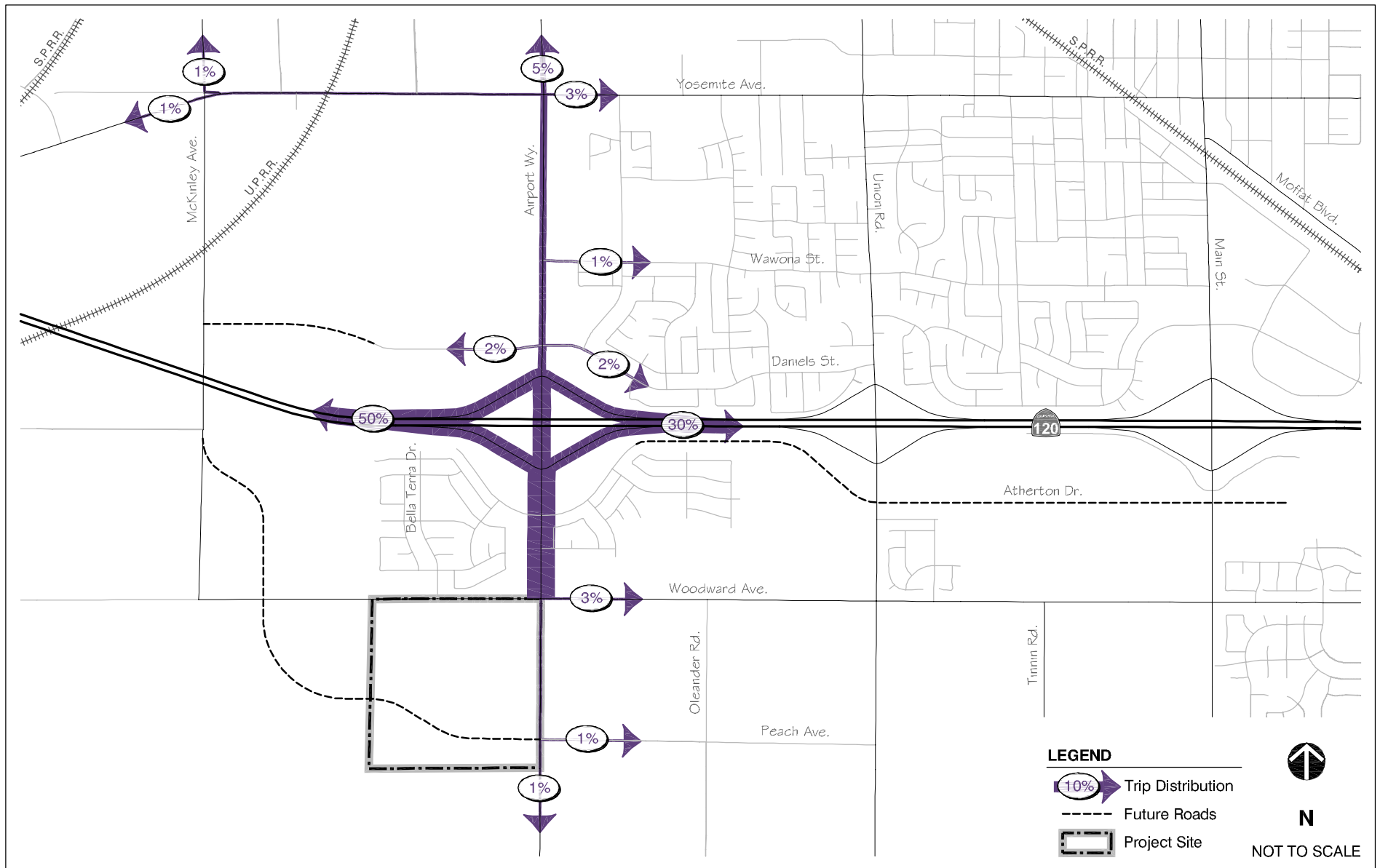
The project trips were added to existing traffic volumes to establish intersection and freeway volumes for Existing Plus Project Conditions shown in Figures 12-10A and 12-10B. Intersection LOS was calculated with the project-generated traffic to evaluate the operating conditions of the intersections and identify potential impacts to the local roadway system. The results of the intersection LOS calculations for Existing Plus Project Conditions are presented in Table 12-14 and show that the following intersections would operate at an unacceptable LOS E or F during the AM or PM peak hour.

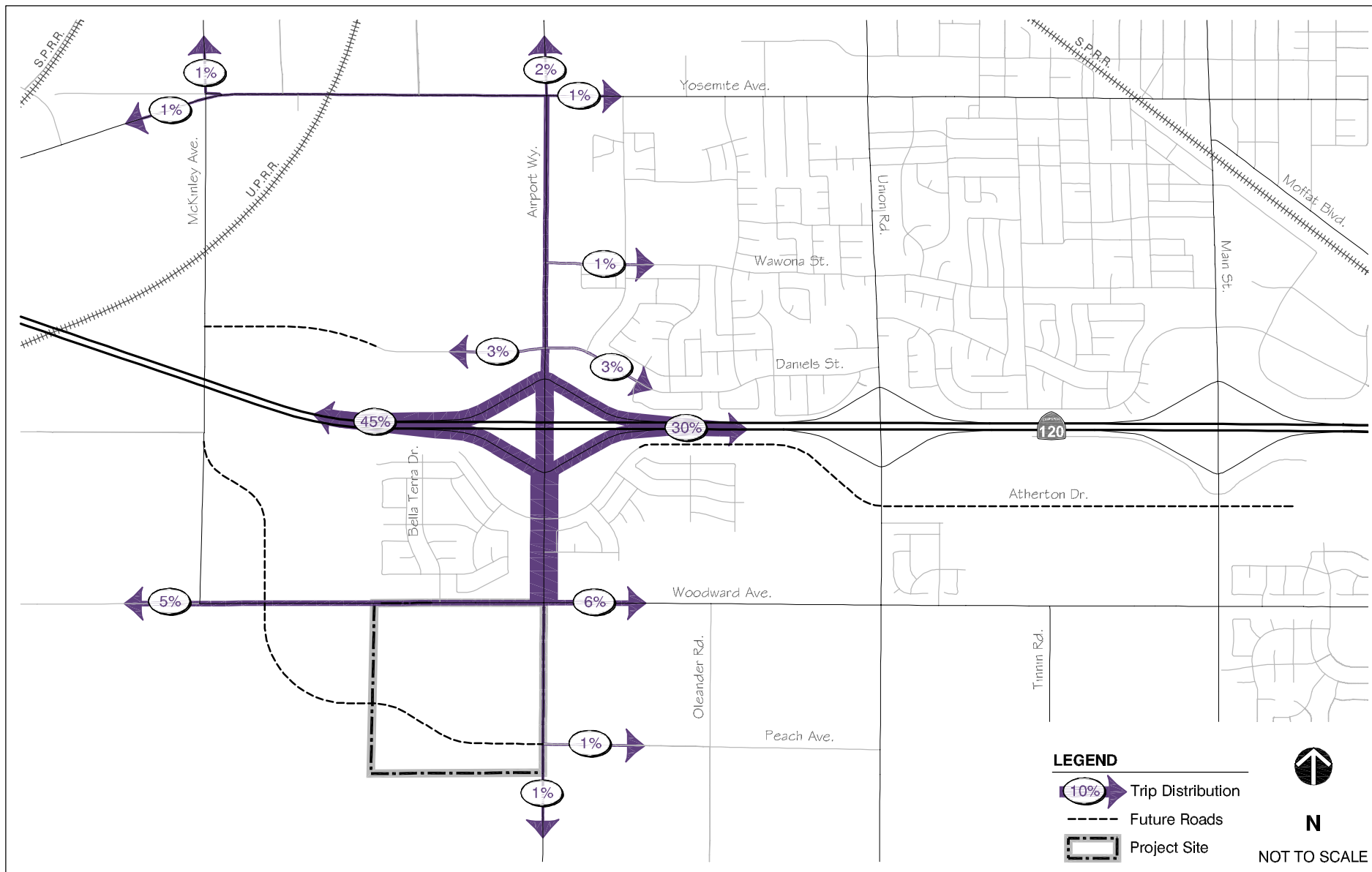
- Wawona Street and Airport Way
- SR 120 Westbound Ramps and Airport Way
- SR 120 Eastbound Ramps and Airport Way
- Atherton Road and Airport Way

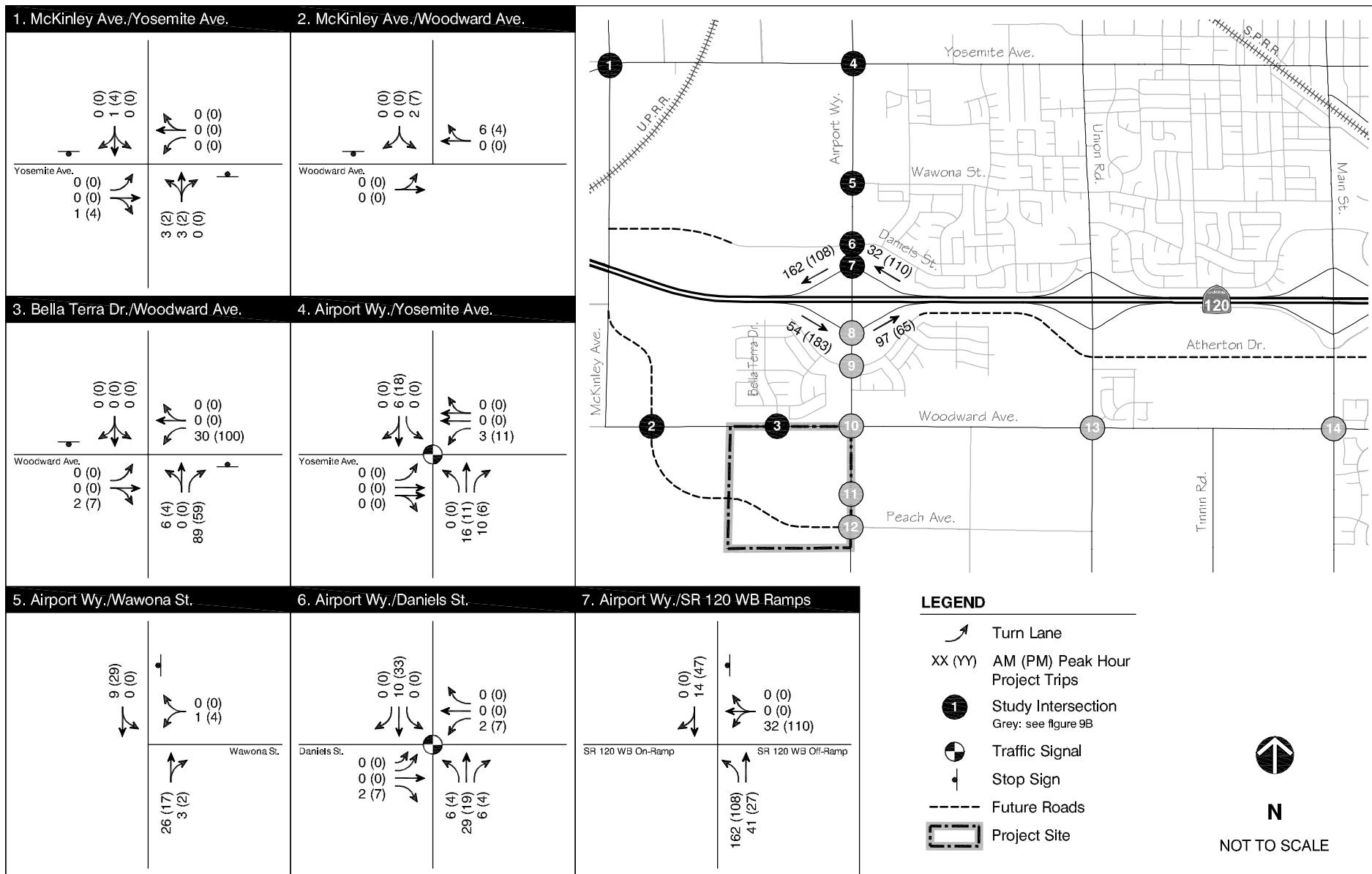
The addition of project-related trips to regional roadways would result in the following two intersections operating at unacceptable levels of service and meeting the warrant for installation of a traffic signal.

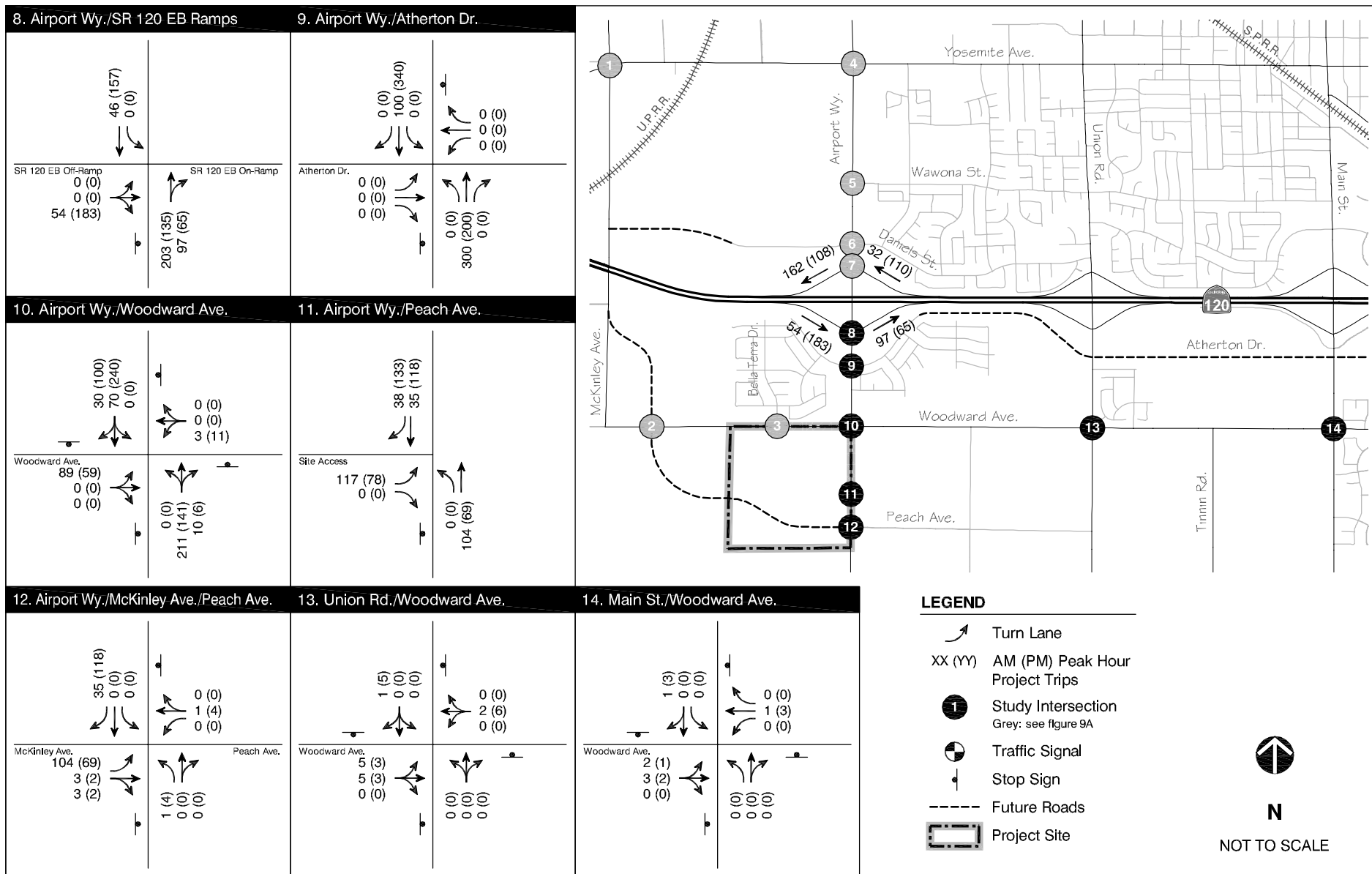
- SR 120 Westbound Ramps and Airport Way
- SR 120 Eastbound Ramps and Airport Way

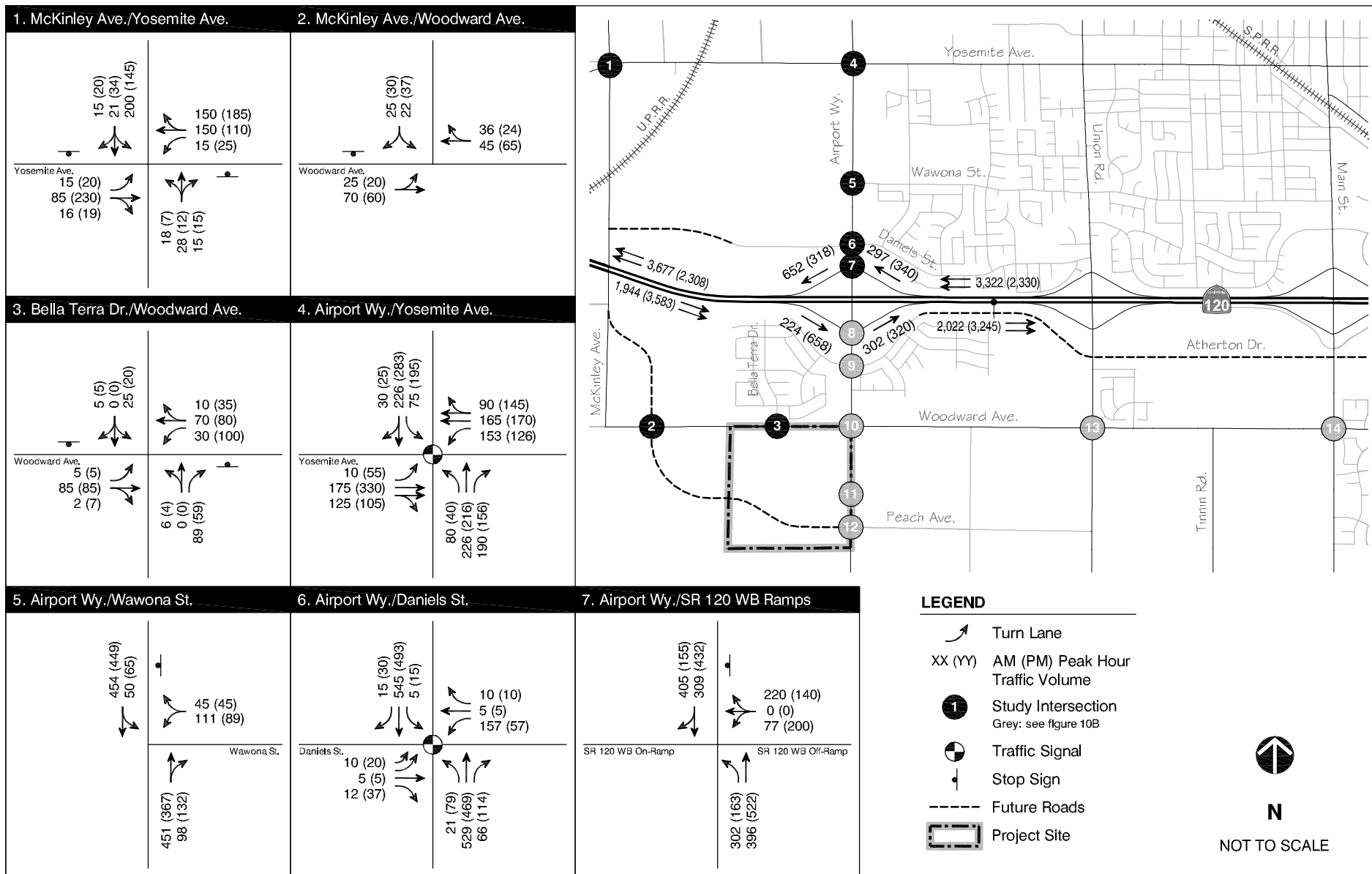
The addition of project-related traffic to the SR 120 and Airport Way intersections would result in a significant impact. The intersections at Wawona Street and Airport Way and at Atherton Road and Airport Way would also operate at unacceptable levels of service with the addition of project-related traffic during the AM and PM peak hours. However, since these intersections do not meet or exceed the peak-hour signal warrant, there is no significant impact based on City standards. Appendix G contains the corresponding calculation sheets.











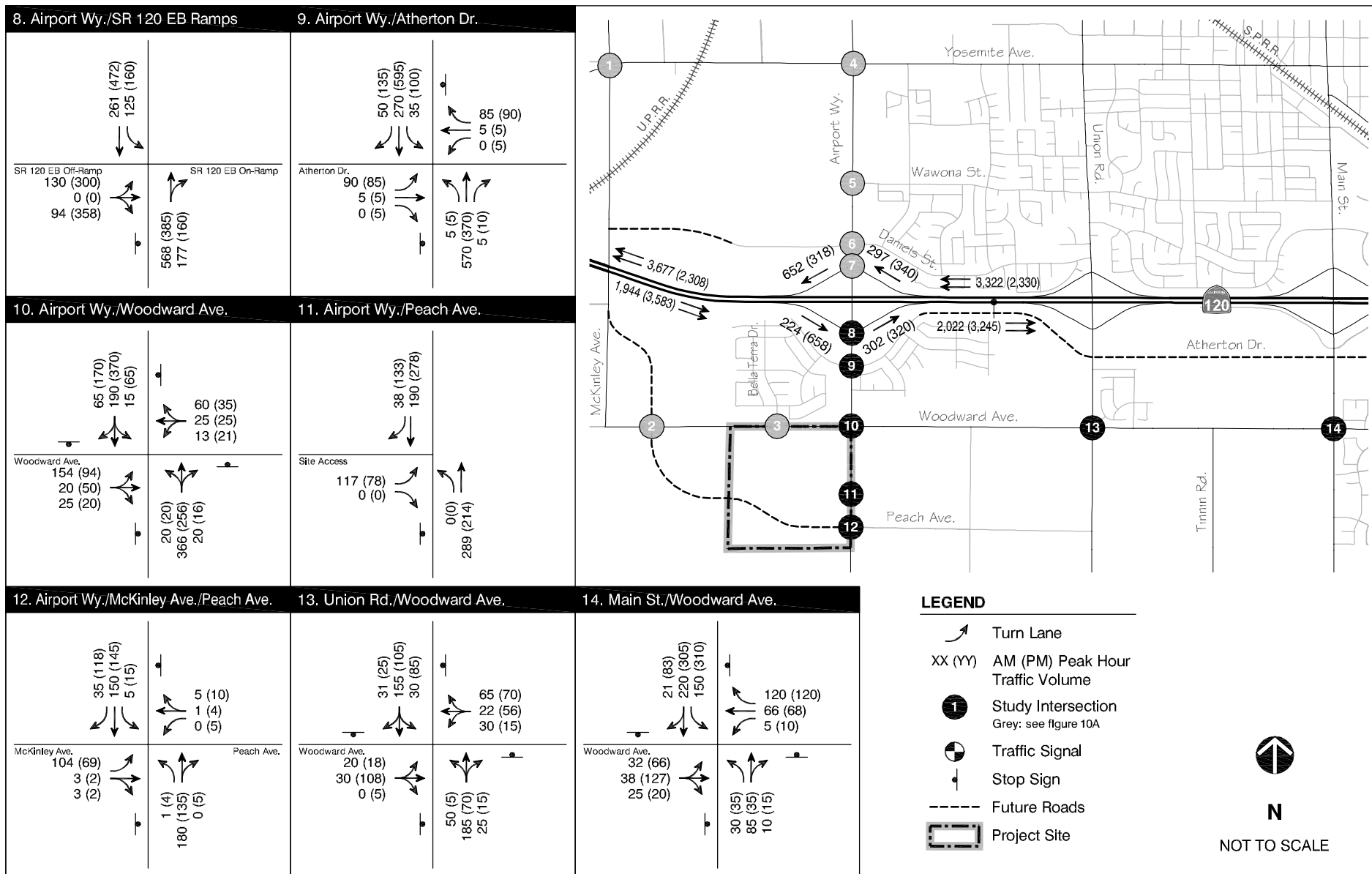


Table 12-14. Existing Plus Project Intersection Levels of Service and Signal Warrants

Intersection	Peak Hour ^a	Existing		Existing Plus Project		Meets Warrant	Significant Impact
		Delay ^b	LOS ^c	Delay ^b	LOS ^c		
1. Yosemite Avenue and McKinley Avenue	AM	10.9	B	11.0	B	No	No
	PM	11.1	B	11.3	B	No	No
2. Woodward Avenue and McKinley Avenue	AM	9.3 (2.9)	A (A)	9.4 (2.8)	A (A)	No	No
	PM	9.5 (3.2)	A (A)	9.6 (3.4)	A (A)	No	No
3. Woodward Avenue and Bella Terra Drive	AM	9.5 (1.6)	A (A)	11.6 (4.5)	B (A)	No	No
	PM	9.6 (1.2)	A (A)	12.9 (4.3)	B (A)	No	No
4. Yosemite Avenue and Airport Way	AM	25.1	C	25.2	C	NA	No
	PM	27.5	C	27.9	C		No
5. Wawona Street and Airport Way	AM	72.4 (10.3)	F (B)	>100 (14.3)	F (B)	No	No
	PM	35.3 (5.1)	E (A)	44.8 (6.1)	E (A)	No	No
6. Daniels Street and Airport Way	AM	20.3	C	21.7	C	NA	No
	PM	17.9	B	18.6	B		No
7. SR 120 westbound ramps and Airport Way	AM	95.7 (18.5)	F (C)	>100 (>100)	F (F)	Yes	Yes
	PM	>100 (26.8)	F (D)	>100 (>100)	F (F)	Yes	Yes
8. SR 120 eastbound ramps and Airport Way	AM	45.4 (9.2)	E (A)	>100 (33.5)	F (D)	Yes	Yes
	PM	>100 (>100)	F (F)	>100 (>100)	F (F)	Yes	Yes
9. Atherton Road and Airport Way	AM	21.3 (4.5)	C (A)	68.4 (7.1)	F (A)	No	No
	PM	27.4 (5.0)	D (A)	>100 (12.4)	F (B)	No	No
10. Woodward Avenue and Airport Way	AM	9.0	A	15.2	C	No	No
	PM	9.4	A	33.1	D	No	No
11. Site Access and Airport Way	AM	–	–	14.2 (2.6)	B (A)	No	No
	PM	–	–	13.5 (1.5)	B (A)	No	No
12. Peach Avenue and Airport Way	AM	9.3 (0.3)	A	12.8 (3.1)	B (A)	No	No
	PM	9.6 (0.9)	A	12.2 (2.4)	B (A)	No	No
13. Woodward Avenue and Union Road	AM	9.6	A	9.6	A	No	No
	PM	9.0	A	9.1	A	No	No
14. Woodward Avenue and Main Street	AM	10.4	B	10.4	B	No	No
	PM	16.5	C	16.8	C	No	No

Note: **Bold** highlighting denotes intersections with unacceptable operations (LOS E or F) and that also meet peak hour volume warrants.

^a AM = morning peak hour, PM = evening peak hour.

^b Whole-intersection weighted average control delay is expressed in seconds per vehicle using methodology described in the 2000 HCM. For side-street stop-controlled intersections, total control delay for the worst movement is presented in parentheses.

^c LOS = level of service. For side-street stop-controlled intersections, LOS for the worst movement is shown in parentheses. LOS calculations were conducted using the Synchro software package.

Peak-Hour Signal Warrants

A peak-hour signal warrant analysis was conducted with the addition of project-generated traffic. Table 12-11 also summarizes the warrants analysis for Existing Plus Project Conditions. Appendix G contains the corresponding calculation sheets. The Airport Way/SR 120 westbound and eastbound on- and off-ramp intersections meet the MUTCD warrant during AM and PM peak hours.

Roadway Segments

Table 12-15 presents the results of the LOS analysis under Existing Plus Project Conditions. The LOS calculations indicate that all roadway segments are expected to operate at an acceptable LOS.

Freeway Mainline, Off-Ramp Diverge, and On-Ramp Merge Segments

Freeway mainline and ramp junction LOS analyses were conducted with the addition of project-generated traffic, and the results are summarized in Table 12-16 and 12-17. Appendix G contains the corresponding calculation sheets. The LOS calculations indicate that the addition of project traffic would not lead to any significant impacts.

Table 12-15. Existing Conditions Roadway Segment Levels of Service

Roadway Segment	Lanes	Existing No Project		Existing Plus Project	
		Average Daily Traffic Volume	Level of Service	Average Daily Traffic Volume	Level of Service
1. Airport Way, between Yosemite Avenue and Wawona Street	2	9,225	D	9,630	D
2. Airport Way, between Wawona Street and Daniels Street	2	10,300	D	10,755	D
3. Airport Way, between Daniels Street and SR 120 westbound ramps	2	12,250	D	12,895	D
4. Airport Way, between SR 120 westbound ramps and SR 120 eastbound ramps	2	9,300	D	12,005	D
5. Airport Way, between SR 120 eastbound ramps and Atherton Road	2	7,675	C	12,375	D
6. Airport Way, between Atherton Road and Woodward Avenue	2	4,500	C	9,200	D
7. Airport Way, between Woodward Avenue and Peach Avenue	2	3,225	C	6,685	C
8. Airport Way, south of Peach Avenue	2	3,100	C	3,150	C
9. Yosemite Avenue, between McKinley Avenue and Airport Way	2	6,700	C	6,700	C
10. Yosemite Avenue, between Airport Way and Union Road	2	11,750	D	9,850	D
11. Woodward Avenue, between McKinley Avenue and Bella Terra Drive	2	1,700	C	1,795	C
12. Woodward Avenue, between Bella Terra Drive and Airport Way	2	2,050	C	3,440	C
13. Woodward Avenue, between Airport Way and Oleander Road	2	1,675	C	1,825	C
14. Peach Avenue, between Airport Way and Oleander Road	2	225	C	275	C
15. McKinley Avenue, between Yosemite Avenue and SR 120	2	1,025	C	1,125	C
16. McKinley Avenue, between SR 120 and Woodward Avenue	2	1,000	C	1,095	C

Table 12-16. Existing Plus Project State Route 120 Mainline Levels of Service

Travel Direction	Segment	Peak Hour ^a	Existing		Existing Plus Project		Significant Impact
			Density ^b	Level of Service	Density ^b	Level of Service	
Eastbound	Yosemite Avenue/ Guthmiller Road to Airport Way	AM	19.0	C	19.6	C	No
		PM	35.0	E	37.9	E	No
	Airport Way to Union Road	AM	19.4	C	20.3	C	No
Westbound	Airport Way to Union Road	PM	32.2	D	33.0	D	No
		AM	33.5	D	33.9	D	No
		PM	22.3	C	23.4	C	No
	Yosemite Avenue/ Guthmiller Road to Airport Way	AM	37.7	E	40.7	E	No
		PM	22.1	C	23.2	C	No

^a AM = morning peak hour, PM = evening peak hour.

^b Density is based on HCS+ analysis and results are in passenger cars per mile per lane.

Table 12-17. Existing Plus Project State Route 120 Ramp Junction Levels of Service

Travel Direction	Ramp	Merge/ Diverge	Peak Hour ^a	Existing		Existing Plus Project		Significant Impact
				Density ^b	Level of Service	Density ^b	Level of Service	
Eastbound	Airport Way	Diverge (off-ramp)	AM	18.7	B	19.3	B	No
			PM	33.9	D	35.7	E	No
		Merge (on-ramp)	AM	19.7	B	20.5	C	No
			PM	31.1	D	31.6	D	No
Westbound	Airport Way	Diverge (off-ramp)	AM	32.8	D	33.1	D	No
			PM	22.0	C	23.1	C	No
		Merge (on-ramp)	AM	34.4	D	35.7	E	No
			PM	22.2	C	23.1	C	No

^a AM = morning peak hour, PM = evening peak hour.

^b Density is based on HCS+ analysis and results are in passenger cars per mile per lane for the on-ramp merge section or off-ramp diverge section.

Site Access and Circulation

Figure 12-2 shows the proposed site plan. The site plan shows that the project provides continuity with the surrounding street network, establishes connections to the Airport Way and Woodard Avenue, and accommodates a future extension of McKinley Avenue to the west.

The internal roadway system is typical of a suburban neighborhood designed with radial and circumferential access roads. However, the unbroken median on the east-west internal roadway (which connects the center ring road to Airport Way between Woodward Avenue and McKinley-Peach Avenue) creates a circuitous path for some vehicles destined for Airport Way, as shown on Figure 12-11. Additionally, the proposed site access intersection on Airport Way, between Woodward Avenue and McKinley-Peach Avenue, is shown having right-in/right-out access only. This configuration would lead to a circuitous path for residents of the east-central portion of the site with destinations on Airport Way north of Woodward Avenue. As shown on Figure 12-11, drivers would either have to drive through the site to access the Bella Terra Drive/Woodward Avenue intersection or drive south to access the McKinley Avenue/Airport Way intersection.

All roadway segments should be designed to meet cross-section standards established by the City, include sidewalks for pedestrians, and create bicycle facilities as described in the City's 2003 Bicycle Master Plan (City of Manteca 2003b).

Cumulative Plus Project Conditions

Project trips, under Cumulative Conditions (shown in Figures 12-12A and 12-12B) were added to cumulative no-project turning-movement volumes (presented in Figures 12-6A and 12-6B) to establish turning-movement volumes for Cumulative Plus Project Conditions. Figures 12-13A and 12-13B present the intersection turning-movement, on-ramp, off-ramp, and SR 120 freeway mainline volumes under Cumulative Plus Project Conditions.

Intersections

Intersection LOS was calculated with project-generated traffic to evaluate the operating conditions of the intersections and identify potential impacts to the local roadway system. Table 12-18 presents the results of the intersection LOS calculations under Cumulative Plus Project Conditions. The intersection LOS analysis indicates that 12 of the 14 study intersections are expected to operate at unacceptable conditions with the addition of project trips, as listed below.

- Yosemite Avenue and McKinley Avenue
- Woodward Avenue and McKinley Avenue

- Woodward Avenue and Bella Terra Drive
- Yosemite Avenue and Airport Way
- Wawona Street and Airport Way
- Daniels Street and Airport Way
- SR 120 westbound ramps and Airport Way
- SR 120 eastbound ramps and Airport Way
- Atherton Road and Airport Way
- Woodward Avenue and Airport Way
- Woodward Avenue and Union Road
- Woodward Avenue and Main Street

Appendix G contains the corresponding calculation sheets.

Peak-Hour Signal Warrants

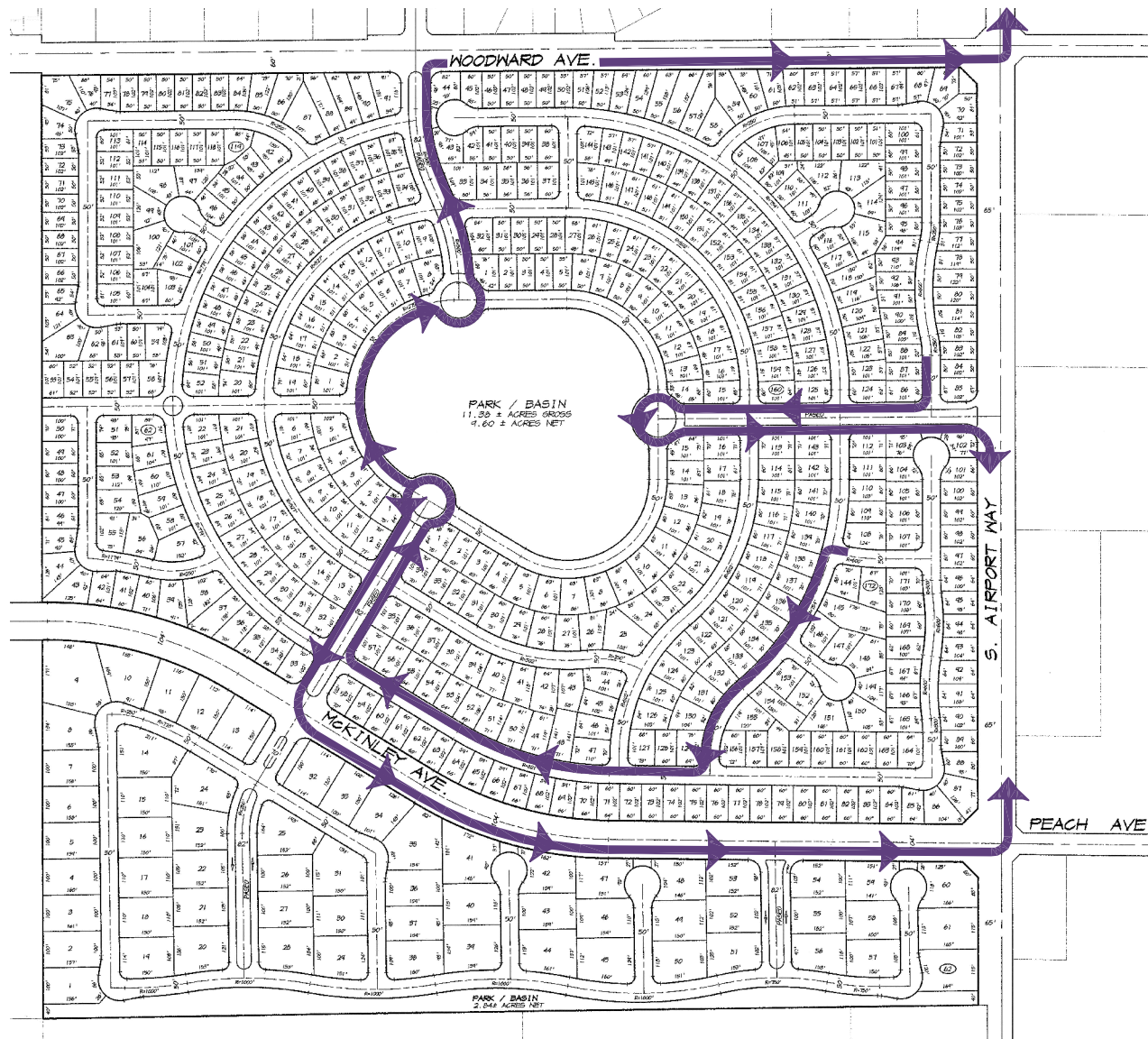
A peak-hour signal warrant analysis was conducted with the addition of project-generated traffic at the intersections that did not meet signal warrant criteria under Cumulative No-Project Conditions. Table 12-18 summarizes the warrant analysis for Cumulative Plus Project Conditions. Appendix G contains the corresponding calculation sheets.

Only the Site Access/Airport Way and McKinley-Peach Avenue/Airport Way intersections did not meet signal warrants under Cumulative No-Project Conditions. As indicated in Table 12-18, these two intersections still do not meet the MUTCD warrant during AM or PM peak hour conditions.

Roadway Segments

Table 12-19 summarizes the results of the LOS analysis for Cumulative Plus Project Conditions. The LOS calculations indicate that the number of roadway segments with unacceptable operations expands on Airport Way when compared to Cumulative No-Project Conditions. The following segments are expected to operate at an unacceptable LOS under Cumulative Plus Project Conditions.

- Airport Way, between Yosemite Avenue and Woodward Avenue
- Woodward Avenue, between McKinley Avenue and Airport Way



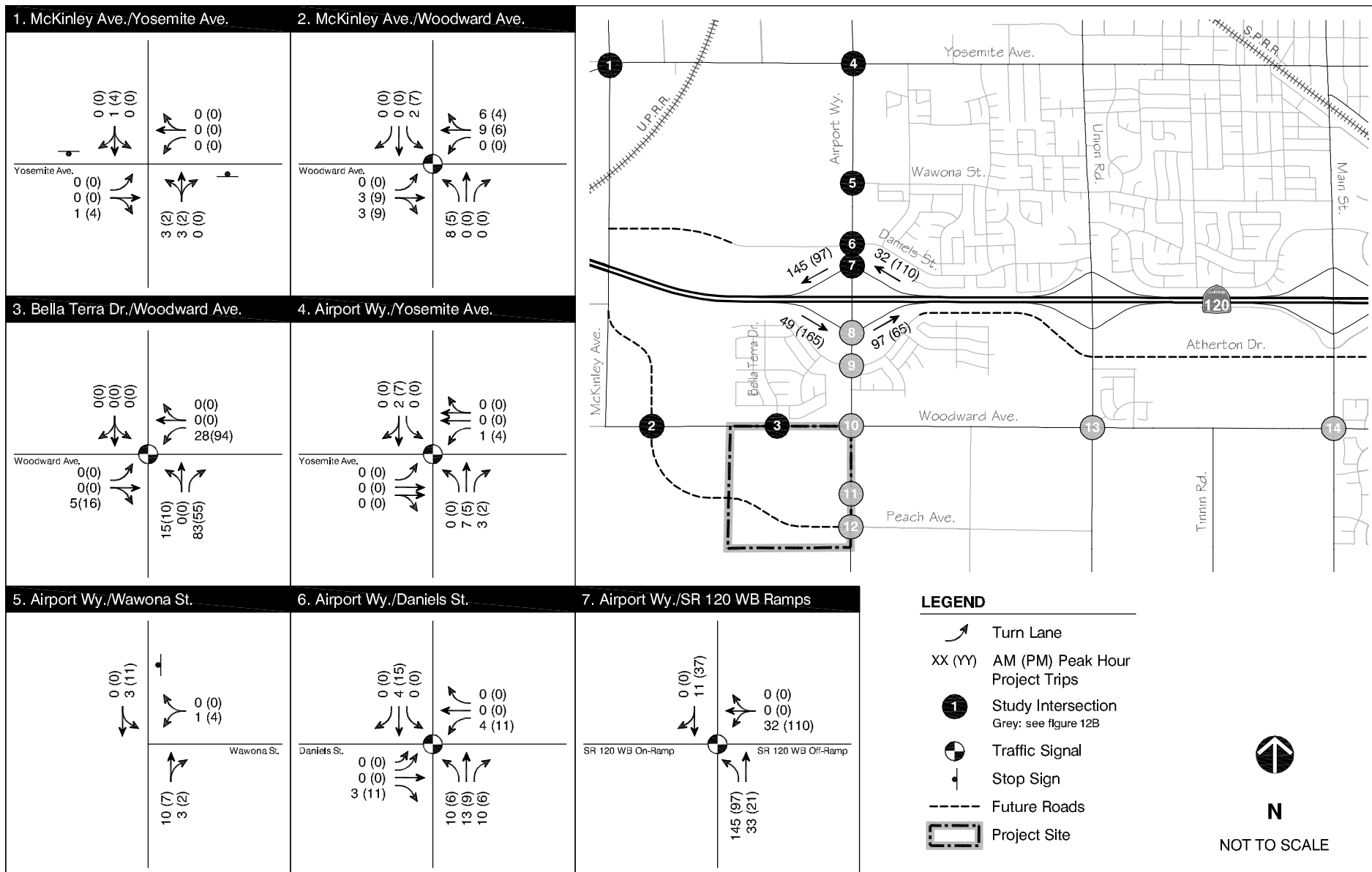
LEGEND

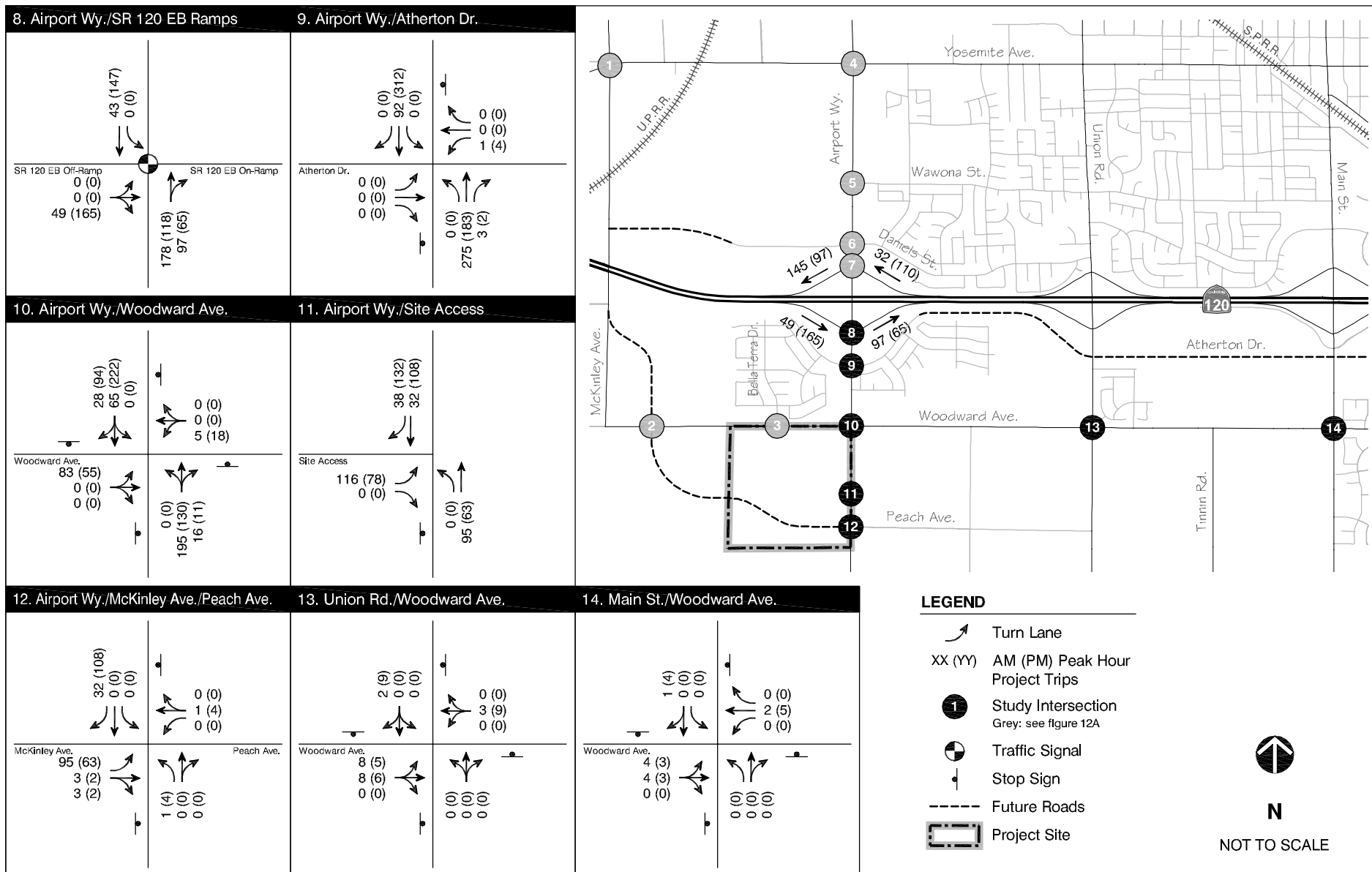
 Site Access and Circulation Patterns

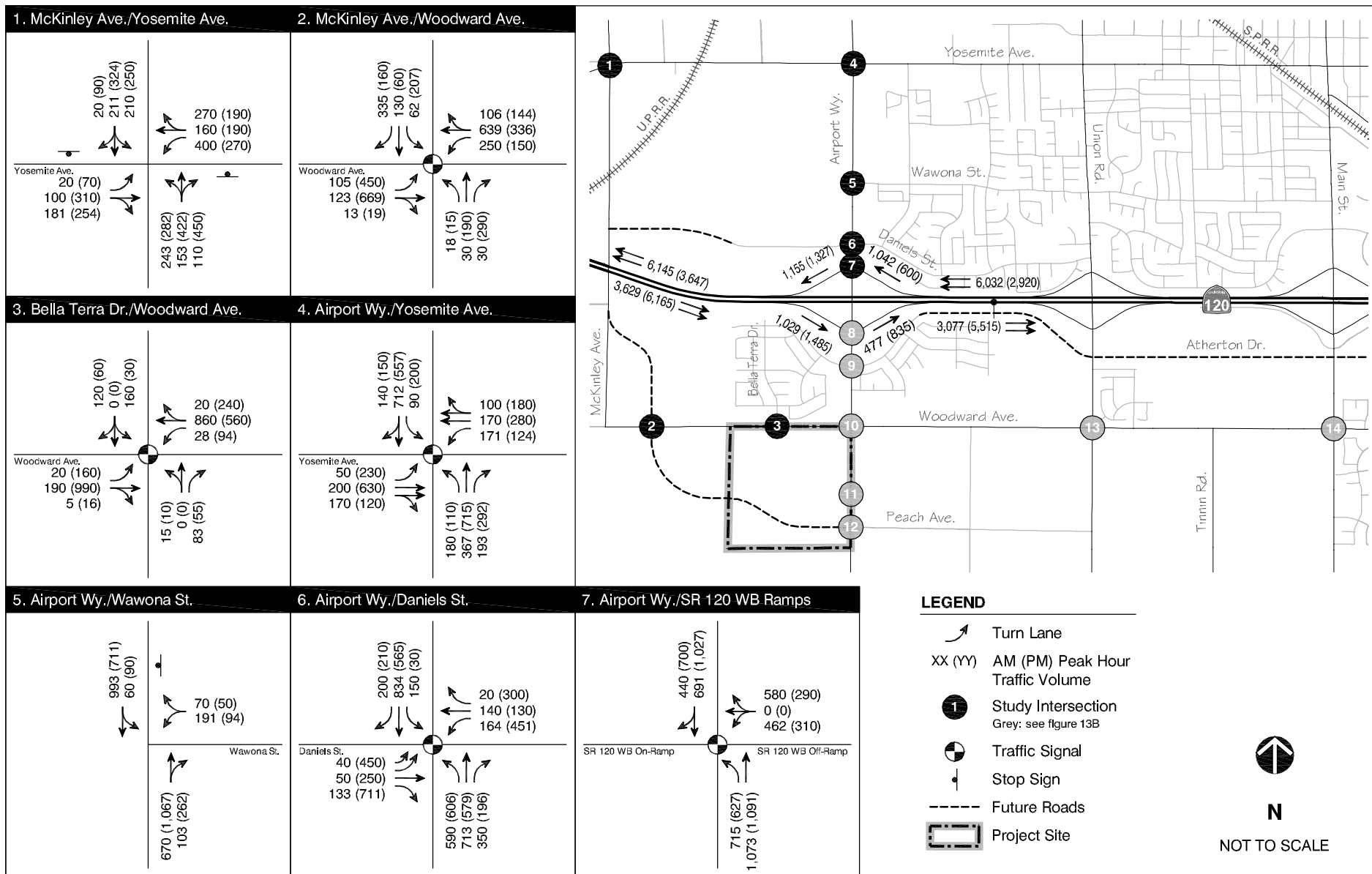


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NOT TO SCALE







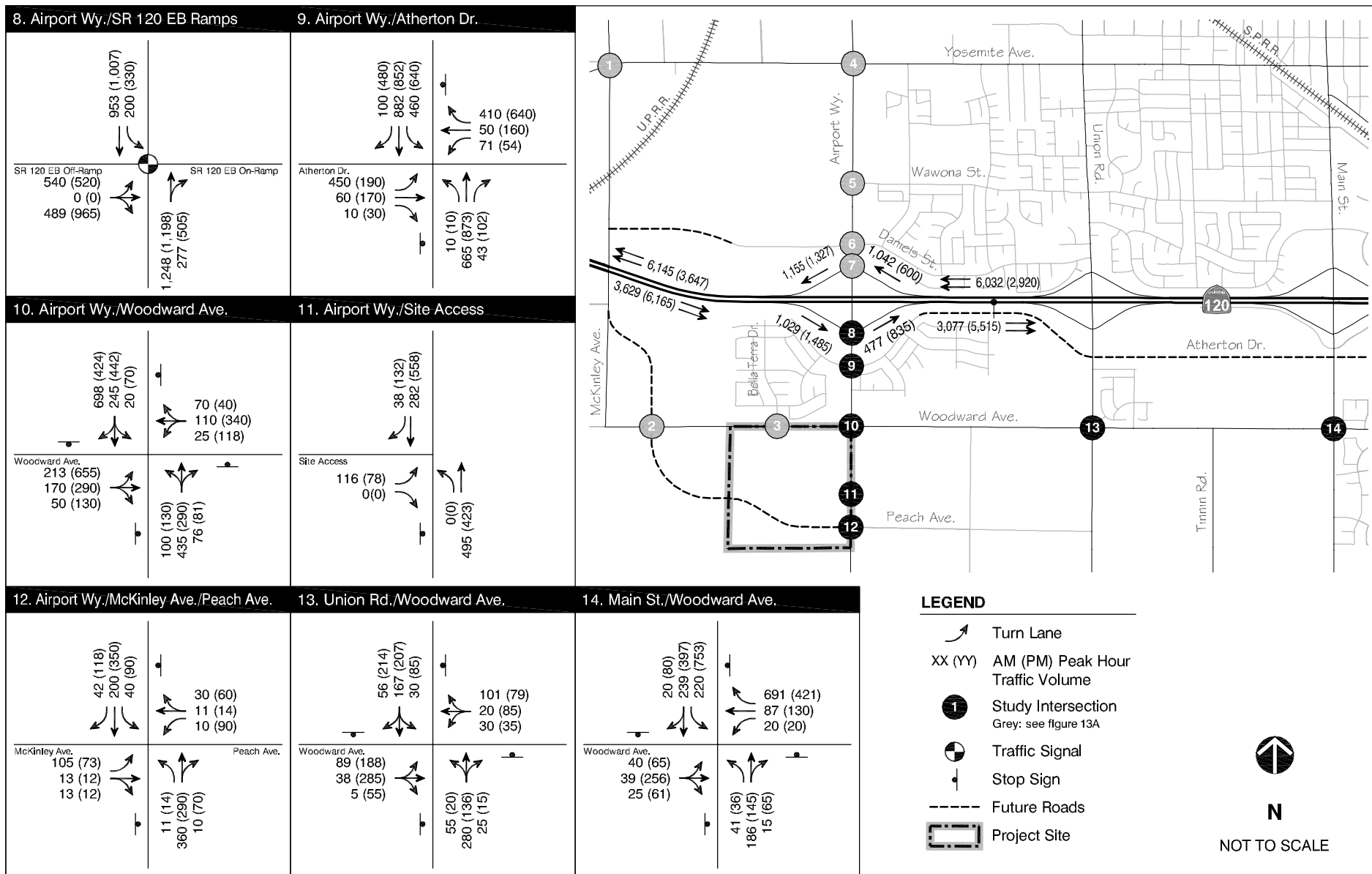


Table 12-18. Cumulative Plus Project Intersection Levels of Service and Signal Warrants

Intersection	Peak Hour ^a	Cumulative No Project		Cumulative Plus Project		Meets Warrant	Significant Impact
		Delay ^b	LOS ^c	Delay ^b	LOS ^c		
1. Yosemite Avenue and McKinley Avenue	AM	> 100	F	> 100	F	Yes	Yes
	PM	> 100	F	> 100	F	Yes	Yes
2. Woodward Avenue and McKinley Avenue	AM	32.5	C	34.7	C	N/A	No
	PM	62.1	E	63.5	E		Yes
3. Woodward Avenue and Bella Terra Drive	AM	> 100 (40.4)	F (E)	> 100 (98.5)	F (F)	Yes	Yes
	PM	>100 (7.8)	F (A)	> 100 (46.2)	F (D)	Yes	Yes
4. Yosemite Avenue and Airport Way	AM	82.9	F	83.5	F	N/A	Yes
	PM	> 100	F	> 100	F		Yes
5. Wawona Street and Airport Way	AM	> 100 (>100)	F (F)	> 100 (>100)	F (F)	Yes	Yes
	PM	> 100 (68.0)	F (F)	> 100 (>100)	F (F)	Yes	Yes
6. Daniels Street and Airport Way	AM	91.6	F	94.0	F	N/A	Yes
	PM	> 100	F	> 100	F		Yes
7. SR 120 westbound ramps and Airport Way	AM	> 100	F	> 100	F	N/A	Yes
	PM	> 100	F	> 100	F		Yes
8. SR 120 eastbound ramps and Airport Way	AM	> 100	F	> 100	F	N/A	Yes
	PM	> 100	F	> 100	F		Yes
9. Atherton Road and Airport Way	AM	> 100 (>100)	F (F)	> 100 (>100)	F (F)	Yes	Yes
	PM	> 100 (>100)	F (F)	> 100 (>100)	F (F)	Yes	Yes
10. Woodward Avenue and Airport Way	AM	> 100	F	> 100	F	Yes	Yes
	PM	> 100	F	> 100	F	Yes	Yes
11. Site Access and Airport Way	AM	–	–	22.2 (2.8)	C (A)	No	No
	PM	–	–	27.1 (1.8)	D (A)	No	No
12. Peach Avenue and Airport Way	AM	18.0 (2.1)	C (A)	26.7 (5.0)	D (A)	No	No
	PM	37.5 (5.6)	E (A)	48.0 (7.9)	E (A)	No	No
13. Woodward Avenue and Union Road	AM	12.2	B	12.4	B	No	No
	PM	59.9	F	65.9	F	Yes	Yes
14. Woodward Avenue and Main Street	AM	86.5	F	87.4	F	Yes	Yes
	PM	> 100	F	> 100	F	Yes	Yes

Note: **Bold** highlighting denotes intersections with unacceptable operations (LOS E or F). If the intersection is unsignalized, it must also meet peak-hour volume signal warrants.

^a AM = morning peak hour, PM = evening peak hour.

^b Whole-intersection weighted average control delay is expressed in seconds per vehicle using methodology described in the 2000 HCM. For side-street stop-controlled intersections, total control delay for the worst movement is presented in parentheses.

^c LOS = level of service. For side-street stop-controlled intersections, LOS for the worst movement is shown in parentheses. LOS calculations were conducted using the Synchro software package.

N/A—Intersection is assumed to be signalized or signal warrant analysis was conducted under Cumulative No-Project Conditions.

Table 12-19. Cumulative Conditions Roadway Segment Levels of Service

Roadway Segment	Lanes	Cumulative No Project		Cumulative Plus Project	
		Average Daily Traffic Volume	Level of Service	Average Daily Traffic Volume	Level of Service
1. Airport Way, between Yosemite Avenue and Wawona Street	2	18,400	F	18,555	F
2. Airport Way, between Wawona Street and Daniels Street	2	20,250	F	20,455	F
3. Airport Way, between Daniels Street and SR 120 westbound ramps	2	28,950	F	29,460	F
4. Airport Way, between SR 120 westbound ramps and SR 120 eastbound ramps	2	27,550	F	29,980	F
5. Airport Way, between SR 120 eastbound ramps and Atherton Road	2	28,900	F	33,210	F
6. Airport Way, between Atherton Road and Woodward Avenue	2	13,650	D	18,010	F
7. Airport Way, between Woodward Avenue and Peach Avenue	2	7,300	C	10,610	D
8. Airport Way, south of Peach Avenue	2	7,100	C	7,150	C
9. Yosemite Avenue, between McKinley Avenue and Airport Way	2	14,550	D	14,550	D
10. Yosemite Avenue, between Airport Way and Union Road	2	13,100	D	13,150	D
11. Woodward Avenue, between McKinley Avenue and Bella Terra Drive	2	14,800	E	15,030	E
12. Woodward Avenue, between Bella Terra Drive and Airport Way	2	15,250	E	16,550	F
13. Woodward Avenue, between Airport Way and Oleander Road	2	6,800	C	7,050	C
14. Peach Avenue, between Airport Way and Oleander Road	2	2,200	C	2,250	C
15. McKinley Avenue, between Yosemite Avenue and SR 120	2	16,400	F	16,500	F
16. McKinley Avenue, between SR 120 and Woodward Avenue	2	9,800	D	9,895	D

Note: **Bold** highlighting denotes intersections with unacceptable operations (LOS E or F). If the intersection is unsignalized, unacceptable operations are defined by LOS E or F conditions and meeting signal warrant criteria.

Freeway Mainline, Off-Ramp Diverge, and On-Ramp Merge Segments

Freeway mainline LOS analyses under Cumulative Plus Project Conditions were conducted with the addition of project-generated traffic, and the results are summarized in Table 12-20. Appendix G contains the corresponding calculation sheets. The LOS analysis shows that all of the study freeway mainline segments would continue to operate at the same LOS as Cumulative No-Project Conditions. The addition of project traffic would lead to an increase in density on mainline segments already operating at LOS F at the following locations.

- Eastbound SR 120, between Yosemite Avenue and Airport Way in the PM peak hour
- Westbound SR 120, between Union Road and Yosemite Avenue in the AM peak hour

Table 12-20. Cumulative Conditions State Route 120 Mainline Levels of Service

Travel Direction	Segment	Peak Hour ^a	Cumulative		Cumulative Plus Project		Significant Impact
			Density ^b	Level of Service	Density ^b	Level of Service	
Eastbound	Yosemite Avenue/ Guthmiller Road to Airport Way	AM	37.8	E	38.7	E	No
		PM	>45	F	>45	F	Yes
Westbound	Airport Way to Union Road	AM	30.0	D	31.0	D	No
		PM	>45	E	>45	E	No
	Airport Way to Union Road	AM	>45	F	>45	F	Yes
		PM	28.3	D	29.4	D	No
	Yosemite Avenue/ Guthmiller Road to Airport Way	AM	>45	F	>45	F	Yes
		PM	37.3	E	39.0	E	No

^a AM = morning peak hour, PM = evening peak hour.

^b Density is based on HCS+ analysis and results are in passenger cars per mile per lane.

Freeway-ramp junction LOS analyses were conducted under Cumulative Plus Project Conditions, and the results are summarized in Table 12-21. Appendix G contains the corresponding calculation sheets. The LOS calculations indicate that project traffic would lead to an increase in density at ramp merge and diverge junctions already operating at LOS F at the following locations.

- Eastbound off-ramp to Airport Way in the PM peak hour
- Eastbound on-ramp from Airport Way in the PM peak hour
- Westbound off-ramp to Airport Way in the AM peak hour
- Westbound on-ramp from Airport Way in the AM peak hour

Table 12-21. Cumulative Conditions State Route 120 Ramp Junction Levels of Service

Travel Direction	Ramp	Merge/Diverge	Peak Hour ^a	Cumulative		Cumulative Plus Project		Significant Impact
				Density ^b	Level of Service	Density ^b	Level of Service	
Eastbound	Airport Way	Diverge (off-ramp)	AM	35.7	E	36.2	E	No
			PM	>45	F	>45	F	Yes
		Merge (on-ramp)	AM	29.1	D	29.9	D	No
Westbound	Airport Way	Diverge (off-ramp)	PM	>45	F	>45	F	Yes
			PM	27.9	C	29.1	D	No
		Merge (on-ramp)	AM	>45	F	>45	F	Yes
			PM	33.6	D	34.4	D	No

^a AM = morning peak hour, PM = evening peak hour.

^b Density is based on HCS+ analysis and results are in passenger cars per mile per lane for the on-ramp merge section or off-ramp diverge section.

Impacts and Mitigation Measures

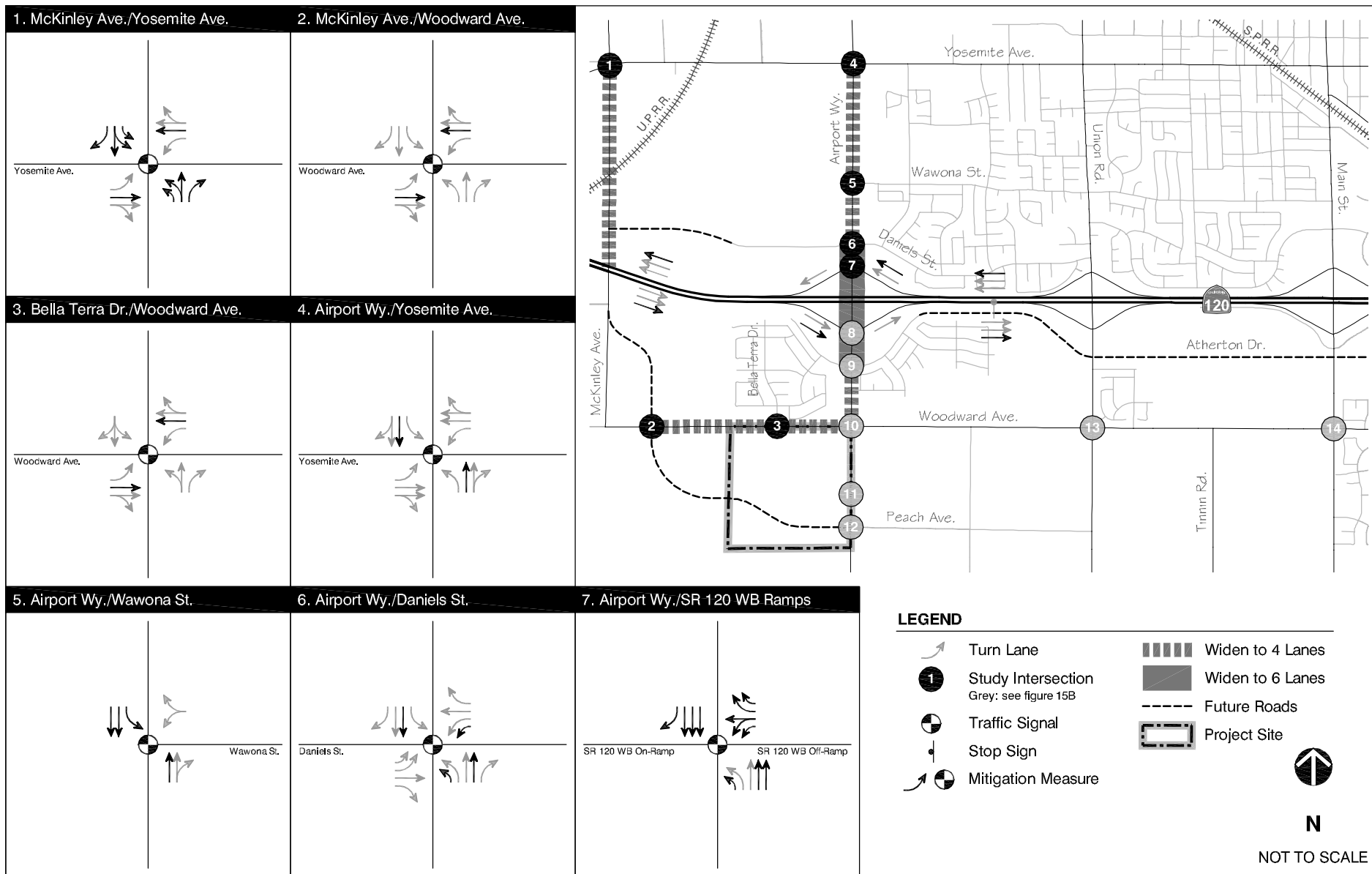
The following section describes significant impacts to the transportation system that are caused by the Machado Estates project. A mitigation measure is proposed to reduce the significance of each identified impact. Because of technical, financial, and environmental constraints, not all impacts can be mitigated to a less-than-significant level. Figures 12-15A and 12.15B summarize the mitigation measures identified below.

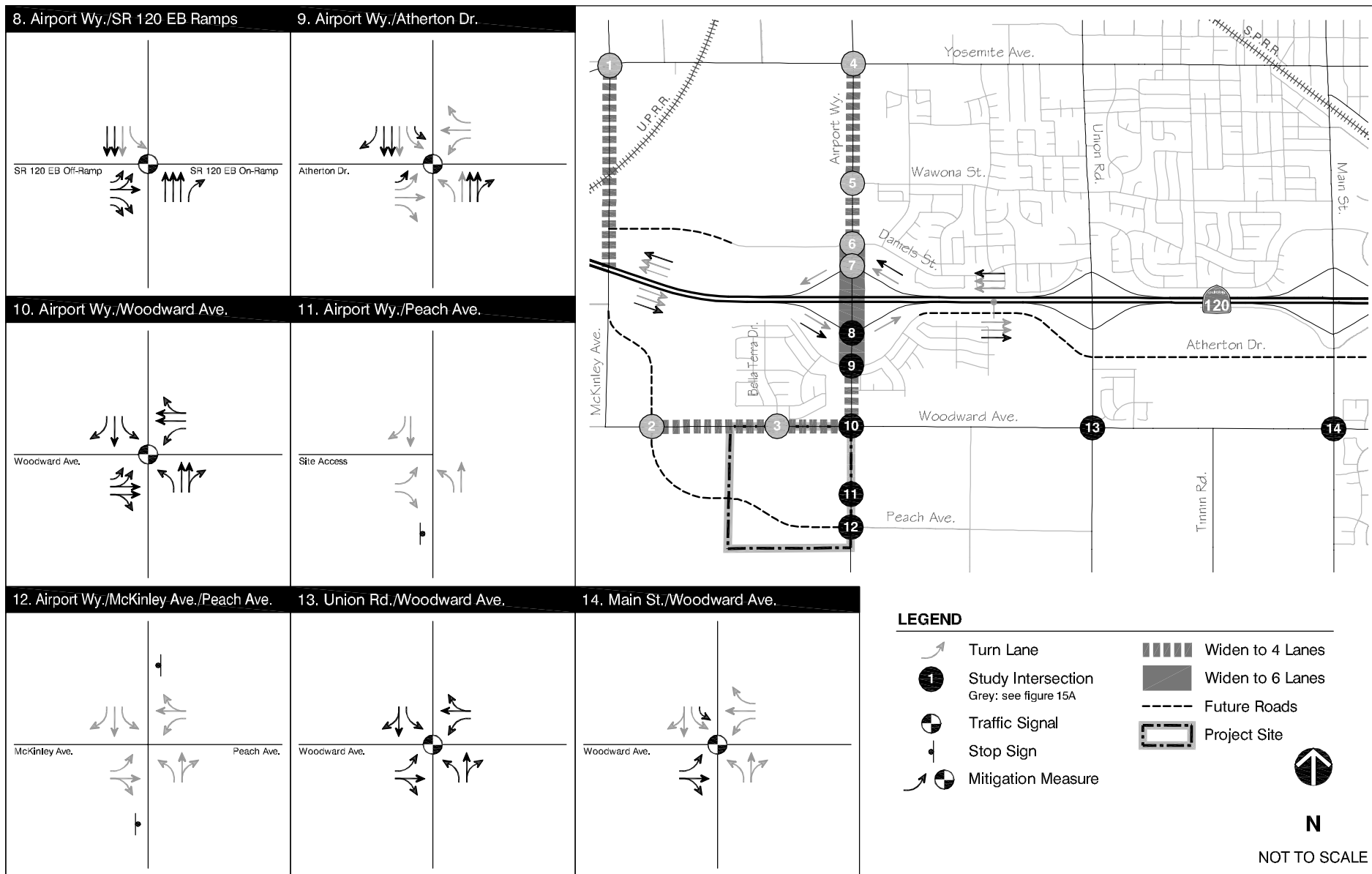
Impact TRA-1: Unacceptable Level of Service at Unsignalized Airport Way/Westbound State Route 120 On- and Off-Ramp Intersection under Existing Plus Project Conditions (Less than Significant with Mitigation)

As described previously, the Airport Way/Westbound SR 120 on- and off-ramp intersection would operate at unacceptable LOS F during AM and PM peak hour conditions, which exceeds the LOS D threshold for an unsignalized city street/Caltrans ramp terminal intersection. This LOS would be considered a significant impact. In addition, the intersection meets the peak-hour traffic signal warrant criteria from the MUTCD.

Mitigation Measure TRA-1a: Pay PFIP Fee for the Installation of a Traffic Signal at the Airport Way/Westbound State Route 120 On- and Off-Ramp Intersection

As shown in Table 12-22, with the installation of traffic signals, intersection operations would improve to acceptable LOS C or better during both AM and PM peak hour conditions. Therefore, this impact is considered less than significant with mitigation. As noted earlier, this





traffic signal is already funded and is expected to be operational in February 2008. Since the City's PFIP is the funding source for this traffic signal, the project applicant's standard PFIP fee will cover the cost of the traffic signal. It should be noted that any new traffic signals installed along Airport Way, between Daniels Street and Atherton Road, should be coordinated due to the close intersection spacing in the area.

Table 12-22. Existing Plus Project with Mitigation Intersection Levels of Service

Intersection	Peak Hour ^a	Intersection Control	Delay ^b	LOS ^c
1. SR 120 westbound ramps and Airport Way	AM PM	Signal	26.1 14.6	C B
2. SR 120 eastbound ramps and Airport Way	AM PM	Signal	27.8 20.1	C C

^a AM = morning peak hour, PM = evening peak hour.

^b Whole-intersection weighted average control delay is expressed in seconds per vehicle using methodology described in the 2000 HCM. For side-street stop-controlled intersections, total control delay for the worst movement is presented in parentheses.

^c LOS = level of service. For side-street stop-controlled intersections, LOS for the worst movement is shown in parentheses. LOS calculations were conducted using the Synchro software package.

Impact TRA-2: Unacceptable Level of Service at Unsignalized Airport Way/Eastbound State Route 120 On- and Off-Ramp Intersection under Existing Plus Project Conditions (Less than Significant with Mitigation)

As described previously, the Airport Way/Eastbound SR 120 on- and off-ramp intersection would operate at unacceptable LOS F during AM and PM peak hour conditions, which exceeds the LOS D threshold for an unsignalized city street/Caltrans ramp terminal intersection. This is considered a significant impact. In addition, the intersection meets the peak-hour traffic signal warrant criteria from the MUTCD.

Mitigation Measure TRA-2a: Pay PFIP Fee for the Installation of a Traffic Signal at the Airport Way/Eastbound State Route 120 On- and Off-Ramp Intersection

As shown in Table 12-22, with the installation of traffic signals, intersection operations would improve to acceptable LOS C during both AM and PM peak hour conditions. Therefore, this impact is considered less than significant with mitigation. As noted earlier, this traffic signal is already funded and is expected to be operational in February 2008. Since the City's PFIP is the funding source for this traffic signal, the project applicant's standard PFIP fee will cover the cost of the traffic signal. It should be noted that any new traffic signals installed along Airport Way, between Daniels Street and Atherton Road, should be coordinated due to the close intersection spacing in the area.

Impact TRA-3: Site Access and Circulation Impacts (Less than Significant with Mitigation)

As shown on Figure 12-11, the current site plan would cause some drivers to choose circuitous routes when entering or exiting portions of the site. This is considered a significant impact. As described in Mitigation Measure TRA-5, changes to the site plan would reduce this impact to a less-than-significant level.

Mitigation Measure TRA-3a: Reconfigure Site Plan to Provide Better Access and Circulation

As shown on Figure 12-14, the following improvements would improve site access and circulation.

- Provide a full access intersection at Airport Way for the site access located between Woodward Avenue and McKinley-Peach Avenue.
- Accommodate left- and U-turns along the east-west site access road at the second intersection west of Airport Way. Left- and U-turns can be accommodated with a roundabout or an appropriately sized traditional four-way intersection.
- Allow bike and pedestrian access through the ends of cul-de-sacs to encourage bicycling and walking.

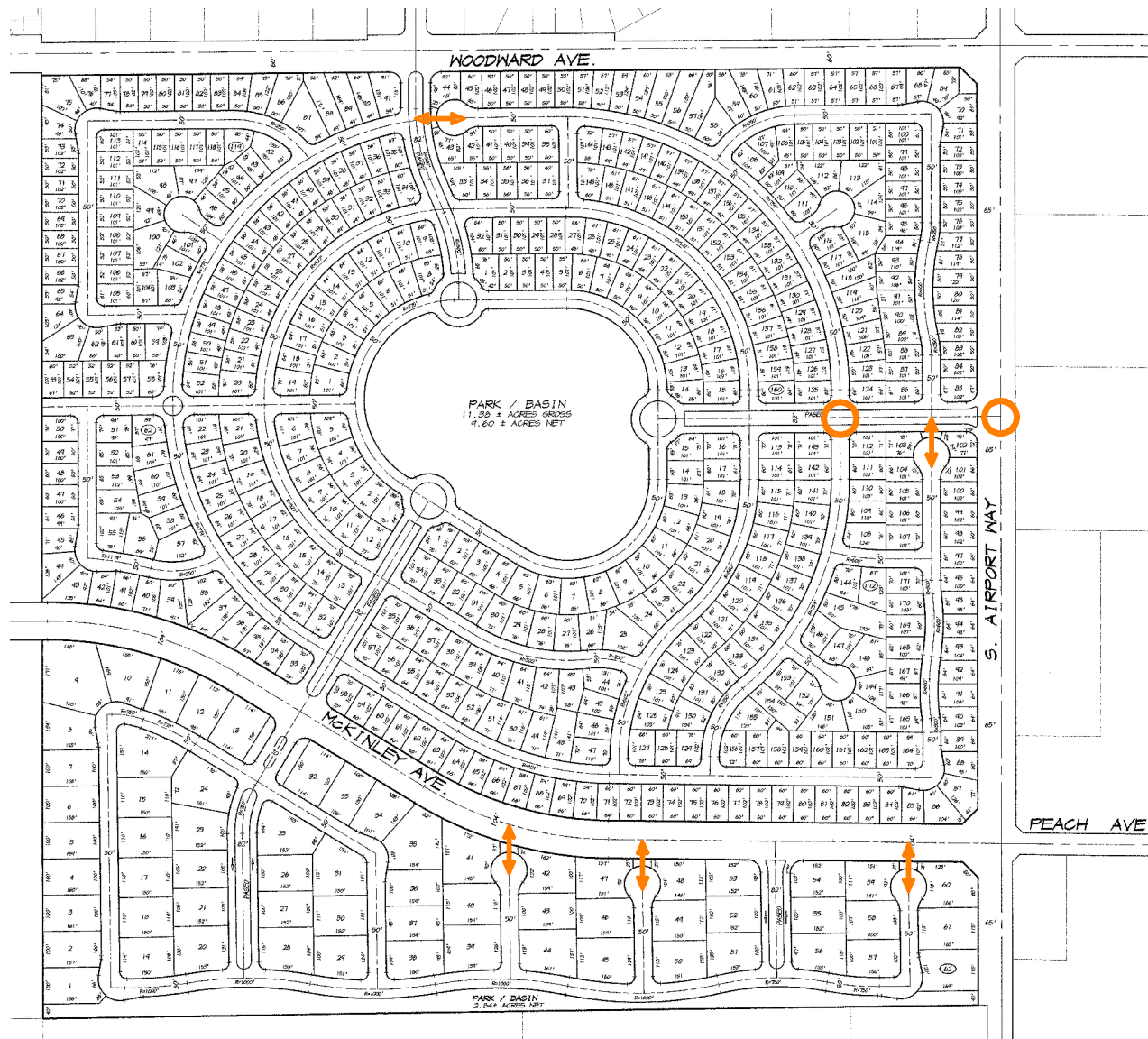
Impact TRA-4: Unacceptable Level of Service at the Yosemite Avenue/McKinley Avenue Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours and meets the peak-hour signal warrant under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-4a: Pay Fair-Share of Intersection Improvements at Yosemite Avenue/McKinley Avenue

The City General Plan shows Yosemite Avenue as a six-lane facility and McKinley Avenue as a four-lane facility in the future. As part of the widening projects, this intersection would be improved and signalized. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. Acceptable operations can be provided at this intersection with the construction of the improvements listed below.

- Signalize the intersection.
- Construct second eastbound and westbound through lanes at the intersection. The additional through lanes must be carried a sufficient distance up and downstream to ensure adequate lane utilization.
- Configure the northbound and southbound approaches as follows: single left-turn lane, shared through/left-turn lane, and single right-turn lane.



A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS D during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-5: Unacceptable Level of Service at the Woodward Avenue/McKinley Avenue Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS E in the PM peak hour under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-5a: Pay Fair-Share of Intersection Improvements at Woodward Avenue/McKinley Avenue

The General Plan shows Woodward Avenue and McKinley Avenue as four-lane facilities in the future. As part of the widening projects, this intersection would be improved. Moreover, as described later in this section, the segment of Woodward Avenue between McKinley and Bella Terra Drive must be widened to four lanes to accommodate project traffic. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified, as the current PFIP covers only a portion of the cost. Acceptable operations can be provided at this intersection with the construction of the improvements listed below.

- Construct second eastbound and westbound through lanes at the intersection. The additional through lanes must be carried a sufficient distance up and downstream to ensure adequate lane utilization.
- Configure the northbound and southbound approaches as follows: single left-turn lane, single through lane, and a single right-turn lane.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS D or better during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-6: Unacceptable Level of Service at the Woodward Avenue/Bella Terra Drive Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours and meets the peak-hour signal warrant under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-6a: Pay Fair-Share to Signalize Woodward Avenue/Bella Terra Drive Intersection

To accommodate project traffic at this intersection (which provides access to the site), a traffic signal is required under Cumulative Conditions. Since a subsequent mitigation measure identifies the widening of Woodward Avenue to four lanes, this mitigation measure assumes the widening is in place.

A LOS analysis indicates that if the intersection is signalized, it will operate at LOS B during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-7: Unacceptable Level of Service at the Yosemite Avenue/Airport Way Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-7a: Pay Fair-Share of Intersection Improvements at Yosemite Avenue/Airport Way

The City General Plan shows Yosemite Avenue and Airport Way as six-lane facilities in the future. As part of the widening projects, this intersection would be improved. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified, as the current PFIP covers only a portion of the cost. Acceptable operations can be provided at this intersection with the construction of the following improvements:

- provide a single left-turn lane, a through lane, and a shared through/right-turn lane on all approaches.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS D or better during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Note that a subsequent mitigation measure requires that Airport Way be widened to four lanes between Yosemite Avenue and Daniels Street to accommodate project trips at an acceptable LOS. The mitigation measure at this intersection was designed to accommodate the roadway widening to four lanes. By providing the additional through lanes, this intersection will operate at an acceptable LOS. The roadway widening therefore has a secondary benefit that provides acceptable operations at this intersection.

Impact TRA-8: Unacceptable Level of Service at the Wawona Street/Airport Way Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours under Cumulative No-Project Conditions. This unsignalized intersection also meets peak-hour signal warrant criteria. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-8a: Pay Fair-Share of Intersection Improvements at Wawona Street/Airport Way

The General Plan shows Airport Way as six-lane facility in the future. As part of the Airport Way widening project, this intersection would be improved. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified, as the current PFIP covers only a portion of the cost. To meet the City's LOS standards, the intersection must be configured as follows:

- provide a single left-turn lane and two through lanes on the southbound approach, and
- provide a through lane and a shared through/right-turn lane.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS B during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Note that a subsequent mitigation measure requires that Airport Way be widened to four lanes between Yosemite Avenue and Daniels Street to accommodate project trips at an acceptable LOS. The mitigation measure at this intersection was designed to accommodate the roadway widening to four lanes. By providing the additional through lanes, this intersection will operate at an acceptable LOS. The roadway widening therefore has a secondary benefit that provides acceptable operations at this intersection.

Impact TRA-9: Unacceptable Level of Service at the Daniels Street/Airport Way Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-9a: Pay Fair-Share of Intersection Improvements at Daniels Street/Airport Way

The City General Plan shows Airport Way as a six-lane facility in the future. As part of the Airport Way widening project, this intersection would be improved. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified, as the current PFIP covers only a portion of the cost. To meet the City's LOS standards, the intersection must be configured as follows:

- provide a single left-turn lane, two through lanes, and a right-turn lane on the southbound approach;
- provide two left-turn lanes, two through lanes, and a right-turn lane on the northbound approach; and
- provide two left-turn lanes, one through lane, and a right-turn lane on the eastbound and westbound approach.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS B during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-10: Unacceptable Level of Service at the Westbound SR 120 Ramps/Airport Way Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-10a: Pay Fair-Share for Interchange Improvements at Airport Way and SR 120

As described previously, the City, in cooperation with Caltrans District 10 and SJCOG, has initiated a PSR for the SR 120/Airport Way interchange. The interchange project will determine the required interchange design to serve full buildout of the City General Plan (six lanes on Airport Way) and the planned widening of SR 120 from four to six lanes. The Westbound SR 120/Airport Way ramp terminal intersection would be designed with the following characteristics:

- three through lanes and a right-turn lane on the southbound approach,
- two left-turn lanes and three through lanes on the northbound approach, and
- two left-turn lanes, a shared through/right-turn lane, and a right-turn lane on the westbound approach.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS C during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

While the improvements described above would provide acceptable operations at this intersection, the impact is still considered significant and unavoidable for the following reasons:

- full funding for the project has not been identified;
- the timeline for completion of the interchange improvements is unknown; and
- this project is outside the control of the City or the project applicant and its implementation cannot be guaranteed.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Impact TRA-11: Unacceptable Level of Service at the Eastbound SR 120 Ramps/Airport Way Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-11a: Pay Fair-Share for Interchange Improvements at Airport Way and SR 120

As described previously, the City, in cooperation with Caltrans District 10, and SJCOG has initiated a PSR for the SR 120/Airport Way interchange. The interchange project will determine the required interchange design to serve full buildout of the City General Plan (six lanes on Airport Way) and the planned widening of SR 120 from four to six lanes. The Eastbound SR 120/Airport Way ramp terminal intersection would be designed with the following characteristics:

- one left-turn lane and three through lanes on the southbound approach,

- three through lanes and a right-turn lane on the northbound approach, and
- one left-turn lane, a shared through/left-turn lane, and two right-turn lanes on the eastbound approach.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS C or better during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

While the improvements described above would provide acceptable operations at this intersection, the impact is still considered significant and unavoidable for the following reasons:

- full funding for the project has not been identified;
- the timeline for completion of the interchange improvements is unknown; and
- this project is outside the control of the City or the project applicant and its implementation cannot be guaranteed.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Impact TRA-12: Unacceptable Level of Service at the Atherton Road/Airport Way Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours and meets the peak-hour signal warrant under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-12a: Pay Fair-Share of Intersection Improvements at Atherton Road/Airport Way Intersection

The City General Plan shows Airport Way as a six-lane facility and Atherton Road as a four-lane facility in the future. As part of the widening projects, this intersection would be improved and signalized. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified, as the current PFIP covers only a portion of the cost. To meet the City's LOS standard, the following intersection improvements are necessary:

- signalize the intersection;
- construct two left-turn lanes, three through lanes, and a right-turn lane on the southbound approach;

- construct one left-turn lane, two through lanes, and a shared through/right-turn lane on the northbound approach;
- construct two left-turn lanes, a through lane, and a right-turn lane on the eastbound approach; and
- maintain the current westbound configuration of one left-turn lane, one through lane, and one right-turn lane.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS D or better during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-13: Unacceptable Level of Service at the Woodward Avenue/Airport Way Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours and meets the peak-hour signal warrant under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-13a: Pay Fair-Share of Intersection Improvements at Woodward Avenue/Airport Way Intersection

The City General Plan shows Airport Way as a six-lane facility and Woodward Avenue as a four-lane facility in the future. As part of the widening projects, this intersection would be improved and signalized. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. To meet the City's LOS standard, the following intersection improvements are necessary:

- signalize the intersection;
- construct one left-turn lane, one through lane, and one right-turn lane on the southbound approach;
- construct one left-turn lane, one through lane, and a shared through/right-turn lane on the northbound approach;

- construct one left-turn lane, one shared left/through lane, and one shared through/right-turn lane on the eastbound approach; and
- construct one left-turn lane, one through lane, and one shared through/right-turn lane on the eastbound approach.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS D or better during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-14: Unacceptable Level of Service at the Woodward Avenue/Union Road Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the PM peak hour and meets the peak hour signal warrant under Cumulative No-Project Conditions. Since project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-14a: Pay Fair-Share of Intersection Improvements at Woodward Avenue/Union Road Intersection

The City General Plan shows Union Road and Woodward Avenue as four-lane facilities in the future. As part of the widening projects, this intersection would be improved and signalized. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. To meet the City's LOS standard, the following intersection improvements are necessary:

- signalize intersection, and
- construct one left-turn lane and one shared through/right-turn lane on all approaches.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS C or better during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-15: Unacceptable Level of Service at the Woodward Avenue/Main Street Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours and meets the peak-hour signal warrant under Cumulative No-Project Conditions. Since project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-15a: Pay Fair-Share of Intersection Improvements at Woodward Avenue/Main Street Intersection

The City General Plan shows Main Street as a six-lane facility and Woodward Avenue as a four-lane facility in the future. As part of the widening projects, this intersection would be improved and signalized. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. To meet the City's LOS standard, the following intersection improvements are necessary:

- signalize the intersection,
- construct an additional left-turn lane to provide two left-turn lanes and one shared through/right-turn lane on the southbound approach, and
- construct one left-turn lane and one shared through/right-turn lane on the eastbound approach.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS C or better during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the

improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-16: Unacceptable Roadway Segment Level of Service on Airport Way between Yosemite Avenue and Daniels Street under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-19, the Airport Way roadway segments, between Yosemite Avenue and Daniels Street, are expected to operate at LOS F conditions under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-16a: Pay Fair-Share to Widen Airport Way to Four Lanes

The City General Plan shows Airport Way as a six-lane facility in the future. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. Table 12-24 shows that adequate roadway segment operations can be provided by widening Airport Way to four lanes.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-17: Unacceptable Roadway Segment Level of Service on Airport Way between Daniels Street and Atherton Road under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-19, the Airport Way roadway segments, between Daniels Street and Atherton Road, are expected to operate at LOS F conditions under Cumulative No-Project Conditions. Project trips would exacerbate an existing deficiency for the roadway segments between Daniels Street and the Eastbound SR 120 ramps and would degrade LOS to an unacceptable LOS F on the segment between the SR 120 eastbound ramps and Atherton Road. This is considered a significant impact.

Mitigation Measure TRA-17a: Pay Fair-Share for Interchange Improvements at Airport Way and SR 120 and Airport Way Widening

As described previously, the City, in cooperation with Caltrans District 10, and SJCOG has initiated a PSR for the SR 120/Airport Way interchange. The interchange project will widen Airport Way to six lanes between Daniels Street and Atherton Road, which would provide acceptable roadway segment LOS.

While the improvements described above would provide acceptable operations at this intersection, the impact is still considered significant and unavoidable for the following reasons:

- full funding for the project has not been identified;
- the timeline for completion of the interchange improvements is unknown; and
- this project is outside the control of the City or the project applicant, and its implementation cannot be guaranteed.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Impact TRA-18: Unacceptable Roadway Segment Level of Service on Airport Way between Atherton Road and Woodward Avenue under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-19, Airport Way, between Atherton Road and Woodward Avenue, is expected to operate at LOS F conditions under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-18a: Pay Fair-Share to Widen Airport Way to Four Lanes

The City General Plan shows Airport Way as a six-lane facility in the future. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. Table 12-24 shows that adequate roadway segment operations can be provided by widening Airport Way to four lanes.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-19: Unacceptable Roadway Segment Level of Service on Woodward Avenue between McKinley Avenue and Airport Way under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-19, the Woodward Avenue roadway segments, between McKinley Avenue and Airport Way, are expected to operate at LOS E conditions under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-19a: Pay Fair-Share to Widen Airport Way to Four Lanes

The City General Plan shows Woodward Avenue as a four-lane facility in the future. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. Table 12-24 shows that adequate roadway segment operations can be provided by widening Woodward Avenue to four lanes.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-20: Unacceptable Roadway Segment Level of Service on McKinley Avenue between Yosemite Avenue and SR 120 under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-19, the McKinley Avenue roadway segments, between Yosemite Avenue and SR 120, are expected to operate at LOS F conditions under Cumulative No-Project Conditions. Since project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-20a: Pay Fair-Share to Widen McKinley Avenue to Four Lanes

The General Plan shows McKinley Avenue as a four-lane facility in the future. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. Table 12-24 shows that adequate roadway segment operations can be provided by widening McKinley Avenue to four lanes.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-21: Unacceptable Level of Service on Freeway Mainline Segments under Cumulative Plus Project Conditions (Less than Significant with Mitigation)

As shown in Table 12-20, the addition of project-generated traffic would lead to an increase in density on mainline segments already operating at LOS F at the locations below. This is considered a significant impact.

- Eastbound SR 120, between Yosemite Avenue and Airport Way, in the PM peak hour
- Westbound SR 120, between Union Road and Yosemite Avenue, in the AM peak hour

Mitigation Measure TRA-21a: City Regional Transportation Impact Fee

The project applicant will pay the City's regional transportation impact fee when building permits are issued.

The widening of SR 120 to six lanes is included in the SJCOG Regional Transportation Plan as a Tier 1 improvement. Funding for this improvement comes from the City's regional transportation impact fee (currently at \$2,500 per dwelling unit) and the Measure K retail transaction and use tax. The project would contribute its fair-share by paying the City's regional transportation impact fee and through retail transactions that would be paid by project residents.

As shown in Table 12-25, the widening of SR 120 from four to six lanes (three in each direction) would provide LOS C conditions in the off-peak direction. However, even with the additional lanes on SR 120, the peak directions of travel (westbound in the AM peak hour, eastbound in the PM peak hour) will continue to operate at LOS F.

Even though SR 120 is still expected to operate at LOS F conditions under cumulative conditions, it still meets the LOS F standard defined in the CMP. The impact caused by the Machado project is considered less than significant with mitigation because the project is paying its fair-share to fund the County's ultimate transportation improvement for SR 120.

Impact TRA-22: Unacceptable Level of Service on Freeway Ramp Junctions under Existing Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-21, the addition of project-generated traffic would lead to an increase in density at ramp merge and diverge junctions already operating at

LOS F at the locations listed under Mitigation Measure TRA-22a below. This is considered a significant impact.

Mitigation Measure TRA-22a: Pay Fair-Share for Interchange Improvements at Airport Way and SR 120

As mentioned previously, the City, in cooperation with Caltrans District 10 and SJCOG, has initiated a PSR for the SR 120/Airport Way interchange. The interchange project will determine the required design to serve full buildout of the City General Plan and the planned widening of SR 120 from four to six lanes (RTP Tier 1 project). The on-ramp and off-ramp designs will provide the necessary acceleration, deceleration, and storage lengths to serve projected morning and evening peak-hour volumes at acceptable levels of service. To reduce the impact of project trips, the project applicant will pay its fair-share for interchange improvements. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

As shown in Table 12-26, the LOS results with the interchange improvements in place indicate that the following ramp junctions are expected to operate at an acceptable LOS during the AM and PM peak hours under Cumulative Plus Project Conditions.

- Eastbound SR 120 on-ramp to Airport Way
- Westbound SR 120 off-ramp from Airport Way

The LOS analysis indicates that the ramp junctions below will operate at LOS F conditions because of congestion on the freeway mainline. However, due to the LOS F standard for SR 120, with the project's contribution toward the ultimate interchange and mainline improvements, the project impact would be mitigated.

- Eastbound SR 120 off-ramp to Airport Way is expected to operate at LOS F during the PM peak hour.
- Westbound SR 120 on-ramp from Airport Way is expected to operate at LOS F during the AM peak hour.

This impact is still considered significant and unavoidable because the interchange improvements are not under the control of the City or applicant, and because no funding sources have been identified for the interchange improvements.

Impact TRA-23: Increased Demand for Bicycle Facilities under Existing Plus Project and Cumulative Plus Project Conditions (Less than Significant with Mitigation)

Currently, the only bicycle facilities near the project site are bicycle lanes along Airport Way from Atherton Road to the south. Typical weekday activities (biking to work, exercising, etc.) would create an unmet demand for bicycle facilities along the McKinley Avenue extension and Woodward Avenue. This is considered a significant impact.

Mitigation Measure TRA-23a: Install Bicycle Facility Improvements in the Vicinity of the Project Site

The project applicant will coordinate with the City to determine specific bicycle facilities improvements required to mitigate increased demand for bicycle facilities. One possible improvement includes dedicated bicycle lanes, bicycle routes, or other bicycle improvements along the project frontage on McKinley Avenue and Woodward Avenue consistent with the 2003 Bicycle Master Plan (City of Manteca 2003b).

Additionally, as shown on Figure 12-14, bicycle access through the ends of cul-de-sacs should be allowed to encourage bicycling. Proposed bicycle access to and from the project site that meets the Bicycle Master Plan and City standards for bicycle facilities will be shown on improvement plans submitted by the applicant to the City before final map approval. The applicant will construct the bicycle access improvements along with the other infrastructure improvements for the project before occupancy.

Impact TRA-24: Increased Demand for Public Transit under Existing Plus Project and Cumulative Plus Project Conditions (Less than Significant with Mitigation)

Currently, there are no transit facilities in the project site vicinity. Typical weekday activities within the proposed development would create a demand for transit services for residents who would use public transit to access jobs or other activities in other areas of Manteca or San Joaquin County. This is considered a significant impact.

Mitigation Measure TRA-24a: Coordinate with the City of Manteca to Develop Transit Service and Construct Facilities in the Vicinity of the Project Site

The project applicant will coordinate with the City to determine specific transit improvements required to mitigate increased demand for public transit. An example of a transit improvement would be to pay for the construction of a sheltered transit stop along the project frontage on either Airport Way or Woodward Avenue and help fund expanded transit service to the project site to meet the increased demand on public transportation by project residents.

Additional Annexation Area

The annexation of properties north of the Machado Estates project area will not increase traffic or travel within the annexation area. Therefore, LOS will not be affected by the annexation. There are no traffic impacts associated with this element of the project, and no mitigation is required.

Table 12-23. Cumulative Plus Project Intersection Levels of Service

Intersection	Peak Hour ^a	Cumulative Plus Project		Cumulative Plus Project with Mitigation	
		Delay ^b	LOS ^c	Delay ^b	LOS ^c
1. Yosemite Avenue and McKinley Avenue	AM	> 100	F	37.2	D
	PM	> 100	F	49.6	D
2. Woodward Avenue and McKinley Avenue	AM	34.7	C	21.6	C
	PM	63.5	E	40.2	D
3. Woodward Avenue and Bella Terra Drive	AM	> 100 (98.5)	F (F)	22.0	C
	PM	> 100 (46.2)	F (D)	18.7	B
4. Yosemite Avenue and Airport Way	AM	83.5	F	29.1	C
	PM	> 100	F	45.3	D
5. Wawona Street and Airport Way	AM	> 100 (>100)	F (F)	10.0	B
	PM	> 100 (>100)	F (F)	10.2	B
6. Daniels Street and Airport Way	AM	94.0	F	32.1	C
	PM	> 100	F	42.3	D
7. SR 120 westbound ramps and Airport Way	AM	> 100	F	23.9	C
	PM	> 100	F	27.4	C
8. SR 120 eastbound ramps and Airport Way	AM	> 100	F	14.5	B
	PM	> 100	F	27.2	C
9. Atherton Road and Airport Way	AM	> 100 (>100)	F (F)	34.3	C
	PM	> 100 (>100)	F (F)	36.8	D
10. Woodward Avenue and Airport Way	AM	> 100	F	18.4	B
	PM	> 100	F	40.0	D
11. Site Access and Airport Way	AM	22.2 (2.8)	C (A)	22.2 (2.8)	C (A)
	PM	27.1 (1.8)	D (A)	27.1 (1.8)	D (A)
12. Peach Avenue and Airport Way	AM	26.7 (5.0)	D (A)	26.7 (5.0)	D (A)
	PM	48.0 (7.9)	E (A)	48.0 (7.9)	E (A)
13. Woodward Avenue and Union Road	AM	12.4	B	21.5	C
	PM	65.9	F	30.5	C
14. Woodward Avenue and Main Street	AM	87.4	F	24.8	C
	PM	> 100	F	27.4	C

Note: **Bold** highlighting denotes intersections with unacceptable operations (LOS E or F). If the intersection is unsignalized, it must also meet peak-hour volume signal warrants.

^a AM = morning peak hour, PM = evening peak hour.

^b Whole-intersection weighted average control delay is expressed in seconds per vehicle using methodology described in the 2000 HCM. For side-street stop-controlled intersections, total control delay for the worst movement is presented in parentheses.

^c LOS = level of service. For side-street stop-controlled intersections, LOS for the worst movement is shown in parentheses. LOS calculations conducted using the Synchro software package.

N/A—Intersection is assumed to be signalized or signal warrant analysis was conducted under Cumulative No-Project Conditions.

Table 12-24. Cumulative Plus Project with Mitigation Roadway Segment Levels of Service

Roadway Segment	Lanes	Average Daily Traffic Volume	Level of Service
1. Airport Way, between Yosemite Avenue and Wawona Street	4	18,555	C
2. Airport Way, between Wawona Street and Daniels Street	4	20,455	C
3. Airport Way, between Daniels Street and SR 120 westbound ramps	6	29,460	C
4. Airport Way, between SR 120 westbound ramps and SR 120 eastbound ramps	6	29,980	C
5. Airport Way, between SR 120 eastbound ramps and Atherton Road	6	33,210	C
6. Airport Way, between Atherton Road and Woodward Avenue	4	18,010	C
7. Airport Way, between Woodward Avenue and Peach Avenue	2	10,610	C
8. Airport Way, south of Peach Avenue	2	7,150	C
9. Yosemite Avenue, between McKinley Avenue and Airport Way	2	14,550	D
10. Yosemite Avenue, between Airport Way and Union Road	2	13,150	D
11. Woodward Avenue, between McKinley Avenue and Bella Terra Drive	4	15,030	C
12. Woodward Avenue, between Bella Terra Drive and Airport Way	4	16,550	C
13. Woodward Avenue, between Airport Way and Oleander Road	2	7,050	C
14. Peach Avenue, between Airport Way and Oleander Road	2	2,250	C
15. McKinley Avenue, between Yosemite Avenue and SR 120	2	16,500	C
16. McKinley Avenue, between SR 120 and Woodward Avenue	2	9,895	D

Table 12-25. Cumulative Conditions State Route 120 Mainline Levels of Service

Travel Direction	Segment	Peak Hour ^a	Cumulative Plus Project		Cumulative Plus Project with Mitigation	
			Density ^b	Level of Service	Density ^b	Level of Service
Eastbound	Yosemite Avenue/Guthmiller Road to Airport Way	AM	38.7	E	23.7	C
		PM	>45	F	>45	F
	Airport Way to Union Road	AM	31.0	D	20.1	C
		PM	>45	E	39.0	E
Westbound	Airport Way to Union Road	AM	>45	F	>45	F
		PM	29.4	D	19.1	C
	Yosemite Avenue/Guthmiller Road to Airport Way	AM	>45	F	>45	F
		PM	39.0	E	23.8	C

^a AM = morning peak hour, PM = evening peak hour.

^b Density is based on HCS+ analysis and results are in passenger cars per mile per lane.

Table 12-26. Cumulative Conditions State Route 120 Ramp Junction Levels of Service

Travel Direction	Ramp	Merge/Diverge	Peak Hour ^a	Cumulative Plus Project		Cumulative Plus Project with Mitigation	
				Density ^b	Level of Service	Density ^b	Level of Service
Eastbound	Airport Way	Diverge (off-ramp)	AM	36.2	E	12.6	B
			PM	>45	F	29.4	F ^c
		Merge (on-ramp)	AM	29.9	D	20.3	C
			PM	>45	F	34.4	D
Westbound	Airport Way	Diverge (off-ramp)	AM	>45	F	28.1	D
			PM	29.1	D	7.5	A
		Merge (on-ramp)	AM	>45	F	38.7	F ^c
			PM	34.4	D	25.8	C

^a AM = morning peak hour, PM = evening peak hour.

^b Density is based on HCS+ analysis and results are in passenger cars per mile per lane for the on-ramp merge section or off-ramp diverge section.

^c LOS F is due to oversaturated conditions on freeway mainline.

Table 12-27. Fair-Share Percentage of Intersection Improvements

Intersection	Fair-Share Percentage
1. Yosemite Avenue and McKinley Avenue	1%
2. Woodward Avenue and McKinley Avenue	2%
3. Woodward Avenue and Bella Terra Drive	9%
4. Yosemite Avenue and Airport Way	1%
5. Wawona Street and Airport Way	2%
6. Daniels Street and Airport Way	2%
7. and 8. SR 120 and Airport Way Interchange	12%
9. Atherton Road and Airport Way	15%
10. Woodward Avenue and Airport Way	23%
11. Woodward Avenue and Oleander Road	5%
12. Woodward Avenue and Union Road	5%
13. Woodward Avenue and Main Street	1%

Note: Fair-Shares calculated using the following formula:

$$(\text{Project Trips}) / (\text{Cumulative Plus Project Trips} - \text{Existing No Project Trips})$$

Table 12-28. Fair-Share Percentage of Roadway Segment Improvements

Roadway Segment	Improvement	Fair-Share Percentage
1. Airport Way, between Yosemite Avenue and Wawona Street	Widen from two to four lanes	2%
2. Airport Way, between Wawona Street and Daniels Street	Widen from two to four lanes	2%
3. Airport Way, between Daniels Street and SR 120 WB Ramps	Widen from two to six lanes	3%
4. Airport Way, between SR 120 WB Ramps and SR 120 EB Ramps	Widen from two to six lanes/ interchange improvements	12%
5. Airport Way, between SR 120 EB Ramps and Atherton Road	Widen from two to six lanes	17%
6. Airport Way, between Atherton Road and Woodward Avenue	Widen from two to four lanes	32%
11. Woodward Avenue, between McKinley Avenue and Bella Terra Drive	Widen from two to four lanes	2%
12. Woodward Avenue, between Bella Terra Drive and Airport Way	Widen from two to four lanes	9%
Note: Fair-Shares calculated using the following formula: $\frac{\text{Project Trips}}{\text{Cumulative Plus Project Trips} - \text{Existing No Project Trips}}$		

Chapter 13

Utilities and Service Systems

Introduction

This section analyzes the proposed project's effects on utilities and service systems, with a focus on the proposed project's potential to affect services, including police; fire and emergency; education; parks and recreation; solid waste; wastewater collection, capacity, and treatment (sewer); drainage; electricity and natural gas; and communication services. Impacts related to water quality and water supply can be found in Chapter 9, *Hydrology and Water Quality*, of this document. Key sources of data used in the preparation of this section were:

- City General Plan (City of Manteca 2003a), and
- City General Plan EIR (Wade Associates 2003).

Environmental Setting

This section discusses the federal, state, and local regulations related to utilities and service systems that would apply to the proposed project. Existing conditions related to utilities and service systems in the project area are discussed, as well.

Regulatory Setting

Federal

There are no specific federal regulations that apply to utilities and service systems associated with this project.

State

Solid Waste Management

California Integrated Waste Management Board

The California Integrated Waste Management Act became law on January 1, 1990. This law mandates that each county and city divert 25% of its waste from landfills by 1995 and divert 50% by 2000 or face a fine of \$10,000 per day. The California Integrated Waste Management Board (CIWMB) administering this law requires each city and county to prepare an Integrated Waste Management Plan (IWMP). The IWMP must include a source reduction and recycling element and a household hazardous waste element.

Fire Protection

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration requires the presence of a minimum of four firefighters for the use of respirators, which are required for entry into an enclosed space filled with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors. Therefore, a minimum of four firefighters is required in order to respond to most fire incidents.

California Public Utilities Commission

Electricity

The California Public Utilities Commission (CPUC) has permitting authority over the construction of new and expanded power plants, electric transmission lines, and substations. The CPUC Utilities Safety and Reliability Branch audits utility overhead and underground electric facilities through random field inspections.

Natural Gas

The CPUC regulates local natural-gas distribution facilities and services as well as intrastate pipelines. The CPUC published *California Natural Gas Infrastructure Outlook: 2002–2006*, which concluded that Pacific Gas & Electric's (PG&E's) natural-gas infrastructure would be sufficient through 2006 (California Public Utilities Commission 2001).

Local

City of Manteca General Plan 2023

The City General Plan identifies the community's land use, transportation, environmental, economic, and social goals and policies as they relate to land use,

conservation, and development. The City General Plan includes the following goals and policies for utilities and services that may relate to the proposed project.

Policies:

LU-P-3. The City shall encourage a pattern of development that promotes the efficient and timely development of public services and facilities.

Policies: Wastewater Collection and Treatment

PF-P-18. Ensure wastewater collection and treatment for all development in the City and the safe disposal of wastes.

PF-P-19. The City will maintain capacity to process combined residential, commercial, and industrial flow.

PF-P-20. The City shall develop new sewage treatment and trunk line capacity as necessary to serve new development.

PF-P-24. Ensure that all new development provides for and funds a fair share of the costs for adequate sewer distribution, including line extensions, easements, and plant expansions.

PF-P-25. The City will maintain the ability to handle peak discharge flow while meeting State Regional Water Quality Control Board standards as established in the current NPDES Permit.

Implementation: Wastewater Collection and Treatment

PF-I-9. The City will require all sewage generators within its service area to connect to the City's system, except those areas where on-site treatment and disposal facilities are deemed appropriate.

PF-I-12. The City will promote reduced wastewater system demand through efficient water use by:

- requiring water-conserving design and equipment in new construction,
- encouraging retrofitting with water conserving devices,
- designing wastewater systems to minimize inflow and infiltration to the extent economically feasible, and
- maintaining a citywide map of all sewer collection system components and monitoring the condition of the system on a regular basis.

Policies: Electric Service

PF-P-29. Ensure that reliable, adequate electric service is available to all users in the City.

Implementation: Electric Service

PF-I-15. The City will support energy conservation measures and innovative uses of solar energy, heat recovery, and co-generation in all structural and industrial processes.

PF-I-17. The City will require undergrounding of utility lines in new development, and as areas are redeveloped, except where infeasible for operational reasons.

Policies: Solid Waste Management

PF-P-31. The City will implement and enforce the provisions of its Source Reduction and Recycling Element.

PF-P-32. The City shall support the continued use of the Lovelace Transfer Station on Lovelace Road, between Union Road and Airport Way, for the processing and shipping of solid waste materials.

Policies: Police Protection

PF-P-39. The City shall endeavor through adequate staffing and patrol arrangements to maintain the minimum feasible police response times for police calls.

Policies: Fire Protection

PF-P-42. The City shall endeavor to maintain an overall fire insurance (ISO) rating of 4 or better.

PF-P-43. The City shall endeavor through adequate staffing and station locations to maintain the minimum feasible response time for fire and emergency calls.

Policies: Parks and Recreation

PF-P-46. The City shall expand the community and neighborhood park system with the goal of providing neighborhood park facilities within reasonable walking distance of all city residential areas.

Existing Conditions

Information about existing conditions was compiled by reviewing relevant technical reports, conducting research on the Internet, and receiving personal communication. Table 13-1 identifies the public service, utility, and recreation providers that serve the project area.

Table 13-1. Summary of Public Service, Utility, and Recreation Providers in the Project Area

Public Service or Utility	Provider
Police	Manteca Police Department
Fire	Manteca Fire Department
Education	Manteca Unified School District
Parks	City of Manteca Parks and Recreation Department
Solid waste	City of Manteca Solid Waste Division; and Forward, Inc.
Wastewater	City of Manteca Wastewater Quality Control Facility
Electricity and natural gas	PG&E
Communication services	Verizon and AT&T Broadband

Police

The Manteca Police Department (MPD) serves Manteca, including the project area, with more than 70 sworn officers, 30 civilian staff members, and volunteer workers (City of Manteca 2003a). The MPD provides crime prevention for the residents of Manteca through community policing, neighborhood watch, proactive enforcement, and citizen involvement.

The Manteca police station is located 2.8 miles northeast of the proposed project area. The MPD has tentative plans for the construction of a new station near the intersection of South Main Street and State Route (SR) 120 within the next 5 years (City of Manteca 2007c). This facility would replace the existing police station. Police response times are less related to the location of the station, however, and more related to the location of officers during their daily patrols. There are no known issues with officers responding in a timely manner to calls south of SR 120 and the proposed project area (Halford pers. comm.).

Fire and Emergency Services

The Manteca Fire Department (MFD) serves Manteca, including the project area (City of Manteca 2007b). The Insurance Services Office (ISO) has rated Manteca's firefighting capabilities as Class 3 on a scale of 1 to 10, with 1 signifying the best public protection. The Class 3 rating applies to all developed areas of Manteca where a water supply for fire suppression is provided by way of a hydrant system. The City General Plan outlines a policy of endeavoring to maintain an overall fire insurance (ISO) rating of 4 or better.

The MFD responds to emergencies and calls for service from three fire stations located within the city limits. MFD stations are:

- Station 241, at 290 South Powers Avenue;

- Station 242, at 1154 South Union Road; and
- Station 243, at 399 West Louise Avenue.

Station 242 is located approximately 0.25 mile north of SR 120 and would provide the first response to emergencies in the proposed project area.

As of 2007, the MFD maintained a staff of nine administrative personnel and 30 fire-suppression personnel. The average number of on-duty engine company personnel per day per shift is 9.16 (City of Manteca 2007b).

The MFD is also responsible for providing emergency medical services. In 2005, the MFD responded to 2,403 calls for emergency medical services (City of Manteca 2007b). To maintain a standard level of care, all trained fire personnel carry Emergency Medical Technician 1 (EMT-1) and EMT-Defibrillation (EMT-D) certification.

The MFD goals are to maintain a 5-minute response time for all emergencies and keep all engine and ladder companies staffed with a minimum of three persons (City of Manteca 2003a). The average response time for the three MFD stations was 4.79 minutes, and effectiveness was 75.1%, meaning that an engine company arrived within 5 minutes approximately 75% of the time. The *Manteca Fire Department Annual Report 2005* notes, however, that the 5-minute response time was exceeded on numerous occasions in 2005, illustrating that the system is undergoing increasing strain (City of Manteca 2005b).

Education

Within the urban area of Manteca, the Manteca Unified School District (MUSD) consists of four high schools, 19 elementary schools, five annexes (for kindergarten through third grade), two adult education schools, and two continuation high schools. As of fall 2006, the MUSD had approximately 23,000 students (Dwyer pers. comm.). The closest high school to the project area is Sierra High School, located 1.7 miles northeast of the project area. Veritas Elementary School is located 1 mile east of the proposed project site (Manteca Unified School District 2007).

Construction of a new elementary school (the proposed Rustic School) is planned approximately 2.5 miles southwest of the project site (Manteca Unified School District 2007).

Schools follow both a traditional and a year-round calendar. The MUSD provides services to the City of Manteca; the City of Lathrop; unincorporated French Camp; and Weston Ranch, a community of southwest Stockton.

According to the EIR for the City General Plan (Wade Associates 2003), the MUSD will select the location of additional new schools based on the location of new residential developments in the area.

Parks and Recreation

The Manteca Parks and Recreation Department currently provides 28 neighborhood parks and five community parks distributed throughout the city. These include 275 acres of neighborhood and community parks, the Tidewater Bikeway, a skate park, and a senior center. The department also supervises the operation of an 18-hole municipal golf course as well as library services. Many parks are co-located with a small detention basin that serves a particular neighborhood. Consequently, the parks typically are located within easy walking distance for local residents. The City has a service standard of 5 acres of parkland per 1,000 residents (City of Manteca 2003a).

In addition, the Big League Dreams (BLD) Sports Park project is a City-owned recreational sports complex that includes six softball/baseball fields, one covered sports pavilion, two Stadium Club restaurants, one snack bar, one maintenance building and yard, an eight-station batting cage, two playgrounds, and 600 vehicle parking spaces. The BLD project is located north of SR 120, approximately 0.25 mile west of Airport Way. A grand-opening celebration was held at the BLD on October 21, 2006 (City of Manteca 2006).

The closest existing park facility to the proposed project area is Bella Vista Park, located approximately 0.25 mile to the north (City of Manteca 2007d).

Solid Waste

The City's Solid Waste Division collects solid and green waste throughout Manteca and deposits it at the Forward Landfill on South Austin Road. This landfill has a closure date of 2053 and a remaining capacity of 1,608,752 cubic yards, which is adequate to serve the solid waste removal needs of the project area. Recyclables are taken to a mini transfer station adjacent to the Forward Landfill, where they are put into transfer trucks and hauled to Sacramento Recycling in Sacramento (LeStrange pers. comm.).

Wastewater Collection, Capacity, and Treatment (Sewer)

The Manteca Wastewater Quality Control Facility (WQCF) currently treats approximately 6.5 million gallons per day (mgd) (Govea pers. comm.). The WQCF is an 8.11-mgd-rated combined biofilter-activated sludge plant owned and operated by the City. Secondary effluent is land-applied during spring and summer (flood irrigation for alfalfa) and discharged into the San Joaquin River during fall and winter.

Expansion of the municipal waste collection system is planned to support development of Manteca as identified in the City General Plan. Phased improvements, known as Schedules A and B (now complete) and Schedule D

(planned to be completed in late 2007), will increase the capacity of the treatment facility to 9.87 mgd; Schedule C is scheduled for completion in 2008. The municipal treatment system capacity will be expanded through the addition of primary and secondary treatment units, as well as nitrification, denitrification, tertiary filtration, and ultraviolet (UV) disinfection to improve the effluent quality. The expansion includes additional sludge digestion and dewatering units, as well as improvements to buildings, pump stations, ponds, and chemical handling facilities (Central Valley Regional Water Quality Control Board 2004). Schedules A and B, which consisted of the primary and secondary treatment units, the nitrification and denitrification units, pump station improvements, and building improvements, are complete. Schedule D, which is anticipated to be completed in July 2007, involves the tertiary filtration and UV disinfection systems, ponds, and chemical handling facilities. Schedule C, which is scheduled for completion in July 2008, involves the mechanical dewatering facilities. Additional sludge digestion has been removed from the overall plant expansion project (Govea pers. comm.).

Ultimately, the City has plans to expand the WQCF to a capacity of 27 mgd. Future expansions also will bring higher treatment standards, which will produce treated wastewater suitable for landscape irrigation.

The City's Public Facilities Implementation Program (PFIP) establishes LOS standards for wastewater. The City's target is to collect and treat an average of 325 gallons per day per dwelling unit, which is the amount a typical single-family residence contributes to the system. This LOS standard is applicable both in the areas of Manteca that have already been developed and in the geographic areas where development is expected.

Drainage

The City operates and maintains the storm drainage system that serves the existing community. The system consists of approximately 170 miles of pipeline, 36 pump stations, and 35 detention basins. Runoff from rainfall flows through the system into South San Joaquin Irrigation District (SSJID) drains and laterals and eventually into the San Joaquin River.

The SSJID operates drainage facilities that pass through Manteca and carry a portion of the city's drainage. Water from the SSJID, along with drainage pumped by the City, flows west into French Camp Canal, which eventually flows into French Camp Slough and then into the San Joaquin River. Storm drainage is gravity discharged from the area to the north to French Camp Canal. Stormwater in the project will drain to Lateral X-Ya on an interim basis and to the South Drain as the permanent solution (Milam pers. comm.).

City policy requires the construction of detention or retention basins to handle all onsite drainage from a new development (City of Manteca 2003a). Typically, 7% to 10% of the land area is required for onsite detention.

Electricity and Natural Gas

Electricity and natural gas in Manteca are supplied by PG&E, a private corporation. PG&E currently owns and operates electricity and natural-gas infrastructure within Manteca. Infrastructure generally is located in roadway rights-of-way. The City General Plan stipulates that utility lines be undergrounded in new development and redeveloped areas.

Communication Services

Telephone services in Manteca are provided by Verizon. The existing community is equipped with fiber optic lines. Cable television services, as well as broadband Internet services, are provided by AT&T Broadband. Internet services are provided through dial-up connections, ISDN, cable, and satellite services via a number of providers. Infrastructure is located generally in roadway rights-of-way. The City General Plan stipulates that utility lines be undergrounded in new development and redeveloped areas.

Impact Analysis

Thresholds of Significance

Thresholds of significance were determined based on Appendix G of the State CEQA Guidelines and by using professional judgment and standard practices. An impact was considered to be significant if it would:

- exceed wastewater treatment requirements of the applicable RWQCB;
- require or result in the construction of new water or wastewater treatment facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects;
- require or result in the construction of new stormwater drainage facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects;
- result in insufficient water supplies to serve the project from existing entitlements and resources (addressed in Chapter 9 as Impact HYD-8);
- result in a determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs;
- fail to comply with federal, state, and local statutes and regulations related to solid waste;

- result in disruption or disturbances to the city's public services or utility services due to construction activities; or
- result in substantial adverse physical impacts associated with service ratios, response times, or other performance objectives for any public services, including schools, parks, police protection, or fire protection.

Impacts and Mitigation Measures

Impact USS-1: Temporary Construction-Related Impacts on Access Routes and Reduced Response Times for Police, Fire, and Emergency Services (Less than Significant)

Road closures or detours may occur during construction. Standard construction methods would be used to maintain access to all providers of emergency services. In addition, relevant police and fire departments with responsibility in the project area would be notified of construction plans and schedules to prevent impacts on emergency response times while facilities are under construction. This impact would be less than significant. No mitigation is required.

Impact USS-2: Operational Impacts on Police Services, Including Inadequate Service Ratios and Response Times (Less than Significant)

The MPD station is located 2.8 miles northeast of the project area. The MPD has tentative plans for the construction of a new station near the intersection of South Main Street and SR 120 within the next 5 years. This proposed facility would replace the existing police station. Police response times are less related to the location of the station, however, and more related to the location of officers during their daily patrols. There are no known issues with officers responding in a timely manner to calls south of SR 120 and the project area (Halford pers. comm.).

The City, currently with 70 sworn officers, maintains a service standard of one sworn officer per 1,000 residents. With a population of 63,703 residents as of January 1, 2006, Manteca currently has approximately one officer for every 910 residents, which is within the service standard (California Department of Finance 2006). The proposed project would contribute approximately 1,716 residents to Manteca; the average household size in Manteca is 3.07 persons per housing unit, according to the Housing Element of the City General Plan (City of Manteca 2003a). This increase in population would result in an officer-to-resident ratio of 1:935, which is within the established service standard. Impact PFS-6 in the City General Plan EIR found that impacts on police protection as a result of City General Plan buildout would be less than significant with the implementation of General Plan policies PF-P-39 through PF-P-41 and PF-I-22.

Because the project's contribution to population in Manteca would not result in an inadequate officer-to-resident service ratio or inadequate response times, this impact is considered less than significant. No mitigation is required.

Impact USS-3: Operational Impacts on Fire Services, Including Inadequate Service Ratios, Response Times, and Water Pressure and Supply for Fire Suppression (Less than Significant)

The service standard as established in the City General Plan is an average 5-minute response time for all emergencies and a minimum of three persons for each engine and ladder company. Station 242, located at Union Road, approximately 0.25 mile north of SR 120, would provide the first response to emergencies in the project area. As noted in the IS, the response time would be less than 5 minutes, and no additional fire station would be needed. Additionally, impacts on fire protection personnel would be minimized by General Plan goals and policies.

Fire protection also requires adequate water pressure and supply. The water service standard for fire suppression in Manteca is 1,250 gallons per minute for low-density residential uses. The City's 2005 *Water Master Plan* includes the General Plan 2023 study area, which includes the project site. Because the *Water Master Plan* anticipates serving the General Plan study area, water supply for fire suppression purposes is anticipated to be adequate. In addition, Impact PFS-6 in Chapter 14 of the EIR prepared for the City General Plan finds that implementation of General Plan policies PF-P-42 through PF-P-45, PF-I-24, and PF-I-25—along with the *Water Master Plan*, the PFIP, and participation in the SSJID Surface Water Supply Project—would not result in substantial impacts related to water supply.

Because the proposed project would not result in impacts on fire service, including adequate service ratios, response times, and water supply for fire suppression, this impact is considered less than significant, and no mitigation is required.

Impact USS-4: Inadequate Service Ratios at Schools in the Project Area (Less than Significant)

The closest high school to the project area is Sierra High School, located 1.7 miles to the northeast. Veritas Elementary School is located 1 mile east of the proposed project site. The construction of a new elementary school (the proposed Rustic School) is planned approximately 2.5 miles southwest of the project site (Manteca Unified School District 2007). The projected increases in enrollment at these schools are based on the average number of students per residential unit in the proposed Machado project area, as shown in Table 13-2. A proposal for a new elementary school (Tara Park School at East Woodward and South McKinley Avenues) currently is being reviewed.

Table 13-2. Projected School Enrollment

Grade Level	Calculation	Number of Students
Kindergarten–6	0.534 students x 575 single-family residences =	307
7–8	0.147 students x 575 single-family residences =	85
9–12	0.267 students x 575 single-family residences =	154
Total: 0.948 students x 575 single-family residences =		546
Note: Because the subtotals are rounded, the total does not precisely match the sum of the calculations.		

Impact PFS-6 in Chapter 14 of the City General Plan EIR found that impacts on schools as a result of General Plan 2023 buildout would be less than significant with implementation of General Plan goal PF-13, policies PF-P-32 through PF-P-38, and policies PF-I-18 through PF-I-21.

Because the project would result in an increase of approximately 546 students in the project area, impacts on school service ratios are considered significant. Developer fees paid through the building-permit process would be used to cover the cost of new school facilities. The payment of school impact fees, in accordance with California Government Code 65995, would reduce potential impacts on these schools to less-than-significant levels. Therefore, the project impact would be less than significant. No mitigation is necessary.

Impact USS-5: Provision of Parks and Recreational Facilities (Less than Significant with Mitigation)

The closest existing park facility to the proposed project area is Bella Vista Park, located approximately 0.25 mile to the north. The projected population for the project area is 1,765 persons, when the average Manteca household size of 3.07 persons (City of Manteca 2003a) is multiplied by 575 new residential units. The population growth associated with the proposed project would increase the use of existing park facilities in the area and require approximately 9 additional acres of parkland per the City's requirement of 5 acres of park land per 1,000 residents.

To offset the demands placed on existing recreational and other public facilities in the City, the proposed project includes the development of a 16.61-acre linear park/detention basin within the housing development. This acreage complies with the required parkland dedication. In addition, as stated in the IS prepared for this project, the project applicant would be subject to the conditions set forth by the Manteca Parks and Recreation Department as provided in the mitigation measure below. Implementation of the following measure would reduce these impacts to a less-than-significant level.

Mitigation Measure USS-5a: Pay Park Acquisition and Improvement Fee

The project applicants will comply with policy PF-P-53 of the City General Plan, which requires the payment of a park acquisition and improvement fee to fund systemwide improvements.

Impact USS-6: Operational and Construction-Related Impacts on Solid Waste Collection and Storage Capacity (Less than Significant)

The proposed project calls for the building of residential and park uses only; therefore, solid waste generated by the project would be limited to construction waste and household wastes. This waste is collected by the City and deposited at the Forward Landfill. Recyclables are taken to a mini transfer station adjacent to the Forward Landfill where they are put into transfer trucks and hauled to Sacramento Recycling in Sacramento (LeStrange pers. comm.). The Forward Landfill has a closure date of 2053 and a remaining capacity of 1,608,752 cubic yards, which, as identified in the City General Plan EIR, is adequate to serve the solid waste removal needs of General Plan buildout, including the construction of the project and the operational uses of the project area.

As determined in the IS prepared for this project, the Forward Landfill has adequate capacity for the construction and operation of the proposed project; therefore, this impact would be less than significant. No mitigation is required.

Impact USS-7: Expansion or Construction of New Wastewater Collection, Conveyance, or Treatment Facilities (Less than Significant)

The existing home on the project site is served currently by a septic system. As discussed in Chapter 8, "Hazards and Hazardous Materials," these septic systems would be properly abandoned upon project implementation (see Mitigation Measure HAZ-2f). The project site would be served by City wastewater facilities upon project development.

The WQCF has capacity for 8.11 mgd; it currently treats approximately 6.5 mgd and plans to increase the capacity of the plant to 9.87 mgd by September 2007 (Govea pers. comm.). With 575 new residential units, the proposed project would contribute 184,186 gallons per day of wastewater to the system, bringing the total amount of treated wastewater in Manteca to approximately 7 mgd, still well within the current capacity for treatment. The project's contribution to wastewater treatment is therefore less than significant.

The proposed project calls for sewer lines to be connected to the City sewer system. Ultimately, wastewater will flow south of the project site by gravity flow to the South Manteca Trunk Sewer (SMTS), located on Peach Avenue. However, the SMTS will not be constructed until sufficient funds are collected through development fees. In the interim, the proposed project will construct a sewer pump station and new force main to the Tara Park pump station along Woodward Avenue. An EIR for the Sundance and Oleander projects is also in preparation at this time. If the Sundance and Oleander projects (located adjacent to the proposed project site, west of Union Road and to the north and south of Woodward Avenue) are constructed before the proposed project, then the proposed project would tie the force main into the one constructed by the Sundance or Oleander project. This interim system would provide sufficient collection and conveyance for the proposed project's wastewater. Because sufficient collection, conveyance, and treatment exist or would be built for the proposed project, this impact is less than significant, and no mitigation is required.

Impact USS-8: Insufficient Drainage Capacity to Serve the Proposed Project (Less than Significant)

The proposed project calls for a 16.61-acre linear park/detention basin to be constructed in the new development. The project's detention basin would be designed to City standards, and implementation-stage improvement plans would be reviewed by City engineers. Although this project would need to connect to the South Drain in the future when it becomes available, there is interim capacity for this project to discharge into the Lateral X-Ya connector (Milam pers. comm.). Because there is interim capacity for drainage discharge, and the design of the proposed detention basin would be reviewed and approved by City engineers, this impact is considered less than significant, and no mitigation is required.

Impact USS-9: Inadequate Energy Sources and Infrastructure (Less than Significant)

The City General Plan EIR identified energy demand as a prominent issue in recent years, as reflected in increasing energy costs, blackouts, brownouts, and scheduled outages. The CPUC (2001) concluded that PG&E's natural-gas infrastructure would be sufficient through 2006. The City General Plan Public Facilities and Services Element and Resource Conservation Element also provide measures to reduce electricity demand and infrastructure expansion, including support of conservation measures, alternative-energy use in the city, and land use and circulation improvements.

Project development plans would provide unrestricted utility access and prevent easement encroachments that might impair the safe and reliable maintenance and operation of PG&E's facilities. The project proponent would coordinate with PG&E to ensure that any necessary improvements to PG&E's facilities as a result of the proposed project are formally requested from and approved by the CPUC prior to project development. Therefore, this impact is less than significant.

Impact USS-10: Temporary, Planned, or Accidental Construction-Related Disruptions to Utility Services (Less than Significant with Mitigation)

Utility services could be disrupted as a result of project construction. In most cases, impacts on utilities and services involve temporary disruptions that would not exceed 1 day. All utility lines and cables that would be disrupted during project construction would be identified during the design phase for the project; the design would include a detailed engineering and construction plan, which would thoroughly describe construction techniques and protective measures for minimizing impacts on utilities. Reasonable efforts would be made to provide a temporary bypass around the affected utilities during construction so interruptions in service are eliminated or minimized. Review of this plan by special service districts and utility providers in the project area would be required; as such, the City and its contractors would coordinate with utility owners prior to project construction.

Temporary and accidental impacts on small utility lines, such as telephone or cable lines, would be considered adverse but not significant, because the affected area and duration of the impacts would be limited. However, disruptions to

major utility lines, such as natural-gas or sewer lines, would be considered significant. This impact would be significant, but implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure USS-10a: Identify and Relocate Existing Utilities Where Necessary

Project design and specifications will identify all underground utilities in the areas of proposed excavations. Underground Service Alert will be contacted to identify underground utilities. Where possible, existing utilities will be avoided. In instances in which utilities cannot be avoided, the relocation of existing utilities will be completed either before or during project construction.

Additional Annexation Area

The annexation of properties north of the Machado Estates project area will not change or alter demands on public services. No additional services will be required, as residential units within the annexation area are already receiving utility and emergency services. There are no impacts associated with this element of the project, and no mitigation is necessary.

Chapter 14

Other CEQA Considerations

Growth-Inducing Impacts

The State CEQA Guidelines require an EIR to discuss the ways in which a proposed project may foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects that would remove obstacles to population growth. The guidelines provide that growth in an area is not necessarily beneficial, detrimental, or of little significance to the environment.

Growth can be induced in several ways, including the elimination of obstacles to growth or stimulation of economic activity within a region. According to the standards of significance contained in CEQA, a project is considered either directly or indirectly growth-inducing if it does any of the following:

- fosters economic or population growth or additional housing;
- removes obstacles to growth (e.g., through development of physical infrastructure, roadways, and utilities); or
- taxes community services or facilities to such an extent that new services or facilities would be necessary.

Impact GI-1: Fosters Economic or Population Growth or Additional Housing (Less than Significant)

The proposed project would increase the number of single-family homes in the area by 575. This would represent an addition of approximately 1765 people in Manteca, using an average household size of 3.07 people as cited in the City General Plan (City of Manteca 2003a) multiplied by 575 residential units. The General Plan designates the project area as LDR, and the project implements planned growth as called for in the General Plan. Surrounding areas are also designated as LDR, and applications have been filed for development of some of these lands. Therefore, the proposed project would not induce additional population growth by itself. This impact is considered less than significant on a project level. The General Plan and General Plan EIR (Wade Associates 2003) provide for and address future growth in the City's SOI. The project would be consistent with the City's growth plans and would not result in substantial growth above and beyond what is planned for in the General Plan.

Additional Annexation Area

Future development of 15 parcels proposed for annexation could result in potentially significant impacts to cultural resources; biological resources; air quality; aesthetics; geology, soils and paleontological resources; noise related to construction of operation of future development; hydrology and water quality; population and housing; transportation and traffic; and utilities, as well as cumulative impacts related to these resource areas. As future development possibilities associated with the annexation properties are unknown at this time, project-specific analysis will be necessary if development of the annexation properties is proposed in the future.

Impact GI-2: Removal of a Potential Obstacle to Growth (Less than Significant)

The proposed project would extend public services, including sewer and water service, to the previously unserved project site. It would also construct new roadways to serve the proposed development. These improvements would remove an existing obstacle to growth at the project site. To the extent that new major roadways serving the site would serve other development areas, these roadways, as planned for in the City General Plan, would serve development projects for which the environmental impacts are assessed in the EIRs for those specific projects. Services and facilities constructed to serve the proposed project would be proportionate to the level necessary to accommodate the project and would not, in themselves, increase the development potential of properties outside of the project site that were not slated for development in the project description or the General Plan. Therefore, this impact is considered less than significant. No mitigation is required.

Impact GI-3: Taxes Community Services or Facilities to an Extent that New Services or Facilities Would Be Necessary (Less than Significant)

As stated, the proposed project would require the extension of various services and facilities to serve the project site. However, the capacity of these services and facilities would be proportionate to the level necessary to accommodate the project. The project would not require additional community services or facilities outside the project area. Therefore, this impact is considered less than significant. No mitigation is required.

Cumulative Impacts

Impact CE-1: Cumulative Loss of Agricultural Lands (Significant and Unavoidable)

The General Plan EIR concluded that buildout of the General Plan would result in the conversion of 5,912.8 acres of Prime Farmland, Farmland of Statewide Importance, and Farmland of Local Importance to nonagricultural uses (Wade Associates 2003). This was considered to be a potentially significant impact, and mitigation measures were identified to reduce this impact. The General Plan EIR concluded that the mitigation measures reduced the impact but not to a less-than-

significant level, and that the impact was therefore considered to be significant and unavoidable.

The proposed project would contribute to 156.8 acres of conversion of important farmland to this cumulative impact. Of the 156.8 acres, approximately 94.5% is Farmland of Statewide Importance, and the remaining land is Prime Farmland. The proposed project would irreversibly convert all 156.8 acres of Prime Farmland and Farmland of Statewide Importance to nonagricultural uses. The conversion of this farmland would contribute to the cumulative loss of farmland in the area and throughout the Central Valley. This is a significant project impact.

Conversion of the project site would also result in increased conflicts between agricultural and urban uses, as well as a reduction in agricultural support services, resulting in pressures for other agricultural lands to be removed from farming. Growth pressures and other conflicts arising from the location of proposed residences directly adjacent to agricultural land would be a significant cumulative impact. Implementation of Mitigation Measure AG-1a would reduce these impacts, but not below the level of significance. The project's contribution to this impact is considered cumulatively significant.

Impact CE-2: Cumulative Effect on Air Quality (Less Than Significant with Mitigation)

Several of the air quality impacts identified in Chapter 4, "Air Quality," could contribute to cumulative impacts in the area. These impacts include temporary increases in construction-related emissions during construction activities and operational-related emissions from the proposed land uses and increased traffic volumes. The estimated area source and vehicle emissions for the proposed project would exceed the SJVAPCD thresholds summarized in Chapter 4. However, cumulative impacts are considered less than significant with compliance with Rule 9510 (Barber pers. comm.). Consequently, Mitigation Measure AIR-3b will ensure that cumulative impacts are less than significant.

Impact CE-3: Cumulative Effect on Climate Change (Significant and Unavoidable)

GHGs tend to accumulate in the atmosphere because of their relatively long lifespan. As a result, their impact on the atmosphere is mostly independent of the point of emission; GHG emissions are more appropriately evaluated on a regional, state, or even national scale than on an individual project level. The IPCC has been established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant for the understanding of climate change, its potential impacts, and options for adaptation and mitigation.

The IPCC predicts substantial increases in temperatures globally of between 1.1° Celsius and 6.4° Celsius, depending on the scenario (Intergovernmental Panel on Climate Change 2007). Because it is accepted that climate change due to GHGs is occurring, and even small contributions may be cumulatively considerable given the seriousness of the problem, the project-related GHG emissions would result in a cumulatively significant contribution to climate change.

Mitigation Measure CE-3a: Implement City of Manteca General Plan Policies for Energy Conservation

All of these policies work to reduce emissions of GHGs. Implementation of the City General Plan goals and policies to reduce energy-related impacts associated with climate change would work to reduce emissions of GHGs; however, the residual level of cumulative impacts associated with the project would remain significant.

The City General Plan does not address climate change at this time. However, impact PFS-7 of the General Plan EIR states that the City General Plan would require expanded energy sources and infrastructure for the urban development anticipated in the General Plan. City General Plan Goal PF-10 and Policies PF-P-28 and PF-I-14 to PF-I-16 would reduce energy provision-related impacts by using conservation measures and expanding services throughout the city. General Plan Goal RC-3 and Policies RC-I-6, RC-I-8, RC-P-8, RC-I-10, and RC-I-11 would reduce impacts related to electricity and infrastructure expansion by using the following types of measures: energy conservation practices, conservation-minded building orientation and design, energy source alternatives (e.g., solar), land use and circulation improvements (e.g., reduction in length of vehicle trips), and interagency and interjurisdictional cooperation.

Impact CE-4: Cumulative Impacts to Geology and Soils (No Impact)

Many projects in the San Joaquin Valley are subject to geologic hazards and constraints similar to those affecting the proposed Machado Estates project, and those factors are addressed through a combination of engineering design and geotechnical mitigation specific to each project's needs, as required by applicable state and local codes. Therefore, there would be no cumulative impact.

Impact CE-5: Cumulative Impacts to Energy (Significant and Unavoidable)

Impact PFS-7 of the General Plan EIR states that the City General Plan would require expanded energy sources and infrastructure for the urban development anticipated in the General Plan. City General Plan Goal PF-10 and Policies PF-P-28 and PF-I-14 to PF-I-16 would reduce energy provision-related impacts by using conservation measures and expanding services throughout the city. General Plan Goal RC-3 and Policies RC-I-6, RC-I-8, RC-P-8, RC-I-10, and RC-I-11 would reduce impacts related to electricity and infrastructure expansion by using the following types of measures: energy conservation practices, conservation-minded building orientation and design, energy source alternatives (e.g., solar), land use and circulation improvements (e.g., reduction in length of vehicle trips), and interagency and interjurisdictional cooperation. However, the General Plan EIR finds that while implementation of these goals and policies would help reduce energy-related impacts associated with General Plan buildout, the residual level of cumulative impacts would remain significant. Additionally, PG&E has noted that "continued development consistent with the City's general plans will have a cumulative impact on PG&E's gas and electric systems and may require onsite and offsite additions and improvements to the facilities that supply these services" (Poon pers. comm.). Because the proposed project is

included in the General Plan EIR analysis, the project's contribution to cumulative energy impacts in the General Plan study area is therefore considered significant and unavoidable.

Impact CE-6: Cumulative Impact Resulting from Increased Traffic Noise (Significant and Unavoidable)

The traffic noise modeling results in Table 10-8 indicate that the residential outdoor use performance standard of 60 dBA L_{dn} would be exceeded under cumulative conditions along the following roadway segments:

- Airport Way, all study segments;
- Yosemite Avenue, all study segments;
- Woodward Avenue, all study segments; and
- SR 120, between Main Street and Airport Way.

Significant cumulative traffic noise impacts are therefore predicted to occur along these roadway segments.

A project's contribution to a cumulative impact is considerable if with-project noise levels result in a noise level increase of at least 1 dB greater than no-project noise levels, at a given noise-sensitive location. The results in Table 10-8 indicate that implementation of the proposed project would contribute (result in a 1 dB increase) to the significant cumulative traffic noise impacts at residences along the three segments of Airport Way between Atherton Road and Peach Avenue. The project's contribution to this significant cumulative noise impact is therefore cumulatively considerable.

The project applicant will construct noise barriers along Woodward Avenue and Airport Way so that traffic noise in primary outdoor use areas at residences does not exceed 60 dBA L_{dn} , pursuant to Mitigation Measure NOI-3a to reduce noise at outdoor residential use areas. However, because the city does not have a program in place for mitigating cumulative traffic noise impacts, there is no feasible way for the project applicant to mitigate its fair share of the cumulative impact. This impact is therefore significant and unavoidable.

Impact CE-7: Cumulative Impacts on Other Public Services and Utilities (Less than Significant)

The General Plan EIR identifies cumulative impacts related to public services and utilities (including police, fire, and emergency services; schools; parks; and solid waste, wastewater, and drainage facilities) as a result of General Plan buildout to be potentially significant. However, with implementation of the goals and policies in the Public Facilities and Services Element (Section 6) of the City General Plan, these impacts would be reduced to a less-than-significant level. Because the proposed project is included in the General Plan EIR analysis, the project's contribution to cumulative public services and utilities impacts is also considered less than significant.

Impact CE-8: Cumulative Impacts to Public Services (No Impact)

The General Plan EIR identifies cumulative impacts related to public services and utilities (including police, fire, and emergency services; schools; parks; and solid waste, wastewater, and drainage facilities) as a result of General Plan buildout to be potentially significant. However, with implementation of the goals and policies in the Public Facilities and Services Element (Section 6) of the General Plan 2023, these impacts would be reduced to a less-than-significant level. Because the proposed project is included in the General Plan EIR analysis, the project's contribution to cumulative public services and utilities impacts is also considered less than significant.

Transportation—Future 2015 Conditions

Impact TRA-4: Unacceptable Level of Service at the Yosemite Avenue/McKinley Avenue Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours and meets the peak-hour signal warrant under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-4a: Pay Fair-Share of Intersection Improvements at Yosemite Avenue/McKinley Avenue

The City General Plan shows Yosemite Avenue as a six-lane facility and McKinley Avenue as a four-lane facility in the future. As part of the widening projects, this intersection would be improved and signalized. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. Acceptable operations can be provided at this intersection with the construction of the improvements listed below.

- Signalize the intersection.
- Construct second eastbound and westbound through lanes at the intersection. The additional through lanes must be carried a sufficient distance up and downstream to ensure adequate lane utilization.
- Configure the northbound and southbound approaches as follows: single left-turn lane, shared through/left-turn lane, and single right-turn lane.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS D during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-5: Unacceptable Level of Service at the Woodward Avenue/McKinley Avenue Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS E in the PM peak hour under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-5a: Pay Fair-Share of Intersection Improvements at Woodward Avenue/McKinley Avenue

The General Plan shows Woodward Avenue and McKinley Avenue as four-lane facilities in the future. As part of the widening projects, this intersection would be improved. Moreover, as described later in this section, the segment of Woodward Avenue between McKinley and Bella Terra Drive must be widened to four lanes to accommodate project traffic. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified, as the current PFIP covers only a portion of the cost. Acceptable operations can be provided at this intersection with the construction of the improvements listed below.

- Construct second eastbound and westbound through lanes at the intersection. The additional through lanes must be carried a sufficient distance up and downstream to ensure adequate lane utilization.
- Configure the northbound and southbound approaches as follows: single left-turn lane, single through lane, and a single right-turn lane.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS D or better during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-6: Unacceptable Level of Service at the Woodward Avenue/Bella Terra Drive Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours and meets the peak-hour signal warrant under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-6a: Pay Fair-Share to Signalize Woodward Avenue/Bella Terra Drive Intersection

To accommodate project traffic at this intersection (which provides access to the site), a traffic signal is required under Cumulative Conditions. Since a subsequent mitigation measure identifies the widening of Woodward Avenue to four lanes, this mitigation measure assumes the widening is in place.

A LOS analysis indicates that if the intersection is signalized, it will operate at LOS B during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-7: Unacceptable Level of Service at the Yosemite Avenue/Airport Way Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-7a: Pay Fair-Share of Intersection Improvements at Yosemite Avenue/Airport Way

The City General Plan shows Yosemite Avenue and Airport Way as six-lane facilities in the future. As part of the widening projects, this

intersection would be improved. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified, as the current PFIP covers only a portion of the cost. Acceptable operations can be provided at this intersection with the construction of the following improvements:

- provide a single left-turn lane, a through lane, and a shared through/right-turn lane on all approaches.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS D or better during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Note that a subsequent mitigation measure requires that Airport Way be widened to four lanes between Yosemite Avenue and Daniels Street to accommodate project trips at an acceptable LOS. The mitigation measure at this intersection was designed to accommodate the roadway widening to four lanes. By providing the additional through lanes, this intersection will operate at an acceptable LOS. The roadway widening therefore has a secondary benefit that provides acceptable operations at this intersection.

Impact TRA-8: Unacceptable Level of Service at the Wawona Street/Airport Way Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours under Cumulative No-Project Conditions. This unsignalized intersection also meets peak-hour signal warrant criteria. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-8a: Pay Fair-Share of Intersection Improvements at Wawona Street/Airport Way

The General Plan shows Airport Way as six-lane facility in the future. As part of the Airport Way widening project, this intersection would be improved. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified, as the current PFIP

covers only a portion of the cost. To meet the City's LOS standards, the intersection must be configured as follows:

- provide a single left-turn lane and two through lanes on the southbound approach, and
- provide a through lane and a shared through/right-turn lane.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS B during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Note that a subsequent mitigation measure requires that Airport Way be widened to four lanes between Yosemite Avenue and Daniels Street to accommodate project trips at an acceptable LOS. The mitigation measure at this intersection was designed to accommodate the roadway widening to four lanes. By providing the additional through lanes, this intersection will operate at an acceptable LOS. The roadway widening therefore has a secondary benefit that provides acceptable operations at this intersection.

Impact TRA-9: Unacceptable Level of Service at the Daniels Street/Airport Way Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-9a: Pay Fair-Share of Intersection Improvements at Daniels Street/Airport Way

The City General Plan shows Airport Way as a six-lane facility in the future. As part of the Airport Way widening project, this intersection would be improved. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified, as the current PFIP covers only a portion of the cost. To meet the City's LOS standards, the intersection must be configured as follows:

- provide a single left-turn lane, two through lanes, and a right-turn lane on the southbound approach;
- provide two left-turn lanes, two through lanes, and a right-turn lane on the northbound approach; and
- provide two left-turn lanes, one through lane, and a right-turn lane on the eastbound and westbound approach.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS B during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-10: Unacceptable Level of Service at the Westbound SR 120 Ramps/Airport Way Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-10a: Pay Fair-Share for Interchange Improvements at Airport Way and SR 120

As described previously, the City, in cooperation with Caltrans District 10 and SJCOG, has initiated a PSR for the SR 120/Airport Way interchange. The interchange project will determine the required interchange design to serve full buildout of the City General Plan (six lanes on Airport Way) and the planned widening of SR 120 from four to six lanes. The Westbound SR 120/Airport Way ramp terminal intersection would be designed with the following characteristics:

- three through lanes and a right-turn lane on the southbound approach,
- two left-turn lanes and three through lanes on the northbound approach, and
- two left-turn lanes, a shared through/right-turn lane, and a right-turn lane on the westbound approach.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS C during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

While the improvements described above would provide acceptable operations at this intersection, the impact is still considered significant and unavoidable for the following reasons:

- full funding for the project has not been identified;
- the timeline for completion of the interchange improvements is unknown; and
- this project is outside the control of the City or the project applicant and its implementation cannot be guaranteed.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Impact TRA-11: Unacceptable Level of Service at the Eastbound SR 120 Ramps/Airport Way Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-11a: Pay Fair-Share for Interchange Improvements at Airport Way and SR 120

As described previously, the City, in cooperation with Caltrans District 10, and SJCOG has initiated a PSR for the SR 120/Airport Way interchange. The interchange project will determine the required interchange design to serve full buildout of the City General Plan (six lanes on Airport Way) and the planned widening of SR 120 from four to six lanes. The Eastbound SR 120/Airport Way ramp terminal intersection would be designed with the following characteristics:

- one left-turn lane and three through lanes on the southbound approach,
- three through lanes and a right-turn lane on the northbound approach, and
- one left-turn lane, a shared through/left-turn lane, and two right-turn lanes on the eastbound approach.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS C or better during the AM and

PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

While the improvements described above would provide acceptable operations at this intersection, the impact is still considered significant and unavoidable for the following reasons:

- full funding for the project has not been identified;
- the timeline for completion of the interchange improvements is unknown; and
- this project is outside the control of the City or the project applicant and its implementation cannot be guaranteed.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Impact TRA-12: Unacceptable Level of Service at the Atherton Road/Airport Way Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours and meets the peak-hour signal warrant under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-12a: Pay Fair-Share of Intersection Improvements at Atherton Road/Airport Way Intersection

The City General Plan shows Airport Way as a six-lane facility and Atherton Road as a four-lane facility in the future. As part of the widening projects, this intersection would be improved and signalized. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified, as the current PFIP covers only a portion of the cost. To meet the City's LOS standard, the following intersection improvements are necessary:

- signalize the intersection;
- construct two left-turn lanes, three through lanes, and a right-turn lane on the southbound approach;
- construct one left-turn lane, two through lanes, and a shared through/right-turn lane on the northbound approach;
- construct two left-turn lanes, a through lane, and a right-turn lane on the eastbound approach; and
- maintain the current westbound configuration of one left-turn lane, one through lane, and one right-turn lane.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS D or better during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-13: Unacceptable Level of Service at the Woodward Avenue/Airport Way Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours and meets the peak-hour signal warrant under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-13a: Pay Fair-Share of Intersection Improvements at Woodward Avenue/Airport Way Intersection

The City General Plan shows Airport Way as a six-lane facility and Woodward Avenue as a four-lane facility in the future. As part of the widening projects, this intersection would be improved and signalized. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. To meet the City's LOS standard, the following intersection improvements are necessary:

- signalize the intersection;
- construct one left-turn lane, one through lane, and one right-turn lane on the southbound approach;
- construct one left-turn lane, one through lane, and a shared through/right-turn lane on the northbound approach;
- construct one left-turn lane, one shared left/through lane, and one shared through/right-turn lane on the eastbound approach; and
- construct one left-turn lane, one through lane, and one shared through/right-turn lane on the eastbound approach.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS D or better during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-14: Unacceptable Level of Service at the Woodward Avenue/Union Road Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the PM peak hour and meets the peak hour signal warrant under Cumulative No-Project Conditions. Since project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-14a: Pay Fair-Share of Intersection Improvements at Woodward Avenue/Union Road Intersection

The City General Plan shows Union Road and Woodward Avenue as four-lane facilities in the future. As part of the widening projects, this intersection would be improved and signalized. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. To meet the City's LOS standard, the following intersection improvements are necessary:

- signalize intersection, and
- construct one left-turn lane and one shared through/right-turn lane on all approaches.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS C or better during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-15: Unacceptable Level of Service at the Woodward Avenue/Main Street Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-18, this intersection operates at an unacceptable LOS F in the AM and PM peak hours and meets the peak-hour signal warrant under Cumulative No-Project Conditions. Since project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-15a: Pay Fair-Share of Intersection Improvements at Woodward Avenue/Main Street Intersection

The City General Plan shows Main Street as a six-lane facility and Woodward Avenue as a four-lane facility in the future. As part of the widening projects, this intersection would be improved and signalized. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. To meet the City's LOS standard, the following intersection improvements are necessary:

- signalize the intersection,
- construct an additional left-turn lane to provide two left-turn lanes and one shared through/right-turn lane on the southbound approach, and
- construct one left-turn lane and one shared through/right-turn lane on the eastbound approach.

A LOS analysis indicates that if the intersection is configured as described above, it will operate at LOS C or better during the AM and PM peak hours. Table 12-23 presents the intersection LOS results under Cumulative Plus Project with Mitigation Measures Incorporated.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-16: Unacceptable Roadway Segment Level of Service on Airport Way between Yosemite Avenue and Daniels Street under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-19, the Airport Way roadway segments, between Yosemite Avenue and Daniels Street, are expected to operate at LOS F conditions under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-16a: Pay Fair-Share to Widen Airport Way to Four Lanes

The City General Plan shows Airport Way as a six-lane facility in the future. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. Table 12-24 shows that adequate roadway segment operations can be provided by widening Airport Way to four lanes.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-17: Unacceptable Roadway Segment Level of Service on Airport Way between Daniels Street and Atherton Road under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-19, the Airport Way roadway segments, between Daniels Street and Atherton Road, are expected to operate at LOS F conditions under Cumulative No-Project Conditions. Project trips would exacerbate an existing deficiency for the roadway segments between Daniels Street and the Eastbound SR 120 ramps and would degrade LOS to an unacceptable LOS F on the segment between the SR 120 eastbound ramps and Atherton Road. This is considered a significant impact.

Mitigation Measure TRA-17a: Pay Fair-Share for Interchange Improvements at Airport Way and SR 120 and Airport Way Widening

As described previously, the City, in cooperation with Caltrans District 10, and SJCOG has initiated a PSR for the SR 120/Airport Way interchange. The interchange project will widen Airport Way to six lanes between Daniels Street and Atherton Road, which would provide acceptable roadway segment LOS.

While the improvements described above would provide acceptable operations at this intersection, the impact is still considered significant and unavoidable for the following reasons:

- full funding for the project has not been identified;
- the timeline for completion of the interchange improvements is unknown; and
- this project is outside the control of the City or the project applicant, and its implementation cannot be guaranteed.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Impact TRA-18: Unacceptable Roadway Segment Level of Service on Airport Way between Atherton Road and Woodward Avenue under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-19, Airport Way, between Atherton Road and Woodward Avenue, is expected to operate at LOS F conditions under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-18a: Pay Fair-Share to Widen Airport Way to Four Lanes

The City General Plan shows Airport Way as a six-lane facility in the future. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. Table 12-24 shows that adequate roadway segment operations can be provided by widening Airport Way to four lanes.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-19: Unacceptable Roadway Segment Level of Service on Woodward Avenue between McKinley Avenue and Airport Way under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-19, the Woodward Avenue roadway segments, between McKinley Avenue and Airport Way, are expected to operate at LOS E conditions under Cumulative No-Project Conditions. Because project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-19a: Pay Fair-Share to Widen Airport Way to Four Lanes

The City General Plan shows Woodward Avenue as a four-lane facility in the future. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. Table 12-24 shows that

adequate roadway segment operations can be provided by widening Woodward Avenue to four lanes.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-20: Unacceptable Roadway Segment Level of Service on McKinley Avenue between Yosemite Avenue and SR 120 under Cumulative Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-19, the McKinley Avenue roadway segments, between Yosemite Avenue and SR 120, are expected to operate at LOS F conditions under Cumulative No-Project Conditions. Since project trips exacerbate an existing deficiency, this is considered a significant impact.

Mitigation Measure TRA-20a: Pay Fair-Share to Widen McKinley Avenue to Four Lanes

The General Plan shows McKinley Avenue as a four-lane facility in the future. However, as mentioned previously, full funding for General Plan roadway improvements has not been identified since the current PFIP covers only a portion of the cost. Table 12-24 shows that adequate roadway segment operations can be provided by widening McKinley Avenue to four lanes.

To help implement these improvements, the project applicant shall make a fair-share contribution toward the unfunded portion of the costs. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

Even though the improvements described above will provide acceptable operations under Cumulative Plus Project conditions, the impact is still considered significant and unavoidable because full funding for the improvements has not been identified and implementation cannot be guaranteed.

Impact TRA-21: Unacceptable Level of Service on Freeway Mainline Segments under Cumulative Plus Project Conditions (Less than Significant with Mitigation)

As shown in Table 12-20, the addition of project-generated traffic would lead to an increase in density on mainline segments already operating at LOS F at the locations below. This is considered a significant impact.

- Eastbound SR 120, between Yosemite Avenue and Airport Way, in the PM peak hour
- Westbound SR 120, between Union Road and Yosemite Avenue, in the AM peak hour

Mitigation Measure TRA-21a: City Regional Transportation Impact Fee

The project applicant will pay the City's regional transportation impact fee when building permits are issued.

The widening of SR 120 to six lanes is included in the SJCOG Regional Transportation Plan as a Tier 1 improvement. Funding for this improvement comes from the City's regional transportation impact fee (currently at \$2,500 per dwelling unit) and the Measure K retail transaction and use tax. The project would contribute its fair-share by paying the City's regional transportation impact fee and through retail transactions that would be paid by project residents.

As shown in Table 12-25, the widening of SR 120 from four to six lanes (three in each direction) would provide LOS C conditions in the off-peak direction. However, even with the additional lanes on SR 120, the peak directions of travel (westbound in the AM peak hour, eastbound in the PM peak hour) will continue to operate at LOS F.

Even though SR 120 is still expected to operate at LOS F conditions under cumulative conditions, it still meets the LOS F standard defined in the CMP. The impact caused by the Machado project is considered less than significant with mitigation because the project is paying its fair-share to fund the County's ultimate transportation improvement for SR 120.

Impact TRA-22: Unacceptable Level of Service on Freeway Ramp Junctions under Existing Plus Project Conditions (Significant and Unavoidable)

As shown in Table 12-21, the addition of project-generated traffic would lead to an increase in density at ramp merge and diverge junctions already operating at LOS F at the locations listed under Mitigation Measure TRA-22a below. This is considered a significant impact.

Mitigation Measure TRA-22a: Pay Fair-Share for Interchange Improvements at Airport Way and SR 120

As mentioned previously, the City, in cooperation with Caltrans District 10 and SJCOG, has initiated a PSR for the SR 120/Airport Way interchange. The interchange project will determine the required design to serve full buildout of the City General Plan and the planned widening of SR 120 from four to six lanes (RTP Tier 1 project). The on-ramp and off-ramp designs will provide the necessary acceleration, deceleration, and storage lengths to serve projected morning and evening peak-hour volumes at acceptable levels of service. To reduce the impact of project

trips, the project applicant will pay its fair-share for interchange improvements. The fair-share percentage and the dollar amount of the fee/contribution will be determined at the time of final map approval.

As shown in Table 12-26, the LOS results with the interchange improvements in place indicate that the following ramp junctions are expected to operate at an acceptable LOS during the AM and PM peak hours under Cumulative Plus Project Conditions.

- Eastbound SR 120 on-ramp to Airport Way
- Westbound SR 120 off-ramp from Airport Way

The LOS analysis indicates that the ramp junctions below will operate at LOS F conditions because of congestion on the freeway mainline. However, due to the LOS F standard for SR 120, with the project's contribution toward the ultimate interchange and mainline improvements, the project impact would be mitigated.

- Eastbound SR 120 off-ramp to Airport Way is expected to operate at LOS F during the PM peak hour.
- Westbound SR 120 on-ramp from Airport Way is expected to operate at LOS F during the AM peak hour.

This impact is still considered significant and unavoidable because the interchange improvements are not under the control of the City or applicant, and because no funding sources have been identified for the interchange improvements.

Impact TRA-23: Increased Demand for Bicycle Facilities under Existing Plus Project and Cumulative Plus Project Conditions (Less than Significant with Mitigation)

Currently, the only bicycle facilities near the project site are bicycle lanes along Airport Way from Atherton Road to the south. Typical weekday activities (biking to work, exercising, etc.) would create an unmet demand for bicycle facilities along the McKinley Avenue extension and Woodward Avenue. This is considered a significant impact.

Mitigation Measure TRA-23a: Install Bicycle Facility Improvements in the Vicinity of the Project Site

The project applicant will coordinate with the City to determine specific bicycle facilities improvements required to mitigate increased demand for bicycle facilities. One possible improvement includes dedicated bicycle lanes, bicycle routes, or other bicycle improvements along the project frontage on McKinley Avenue and Woodward Avenue consistent with the 2003 Bicycle Master Plan (City of Manteca 2003b). Additionally, as shown on Figure 12-14, bicycle access through the ends of cul-de-sacs should be allowed to encourage bicycling. Proposed bicycle access to and from the project site that meets the Bicycle Master Plan and City standards for bicycle facilities will be shown on

improvement plans submitted by the applicant to the City before final map approval. The applicant will construct the bicycle access improvements along with the other infrastructure improvements for the project before occupancy.

Impact TRA-24: Increased Demand for Public Transit under Existing Plus Project and Cumulative Plus Project Conditions (Less than Significant with Mitigation)

Currently, there are no transit facilities in the project site vicinity. Typical weekday activities within the proposed development would create a demand for transit services for residents who would use public transit to access jobs or other activities in other areas of Manteca or San Joaquin County. This is considered a significant impact.

Mitigation Measure TRA-24a: Coordinate with the City of Manteca to Develop Transit Service and Construct Facilities in the Vicinity of the Project Site

The project applicant will coordinate with the City to determine specific transit improvements required to mitigate increased demand for public transit. An example of a transit improvement would be to pay for the construction of a sheltered transit stop along the project frontage on either Airport Way or Woodward Avenue and help fund expanded transit service to the project site to meet the increased demand on public transportation by project residents.

Significant and Unavoidable Impacts

A significant and unavoidable impact is one that would cause a substantial adverse effect on the environment and for which no mitigation is available to reduce the impact to a less-than-significant level. Significant and unavoidable cumulative impacts are identified above under “Cumulative Impacts.” The significant and unavoidable impacts of the proposed project are listed below.

- Impact AG-1: Direct Conversion of Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or Other Farmland to Nonagricultural Use
- Impact AIR-3: Generation of Emissions of Reactive Organic Gases and Oxides of Nitrogen in Excess of San Joaquin Valley Air Pollution Control District
- Impact CE-1: Cumulative Loss of Agricultural Lands
- Impact CE-3: Cumulative Effect on Climate Change
- Impact CE-5: Cumulative Impacts to Energy
- Impact CE-6: Cumulative Impact Resulting from Increased Traffic Noise

- Impact TRA-4: Unacceptable Level of Service at the Yosemite Avenue/McKinley Avenue Intersection under Cumulative Plus Project Conditions
- Impact TRA-5: Unacceptable Level of Service at the Woodward Avenue/McKinley Avenue Intersection under Cumulative Plus Project Conditions
- Impact TRA-6: Unacceptable Level of Service at the Woodward Avenue/Bella Terra Drive Intersection under Cumulative Plus Project Conditions
- Impact TRA-7: Unacceptable Level of Service at the Yosemite Avenue/Airport Way Intersection under Cumulative Plus Project Conditions
- Impact TRA-8: Unacceptable Level of Service at the Wawona Street/Airport Way Intersection under Cumulative Plus Project Conditions
- Impact TRA-9: Unacceptable Level of Service at the Daniels Street/Airport Way Intersection under Cumulative Plus Project Conditions
- Impact TRA-10: Unacceptable Level of Service at the Westbound SR 120 Ramps/Airport Way Intersection under Cumulative Plus Project Conditions
- Impact TRA-11: Unacceptable Level of Service at the Eastbound SR 120 Ramps/Airport Way Intersection under Cumulative Plus Project Conditions
- Impact TRA-12: Unacceptable Level of Service at the Atherton Road/Airport Way Intersection under Cumulative Plus Project Conditions
- Impact TRA-13: Unacceptable Level of Service at the Woodward Avenue/Airport Way Intersection under Cumulative Plus Project Conditions
- Impact TRA-14: Unacceptable Level of Service at the Woodward Avenue/Union Road Intersection under Cumulative Plus Project Conditions
- Impact TRA-15: Unacceptable Level of Service at the Woodward Avenue/Main Street Intersection under Cumulative Plus Project Conditions (Significant and Unavoidable)
- Impact TRA-16: Unacceptable Roadway Segment Level of Service on Airport Way between Yosemite Avenue and Daniels Street under Cumulative Plus Project Conditions
- Impact TRA-17: Unacceptable Roadway Segment Level of Service on Airport Way between Daniels Street Atherton Road under Cumulative Plus Project Conditions (Significant and Unavoidable)
- Impact TRA-18: Unacceptable Roadway Segment Level of Service on Airport Way between Atherton Road and Woodward Avenue under Cumulative Plus Project Conditions
- Impact TRA-19: Unacceptable Roadway Segment Level of Service on Woodward Avenue between McKinley Avenue and Airport Way under Cumulative Plus Project Conditions

- Impact TRA-20: Unacceptable Roadway Segment Level of Service on McKinley Avenue between Yosemite Avenue and SR 120 under Cumulative Plus Project Conditions
- Impact TRA-21: Unacceptable Level of Service on Freeway Mainline Segments under Cumulative Plus Project Conditions
- Impact TRA-22: Unacceptable Level of Service on Freeway Ramp Junctions under Existing Plus Project Conditions

Significant, Irreversible Environmental Changes

Section 15126.2(c) of the State CEQA Guidelines provides the following direction for the discussion of irreversible changes:

Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvements, which provide access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to ensure that current consumption is justified.

The proposed project would result in an irreversible commitment of energy resources, primarily in the form of fossil fuels (e.g., fuel, oil, natural gas, and gasoline) for construction equipment, as well as consumption or destruction of other nonrenewable and slowly renewable resources (e.g., gravel, metals, and water). The proposed project would also result in the permanent conversion of agricultural lands to developed land uses. This conversion would represent an irreversible commitment of land to another land use.

Chapter 15

Alternatives Analysis

Introduction and Overview

CEQA requires that an EIR describe a reasonable range of feasible alternatives to the project or project location that could substantially reduce one or more of the project's significant environmental impacts while meeting most or all of its objectives. The EIR is required to analyze the potential environmental impacts of each alternative, though not at the same level of detail as the project. There must be sufficient detail to be able to compare the respective merits of the alternatives. Key provisions of the State CEQA Guidelines (Section 15126.6) that pertain to alternatives analysis are summarized below.

- The discussion of alternatives shall focus on alternatives to the project or project location that are feasible, would meet most or all of the project objectives, and would substantially reduce one or more of its significant impacts.
- The range of alternatives must include the No-Project Alternative. The no-project analysis will discuss the existing conditions at the time the NOP was published, as well as conditions that would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. The No-Project Alternative is not required to be feasible, meet any of the project objectives, or reduce the project's expected impacts to any degree.
- The range of alternatives required is governed by a "rule of reason." The EIR must evaluate only those alternatives necessary to permit a reasoned choice. An EIR is not required to analyze every conceivable alternative to a project.
- An EIR does not need to consider an alternative whose effects cannot be reasonably ascertained, whose implementation is remote and speculative, and that would not achieve the basic project objectives.

Methodology and Screening Criteria

A range of potential alternatives was subjected to screening criteria to rule out those that do not qualify as alternatives under CEQA. There was no attempt to include every conceivable alternative in this range. Rather, the EIR preparers considered several representative alternatives. The screening criteria for the potential alternatives are relatively simple.

- Does the alternative meet most or all of the project objectives?
- Is the alternative potentially feasible?
- Would the alternative substantially reduce one or more of the significant impacts associated with the project?

Project Objective

The objective of the proposed project is to provide additional residential opportunities for the expanding population of Manteca. This project would help accommodate the growing community.

Feasibility

Feasible is defined as “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors” (State CEQA Guidelines Section 15364). CEQA does not require that an EIR determine the ultimate feasibility of a selected alternative, but rather that it is probably feasible. Accordingly, no economic studies have been prepared regarding the economic feasibility of the selected alternatives.

Significant Impacts

The alternative should provide a means of reducing the level of impacts that would otherwise result from implementation of the project. The following significant impacts would be associated with the proposed project. Where mitigation measures identified in the EIR would reduce these impacts to a less-than-significant level, this is also identified below.

- **Agriculture:** Direct conversion of prime farmland, unique farmland, farmland of statewide importance, or other farmland to nonagricultural use (significant and unavoidable).
- **Air Quality:** Temporary increase in construction-related emissions (less than significant with mitigation); elevated health risk from the exposure of nearby sensitive receptors to diesel particulate matter (less than significant

with mitigation); and generation of significant levels of emissions of from project construction (significant and unavoidable).

- **Biological Resources:** Substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the DFG or USFWS (less than significant with mitigation); potential disturbance or loss of waters of the United States (less than significant with mitigation); conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (less than significant with mitigation); and conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan (less than significant with mitigation).
- **Cultural Resources:** Potential destruction of buried archeological resources (less than significant with mitigation), and destruction or disturbance of human remains (less than significant with mitigation).
- **Geology, Soils, and Paleontology:** Contribution to substantial soil erosion or loss of topsoil (less than significant with mitigation), and damage to paleontological resources (less than significant with mitigation).
- **Hazards and Hazardous Materials:** Potential hazard to the public or the environment through the routine transport, use, of disposal of hazardous materials during construction (less than significant with mitigation); and significant hazard from reasonably foreseeable upset and accident conditions involving release of hazardous materials (less than significant with mitigation).
- **Hydrology and Water Quality:** Construction-related erosion, sedimentation, and potential release of hazardous materials (less than significant with mitigation); water quality impacts from construction below the water table (less than significant with mitigation); increased amounts of surface runoff and associated impacts to water quality and drainage facilities during operation (less than significant with mitigation); and flood hazards associated with levee or dam failure (less than significant with mitigation).
- **Noise:** Exposure of noise-sensitive land uses to vibration and noise during construction activities (less than significant with mitigation), and exposure of future noise-sensitive land uses within the proposed project to traffic noise (less than significant with mitigation).
- **Traffic and Transportation:**
 - ❑ Unacceptable LOS at unsignalized Airport Way/Westbound State Route 120 on-and off-ramp Intersection under Existing Plus Project Conditions (less than significant with mitigation).
 - ❑ Unacceptable LOS at unsignalized Airport Way/Eastbound State Route 120 on- and off-ramp intersection under Existing Plus Project Conditions (less than significant with mitigation).
 - ❑ Site access and circulation impacts (less than significant with mitigation).

- ❑ Unacceptable LOS at the Yosemite Avenue/McKinley Avenue Intersection under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable LOS at the Woodward Avenue/McKinley Avenue intersection under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable LOS at the Woodward Avenue/Bella Terra Drive intersection under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable LOS at the Yosemite Avenue/Airport Way intersection under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable LOS at the Wawona Street/Airport Way intersection under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable LOS at the Daniels Street/Airport Way intersection under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable LOS at the Westbound SR 120 Ramps/Airport Way intersection under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable LOS at the Eastbound SR 120 Ramps/Airport Way intersection under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable LOS at the Atherton Way/Airport Way intersection under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable LOS at the Woodward Avenue/Airport Way intersection under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable LOS at the Woodward Avenue/Union Road intersection under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable LOS at the Woodward Avenue/Main Street intersection under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable roadway segment LOS on Airport Way between Yosemite Avenue and Daniels Street under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable roadway segment LOS on Airport Way between Daniels Street and Atherton Road under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable roadway segment LOS on Airport Way between Atherton Road and Woodward Avenue under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable roadway segment LOS on Woodward Avenue between McKinley Avenue and Airport Way under Cumulative Plus Project Conditions (significant and unavoidable).

- ❑ Unacceptable roadway segment LOS on McKinley Avenue between Yosemite Avenue and SR 120 under Cumulative Plus Project Conditions (significant and unavoidable)
- ❑ Unacceptable LOS on freeway mainline segments under Cumulative Plus Project Conditions (significant and unavoidable).
- ❑ Unacceptable LOS on freeway ramp junctions under Existing Plus Project Conditions (significant and unavoidable).
- ❑ Increased demand for bicycle facilities under Existing Plus Project and Cumulative Plus Project Conditions (less than significant with mitigation).
- ❑ Increased demand for public transit under Existing Plus Project and Cumulative Plus Project Conditions (less than significant with mitigation).
- **Utilities and Service Systems:** Inadequate provision of parks and recreational facilities (less than significant with mitigation), and temporary, planned, or accidental construction-related disruptions to utility services (less than significant with mitigation).

Alternatives Development

To develop alternatives to the proposed project, the significant impacts listed above were evaluated to determine whether an alternative could be developed to reduce one or more impacts to a less-than-significant level. Significant impacts included those found to be significant and unavoidable as well as those that could be reduced to a less-than-significant level with mitigation. Through this process, several alternatives were considered but rejected and several were analyzed, as described below.

Alternatives Considered but Rejected

Alternative 1: Alternative Site

This alternative focuses on alternative locations for development of the project as proposed. This alternative considers that the project would proceed within the PUSA, consistent with the provisions of the General Plan. The objective is to determine whether any of the significant effects of the project, if fully implemented, would be avoided or substantially lessened by locating the project as described at another location.

The objective of the proposed project is to provide housing to accommodate expected city population growth. Most of the possible alternative sites within the City's SOI have already been proposed for development by other developers. Potential alternative sites are similar to the project site in topography and land use. Most are also currently in agricultural use and would, compared to the

proposed project site, have comparable environmental sensitivity and likely the same level of impacts as the project, differing only in project location. For example, affected roadways include major arterials and freeway facilities that would be affected by traffic in any part of Manteca.

The City General Plan Housing Element identifies land available for development with housing on Figure 12-25 of the Housing Element. As shown on this figure, little undeveloped land is available for housing development within the existing city limits. The Housing Element identifies an opportunity for development on infill housing on sites designated for Commercial Mixed Use Development. These sites are small and available for the development of high-density housing. No infill sites are available for development of a single-family housing project in the range of units meeting the objectives of this project.

For these reasons, no alternative site is available for development of this project that would result in a substantial reduction of the environmental impacts of the proposed project, as identified in the impact analysis in this document.

Alternative 2: Reduced Density

Under this alternative, the number of residential units would be reduced by an undetermined amount to lessen the project's traffic and transportation impacts. The traffic analysis and traffic tables show that all traffic impacts on local roadways are capable of being mitigated with local roadway improvements. Reduction in the project to levels not requiring local roadway improvements would likely be a severe reduction in the number of units to be developed on the project site, making the project infeasible. Further, as described in the assessment of the traffic impacts of the proposed project, freeway operation with or without the project would be at unacceptable levels, so no amount of reduction in the size of the project would address the freeway impacts. Therefore, Alternative 2 would not substantially reduce the traffic impacts of the project to the extent that the impacts associated with project development would be reduced to a less-than-significant level, and so this alternative was not considered further.

Alternatives Analyzed

Alternative 3: Commercial Mixed Use Alternative

The General Plan Housing Element (Wade and Associates 2003) identifies a Commercial Mixed Use (CMU) designation. This designation allows for a mixture of commercial, office, and high-density residential uses. Under this category, all infill development will be allocated for high-density residential, with an average of 25% of all CMU-designated land being developed for high-density residential at an average density of 25 units per 20 acres.

This alternative would apply the General Plan's CMU designation across the entire project site. The CMU designation would provide flexibility in the design

of the project site, with the possibility of inclusion of a mix of retail, professional office, business park, and high-density residential uses. Modifications in the project design and plan layout may result in increased ease of traffic flow within the project site and greater access to connecting roadways and freeway access.

Because there is no specific proposal for 156.8 acres of CMU, this EIR cannot precisely forecast the impacts of this alternative. However, for comparison purposes, Table 15-1 illustrates a potential development scenario. The following basic assumptions underlie this scenario.

- Approximately 25% of the site would be used for high-density residential use.
- Approximately 15% of the site would be used for low-density residential use.
- Approximately 20% of the site would be used for roads.
- The remaining 40% of the site would be evenly divided between the possible categories as outlined in the General Plan.

Table 15-1. Alternative 3 Proposed Land Uses

Land Use	Portion of Project Area
High-Density Residential	25%
Roads	20%
Low-Density Residential	15%
Commercial	10%
Parks/Open Space	10%
Professional	10%
Retail	10%
Total	100%

The CMU alternative would result in greater intensity of use than the proposed project. With a reduction in housing units, air and noise impacts would be reduced. Design changes associated with mixed use would lead to improved traffic circulation and thus would reduce traffic impacts immediately adjacent to the project area. However, it is unlikely that all traffic impacts would be reduced below a significant level. Additionally, traffic impacts associated with local freeway mainline segments and ramps would not be reduced. However, this alternative meets the project goal of providing housing to accommodate growth in the City of Manteca while conforming to a Housing Element goal within the General Plan.

Alternative 4: Alternative Tentative Map for Machado Estates

Under Alternative 4, the project would result in development of a smaller number of housing units than under the proposed project, but with a different configuration of the same 156.8-acre site (Figure 15-1). Single-family housing units would be constructed at up to eight units per acre, the maximum allowed under the City General Plan's LDR land-use designation for the project site.

Under this alternative, all impacts would remain the same as for the proposed project, except for the impacts on hydrology. This configuration would place residential parcels within the 100-year flood zone. It also would increase impacts on hydrology and water quality. However, this impact would be reduced to a less-than-significant level with the appropriate mitigation measures. This configuration would reduce impacts related to anticipated LOS or trips generated.

Alternative 5: Phased Development Alternative

Alternative 5 would phase the development of Machado Estates to coincide with planned freeway improvements to reduce traffic and circulation impacts associated with the project. At present, there is not adequate funding for improvements to local roadways to adequately reduce all traffic impacts that would result from the project. However, funding has been identified for the installation of traffic signals at the eastbound and westbound ramp terminal intersections at SR 120 and Airport Way. These intersections are expected to be operational in December of 2007. Additionally, SJCOG has included the widening of SR 120 from four to six lanes as a Tier 1 project in the Regional Transportation Plan. Funding is available for these improvements. However, an implementation schedule has not been established for this work.

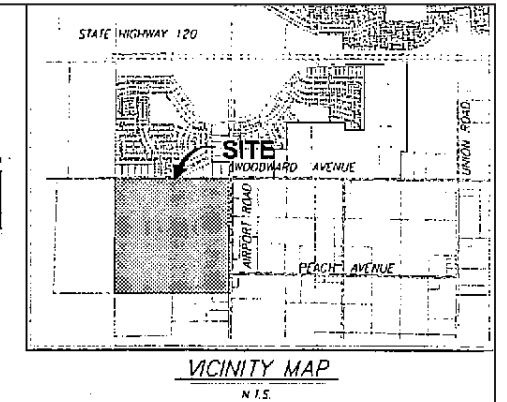
Under this alternative, the project site would be developed in phases to coincide with improvements to SR 120. The proposed SR 120 ramp improvements are anticipated to be completed in December of 2007, with widening of SR 120 from four to six lanes happening at an unidentified later date. Machado Estates development phasing will begin with the December 2007 date and continue as a schedule is developed for the additional improvements to SR 120.

At present, Caltrans is developing the State Route 99 Business Plan and State Route 99 Master Corridor Plan (Hibbard pers. comm.). While development of these plans is in progress and the design of these improvements is not yet clearly defined, the Machado Estates Development could also be phased to coincide with SR 99 improvements in the vicinity of the City of Manteca.

Under this alternative, impacts would be similar to those of the proposed project, with the exception of impacts related to traffic and circulation. By phasing development to coincide with improvements to SR 120 and SR 99, impacts associated with freeway ramp and mainline segments would be reduced and

TENTATIVE SUBDIVISION MAP TRACT NO. 3420 MACHADO ESTATES

A SINGLE FAMILY SUBDIVISION
BEING A PORTION OF THE SOUTHEAST QUARTER OF SECTION 12, T.2S., R.6E., M.D.B.M.,
CITY OF MANTECA, SAN JOAQUIN COUNTY, CALIFORNIA



DEVELOPERS:

AIRPORT WOODWARD JOINT VENTURE
544 E ROSEWATE AVE
MANTECA, CA 95336

ENGINEER:

MCR ENGINEERING
122 SUN WEST PLACE
MANTECA, CA 95317
PHONE 209-6329

NOTES:

1. ALL IMPROVEMENTS TO CONFORM TO CITY OF MANTECA STANDARDS.
2. ALL UTILITIES TO BE UNDERGROUND.
3. SEWAGE DISPOSAL BY CONNECTION TO CITY SEWER SYSTEM.
4. STORM DRAINAGE SHALL BE BY COLLECTION SYSTEM PER CITY OF MANTECA MASTER PLAN.
5. DOMESTIC WATER BY CONNECTION TO CITY WATER SYSTEM.
6. PUBLIC UTILITY EASEMENT WILL BE PROVIDED ALONG ALL STREET FRONTAGES.
7. THIS SUBDIVISION CONTAINS 559 LOTS ON 160+ ACRES.
8. THE SITE SHALL BE CLEARED OF ALL EXISTING STRUCTURES.
9. THIS PROJECT MAY BE DEVELOPED IN PHASES. PARCEL MAPS MAY BE FILED ON PHASE BOUNDARIES FOR PURPOSE OF SALE OR FARMING.
10. THIS PROPERTY IS RELATIVELY FLAT AT EL. 202.
11. BOUNDARY LINES ARE BASED ON ASSESSORS MAP AND ARE SUBJECT TO CHANGE.

INDEX

SHEET	DESCRIPTION
1	COVER SHEET
2	CROSS SECTIONS
3	BOUNDARY AND TOPOGRAPHIC SURVEY PLAN
4	UTILITY PLAN (NORTH)
5	UTILITY PLAN (SOUTH)
6	DIMENSION PLAN (NORTH)
7	DIMENSION PLAN (SOUTH)
8	DEVELOPMENT PLAN (NORTH)
9	DEVELOPMENT PLAN (SOUTH)

LOT COUNT:

PHASE 1 = 181 LOTS TOTAL
LOTS 1-181
PHASE 2 = 224 LOTS TOTAL
LOTS 182-405
PHASE 3 = 154 LOTS TOTAL
LOTS 406-559

LEGEND:

- 8" W PROPOSED WATER LINE
- 12" SD PROPOSED STORM DRAIN
- 8" SS PROPOSED SANITARY SEWER
- PROPOSED MANHOLE
- 2" W EXISTING WATER LINE
- 5" SD EXISTING STORM DRAIN
- 6" SS EXISTING SANITARY SEWER
- EXISTING MANHOLE



SCALE
1" = 200'

61192.06 (7/07)

overall impacts to traffic and circulation would be lower than those of the proposed project.

Alternative 6: No-Project Alternative (No Development)

Under the No-Project Alternative, the proposed project would not be constructed and no construction activities would occur at the site. The site consists primarily of wheat fields, and it contains one private residence near the northeast corner. Under this alternative, this use would remain. This alternative is included to allow for comparison of the impacts caused by approval of the project with the impacts that would result if it were not approved and the site were not developed.

Under this alternative, the existing physical conditions of the site would continue as described in the *Environmental Setting* section of each topic discussed in Chapters 3 through 13. There would be no changes to the physical or visual character of the site. No project-generated traffic would be added to city or county roadways, and no new air pollutant emissions or noise would be generated from the site. There would be no changes to the existing hydrology or water quality. Other project-specific impacts described in Chapters 3 through 13 would also not occur should the existing physical conditions on the project site persist.

Under the No-Project Alternative, none of the impacts under the proposed project would occur. This alternative would not be consistent with the goals of the City General Plan (City of Manteca 2003a) or the project objectives.

Environmentally Superior Alternative

State CEQA Guidelines Section 15126.6(e)(2) requires that an EIR identify which alternative is the environmentally superior alternative. If the No-Project Alternative is the environmentally superior alternative, the EIR must also identify which of the other alternatives is environmentally superior. Based on the preceding discussion, the No-Project Alternative would be the environmentally superior alternative. Therefore, the environmentally superior alternative among the remaining alternatives must also be identified. Based on the comparison presented in this chapter, Alternative 5, the Phased Development Alternative, would be the environmentally superior alternative. Alternative 5 would have impacts similar to those of the proposed project with the exception of traffic and circulation impacts, which account for much of the total impact of the proposed project, and which would be reduced when compared with the proposed project.

Chapter 16

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- Cadrett, John. CEQA Coordinator. San Joaquin Valley Unified Air Pollution Control District, Modesto, CA. June 15, 2005—telephone conversation with Shannon Hatcher of Jones & Stokes regarding, compliance with revised SJVAPCD Regulation VIII.
- Dwyer, Sandra. Administrator of Facilities Planning. Manteca Unified School District, Manteca, CA. August 2, 2006—email to Jessica Hankins of Jones & Stokes.
- Govea, Phil. Associate Engineer. City of Manteca Department of Public Works, Engineering Division, Manteca, CA. August 14 and August 18, 2006—emails to Jessica Hankins of Jones & Stokes.
- Guerra, Hector. Senior Air Quality Planner, San Joaquin Valley Unified Air Pollution Control District. September 26, 2003—telephone conversation with Shannon Hatcher of Jones & Stokes, regarding health risk assessment procedures for diesel exhaust from construction equipment in the San

Joaquin Valley Air Basin. Halford, Charles M. Chief of Police. City of Manteca Police Department, Manteca, CA. September 15, 2005—telephone conversation with John Jarecki and Taryn Nance of Jones & Stokes.

LeStrange, Rexie. Recycling Coordinator. City of Manteca Solid Waste Division, Manteca, CA. August 24, 2006—email to Jessica Hankins of Jones & Stokes.

Milam, Don. Associate Engineer. City of Manteca, Manteca, CA. June 15, 2006—telephone conversation with Sally Zeff of Jones & Stokes.

Chapter 17

List of Preparers

Name, Title	Role	Education	Experience
Jones & Stokes			
Sally Lyn Zeff, AICP, Associate Principal	Project Director	M.U.P., Urban Planning B.A., Medieval Studies	25 years
Wendy Johnson Environmental Scientist	Project Manager	B.A., Anthropology	12 years
Shahira Ashkar, Archaeologist	Senior Peer Review: Cultural Resources	M.A., Anthropology B.A., Anthropology	19 years
Madeline Bowen, Architectural Historian	Senior Peer Review: Cultural Resources, Architectural History	M.A., History B.A., Liberal Arts	11 years
Mark Bowen Architectural Historian	Senior Peer Review: Cultural Resources	B.A., History	12 years
	Section Writer: Architectural History		
Monique Briard Environmental Scientist	Section Author: Agriculture, Land Use, and Planning	B.A., History	2 years
David Buehler, P.E., Acoustical Engineer and Principal	Senior Peer Review: Noise	B.S., Civil Engineering	25 years
Anna Busing Environmental Scientist/Planner/Engineer	Senior Peer Review: Geology, Soils and Paleontological Resources	Ph. D., Geology B.S., Geology	20 years
Chris Coelho Environmental Specialist	Section Author: Hydrology and Water Quality	M.S., Environmental Sciences B.S., Environmental and Resource Sciences	1 year
Michael Eng, Environmental Specialist	Section Author: Hazards and Hazardous Materials	B.A., English B.S., Ecology	1 year
Katie Haley, Architectural Historian	Section Author: Cultural Resources, Architectural History	M.A., History (Public History) B.A., History	3 years
Shannon Hatcher, Air Quality and Noise Specialist	Section Author: Air Quality	B.S., Environmental Science B.S., Environmental Health and Safety	6 years

Name, Title	Role	Education	Experience
Christiaan Havelaar, Archaeologist	Section Author: Cultural Resources, Archaeology; Cultural Technical Report Author	B.A., Anthropology	9 years
Erin Hitchcock Environmental Specialist	Section Author: Biological Resources; Wildlife Biology	B.S., Biology	1 year
Josh Hunter Communications Specialist	Publications	B.A., Anthropology	1 year
Jody Job, Communications Specialist	Publications	–	27 years
Andrew Martin Environmental Specialist	Section Author: Geology, Soils and Paleontological Resources	M.A., Environmental Studies B.A., Biology	2 years
Tim Messick, Graphic Artist	Graphics and Figures	M.A., Biology B.A., Botany	24 years
Taryn Nance Environmental Specialist	Section Author: Utilities and Service Systems	M.A., Anthropology B.S., Anthropology	4 years
Joy Nishida Environmental Specialist	Section Author: Biological Resources; Botany	M.S., Biological Sciences B.S., Environmental and Systematic Biology and Natural Resources Management	2 years
William O'Daly Technical Editor	Technical Editor	M.F.A., Creative Writing, Translation B.A., English/Creative Writing	26 years
Tim Rimpo, Senior Air Quality Specialist	Senior Peer Review: Air Quality	M.S., Economics B.A., Economics	23 years
Chris Small, Technical Editor	Lead Technical Editor	B.A., English B.A., Economics	7 years
Sarah Sol Technical Editor	Technical Editor	A.A., Journalism	12 years
Jason Volk, Noise and Air Quality Specialist	Section Author: Noise	B.S., Mechanical Engineering	2 years