FINAL ENVIRONMENTAL IMPACT REPORT
VOLUME II

SACRAMENTO COUNTY GENERAL PLAN UPDATE

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COUNTY OF SACRAMENTO
DEPARTMENT OF ENVIRONMENTAL
REVIEW AND ASSESSMENT
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INTRODUCTION

Noise is defined as unwanted sound. Sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are measured and expressed in decibels (dB) with 0 dB corresponding roughly to the threshold of hearing. Decibels and other technical terms are defined in Table NO-1.

Most environmental sounds consist of several frequencies, with each frequency differing in sound level. The intensities of each frequency combine to generate sound. Acoustical professionals quantify sounds by "weighting" frequencies based on how sensitive humans are to that particular frequency. Using this method, low and extremely high frequency sounds are given less weight, or importance, while mid-range frequencies are given more weight, because humans can hear mid-range frequencies much better than low and very high frequencies. This method is called "A" weighting, and the units of measurement are called dBA (A-weighted decibel level). In practice, noise is usually measured with a meter that includes an electrical "filter" that converts the sound to dBA. Page 6 of the Sacramento County General Plan Noise Element contains a table showing common noise sources and the sound level those sources typically generate.

To protect citizens and visitors of the County from unhealthy or inappropriate noise levels, the General Plan contains a Noise Element with policies designed to control or abate noise. This chapter provides an analysis of the proposed changes to the Noise Element, as well analyses of the potential noise effects of proposed changes to the Transportation Plan and land uses within the General Plan. For this analysis, the entire existing Noise Element of the Sacramento County General Plan (including the Background) is hereby incorporated by reference, and may be viewed on the Planning Department website (http://www.planning.saccounty.net/general-plan/index.html), at the Sacramento County Planning and Community and Development offices (827 7th Street, Room 230, Sacramento, CA) or at the Sacramento County Environmental Review and Assessment offices (827 7th Street, Room 220, Sacramento, CA).

SETTING

The primary source of noise in Sacramento County is from transportation, which includes car, aircraft, and train traffic. As shown on the regional map below (Plate NO-1), there are five freeways in the County that all converge near downtown Sacramento, seven public airports, and multiple heavy and light rail lines. There are also numerous arterial roadways and highways of two to eight lanes that generate

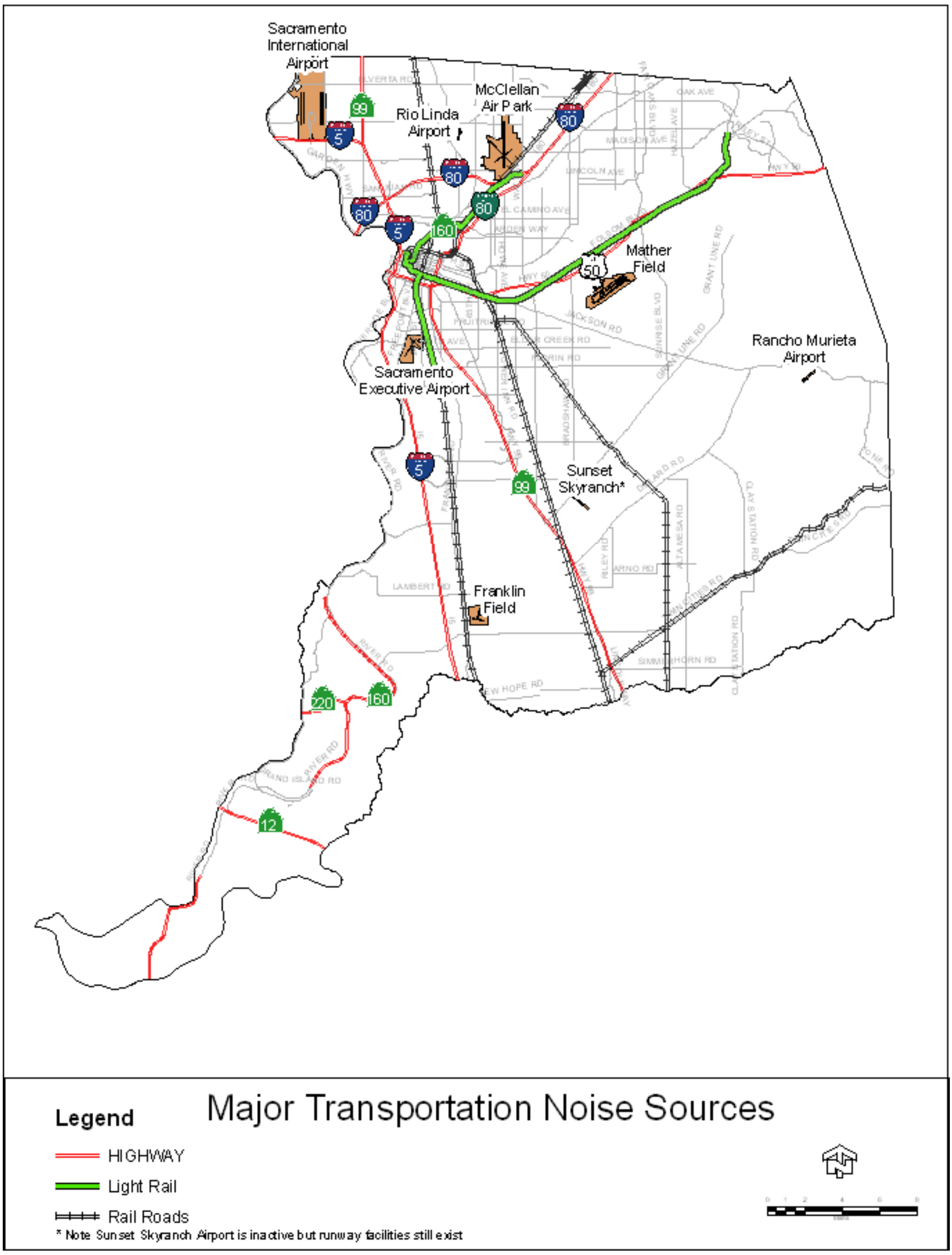
noise. Smaller residential streets are not shown because these typically do not generate noise that exceed adopted standards; the traffic volumes on these streets are very low. There are also many small private airstrips used for personal, agricultural, and other uses that are not shown because they serve very small aircraft on an infrequent basis.

In addition to the above transportation sources, there are also major and minor stationary sources in the County. The major sources include aggregate mining, manufactories, and the Aerojet testing facilities. Many commercial and industrial uses also generate noise that is incompatible with residential uses and other "sensitive receptors", which is one reason why such uses are often grouped together in industrial districts or along major roadways away from schools and large residential areas. Parks and schools are considered sensitive receptors, but these facilities may also generate noise. Fans in the bleachers cheer loudly for their teams and children on playgrounds yell and scream.

Table NO-1 Acoustical Terminology

TERM	DEFINITION
Ambient Noise Level:	The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.
Intrusive Noise:	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Decibel, dB:	A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
Community Noise Equivalent Level, CNEL*:	The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening form 7:00 p.m. to 10:00 p.m. And ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.
Day/Night Noise Level, L_{dn}*:	The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. And before 7:00 a.m.
Equivalent Noise Level, L_{eq}:	The average noise level during the measurement or sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.
L_{max}, L_{min}:	The maximum or minimum sound level recorded during a noise event.
L_n :	The sound level exceeded "n" per percent of the time during a sample interval. L_{10} equals the level exceeded 10 percent of the time (L_{90}, L_{50} , etc.)
Noise Exposure Contours:	Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and L_{dn} contours are frequently utilized to describe community exposure to noise.
Sound Exposure Level, SEL; or Single Event Noise Exposure Level, SENEL:	The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time integrated A-weighted squared sound pressure level for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.
Sound Level, dBA:	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

Plate NO-1 County Map of Major Transportation Noise Sources



REGULATORY SETTING

In order to limit population exposure to physically and/or psychologically damaging noise levels, the State of California and Sacramento County have established standards and ordinances to control noise.

STATE OF CALIFORNIA

The California Department of Health Services (DHS) office of Noise Control has studied the relationship between noise levels and different land uses. As a result, the DHS has established four categories for judging the severity of noise intrusion on specified land use. Noise in the "normally acceptable" category places no undue burden on affected receptors and would need no mitigation. As noise rises into the "conditionally acceptable" range, some mitigation of exposure (as established by an acoustical study) would be warranted. At the next level, noise intrusion is so severe that it is classified "normally unacceptable" and would require extraordinary noise reduction measures to avoid disruption. Finally, noise in the "clearly unacceptable" category is so severe that it cannot be mitigated.

Title 24 of the California Administrative Code establishes standards governing interior noise levels that apply to all new multifamily residential units in California. The standards require that acoustical studies be performed prior to construction at building locations where the existing L_{dn} exceeds 60 dBA. Such acoustical studies are required to establish mitigation measures that will limit maximum L_{dn} noise levels to 45 dBA in any inhabitable room. The U.S. Department of Housing and Urban Development (HUD) has set an L_{dn} of 45 as its goal for interior noise in residential units built with HUD funding.

The California Division of Aeronautics requires land uses within a 65 CNEL contour around airports to be compatible with airport operations. Otherwise, the airport operator is required to obtain a variance from the state to continue airport operations. Land uses considered incompatible within the 65 CNEL are single and multiple family dwellings, mobilehome communities, schools of standard construction, hospitals, and childcare facilities.

COUNTY GENERAL PLAN NOISE ELEMENT

In accordance with State noise regulations, the existing Sacramento County General Plan Noise Element sets forth land use compatibility criteria for various community noise levels. For noise generated by transportation noise sources (roads and railroads), the Noise Element specifies that residential land uses are unconditionally compatible with exterior noise levels of up to 60 dB L_{dn}. The 60 dB L_{dn} noise level is considered an acceptable noise environment for residential outdoor activities. Where the exterior noise level from transportation sources is between 60 and 75 dB L_{dn}, the Noise Element

specifies that residential uses should be permitted only after careful study and inclusion of noise reduction, or attenuation measures as needed. In these instances, an exterior noise level of 65 dB L_{dn} may be allowed in outdoor activity areas provided that "all practical" exterior noise reduction measures are applied.

An interior noise level criterion of 45 dB L_{dn} is specified in the Noise Element for residential land uses exposed to transportation noise sources. The intent of this interior noise standard is to provide a suitable environment for indoor communication and sleep. For noise generated by non-transportation noise sources (industrial and commercial machinery and uses, etc.), the Noise Element specifies that residential land uses are compatible with exterior daytime levels up to 70dB L_{max}.

There are seven policies, NO-1 through NO-7, in the existing Noise Element, all of which are applicable to the proposed land use changes in the General Plan Update project. These policies can be read in their entirety in the existing Noise Element, but are summarized here. New transportation noise affecting outdoor residential areas should be mitigated to 60 dB Ldn/CNEL where possible, and at least to 65 dB Ldn/CNEL. New non-transportation noise sources must meet the criteria in Table II-1 of the Noise Element (this table lists various land use types, and the acceptable ranges of noise). An acoustical analysis is required if the standards in Table II-1 cannot be met or if a new residential project is proposed in an area where the ambient noise exceeds 60 dB Ldn/CNEL. New residential development is not permitted if the mitigation cannot lower impacts below the standards of Table II-1.

The General Plan Update includes changes to the Noise Element. Therefore, any land use changes proposed as part of the Update must be compared not only to the existing policies in effect, but also to the proposed policies that may go into effect as part of the Update. These proposed policies may be read in their entirety in the proposed Noise Element. The Noise Element proposed as part of the General Plan Update project is a complete rewrite of the existing General Plan Noise Element. Although the intent of the proposed policies is often the same as the existing policies, the language is fundamentally different. A detailed comparison of these changes, and an analysis of their impacts is provided in the "Impacts and Analysis" section, beginning on page 14.

COUNTY NOISE CONTROL ORDINANCE

Noise generated by non-transportation noise sources are regulated by the County Noise Ordinance as summarized in Table NO-2.

Table NO-2 Sacramento County Noise Ordinance Standards

Cumulative Duration of the Intrusive Sound	Descriptor	Exterior Noise Standard, dB	
		Daytime (7am-10pm)	Nighttime (10pm-7am)
30-60 minutes per hour	L_{50}	55	50
15-30 minutes per hour	L_{25}	60	55
5-15 minutes per hour	L_{08}	65	60
1-5 minutes per hour	L_{02}	70	65
Level not to be exceeded at any time	L_{max}	75	70

AIRPORT COMPREHENSIVE LAND USE PLANS AND AIRPORT POLICY AREAS

There are eight public use airports located within Sacramento County that are shown on Plate NO-1. One of these public use airports, the Sunset Skyranch facility, is still present but is not in operation and may ultimately be converted to a non-airport use (the airport was denied renewal of the airport Use Permit). The Rancho Murieta Airport and Rio Linda Airport both include relatively short runways, and can only be used by smaller aircraft. As a result, the primary noise contours of these airports encumber very small areas that do not extend into any of the proposed Commercial Corridors or New Growth Areas. Franklin Field and Sacramento Executive are of medium size, but the noise contours for these airports do not extend into any of the proposed Commercial Corridors or New Growth Areas. Therefore, no discussion is provided for Sunset Skyranch, Rio Linda Airport, Rancho Murieta Airport, Franklin Field, or Sacramento Executive.

The remaining airports, Sacramento International, Mather Field, and McClellan Air Park, all have adopted Comprehensive Land Use Plans (CLUPs) and/or Airport Policy Areas. An airport CLUP addresses airport expansion, noise/land use compatibility, and safety. Discussion for each of these airports is included below, along with maps of the 60 CNEL noise contours (beyond which development, as it relates to airport noise, is unconditionally acceptable).

The noise maps for International Airport and Mather Field show two separate contours: the contour that would result from implementation of the Airport Master Plan and the noise contour that describes the airport's theoretic capacity. Theoretic capacity can be described as the maximum number of flights that can be handled by an airport under optimum, unconstrained conditions and ultimate buildout of the airport facilities. Both of

these contours are shown because at the time the General Plan Update was forwarded for environmental review, the Board of Supervisors had not yet chosen which contour to use for land use planning. To help make that decision, the Board of Supervisors directed that this EIR consider both the theoretic and Master Plan noise contours for Sacramento International Airport and for Mather Field. However, on August 7, 2007 the Board of Supervisors adopted the Sacramento International Airport Master Plan, and adopted the Master Plan contours. Though both are still shown on the exhibits in this chapter, this analysis considers only the Master Plan contour.

Sacramento International Airport

Sacramento International Airport is located northwest of the City of Sacramento near I-5 and the Sacramento River. The airport is currently surrounded by agricultural uses, but the approved Metro Air Park development is to the immediate east of the airport. The North and South Natomas development areas are planned by the City of Sacramento. A new Master Plan was adopted August 7, 2007 and an expansion is currently underway that includes a new terminal and major support facilities. At current passenger levels, the airport has about 160 scheduled daily flights serving about 20,000 passengers per day.

Mather Field

Mather Field is located in central Sacramento County, just south of the City of Rancho Cordova. Since its conversion from a military airfield to a public/commercial facility, operations have steadily increased at this facility during the 90's, as have issues relative to local development. The airport is in the process of developing new noise contours for use in guiding future growth in the airport vicinity, and two scenarios are presented in Plate NO-2. A preferred scenario will ultimately be selected by the Board of Supervisors, with the Noise Element to be amended to reflect the contours which are ultimately adopted by the Board for use in planning purposes. As part of that selection process, the Board of Supervisors directed this EIR to consider the impacts of both the Master Plan and theoretic capacity contours on the proposed General Plan land uses.

McClellan Air Park

McClellan Air Park is located in north-central Sacramento County, just northeast of the City of Sacramento. Since its conversion from a military airfield to a public/commercial facility, operations have increased at this facility since the adoption of the existing General Plan, although not as quickly as Mather Airport, and the operations are still well below the levels of activity experienced during its use as a military air field. The airport noise contours for use in guiding future growth in the airport vicinity are presented in Plate NO-3. The Board of Supervisors adopted the Theoretic Capacity contours for this airport, so only that contour is shown.

NON-REGULATORY SETTING

SUBJECTIVE REACTIONS TO CHANGES IN NOISE LEVELS

Another means of assessing noise impacts is to estimate public reaction to the change in noise levels which result from a given project. Expected human reactions to changes in ambient noise levels have been quantified by metrics that define short-term exposure (e.g., hourly L_{eq}, L_{max} and L_n). These metrics are usually used to describe noise impacts due to industrial operations, machinery and other sources that are not associated with transportation. An increase of at least 3 dB is usually required before most people will perceive a change in noise levels, and an increase of 5 dB is required before the change will be clearly noticeable.

Table NO-3 is used to show expected public reaction to changes in environmental noise levels. This table was developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broad-band noise and to changes in levels of a given noise source.

Table NO-3
Subjective Reaction to Changes in Noise Levels of Similar Sources

Change in Level	Subjective Reaction	Factor Change in Acoustical Energy
1 dB	Imperceptible (Except for tones)	1.3
3 dB	Just Barely Perceptible	2.0
5 dB	Clearly Noticeable	3.2
10 dB	About Twice (or Half) as loud	10.0
Source: *Architectural Acoustics, M. David Egan, 1988.*		

SIGNIFICANCE CRITERIA

Considering the nature of the Project, according to the CEQA Guidelines, an impact may be significant if the Project results in any one of the following:

1. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

2. Expose people residing or working in the project area to excessive airport noise levels.

3. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

The definition of what is “excessive” or “substantial” noise in a given jurisdiction is typically laid out within the General Plan, various Noise Ordinances, and for airports is based on a document called the Comprehensive Land Use Plan (or similar). There are also two separate noise effects to be considered when determining significance: psychological effects arising from incompatibility, and health effects arising from dangerous volumes.

The existing Sacramento County General Plan includes policies that establish compatibility-related noise thresholds but does not include any policies that deal with significant changes in ambient noise. The existing policies that apply to this analysis are NO-1, NO-5, NO-6, and NO-7. The proposed General Plan includes a substantial rewrite of the Noise Element, and includes policies that establish noise thresholds and a policy that defines significant changes in ambient noise. The proposed policies that apply to this analysis are NO-1, NO-2, NO-3, NO-5, NO-9, and NO-15. In this EIR, elements of the Project are examined in light of both the existing and the proposed General Plan policies, which are shown in Table NO-4. To determine whether the proposed changes to the noise policies are themselves significant, the significance standards that apply to health effects are used.

METHODOLOGY

The Federal Highway Administration Traffic Noise Prediction Model (FHWA-RD-77-108) was used to model roadway noise. The roadways analyzed were the same as those analyzed in the Transportation and Circulation chapter, and the traffic volumes and free-flow vehicle speeds were provided by DKS Transportation Solutions. Results are reported as the distance from the centerline of the roadway to the 75 dB L_{dn}, 70 dB L_{dn}, and 65 dB L_{dn} noise contours. It was not possible to acquire complete data on existing soundwall locations and heights, so the modeling does not include the noise shielding effects of existing soundwalls or other noise barriers.

To analyze impacts related to airport noise, the proposed Project and Alternatives were examined to determine if any growth areas lay within noise contours established by an existing Comprehensive Land Use Plan or similar document.

Table NO-4 Existing General Plan Noise Criteria and Proposed Criteria

Existing Policy	Existing Criteria	Proposed Policy	Proposed Criteria	Application
NO-1: Expressed as a threshold	60 – 65 Ldn	**NO-9:** Expressed as a change to existing levels	If < 60 Ldn then 5+ change If 60 – 65 Ldn then 3+ change If > 65 Ldn then 1.5+ change	New transportation noise affecting existing residential land
NO-5: Covers only exterior areas	50 L_{50}, 70 L_{max} (day) 45 L_{50}, 65 L_{max} (night)	**NO-5:** Covers exterior and interior areas	55 L_{50}, 75 L_{max} (day, exterior) 50 L_{50}, 70 L_{max} (night, exterior) 35 L_{50}, 55 L_{max} (day/night, interior)	New residential exposed to non-transportation noise
No equivalent policy	--	**NO-5**	various (see below)	New non-residential exposed to non-transportation noise
--	--	• Transient lodging	55 L_{50}, 75 L_{max} (exterior) 35 L_{50}, 55 L_{max} (interior)	
--	--	• Hospitals and nursing homes	55 L_{50}, 75 L_{max} (exterior) 35 L_{50}, 55 L_{max} (interior)	
--	--	• Theaters and auditoriums	N/A (exterior) 30 L_{50}, 50 L_{max} (interior)	
--	--	• Churches, meeting halls, schools, libraries	55 L_{50}, 75 L_{max} (exterior) 35 L_{50}, 60 L_{max} (interior)	
--	--	• Office buildings	60 L_{50}, 75 L_{max} (exterior) 45 L_{50}, 65 L_{max} (interior)	
--	--	• Commercial buildings	N/A (exterior) 45 L_{50}, 65 L_{max} (interior)	
--	--	• Playgrounds, parks, etc	65 L_{50}, 75 L_{max} (exterior) N/A (interior)	

Existing Policy	Existing Criteria	Proposed Policy	Proposed Criteria	Application
--	--	• Industry	60 L_{50}, 80 L_{max} (exterior) 50 L_{50}, 70 L_{max} (interior)	
NO-6[1]	various: interior rooms only	**NO-1[1]**	Various (see below): exterior areas/interior rooms	New non-residential projects exposed to transportation noise
• Radio studios	25 – 30 dBA	• Commercial buildings	None (exterior) 50 Ldn (interior)	
• Concert halls, music rooms, live theaters	30 – 35 dBA	• Theaters and auditoriums	None (exterior) 35 Ldn (interior)	
• Churches	35 – 40 dBA	• Churches, meeting halls	65 Ldn (exterior) 40 Ldn (interior)	
• Classrooms	35 – 45 dBA	• Schools	65 Ldn (exterior) 40 Ldn (interior)	
• Conference rooms, small offices, court rooms	40 – 45 dBA	• Office buildings	65 Ldn (exterior) 45 Ldn (interior)	
• Movie theaters	40 – 45 dBA	• *See Theaters and auditoriums, above*	N/A	
• Libraries	40 – 45 dBA	• Libraries	65 Ldn (exterior) 40 Ldn (interior)	
• Hospitals	40 – 45 dBA	• Hospitals and nursing homes	65 Ldn (exterior) 45 Ldn (interior)	
• Public offices, banks, stores	45 – 50 dBA	• *See office buildings, above*	N/A	

Existing Policy	Existing Criteria	Proposed Policy	Proposed Criteria	Application
• Restaurants	45 – 55 dBA	• *See commercial buildings, above*	N/A	
No existing equivalent	--	• Transient lodging	65 / 45 Ldn	
No existing equivalent	--	• Playgrounds, parks, etc	-- / 70 Ldn	
No existing equivalent	--	• Industry	65 / 50 Ldn	
NO-7	60 – 65 Ldn/CNEL	**NO-1 and NO-3**	65 Ldn (traffic/railroad) 60 CNEL (airports)	New residential exposed to transportation noise
No equivalent policy	--	**NO-15**	Flexibility to increase the NO-1 and NO-5 exterior thresholds by 5 dB	Infill projects where it is impractical or infeasible to reduce to the NO-1 or NO-5 thresholds

1. For existing NO-6 and proposed NO-1, the list of use categories are not the same. The proposed equivalent category has been paired with the existing category. e.g. the existing category of “classrooms” is deemed equivalent to the proposed category of “schools”.

In addition to the above criteria, the existing General Plan policy NO-6 states that the compatibility of new non-residential projects affected by airport noise shall be determined based on Figure II-4 of the existing Noise Element. This figure is a three-page table that includes a detailed list of project types with notations indicating what noise level is compatible with the proposed use. Similarly, the proposed General Plan policy NO-2 states that new development shall be evaluated relative to Table 4 of the proposed Noise Element, which is a five-page table that serves the same purpose as the existing table. Due to length, these are not included in the EIR. Please refer to the existing and proposed Noise Elements.

All of the noise thresholds established in the existing and proposed Sacramento County General Plan and in the airport Comprehensive Land Use Plans address compatibility, not health effects. The United States Department of Labor, through the Occupational Safety and Health Administration (OSHA), has established noise standards for the workplace that are related to health. Although these OSHA standards do not apply to land use, they provide information about when noise levels go beyond incompatibility or annoyance and become dangerous to human health.

The general provision of the Occupational Health and Safety Standards states that an 8-hour time-weighted average of 85 dBA is the "action level" (OSHA Regulations, Standards 29 CFR, Section 1910.95). At this level, the employer must maintain a hearing testing program and must provide hearing protection to all employees exposed to this sound level. In a similar vein, according to the National Institute of Health, long or repeated exposure to sounds at or above 85 dB can cause hearing loss. The louder the sound, the shorter the time period before hearing loss can occur. Sounds of less than 75 dB, even after long exposure, are unlikely to cause hearing loss (National Institute on Deafness and Hearing Disorders, May 2007). Based on this information, analyses in this chapter will rely on the scales of significance provided in Table NO-5, below. Commensurate with the information from OSHA and the National Institutes of Health, the thresholds apply to land use types where long-term exposure can reasonably be expected (e.g. residential backyards).

Table NO-5 Health-Related Significance of Noise Exposure

Noise Level (long term exposure)	Significance Finding
≤75 dB	less than significant
>75 dB but <85 dB	potentially significant
>85 dB	significant

IMPACTS AND ANALYSIS

The Project does not include the level of detail that allows specific impacts to be identified related to the significance criteria of the General Plan – it is not known where a library may be placed, so it is also not known whether the noise level will exceed the

threshold. Instead, the analysis to follow identifies all of the significant noise sources in the County, identifies the location of the major noise contours, describes the ways in which the presence of these contours may restrict future buildout of the Project, describes the ways in which the Project may increase or decrease the size of the contours, and describes the ways in which these changes in contours may affect existing uses.

IMPACT: PROPOSED POLICIES

The proposed Noise Element of the General Plan is a complete rewrite of the existing Noise Element. Where the existing Noise Element contains 7 policies, the proposed Noise Element contains 16. The existing Noise Element does not use a consistent noise measurement type (e.g. Ldn), contains some thresholds that are ranges rather than specific numbers, and does not provide guidance for all of the common land use types. The purpose of the proposed changes to the Noise Element is to clarify the implementation process and clearly identify thresholds for noise. This section discusses the effects of the deleted, modified, and new policies.

Existing policies NO-5 and NO-7, which prohibit residential development where certain noise thresholds are exceeded, have been deleted. While none of the proposed policies explicitly prohibit non-compliant development, the proposed policies do state that noise mitigation measures "shall be included . . . to reduce projected noise levels to a state of compliance". This language has the same effect as prohibiting non-compliant development, so there is no measurable result of deleting existing NO-5 and NO-7.

Existing policies NO-1, NO-2, NO-3, NO-4 and NO-6 have been substantially modified and expanded on in the proposed Noise Element. Existing policy NO-1, which corresponds to proposed policies NO-9 and NO-10, only applies to new transportation noise related to residential uses, while the proposed policies address non-residential uses as well. Also, existing policy NO-1 establishes the noise threshold as 60 dB Ldn/CNEL unless that isn't practical, in which case 65 dB Ldn/CNEL is allowable. The policy does not describe what is considered "practical". As a result, staff have struggled to define these practical limits on a case-by-case basis. Furthermore, the existing noise environment may already exceed 65 dB. To provide consistency and clarity, the proposed policies establish clear thresholds that take into account the existing noise environment.

Proposed policy NO-9 is less restrictive than the existing policy NO-1. Under the existing policy, a transportation project (such as a road widening) that increased noise from 70 to 71 dB would require mitigation down to at least 65 dB to be less than significant. Under the proposed policy the impact would be less than significant and no mitigation would be required. The proposed policy states that if the existing noise environment already exceeds established thresholds, the transportation project would need to increase the existing noise by at least 1.5 dB to be significant. While this is less restrictive, it is more consistent with CEQA, because the new policy eliminates the requirement to mitigate for existing conditions. Also, policy NO-9 is based on the 1992 recommendations made by the Federal Interagency Committee on Aviation Noise

(FICAN). FICAN recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICAN recommendations were specifically developed to assess aircraft noise impacts, it has been assumed for analyses that they are applicable to all sources of noise that are described in terms of cumulative noise exposure metrics such as the L_{dn} or CNEL.

Existing policy NO-2 establishes thresholds for non-transportation noise sources affecting exterior residential uses. Proposed policy NO-5 establishes thresholds for non-transportation noise sources affecting residential and non-residential uses, for the both the exterior and the interior. Both the existing and proposed policy use L_{50} and L_{max} for the day and nighttime periods to describe the thresholds, but the thresholds are 5 dB higher in the proposed policy.

Existing policies NO-3 and NO-4 require an acoustical study if there is a potential that the thresholds of existing policy NO-2 or NO-1 may be exceeded, and that appropriate mitigation be applied. Proposed policies NO-5 and NO-6 simply state that if the noise thresholds will be exceeded, mitigation shall be applied.

Existing policy NO-6 directs usage of two figures and one table to determine if a new non-residential project is compatible with existing or projected transportation noise. Proposed policy NO-1 includes one table with the thresholds for non-residential uses subject to vehicle and train noise. Proposed policy NO-2 includes a table for thresholds applicable to all projects subject to airport noise. The proposed tables are easier to read and apply.

Proposed policies NO-3, NO-4, NO-7, NO-8, and NO-11 through NO-16 address issues that none of the existing policies address. Table NO-6 below provides brief descriptions of each of these new policies.

Table NO-6 Description of New Policies

Proposed Policy #	Description
NO-3	Prohibits new residential development within the 60 CNEL noise contours for any airport or helipad (except Executive Airport).
NO-4	Provides guidelines for development within an Airport Policy Area, but outside the 60 CNEL area.
NO-7	Establishes that the “last use there” is responsible for noise mitigation.
NO-8	Establishes that construction noise must adhere to the County Code requirements.
NO-11	Specifies that if noise-reducing pavement is used, the benefits must be quantified in an acoustical analysis.
NO-12	Describes the minimum elements of an acoustical analysis.

Proposed Policy #	Description
NO-13	States that alternative site design and setbacks shall be considered before soundwalls are used.
NO-14	States that State of California Noise Insulation standards apply to certain types of high-density attached residential projects.
NO-15	Provides flexibility to consider application of a 5 dB less restrictive exterior noise standard in the case of infill projects where it is infeasible to reduce exterior noise levels to the threshold level, and provides the provisions for making that determination.
NO-16	Provides exemptions to the Noise Element: emergency warning equipment; daytime activities at schools, parks, or playgrounds; and events for which a permit has been obtained.

As stated in the "Significance Criteria" section, at 75 dB and below, long-term noise exposure will not result in hearing loss. With a few exceptions, all of the proposed changes to the General Plan noise thresholds are at 75 dB or below. The exceptions are NO-5, which includes an exterior noise standard of 80 dB for industrial uses exposed to non-transportation noise; NO-9, which defines the significance of new transportation noise based on changes to existing levels, but establishes no upper limit; and NO-15, which is like NO-9, in that it does not establish an upper limit.

The exterior maximum established in NO-5 is high because the use type is industrial, which by its nature will often involve loud noise. These are also employment centers, where business owners are required by OSHA to provide appropriate hearing protection for employees. This being the case, although the 80 dB maximum is a potentially significant level, employer compliance with existing laws will ensure that employees will be given adequate hearing protection, and avoid long-term exposure to significant noise.

Neither proposed policy NO-9 nor NO-15 include a maximum allowable noise threshold. As written, it would be possible for a project to increase ambient noise from 75 dB to 76 dB and not be considered significant, and for a 75 dB noise standard to be increased to 80 dB. These are potentially significant impacts. Mitigation recommends that both policies be revised to include language establishing an upper noise ceiling of 75 dB in any area where it is reasonable to expect that people will be exposed to long-term noise (except in industrial areas). With mitigation, impacts are *less than significant*.

MITIGATION MEASURES:

NO-1. The following language shall be added to proposed policies NO-9 and NO-15: The maximum allowable long-term noise exposure permissible for receptors (except in industrial areas) is 75 dB.

IMPACT: AIRPORT NOISE COMPATIBILITY

Mather Field and McClellan Airpark are the two airports with noise contours that encompass Project elements. The Sacramento International Airport contours do not affect any of the proposed land uses of the Project.

The contours shown on the exhibits to follow, and on the General Plan Land Use Diagram, are the 60 CNEL contours. Moving inward toward the airport from that line, the noise levels increase. One reason only the 60 CNEL is shown is because it is the outer limit of airport noise regulation – noise levels below 60 CNEL are unconditionally acceptable with all use types. Also, although many commercial or industrial uses are permissible within the 60 CNEL contour, residential uses are not permissible; the 60 CNEL contour acts as the boundary defining where residential uses are acceptable.

Mather Field theoretic and master plan 60 CNEL noise contours are shown on Plate NO-2. As shown, the noise contours that would result from implementation of the airport Master Plan cover a smaller extent than the contours that result from a theoretic capacity analysis. In either case, the southern end of the noise contours encumber a large portion of the Jackson Highway Corridor new growth area: the Master Plan contour encompasses 1,475 acres and the theoretic capacity contours encompass 2,250 acres. However, the General Plan Land Use Diagram also shows that large portions of these areas that are within the noise contours are either aggregate resource areas or resource conservation areas.

The McClellan Airpark 60 CNEL noise contour is shown on Plate NO-3. As shown, portions of the West of Watt new growth area and the Watt Avenue North Commercial Corridor are within the 60 CNEL. Both of these areas are intended to include medium and high density residential – uses that will not be permissible within the areas of the 60 CNEL contour. However, most of the growth area and the commercial corridor are outside the noise contour and will not be significantly affected by airport noise.

The adoption of either the theoretic or the Master Plan noise contour does not result in environmental impacts – it is an issue of policy and future planning. A jurisdiction may choose to protect a larger sphere around an airport from incompatible development, in the event that expansion beyond what is in the existing Master Plan becomes either necessary or desirable. One outcome of using a larger contour is that there may be existing uses that are compatible within the existing contour locations, but that will become incompatible if the contours are expanded. The expansion of the contour does not mean that the actual noise level has reached that higher level, so expanding the contour for planning purposes has no physical effect. The airport itself would need to be expanded or modified to increase noise, and that physical activity would require an environmental analysis of the noise impacts to adjacent areas. Nor would the owners of the properties or uses that became incompatible be required to remove or modify those existing uses. The expanded contour would simply prevent the proliferation of other such incompatible uses.

Ultimately, either contour will restrict the type of development that is allowable near Mather Field. Future planning of the Jackson Highway Corridor, the West of Watt new growth area, and the Watt Avenue North Commercial Corridor will be influenced by the presence of the 60 CNEL noise contour. Proposed residential uses in these growth areas must be outside the contour line, making it more appropriate to site certain kinds of business and industrial uses, passive open space uses, or mining uses (in the case of aggregate resource areas). Compliance with the existing CLUP in effect at the time development is proposed will ensure that people residing or working in the vicinity of County airports will not be exposed to excessive airport noise; impacts are *less than significant*.

MITIGATION MEASURES:

None recommended.

Plate NO-2 Mather Field Noise Contours

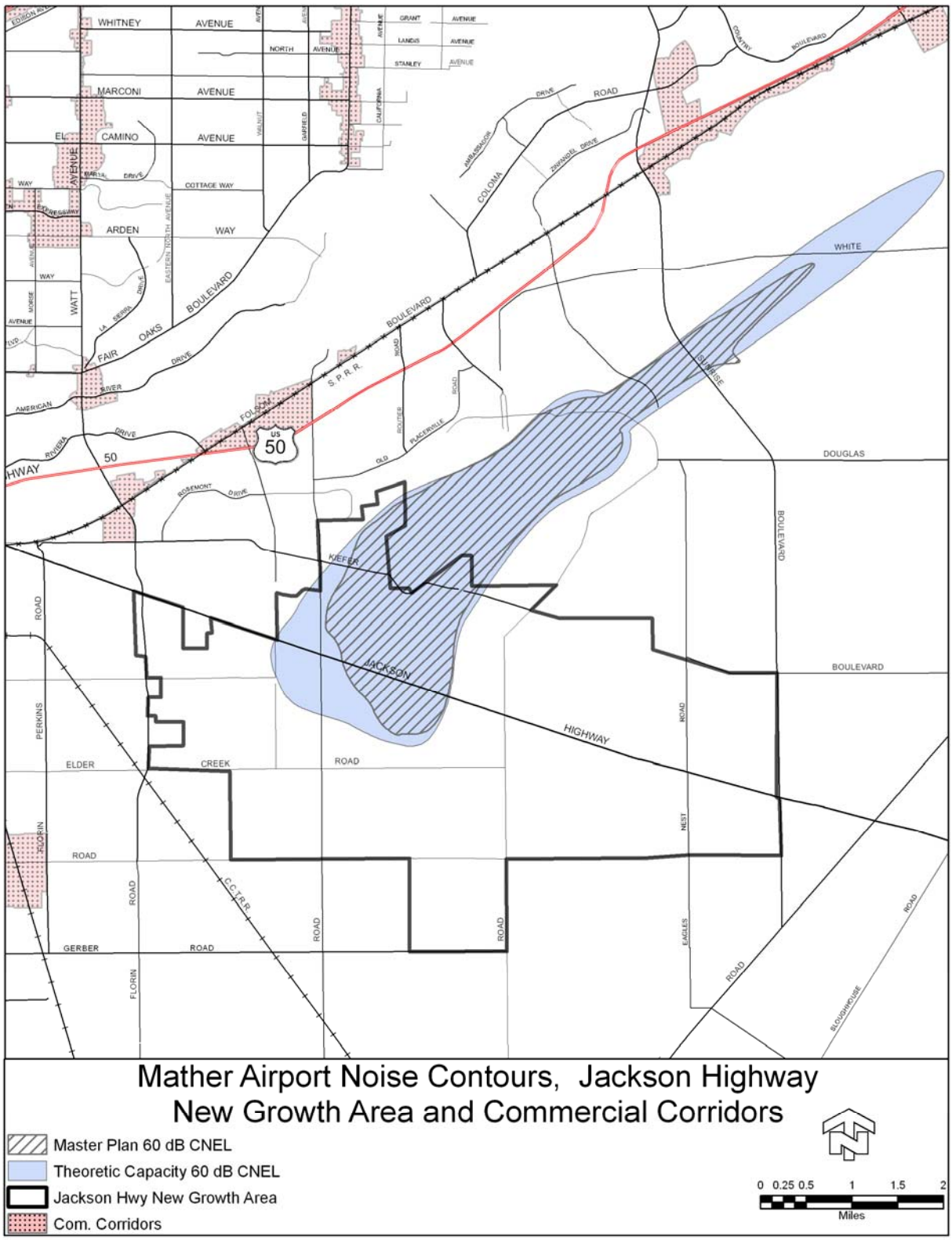
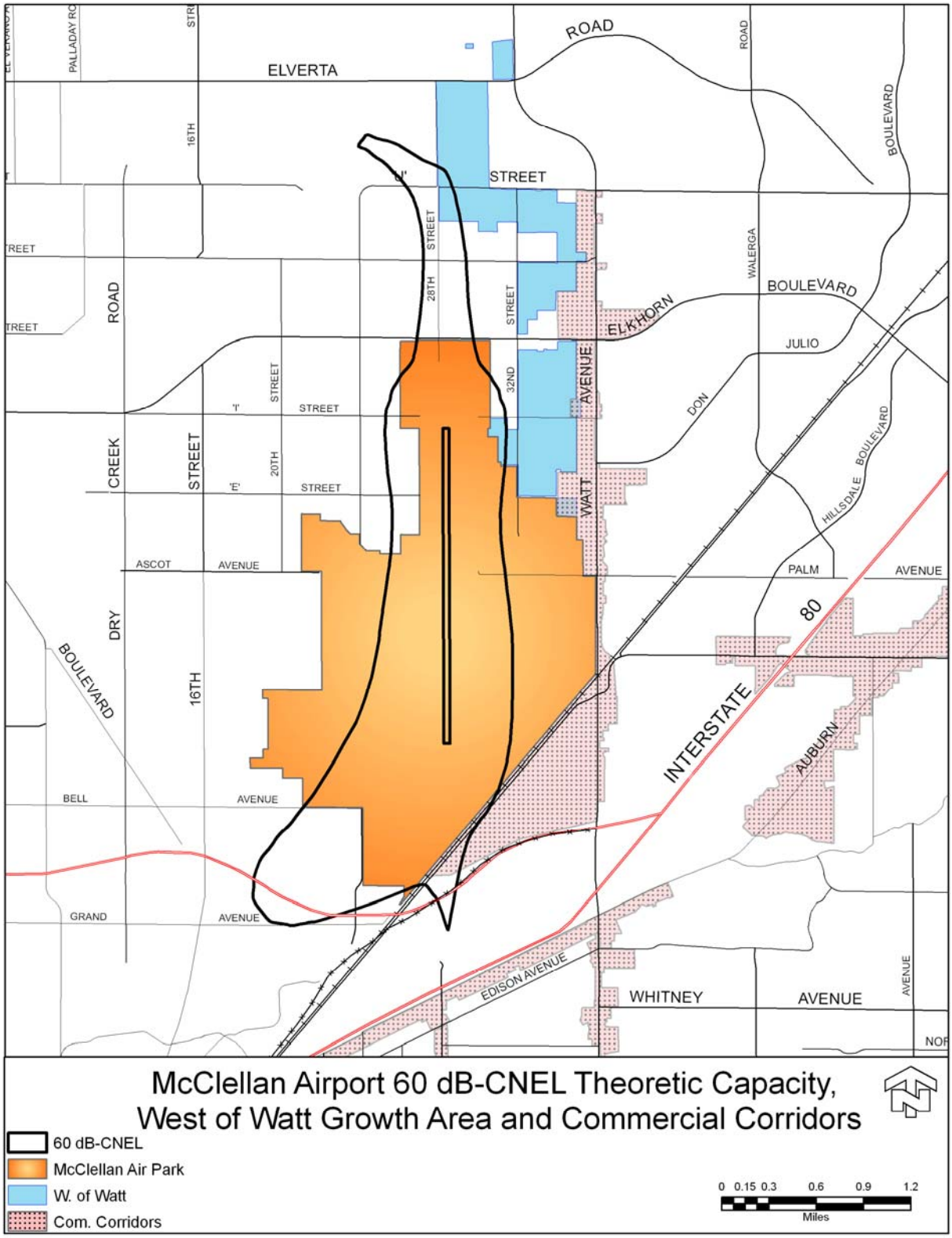


Plate NO-3 McClellan Airport Noise Contours



IMPACT: VEHICLE NOISE

Appendix E contains a full listing of all of the roadways analyzed and the locations of the 65 dB, 70 dB, and 75 dB contours. The impact discussions for the Project and Alternatives use examples to illustrate the overall impact, but do not discuss each roadway segment separately. Refer to the Appendix for details.

EXISTING CONDITIONS

Modeling of existing roadway traffic indicates that noise levels in excess of both existing and proposed General Plan policy currently occur in many areas with noise-sensitive uses, such as residential neighborhoods (refer to Appendix E, Tables NO-1, NO-2, and NO-3). Though existing noise levels in many areas do exceed policy standards intended to address the psychological effects of noise, none of the analyzed roadways result in significant physiological impacts. Based on an examination of the sizes of the roadways, the 75 dB contour does not extend very far beyond the actual roadway right-of-way area (which is 108 feet wide for a 6-lane road), and in many cases lies within the boundaries of the paved roadway. The reason for this is that noise volumes decrease sharply as they first travel from the source, but as the distance from the noise source increases the rate at which noise reduces is slowed. For even the loudest volumes, the noise drops below levels that would cause physiological damage rapidly. It is the lower, nuisance noise volumes that travel much farther and affect a large area.

In the existing condition, the largest noise contour of the roadways analyzed is associated with Watt Avenue from Fair Oaks Boulevard to Highway 50. While the 75 dB contour is located only 90 feet from the centerline, the 65 dB contour is 416 feet from the centerline (Table NO-7). No sensitive receptor areas are exposed to the 75 dB contour, but many residential areas are within the 65 dB to 75 dB range. The table below also includes noise volumes for Grant Line Road from Douglas Road to Chrysanthy Road, and for Jackson Highway from South Watt Avenue to Bradshaw Road. Though in the existing condition these roadways generate very low levels of noise, and even the 65 dB contour doesn't affect residential areas, these two segments show the most change between the Project and Alternatives discussed in the sections to follow.

The table also lists the incorporated City roads that currently have the largest noise contours, listed in the following order: City of Sacramento, City of Elk Grove, City of Citrus Heights, City of Folsom, City of Rancho Cordova, and City of Roseville. As shown, although these are the roads with the largest noise contours in each city, none are as large as the Watt Avenue segment contours.

Table NO-7 Centerline to the 75 dB and 65 dB – Existing Conditions

Unincorporated County Roads			
Roadway Name	**Roadway Segment**	**75 dB**	**65 dB**
Watt Avenue	Fair Oaks Blvd to Hwy 50	90 ft	416 ft
Grant Line Road	Douglas Rd to Chrysanthy Rd	21 ft	97 ft
Jackson Highway	S Watt Ave to Bradshaw Rd	23 ft	109 ft
Incorporated City Roads			
Roadway Name	**Roadway Segment**	**75 dB**	**65 dB**
Howe Avenue	Fair Oaks Blvd to Hwy 50	65 ft	300 ft
Grant Line Road	Bradshaw Rd to Waterman Rd	22 ft	103 ft
Greenback Lane	Auburn Blvd to City Limits	67 ft	312 ft
Folsom Blvd	Hwy 50 to Iron Point Road	50 ft	232 ft
Zinfandel Drive	Folsom Blvd to White Rock Rd	41 ft	189 ft
Sierra College Blvd	E Roseville Pkwy to Old Auburn	41 ft	188 ft

Project Conditions

All modeled roadways will experience an increase in traffic in the 2030 Project condition, which causes the noise contours to expand (refer to Appendix E, Tables NO-4, NO-5, and NO-6). The expansion in the contours will increase noise volumes in areas already inconsistent with General Plan policy, and will cause additional areas to become exposed to noise inconsistent with General Plan policy. In both the existing and cumulative condition, the same segment of Watt Avenue has the largest noise contour. In the cumulative condition, the 75 dB contour will be located 105 feet from the centerline, and the 65 dB contour will be located 487 feet from the centerline (Table NO-8). Though the Grant Line Road and Jackson Highway segments will generate lower noise volumes, the expansion in the noise contours caused by the Project is far more substantial. In the case of Grant Line Road, the 65 dB noise contour expands by 269 feet.

As shown, the Project will also increase noise along the incorporated City roadway segments. The exception is along Greenback Lane. The reason the noise is modeled to decrease on Greenback Lane is because the model uses free-flow speed, the speed that traffic will on average move during busy conditions. In the existing condition, the free-flow speed is 45 mph, but in the cumulative condition it will be reduced to 40 mph. When traffic moves more slowly, it also generates less noise.

Despite these increases in noise contours, there are still no cases in which sensitive areas will be exposed to levels that exceed the 75 dB limit at which potentially significant physiological affects may occur.

Table NO-8 Centerline to the 75 dB and 65 dB –Project

Unincorporated County Roads			
Roadway Name	**Roadway Segment**	**75 dB**	**65 dB**
Watt Avenue	Fair Oaks Blvd to Hwy 50	105 ft	487 ft
Grant Line Road	Douglas Rd to Chrysanthy Rd	79 ft	366 ft
Jackson Highway	S Watt Ave to Bradshaw Rd	74 ft	344 ft
Incorporated City Roads			
Roadway Name	**Roadway Segment**	**75 dB**	**65 dB**
Howe Avenue	Fair Oaks Blvd to Hwy 50	76 ft	353 ft
Grant Line Road	Bradshaw Rd to Waterman Rd	42 ft	196 ft
Greenback Lane	Auburn Blvd to City Limits	60 ft	277 ft
Folsom Blvd	Hwy 50 to Iron Point Road	59 ft	275 ft
Zinfandel Drive	Folsom Blvd to White Rock Rd	59 ft	274 ft
Sierra College Blvd	E Roseville Pkwy to Old Auburn	55 ft	255 ft

Although future development will be required to include design features which ensure that indoor and outdoor noise environments are consistent with General Plan policy, the exposure of existing developed areas to noise levels that exceed existing or proposed General Plan noise thresholds cannot be offset. Though the County could initiate programs to include noise-attenuation features in roadway repair or redesign projects, and/or could establish programs to retrofit private property with noise attenuation features (double-paned windows, masonry courtyards in backyards, etc), it isn't feasible to assume that all areas exposed to elevated noise can be addressed in this manner. A significant number of areas are currently affected, and will be affected in the future, and funding this myriad of improvements in such a large area is not feasible or reasonable. Site constraints may also exist in some areas that prevent successful installation of noise attenuation designs. The increases in noise caused by the proposed Project will expose existing sensitive receptors to noise levels that exceed both existing and proposed General Plan policy. As there is no reasonable or feasible mitigation to offset this impact, Project impacts are *significant and unavoidable*.

MITIGATION MEASURES:

There are no reasonable or feasible measures available.

NO PROJECT ALTERNATIVE

IMPACT: PROPOSED POLICIES

As stated in the policy discussion for the Project, the existing Noise Element does not use a consistent noise measurement type (e.g. Ldn), contains some thresholds that are ranges rather than specific numbers, and does not provide guidance for all of the common land use types.

The existing policies that include thresholds are contained in Table NO-4 of the Project impacts analysis, and the difference in implementation and impacts between the existing and proposed policies are discussed. These same discussions apply here, except that whereas the proposed policies are intended to amend inconsistencies and other issues, the No Project Alternative would retain these problems. There would continue to be no noise standards for new non-transportation noise affecting non-residential uses, and no interior noise standards for new residential exposed to non-transportation noise. Existing policy NO-1 would retain the threshold range that is ambiguous, and would continue to require that projects mitigate for the existing conditions. Existing policy NO-6 would continue to require the use of several different figures and tables to determine noise compatibility, rather than using the proposed simplification.

Though the identified issues would be removed by the adoption of the proposed Project policies, retaining them as part of the No Project Alternative would not cause significant impacts. The thresholds do function as they are written, and also prevent noise from exceeding the levels identified as harmful to human health. The existing noise thresholds are actually more restrictive than the proposed thresholds. Therefore, approval of the No Project Alternative policies would not expose people to noise levels in excess of standards adopted for the purposes of protecting human health, and impacts are *less than significant*.

IMPACT: AIRPORT NOISE COMPATIBILITY

Under the No Project Alternative, the only new growth would consist of buildout of existing areas designated for urban uses that are undeveloped or underdeveloped, **or development such as Cordova Hills that is not within any identified airport noise contour**. In the vicinity of Mather Field, the existing General Plan land use designations are mostly for agricultural and industrial uses, which are compatible with higher levels of airport noise. The nearby areas designated for residential uses are already developed.

In the vicinity of McClellan Airpark, the existing General Plan land use designations are mostly agricultural-residential and low density residential. The existence of the noise contours for McClellan Airpark has restricted development within these areas. Until the CLUP for the airport is amended, these contours will continue to restrict development under the No Project Alternative.

The No Project Alternative includes less development within the vicinity of airports than does the Project. Even so, in either the No Project or the Project condition, compliance with the existing CLUP in effect at the time development is proposed will ensure that people residing or working in the vicinity of County airports are not exposed to excessive airport noise; impacts are *less than significant*.

IMPACT: VEHICLE NOISE

As with the proposed Project, the largest roadway noise contour in the No Project Alternative is associated with Watt Avenue from Fair Oaks Boulevard to Highway 50. Appendix E, Tables NO-4, NO-5, and NO-6 provide the locations of noise contours for all the studied roadways.

In the No Project condition, the Watt Avenue 75 dB contour will be located 102 feet from the centerline and the 65 dB contour 475 feet from the centerline. This is not markedly different from the Project condition, because although there are substantially fewer trips associated with the No Project Alternative overall, the main differences are felt south of the American River where the Project includes two large New Growth Areas but the No Project only includes Cordova Hills. In this general area, the largest contour for the proposed Project is associated with Grant Line Road between Douglas Road and Chrysanthy Road. As shown in Table NO-9 below, existing noise volumes are low, with even the 65 dB contour extending only 97 ft from the centerline. The No Project noise volume increases substantially compared to the existing condition, but the contours still cover a far smaller area than do the contours expected as a result of the Project. It is clear that noise volumes will be much lower in the No Project condition than in the Project condition in the vicinity of Jackson Highway and Grant Line Road. In unincorporated areas north of the American River, Project and No Project noise volumes will be very similar. As shown, Project and No Project Noise volumes are also very similar along the incorporated city roadways.

Table NO-9 Centerline to the 75 dB and 65 dB – No Project

	Existing Condition		Project		No Project	
	75 dB	**65 dB**	**75 dB**	**65 dB**	**75 dB**	**65 dB**
Unincorporated County Roads						
Watt Avenue	90 ft	416 ft	105 ft	487 ft	102 ft	475 ft
Grant Line Road	21 ft	97 ft	79 ft	366 ft	75 ft	348 ft
Jackson Highway	23 ft	109 ft	74 ft	344 ft	53 ft	248 ft
Incorporated City Roads						
Howe Avenue	65 ft	300 ft	76 ft	353 ft	75 ft	349 ft
Grant Line Road	22 ft	103 ft	42 ft	196 ft	39 ft	181 ft
Greenback Lane	67 ft	312 ft	60 ft	277 ft	58 ft	268 ft

Folsom Blvd	50 ft	232 ft	59 ft	275 ft	59 ft	251 ft
Zinfandel Drive	41 ft	189 ft	59 ft	274 ft	56 ft	258 ft
Sierra College Blvd	41 ft	188 ft	55 ft	255 ft	54 ft	251 ft

In the No Project condition, many of the areas that will experience lower noise volumes when compared to the Project are in undeveloped areas or are developed with more rural residential uses. These areas that are less developed are the areas where most of the Project future development would be located. As stated in the discussion for the Project, future development will be required to include design features which ensure that indoor and outdoor noise environments are consistent with General Plan policy. Therefore, the No Project Alternative does not substantially reduce the number of people and environments that will be exposed to noise levels that exceed General Plan policy. The areas most affected by noise in the No Project condition will be the already urbanized portions of the County where it is infeasible to offset many impacts. The increases in noise caused by the No Project Alternative will expose existing sensitive receptors to noise levels that exceed both existing and proposed General Plan policy. As there is no reasonable or feasible mitigation to offset this impact, No Project impacts are *significant and unavoidable*.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

IMPACT: PROPOSED POLICIES

There are no policy differences between the Project and the Remove Grant Line East Alternative. Therefore, the policy impacts of this Alternative are identical to those discussed in the Project impacts and analysis section. Mitigation is required to reduce impacts to *less-than-significant* levels.

MITIGATION MEASURES:

See Mitigation Measure NO-1.

IMPACT: AIRPORT NOISE COMPATIBILITY

The Grant Line East New Growth Area, which is removed as part of the Remove Grant Line East Alternative, is not within any identified airport noise contours. Therefore, the impacts of this Alternative are identical to those discussed in the Project impacts and analysis section. No mitigation is required, and impacts are *less than significant*.

MITIGATION MEASURES:

None recommended.

IMPACT: VEHICLE NOISE

Appendix E Tables NO-7, NO-8, and NO-9 provide the locations of noise contours for all the studied roadways for the Alternative. For the Remove Grant Line East Alternative vehicle noise impacts are similar to those that will result from the Project, except within the vicinity of the Grant Line East New Growth Area. The removal of this area will reduce traffic volumes in the vicinity, and result in a commensurate reduction in traffic noise volumes. Table NO-10 shows the differences between the existing condition, the proposed Project, and the Remove Grant Line East Alternative (this table does not include incorporated city roads, because as stated, the contours are very similar to the Project; refer to Appendix E). As shown, the Grant Line Road noise volume associated with the Remove Grant Line East Alternative increases substantially compared to the existing condition, but the contours still cover a far smaller area than do the contours expected as a result of the Project. Though noise volumes will be much lower in the Remove Grant Line East condition than in the Project condition in the vicinity of Grant Line Road, noise volumes in the Jackson Highway vicinity remain the same.

Table NO-10 Centerline to the 75 dB and 65 dB – Remove Grant Line East

	Existing Condition		Project		Remove Grant Line East	
	75 dB	**65 dB**	**75 dB**	**65 dB**	**75 dB**	**65 dB**
Watt Avenue	90 ft	416 ft	105 ft	487 ft	105 ft	486 ft
Grant Line Road	21 ft	97 ft	79 ft	366 ft	50 ft	234 ft
Jackson Highway	23 ft	109 ft	74 ft	344 ft	74 ft	344 ft

The same conclusion reached for the Project and for the No Project Alternative applies to the Remove Grant Line East Alternative. New development will be required to include noise attenuation features to achieve compliance with noise standards. However, the increases in noise caused by the Alternative will expose existing sensitive receptors to noise levels that exceed both existing and proposed General Plan policy. As there is no reasonable or feasible mitigation to offset this impact, Remove Grant Line East Alternative impacts are *significant and unavoidable*.

MITIGATION MEASURES:

There are no reasonable or feasible measures available.

ALTERNATIVE 2: FOCUSED GROWTH

IMPACT: PROPOSED POLICIES

There are no policy differences between the Project and the Focused Growth Alternative. Therefore, the policy impacts of this Alternative are identical to those discussed in the Project impacts and analysis section. Mitigation is required to reduce impacts to *less-than-significant* levels.

MITIGATION MEASURES:

See Mitigation Measure NO-1.

IMPACT: AIRPORT NOISE COMPATIBILITY

The Grant Line East New Growth Area and the portion of the Jackson Highway Corridor New Growth Area which are removed as part of the Focused Growth Alternative are not within any identified airport noise contours. Therefore, the impacts of this Alternative are identical to those discussed in the Project impacts and analysis section. No mitigation is required, and impacts are *less than significant*.

MITIGATION MEASURES:

None recommended.

IMPACT: VEHICLE NOISE

Except in the vicinity of the Grant Line East and Jackson Highway Corridor New Growth Areas, the vehicle noise impacts of the Focused Growth Alternative are similar to the proposed Project. The noise volumes resulting from the No Project, Remove Grant Line East Alternative, and the Focused Growth Alternative along Grant Line Road are very similar because all involve less or no growth in the Grant Line East New Growth Area. For the Focused Growth Alternative, the most substantially different area is along Jackson Highway.

Appendix E Tables NO-7, NO-8, and NO-9 provide the locations of noise contours for all the studied roadways for the Alternative. The largest contour in the vicinity of the Focused Growth Jackson Highway Corridor New Growth Area is along Jackson Highway from South Watt Avenue to Bradshaw Road. As shown in Table NO-11, the existing noise volumes along this segment are fairly low; the 75 dB contour extends only slightly beyond a single paved lane (this table does not include incorporated city roads, because as stated, the contours are very similar to the Project; refer to Appendix E). The proposed Project will increase traffic volumes along this segment substantially, resulting in a large expansion to the noise contours. As shown in the table, the Focused Growth Alternative will result in slightly larger contours than the Project. The reason for this is that the Alternative makes the Jackson Highway Corridor New Growth Area

smaller, but keeps the same number of units – which increases density. This increased density results in more trips traveling along this particular segment of roadway.

Table NO-11 Centerline to the 75 dB and 65 dB – Focused Growth

	Existing Condition		Project		Focused Growth	
	75 dB	**65 dB**	**75 dB**	**65 dB**	**75 dB**	**65 dB**
Watt Avenue	90 ft	416 ft	105 ft	487 ft	105 ft	486 ft
Grant Line Road	21 ft	97 ft	79 ft	366 ft	50 ft	233 ft
Jackson Highway	23 ft	109 ft	74 ft	344 ft	76 ft	354 ft

The same conclusion reached for the Project and for the No Project Alternative applies to the Focused Growth Alternative. New development will be required to include noise attenuation features to achieve compliance with noise standards. However, the increases in noise caused by the Alternative will expose existing sensitive receptors to noise levels that exceed both existing and proposed General Plan policy. As there is no reasonable or feasible mitigation to offset this impact, Focused Growth Alternative impacts are *significant and unavoidable*.

MITIGATION MEASURES:

There are no reasonable or feasible measures available.

ALTERNATIVE 3: MIXED USE

IMPACT: PROPOSED POLICIES

There are no policy differences between the Project and the Mixed Use Alternative. Therefore, the policy impacts of this Alternative are identical to those discussed in the Project impacts and analysis section. Mitigation is required to reduce impacts to *less-than-significant* levels.

MITIGATION MEASURES:

See Mitigation Measure NO-1.

IMPACT: AIRPORT NOISE COMPATIBILITY

There are no identified airport noise contours within the Grant Line East New Growth Area, so the removal of this area has no affect. The Jackson Highway Corridor New Growth Area includes 1,475 acres within the Master Plan noise contour of Mather Field

and 2,250 acres within the theoretic capacity contours. With the removal of the Jackson Highway Corridor New Growth Area, these noise contours would no longer affect the Alternative. In other respects the impacts of this Alternative are identical to those discussed in the Project impacts and analysis section. No mitigation is required, and impacts are *less than significant*.

MITIGATION MEASURES:

None recommended.

IMPACT: VEHICLE NOISE

Appendix E Tables NO-7, NO-8, and NO-9 provide the locations of noise contours for all the studied roadways for the Alternative. The Alternative does not include either the Grant Line East or the Jackson Highway Corridor New Growth Areas, and also contains less overall new growth than the Project. As shown in Table NO-12 (this table does not include incorporated city roads, because as stated, the contours are very similar to the Project; refer to Appendix E), Watt Avenue from Fair Oaks Boulevard to Highway 50 will remain the area with the largest noise contours; these will be only slightly smaller than the Project contours. The contours along Jackson Highway and Grant Line East will be substantially smaller than the Project contours. The overall pattern of noise resulting from the analysis indicates that the Project and Mixed Use Alternative noise contours will remain very similar in the urbanized areas north of the American River, but the Mixed Use Alternative noise contours will be much smaller in less urbanized areas south of the American River.

The same conclusion reached for the Project and for the No Project Alternative applies to the Mixed Use Alternative. New development will be required to include noise attenuation features to achieve compliance with noise standards. However, the increases in noise caused by the Alternative will expose existing sensitive receptors to noise levels that exceed both existing and proposed General Plan policy. As there is no reasonable or feasible mitigation to offset this impact, Mixed Use Alternative impacts are *significant and unavoidable*.

Table NO-12 Centerline to the 75 dB and 65 dB – Mixed Use

	Existing Condition		Project		Mixed Use	
	75 dB	**65 dB**	**75 dB**	**65 dB**	**75 dB**	**65 dB**
Watt Avenue	90 ft	416 ft	105 ft	487 ft	103 ft	477 ft
Jackson Highway	21 ft	97 ft	79 ft	366 ft	52 ft	242 ft
Grant Line Road	23 ft	109 ft	74 ft	344 ft	48 ft	224 ft

MITIGATION MEASURES:

There are no reasonable or feasible measures available.

ARTERIAL AND THOROUGHFARE DOWNGRADE PROJECT ALTERNATIVES

An analysis of these Project Alternatives is not included in many of the other chapters in this EIR, because these Alternatives do not affect land use. The impact of these Alternatives is specifically to traffic, and thus also to vehicle noise and operational air quality. Neither of these Project Alternatives result in an increase or decrease in overall traffic, but removing lanes in the cumulative condition results in the redirection of traffic flows.

For the Arterial Downgrade Alternative, Table NO-13 includes two of the roadways that would remain in a two-lane configuration in the cumulative condition, rather than being expanded to four lanes: Dry Creek Road from Elkhorn to E Street and Eagles Nest Road from Douglas Road to Kiefer Boulevard. On Dry Creek Road, the Project only increases noise by a small amount. On this same segment the Arterial Downgrade Alternative will actually increase noise, but by a negligible amount. The Project will substantially increase noise along Eagles Nest Road, but again, the difference between the Project and the Arterial Downgrade Alternative is negligible.

Table NO-13 Centerline to the 75 dB and 65 dB – Arterial Downgrade

	Existing Condition		Project		Arterial Downgrade	
	75 dB	65 dB	75 dB	65 dB	75 dB	65 dB
Dry Creek Road	12 ft	56 ft	17 ft	81 ft	18 ft	85 ft
Eagles Nest Road	7 ft	31 ft	18 ft	85 ft	19 ft	89 ft

For the Thoroughfare Downgrade Alternative, Table NO-14 includes three roadways that would remain in a four-lane configuration in the cumulative condition, rather than being expanded to six lanes: Elverta Road from 16th Street to 28th Street, Greenback Lane from Kenneth Avenue to Hazel Avenue, and 16th Street from E Street to the City of Sacramento Limit. The Project increases noise along these segments, but the expansion in the noise contours is moderate. The Thoroughfare Downgrade Alternative would also expand the noise contours, but by less than the Project. In the case of Greenback Lane, the 75 dB contour expands by only a few feet.

Table NO-14 Centerline to the 75 dB and 65 dB – Thoroughfare Downgrade

	Existing Condition		Project		Thoroughfare Downgrade	
	75 dB	65 dB	75 dB	65 dB	75 dB	65 dB
Elverta Road	30 ft	138 ft	40 ft	186 ft	36 ft	169 ft
Greenback Lane	46 ft	215 ft	57 ft	265 ft	49 ft	226 ft
16th Street	23 ft	108 ft	35 ft	164 ft	32 ft	151 ft

The same conclusion reached for the Project and for the No Project Alternative applies to the Arterial and Thoroughfare Downgrade Alternatives. New development will be required to include noise attenuation features to achieve compliance with noise standards. However, the increases in noise caused by the Alternative will expose existing sensitive receptors to noise levels that exceed both existing and proposed General Plan policy. As there is no reasonable or feasible mitigation to offset this impact, Project Alternative impacts are *significant and unavoidable*.

11 AIR QUALITY

INTRODUCTION

This section discusses the overall regulatory framework for air quality management in California and the region, including national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS), and describes existing air quality conditions in the Project Area. Information presented in this section is based in part on guidance provided by the Sacramento Metropolitan Air Quality Management District (SMAQMD).

For most of this EIR, all analysis of Alternatives is contained within separate sections at the end of each chapter. For the Air Quality chapter, the tables throughout the impact discussion for the Project also contain all of the Alternatives. A summary of the Alternatives impacts is still included at the end of the chapter.

SETTING

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

CLIMATE AND ATMOSPHERIC CONDITIONS

The Project Area is located in Sacramento County, California. Sacramento County is located in the Sacramento Valley Air Basin (SVAB), which includes Sacramento, Shasta, Tehama, Butte, Glenn, Colusa, Sutter, Yuba, Yolo, and parts of Solano and Placer counties. The SVAB is bounded on the west by the Coast Ranges and on the north and east by the Cascade Range and Sierra Nevada. The San Joaquin Valley Air Basin lies to the south.

The SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters. During the winter, the North Pacific storm track intermittently dominates valley weather, and fair weather alternates with periods of extensive clouds and precipitation. Also characteristic of winter weather in the valley are periods of dense and persistent low-level fog, which is most prevalent between storms. The frequency and persistence of heavy fog in the valley diminishes with the approach of spring. The average yearly temperature range for the Sacramento Valley is between 20 and 115° Fahrenheit (F), with summer high temperatures often exceeding 90°F and winter low temperatures occasionally dropping below freezing.

Prevailing wind in the Sacramento Valley is generally from the southwest due to marine breezes flowing through the Carquinez Strait, which is the major corridor for air moving into the Sacramento Valley from the west. Incoming airflow strength varies daily with a pronounced diurnal cycle. Influx strength is weakest in the morning and increases in the evening hours. Associated with the influx of air through the Carquinez Strait is the Schultz Eddy which is formed when mountains on the valley's western side divert incoming marine air. The eddy contributes to the formation of a low-level southerly jet between 500 and 1,000 feet above the surface that is capable of speeds in excess of 35 miles per hour (mph). This jet is important for air quality in the Sacramento Valley because of its ability to transport air pollutants over large distances.

The SVAB's climate and topography contribute to the formation and transport of photo-chemical pollutants throughout the region. The region experiences temperature inversions that limit atmospheric mixing and trap pollutants; high pollutant concentrations result near the ground surface. Generally, the lower the inversion base height from the ground and the greater the temperature increase from base to top, the more pronounced the inhibiting effect of the inversion will be on pollutant dispersion. Consequently, the highest concentrations of photochemical pollutants occur from late spring to early fall when photochemical reactions are greatest because of intensifying sunlight and lowering altitude of daytime inversion layers. Surface inversions (those at altitudes of 0 to 500 feet above sea level) are most frequent during winter, and subsidence inversions (those at 1,000 to 2,000 feet above sea level) are most common in the summer.

EXISTING AIR QUALITY CONDITIONS

The following section provides updated descriptions of existing conditions relating to air quality in the Project area.

EMISSION SOURCES

A wide variety of air pollution sources exist within Sacramento County. These include stationary, area-wide, mobile, and biogenic sources. Table AQ-1 summarizes emission sources within Sacramento County.

Table AQ-1 2006 Sacramento County Air Quality Emissions Sources

		Annual emissions (tons per day)						
Source type	**Subcategory**	**TOG**	**ROG**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Stationary sources								
Fuel combustion								
Stationary	Electric utilities	6.07	0.14	0.93	0.51	0.02	0.16	0.16
Stationary	Oil and gas production (combustion)	0.01	0.01	0.26	0.08	0	0	0
Stationary	Manufacturing and industrial	0.13	0.02	0.98	0.85	0.01	0.08	0.07
Stationary	Food and agricultural processing	0.08	0.03	0.18	0.36	0	0.03	0.03
Stationary	Service and commercial	0.33	0.08	0.97	1.14	0.01	0.12	0.12
Stationary	Other (fuel combustion)	0.07	0.07	0.19	0.53	0	0.03	0.03
Total fuel combustion		*6.69*	*0.35*	*3.51*	*3.47*	*0.04*	*0.42*	*0.41*
Waste disposal								
Stationary	Sewage treatment	0.03	0.02	0	0	0	0	0
Stationary	Landfills	21.15	0.3	0.05	0.05	0.01	0.02	0.02
Stationary	Incinerators	0	0	0.01	0.01	0	0	0
Stationary	Soil remediation	0.01	0.01	0	0	0	0	0
Stationary	Other (waste disposal)	0	0	0	0	0	0	0
Total waste disposal		*21.19*	*0.33*	*0.06*	*0.06*	*0.01*	*0.02*	*0.02*
Cleaning and surface coatings								
Stationary	Laundering	0.27	0.02	0	0	0	0	0
Stationary	Degreasing	1.53	0.75	0	0	0	0	0
Stationary	Coatings and related process solvents	2.03	1.83	0	0	0	0	0
Stationary	Printing	0.82	0.81	0	0	0	0	0
Stationary	Adhesives and sealants	0.45	0.41	0	0	0	0	0
Stationary	Other (cleaning and surface coatings)	0	0	0	0	0	0	0
Total cleaning and surface coatings		*5.1*	*3.82*	*0*	*0*	*0*	*0*	*0*

Source type	Subcategory	Annual emissions (tons per day) TOG	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Petroleum production and marketing								
Stationary	Oil and gas production	1.59	0.16	0	0	0	0	0
Stationary	Petroleum marketing	28.87	2.25	0	0	0	0	0
Total petroleum production and marketing		*30.46*	*2.41*	*0*	*0*	*0*	*0*	*0*
Industrial processes								
Stationary	Chemical	0.63	0.52	0.02	0.05	0	0.03	0.03
Stationary	Food and agriculture	0.32	0.32	0	0	0	0.19	0.1
Stationary	Mineral processes	0.1	0.07	0.14	0.14	0.02	1.21	0.33
Stationary	Metal processes	0	0	0	0	0	0	0
Stationary	Wood and paper	0.03	0.03	0.03	0	0	0.14	0.08
Stationary	Electronics	0	0	0	0	0	0	0
Stationary	Other (industrial processes)	0.01	0	0	0	0	0.01	0.01
Total industrial processes		*1.09*	*0.94*	*0.19*	*0.19*	*0.02*	*1.58*	*0.55*
Total stationary sources		***64.53***	***7.85***	***3.76***	***3.72***	***0.07***	***2.02***	***0.98***
Area-wide sources								
Solvent evaporation								
Area-wide	Consumer products	10.39	8.81	0	0	0	0	0
Area-wide	Architectural coatings and related process solvents	3.67	3.59	0	0	0	0	0
Area-wide	Pesticides/fertilizers	0.34	0.34	0	0	0	0	0
Area-wide	Asphalt paving/roofing	0.34	0.34	0	0	0	0.01	0.01
Total solvent evaporation		*14.74*	*13.08*	*0*	*0*	*0*	*0.01*	*0.01*
Miscellaneous processes								
Area-wide	Residential fuel combustion	4.96	2.17	37.33	2.94	0.1	5.04	4.86
Area-wide	Farming operations	19.32	1.55	0	0	0	1.87	0.32
Area-wide	Construction and demolition	0	0	0	0	0	7.55	0.75
Area-wide	Paved road dust	0	0	0	0	0	15.4	2.31
Area-wide	Unpaved road dust	0	0	0	0	0	7.43	0.74

Source type	Subcategory	Annual emissions (tons per day)						
		TOG	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Area-wide	Fugitive windblown dust	0	0	0	0	0	0.44	0.07
Area-wide	Fires	0.05	0.03	0.42	0.01	0	0.06	0.05
Area-wide	Waste burning and disposal	0.61	0.29	2.31	0.14	0.02	0.34	0.33
Area-wide	Cooking	0.08	0.08	0	0	0	0.58	0.58
Total miscellaneous processes		*25.02*	*4.12*	*40.06*	*3.09*	*0.12*	*38.71*	*10.01*
Total area-wide sources		***39.76***	***17.2***	***40.06***	***3.09***	***0.12***	***38.72***	***10.02***
Mobile Sources								
On-road motor vehicles								
Mobile	Light duty passenger	10.33	9.52	84.53	7.27	0.06	0.51	0.28
Mobile	Light duty trucks—1	2.68	2.5	22.89	2.15	0.02	0.12	0.07
Mobile	Light duty trucks—2	4.79	4.38	45.43	5.8	0.04	0.33	0.22
Mobile	Medium duty trucks	2.46	2.21	26.46	3.52	0.02	0.16	0.1
Mobile	Light heavy duty gas trucks—1	1.49	1.41	11.14	1.5	0.01	0.02	0.01
Mobile	Light heavy duty gas trucks—2	0.42	0.4	3.12	0.39	0	0.01	0
Mobile	Medium heavy duty gas trucks	1.2	1.13	9.87	0.95	0	0.01	0
Mobile	Heavy duty gas trucks	0.73	0.68	9.74	0.96	0	0	0
Mobile	Light heavy duty diesel trucks—1	0.05	0.05	0.25	1.26	0.01	0.02	0.01
Mobile	Light heavy duty diesel trucks—2	0.05	0.04	0.18	0.95	0.01	0.02	0.01
Mobile	Medium heavy duty diesel trucks	0.16	0.14	1.3	7.03	0.08	0.2	0.18
Mobile	Heavy duty diesel trucks	1.13	0.99	4.07	14.68	0.12	0.64	0.56
Mobile	Motorcycles	1.63	1.54	12.52	0.38	0	0.01	0.01
Mobile	Heavy duty diesel urban buses	0.02	0.02	0.09	0.42	0.01	0.01	0.01
Mobile	Heavy duty gas urban buses	0.03	0.02	0.3	0.05	0	0	0
Mobile	School buses	0.05	0.04	0.56	0.4	0	0.01	0.01
Mobile	Motor homes	0.09	0.08	0.86	0.46	0	0.01	0.01
Total on-road motor vehicles		*27.31*	*25.15*	*233.31*	*48.17*	*0.38*	*2.08*	*1.48*
Other mobile sources								
Mobile	AIRCRAFT	0.58	0.52	5.62	1.85	0.14	0.07	0.07

Source type	Subcategory	Annual emissions (tons per day)						
		TOG	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Mobile	Trains	0.28	0.23	0.67	3.56	0.2	0.1	0.09
Mobile	Ships and commercial boats	0.02	0.02	0.1	0	0	0	0
Mobile	Recreational boats	4.21	4.01	26.94	1.3	0	0.14	0.11
Mobile	Off-road recreational vehicles	0.25	0.24	0.7	0.01	0	0	0
Mobile	Off-road equipment	8.11	7.29	49.83	17.28	0.13	1.15	1.03
Mobile	Farm equipment	0.58	0.5	2.5	2.47	0.02	0.15	0.14
Mobile	Fuel storage and handling	1.29	1.28	0	0	0	0	0
Total other mobile sources		*15.32*	*14.09*	*86.36*	*26.47*	*0.49*	*1.61*	*1.44*
Total mobile sources		***42.63***	***39.24***	***319.67***	***74.64***	***0.87***	***3.69***	***2.92***
Natural sources								
Natural sources	Biogenic sources	11.27	10.17	0	0	0	0	0
Natural sources	Wildfires	0.02	0.01	0.18	0.01	0	0.02	0.02
Total natural sources		***11.29***	***10.18***	***0.18***	***0.01***	***0.00***	***0.02***	***0.02***
Sacramento County total		***158.21***	***74.47***	***363.67***	***81.46***	***1.06***	***44.45***	***13.94***

Note:
TOG = Total organic gases
ROG = Reactive organic gases
CO = Carbon monoxide
NO_X = Oxides of Nitrogen
SO_X = Oxides of Sulfur
PM_{10} = Particulate matter 2.5 microns or less in diameter
$PM_{2.5}$ = Particulate matter 2.5 microns or less in diameter
Source: based on California Air Resources Board 2008b

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 AQ-2) and by monitoring data collected in the region. Monitoring data concentrations are typically expressed in terms of ppm or $\mu g/m^3$ (parts per million or micrograms per cubic meter). Monitoring data for each of the monitoring stations in the Sacramento area are shown in Table AQ-3. As indicated in Table AQ-3, the monitoring stations in the vicinity of the Project Area have experienced occasional violations of the state and federal 1- and 8-hour ozone standards, state PM_{10} standard, and federal $PM_{2.5}$ standard during the 3-year monitoring period for which complete monitoring data are available (2006 – 2008).

Table AQ-2 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*	O_3	1 hour	0.09	NA	180	NA	If exceeded	NA
		8 hours	0.070	0.075	137	147	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	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
(Lake Tahoe only)		8 hours	6	NA	7,000	NA	If equaled or exceeded	NA
Nitrogen dioxide	NO_2	Annual arithmetic mean	0.030	0.053	57	100	If exceeded	If exceeded on more than 1 day per year
		1 hour	0.18	NA	339	NA	If exceeded	NA
Sulfur dioxide	SO_2	Annual arithmetic mean	NA	0.030	NA	80	NA	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	NA	655	NA	If exceeded	NA
Hydrogen sulfide	H_2S	1 hour	0.03	NA	42	NA	If equaled or exceeded	NA
Vinyl chloride	C_2H_3Cl	24 hours	0.01	NA	26	NA	If equaled or exceeded	NA
Inhalable particulate matter	PM_{10}	Annual arithmetic mean	NA	NA	20	NA	NA	NA
		24 hours	NA	NA	50	150	If exceeded	If exceeded on more than 1 day per year
	$PM_{2.5}$	Annual arithmetic mean	NA	NA	12	15	NA	If 3-year average from single or multiple community-oriented monitors is exceeded
		24 hours	NA	NA	NA	35	NA	If 3-year average of 98th percentile at each population-oriented monitor within an area is exceeded
Sulfate particles	SO_4	24 hours	NA	NA	25	NA	If equaled or exceeded	NA
Lead particles	Pb	Calendar quarter	NA	NA	NA	1.5	NA	If exceeded no more than 1 day per year
		30-day average	NA	NA	1.5	NA	If equaled or exceeded	NA
		Rolling 3-Month average	NA	NA	NA	0.15	If equaled or exceeded	Averaged over a rolling 3-month period

Notes:

All standards are based on measurements at 25ºC and 1 atmosphere pressure.
National standards shown are the primary (health effects) standards.
NA = not applicable.

*The U.S. Environmental Protection Agency recently replaced the 1-hour ozone standard with an 8-hour standard of 0.08 part per million. 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.

Source: California Air Resources Board 2008

Table AQ-3 Ambient Air Quality Monitoring Data Measured at Sacramento Monitoring Stations

Pollutant Standards	2006	2007	2008
1-Hour Ozone (Elk Grove-Bruceville Rd)			
Maximum 1-hour concentration (ppm)	0.143	0.102	0.111
1-hour California designation value	0.11	0.11	0.11
1-hour expected peak day concentration	0.111	0.109	0.105
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	10	1	5
1-Hour Ozone (Folsom-Natoma St)			
Maximum 1-hour concentration (ppm)	0.133	0.129	0.123
1-hour California designation value	0.13	0.13	0.13
1-hour expected peak day concentration	0.129	0.132	0.135
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	31	13	38
1-Hour Ozone (Sloughhouse)			
Maximum 1-hour concentration (ppm)	0.139	0.097	0.148
1-hour California designation value	0.13	0.13	0.13
1-hour expected peak day concentration	0.129	0.128	0.132
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	20	2	16
1-Hour Ozone (Sacramento-T Street)			
Maximum 1-hour concentration (ppm)	0.106	0.109	0.107
1-hour California designation value	0.10	0.11	0.11
1-hour expected peak day concentration	0.103	0.105	0.105
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	6	2	7
1-Hour Ozone (North Highlands-Blackfoot Way)			
Maximum 1-hour concentration (ppm)	0.135	0.109	0.121
1-hour California designation value	0.11	0.11	0.14
1-hour expected peak day concentration	0.111	0.113	-
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	15	1	2
1-Hour Ozone (Sacramento-Del Paso Manor)			
Maximum 1-hour concentration (ppm)	0.125	0.138	0.113
1-hour California designation value	0.12	0.13	0.11
1-hour expected peak day concentration	0.123	0.125	0.122
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	18	6	17
1-Hour Ozone (Sacramento-3801 Airport Rd)			
Maximum 1-hour concentration (ppm)	0.105	0.119	0.109
1-hour California designation value	0.10	0.12	0.12
1-hour expected peak day concentration	0.100	-	-

Pollutant Standards	2006	2007	2008
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	5	2	8
8-Hour Ozone (Elk Grove-Bruceville Rd)			
National maximum 8-hour concentration (ppm)	0.112	0.087	0.093
National second-highest 8-hour concentration (ppm)	0.095	0.082	0.085
State maximum 8-hour concentration (ppm)	0.112	0.088	0.093
State second-highest 8-hour concentration (ppm)	0.096	0.083	0.085
8-hour national designation value	0.082	0.083	0.082
8-hour California designation value	0.096	0.096	0.093
8-hour expected peak day concentration	0.098	0.096	0.094
Number of days standard exceeded[a]			
NAAQS 8-hour (>0.075 ppm)	17	5	7
CAAQS 8-hour (>0.070 ppm)	32	13	13
8-Hour Ozone (Folsom-Natoma St)			
National maximum 8-hour concentration (ppm)	0.110	0.122	0.123
National second-highest 8-hour concentration (ppm)	0.103	0.097	0.116
State maximum 8-hour concentration (ppm)	0.110	0.123	0.123
State second-highest 8-hour concentration (ppm)	0.103	0.097	0.116
8-hour national designation value	0.097	0.098	0.102
8-hour California designation value	0.110	0.110	0.116
8-hour expected peak day concentration	0.115	0.118	0.120
Number of days standard exceeded[a]			
NAAQS 8-hour (>0.075 ppm)	42	21	50
CAAQS 8-hour (>0.070 ppm)	62	34	65
8-Hour Ozone (Sloughhouse)			
National maximum 8-hour concentration (ppm)	0.112	0.089	0.107
National second-highest 8-hour concentration (ppm)	0.106	0.086	0.103
State maximum 8-hour concentration (ppm)	0.112	0.089	0.108
State second-highest 8-hour concentration (ppm)	0.106	0.086	0.103
8-hour national designation value	0.096	0.086	0.103
8-hour California designation value	0.112	0.112	0.112
8-hour expected peak day concentration	0.114	0.114	0.114
Number of days standard exceeded[a]			
NAAQS 8-hour (>0.075 ppm)	32	10	19
CAAQS 8-hour (>0.070 ppm)	46	17	37
8-Hour Ozone (Sacramento-T Street)			
National maximum 8-hour concentration (ppm)	0.090	0.089	0.092
National second-highest 8-hour concentration (ppm)	0.086	0.078	0.086
State maximum 8-hour concentration (ppm)	0.090	0.090	0.092
State second-highest 8-hour concentration (ppm)	0.087	0.078	0.087
8-hour national designation value	0.076	0.078	0.087
8-hour California designation value	0.087	0.090	0.092

Pollutant Standards	2006	2007	2008
8-hour expected peak day concentration	0.088	0.090	0.094
Number of days standard exceeded[a]			
NAAQS 8-hour (>0.075 ppm)	6	2	9
CAAQS 8-hour (>0.070 ppm)	14	7	18
8-Hour Ozone (North Highlands-Blackfoot Way)			
National maximum 8-hour concentration (ppm)	0.093	0.096	0.081
National second-highest 8-hour concentration (ppm)	0.093	0.076	0.080
State maximum 8-hour concentration (ppm)	0.093	0.096	0.082
State second-highest 8-hour concentration (ppm)	0.093	0.076	0.081
8-hour national designation value	0.082	0.080	0.072
8-hour California designation value	0.093	0.076	0.081
8-hour expected peak day concentration	0.097	0.099	–
Number of days standard exceeded[a]			
NAAQS 8-hour (>0.075 ppm)	24	2	2
CAAQS 8-hour (>0.070 ppm)	42	4	4
8-Hour Ozone (Sacramento-Del Paso Manor)			
National maximum 8-hour concentration (ppm)	0.102	0.115	0.096
National second-highest 8-hour concentration (ppm)	0.095	0.086	0.089
State maximum 8-hour concentration (ppm)	0.102	0.116	0.097
State second-highest 8-hour concentration (ppm)	0.096	0.086	0.090
8-hour national designation value	0.090	0.090	0.087
8-hour California designation value	0.107	0.100	0.102
8-hour expected peak day concentration	0.107	0.108	0.104
Number of days standard exceeded[a]			
NAAQS 8-hour (>0.075 ppm)	24	10	18
CAAQS 8-hour (>0.070 ppm)	35	16	23
8-Hour Ozone (Sacramento-3801 Airport Rd)			
National maximum 8-hour concentration (ppm)	0.086	0.102	0.093
National second-highest 8-hour concentration (ppm)	0.079	0.077	0.089
State maximum 8-hour concentration (ppm)	0.087	0.102	0.094
State second-highest 8-hour concentration (ppm)	0.080	0.078	0.090
8-hour national designation value	0.073	0.076	0.078
8-hour California designation value	0.088	0.102	0.102
8-hour expected peak day concentration	–	–	–
Number of days standard exceeded[a]			
NAAQS 8-hour (>0.075 ppm)	5	4	9
CAAQS 8-hour (>0.070 ppm)	13	8	15
Carbon Monoxide (CO) (North Highlands-Blackfoot Way)			
National[b] maximum 8-hour concentration (ppm)	2.70	1.73	1.90
National[b] second-highest 8-hour concentration (ppm)	2.60	1.63	1.80
California[c] maximum 8-hour concentration (ppm)	2.70	1.73	1.80
California[c] second-highest 8-hour concentration (ppm)	2.60	1.63	1.75

Pollutant Standards	2006	2007	2008
Maximum 1-hour concentration (ppm)	7.5	5.1	2.3
Second-highest 1-hour concentration (ppm)	7.3	5.1	2.3
Number of days standard exceeded[a]			
NAAQS 8-hour (≥9 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
Carbon Monoxide (CO) (Sacramento-Del Paso Manor)			
National[b] maximum 8-hour concentration (ppm)	3.49	2.90	2.49
National[b] second-highest 8-hour concentration (ppm)	2.99	2.76	2.10
California[c] maximum 8-hour concentration (ppm)	3.49	2.90	2.49
California[c] second-highest 8-hour concentration (ppm)	2.99	2.76	2.10
Maximum 1-hour concentration (ppm)	4.4	3.5	2.9
Second-highest 1-hour concentration (ppm)	4.2	3.2	2.7
Number of days standard exceeded[a]			
NAAQS 8-hour (≥9 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
Carbon Monoxide (CO) (El Camino-Watt)			
National[b] maximum 8-hour concentration (ppm)	4.19	3.20	2.84
National[b] second-highest 8-hour concentration (ppm)	3.51	2.96	2.60
California[c] maximum 8-hour concentration (ppm)	4.19	3.20	2.84
California[c] second-highest 8-hour concentration (ppm)	3.51	2.96	2.60
Maximum 1-hour concentration (ppm)	4.7	3.5	3.1
Second-highest 1-hour concentration (ppm)	4.6	3.4	3.1
Number of days standard exceeded[a]			
NAAQS 8-hour (≥9 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
Carbon Monoxide (CO) (Sacramento-3801 Airport Rd)			
National[b] maximum 8-hour concentration (ppm)	3.15	5.58	1.83
National[b] second-highest 8-hour concentration (ppm)	2.56	4.10	1.70
California[c] maximum 8-hour concentration (ppm)	3.15	5.58	1.83
California[c] second-highest 8-hour concentration (ppm)	2.56	2.44	1.70
Maximum 1-hour concentration (ppm)	4.7	6.3	2.7
Second-highest 1-hour concentration (ppm)	4.5	5.8	2.5
Number of days standard exceeded[a]			
NAAQS 8-hour (≥9 ppm)	0	0	0
CAAQS 8-hour (≥9.0 ppm)	0	0	0
NAAQS 1-hour (≥35 ppm)	0	0	0

Pollutant Standards	2006	2007	2008
CAAQS 1-hour (≥20 ppm)	0	0	0
Particulate Matter (PM_{10})[d] (Sacramento-T Street)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	109.0	53.4	73.7
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	68.0	53.0	66.6
State[c] maximum 24-hour concentration ($\mu g/m^3$)	111.0	57.4	70.9
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	71.0	56.0	66.7
State annual average concentration ($\mu g/m^3$)[e]	–	20.5	–
National annual average concentration ($\mu g/m^3$)	26.4	19.9	22.3
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 $\mu g/m^3$)[f]	0	0	–
CAAQS 24-hour (>50 $\mu g/m^3$)[f]	–	30.3	–
Particulate Matter (PM_{10})[d] (Branch Center Road)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	38.0	–	–
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	26.0	–	–
State[c] maximum 24-hour concentration ($\mu g/m^3$)	40.0	–	–
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	27.0	–	–
State annual average concentration ($\mu g/m^3$)[e]	–	–	–
National annual average concentration ($\mu g/m^3$)	9.1	–	–
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 $\mu g/m^3$)[f]	0	–	–
CAAQS 24-hour (>50 $\mu g/m^3$)[f]	0	–	–
Particulate Matter (PM_{10})[d] (Branch Center Road #2)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	81.0	56.0	89.0
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	77.0	56.0	86.0
State[c] maximum 24-hour concentration ($\mu g/m^3$)	82.0	60.0	89.0
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	76.0	59.0	87.0
State annual average concentration ($\mu g/m^3$)[e]	-	28.1	-
National annual average concentration ($\mu g/m^3$)	37.8	27.5	28.0
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 $\mu g/m^3$)[f]	0	0	0
CAAQS 24-hour (>50 $\mu g/m^3$)[f]	11	5	10
Particulate Matter (PM_{10})[d] (Health Department-Stockton Blvd)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	56.0	56.0	88.0
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	55.0	51.0	65.0
State[c] maximum 24-hour concentration ($\mu g/m^3$)	57.0	60.0	65.0
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	56.0	55.0	65.0
State annual average concentration ($\mu g/m^3$)[e]	-	21.2	-
National annual average concentration ($\mu g/m^3$)	22.5	20.0	19.2
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 $\mu g/m^3$)[f]	0	0	0
CAAQS 24-hour (>50 $\mu g/m^3$)[f]	4	4	2

Pollutant Standards	2006	2007	2008
Particulate Matter (PM_{10})[d] (North Highlands-Blackfoot Way)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	65.0	56.0	97.0
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	57.0	54.0	76.0
State[c] maximum 24-hour concentration ($\mu g/m^3$)	67.0	59.0	97.0
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	61.0	54.0	76.0
State annual average concentration ($\mu g/m^3$)[e]	26.6	24.8	-
National annual average concentration ($\mu g/m^3$)	25.9	24.0	25.9
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 $\mu g/m^3$)[f]	0	0	-
CAAQS 24-hour (>50 $\mu g/m^3$)[f]	17.9	13.1	-
Particulate Matter (PM_{10})[d] (Sacramento-Del Paso Manor)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	63.0	70.0	71.0
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	62.0	61.0	53.0
State[c] maximum 24-hour concentration ($\mu g/m^3$)	67.0	75.0	72.0
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	67.0	66.0	57.0
State annual average concentration ($\mu g/m^3$)[e]	24.7	20.7	25.0
National annual average concentration ($\mu g/m^3$)	24.1	19.6	19.0
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 $\mu g/m^3$)[f]	0	0	0
CAAQS 24-hour (>50 $\mu g/m^3$)[f]	7	5	2
Particulate Matter (PM_{10})[d] (Sacramento-3801 Airport Rd)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	81.0	94.0	71.0
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	71.0	56.0	53.0
State[c] maximum 24-hour concentration ($\mu g/m^3$)	84.0	98.0	71.0
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	74.0	57.0	55.0
State annual average concentration ($\mu g/m^3$)[e]	-	23	-
National annual average concentration ($\mu g/m^3$)	25.7	22.4	18.8
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 $\mu g/m^3$)[f]	0	0	-
CAAQS 24-hour (>50 $\mu g/m^3$)[f]	-	36.4	-
Particulate Matter ($PM_{2.5}$) (Elk Grove-Bruceville Rd)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	-	-	-
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	-	-	-
State[c] maximum 24-hour concentration ($\mu g/m^3$)	45.0	57.7	83.3
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	41.3	48.2	79.2
National annual designation value ($\mu g/m^3$)	-	-	-
National annual average concentration ($\mu g/m^3$)	-	-	-
State annual designation value ($\mu g/m^3$)	-	-	-
State annual average concentration ($\mu g/m^3$)[e]	-	-	-
Number of days standard exceeded[a]			
NAAQS 24-hour (>35 $\mu g/m^3$)	-	-	-

Pollutant Standards	2006	2007	2008
Particulate Matter ($PM_{2.5}$) (Folsom-Natoma St)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	-	-	-
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	-	-	-
State[c] maximum 24-hour concentration ($\mu g/m^3$)	52.7	42.3	130.5
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	35.5	40.7	111.4
National annual designation value ($\mu g/m^3$)	-	-	-
National annual average concentration ($\mu g/m^3$)	-	-	-
State annual designation value ($\mu g/m^3$)	-	-	-
State annual average concentration ($\mu g/m^3$) [e]	-	-	-
Number of days standard exceeded[a]			
NAAQS 24-hour (>35 $\mu g/m^3$)	-	-	-
Particulate Matter ($PM_{2.5}$) (Sacramento-T Street)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	54.0	58.0	66.1
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	46.0	47.0	51.8
State[c] maximum 24-hour concentration ($\mu g/m^3$)	54.0	58.0	78.9
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	48.8	55.8	69.7
National annual designation value ($\mu g/m^3$)	-	-	-
National annual average concentration ($\mu g/m^3$)	-	11.9	-
State annual designation value ($\mu g/m^3$)	13	13	13
State annual average concentration ($\mu g/m^3$) [e]	12.9	-	-
Number of days standard exceeded[a]	-	27.6	0
NAAQS 24-hour (>35 $\mu g/m^3$)			
Particulate Matter ($PM_{2.5}$))(Health Department-Stockton Blvd)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	45.0	53.0	64.8
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	44.0	49.0	50.0
State[c] maximum 24-hour concentration ($\mu g/m^3$)	45.0	53.0	64.8
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	44.0	49.0	50.0
National annual designation value ($\mu g/m^3$)	10.5	10.7	-
National annual average concentration ($\mu g/m^3$)	10.8	10.9	-
State annual designation value ($\mu g/m^3$)	10	11	11
State annual average concentration ($\mu g/m^3$) [e]	-	10.9	-
Number of days standard exceeded[a]			
NAAQS 24-hour (>35 $\mu g/m^3$)	11.2	23.1	-
Particulate Matter ($PM_{2.5}$) (Sacramento-Del Paso Manor)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	78.0	61.0	74.4
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	71.0	61.0	54.9
State[c] maximum 24-hour concentration ($\mu g/m^3$)	78.0	61.0	93.1
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	71.0	61.0	86.5
National annual designation value ($\mu g/m^3$)	12.0	12.3	-
National annual average concentration ($\mu g/m^3$)	13.1	12.3	-
State annual designation value ($\mu g/m^3$)	15	15	15

Pollutant Standards	2006	2007	2008
State annual average concentration ($\mu g/m^3$) [e]	15.2	12.3	-
Number of days standard exceeded[a]			
NAAQS 24-hour (>35 $\mu g/m^3$)	19.3	26.1	-

Notes:

CAAQS = California ambient air quality standards.

NAAQS = national ambient air quality standards.

– = insufficient data available to determine the value.

[a] An exceedence is not necessarily a violation.

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

[c] 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.

[d] Measurements usually are collected every 6 days.

[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.

Sources: California Air Resources Board 2009; U.S. Environmental Protection Agency 2009

Sensitive Receptors

The SMAQMD defines sensitive receptors as facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants or may experience adverse effects from unhealthful concentrations of air pollutants. Hospitals and clinics, schools, elderly housing and convalescent facilities, and residential areas are examples of sensitive receptors. These types of sensitive receptors are located throughout the Project area.

Regulatory Setting

Air Pollutants

Carbon Monoxide

CO is essentially inert to plants and materials but can have significant effects on human health. CO is a public health concern because it combines readily with hemoglobin and reduces the amount of oxygen transported in the bloodstream. It 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.

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.

Ground-level ozone reaches its highest level during the afternoon and early evening hours. High levels occur most often during the summer months. It is a strong irritant that can cause constriction of the airways, forcing the respiratory system to work harder in order to provide oxygen. It can also cause other health problems (Sacramento Metropolitan Air Quality Management District 2008b):

- Aggravated respiratory disease such as emphysema, bronchitis and asthma
- Damage to deep portions of the lungs, even after symptoms such as coughing or a sore throat disappear
- Wheezing, chest pain, dry throat, headache or nausea
- Reduced resistance to infection
- Increased fatigue
- Weakened athletic performance

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors – reactive organic gases (ROG) and nitrogen oxides (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.

Particulate Matter

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 size of particles is directly linked to their potential for causing health problems. Small particles (known as $PM_{2.5}$ or fine particulate matter) pose the greatest problems

because they can get deep into your lungs and some may even get into your bloodstream. Exposure to such particles can affect both your lungs and your heart.

Scientific studies have linked long-term particle pollution, especially fine particles, with significant health problems including (Sacramento Metropolitan Air Quality Management District 2008b):

- Increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing
- Decreased lung function
- Aggravated asthma
- Development of chronic respiratory disease in children
- Development of chronic bronchitis or chronic obstructive lung disease
- Irregular heartbeat
- Nonfatal heart attacks
- Premature death in people with heart or lung disease, including death from lung cancer

Short-term exposure to particles (hours or days) can:

- Aggravate lung disease causing asthma attacks and acute bronchitis
- Increase susceptibility to respiratory infections
- Cause heart attacks and arrhythmias in people with heart disease

Even if you are healthy, you may experience temporary symptoms, such as:

- Irritation of the eyes, nose and throat
- Coughing
- Chest tightness
- Shortness of breath

Naturally Occurring Asbestos

Asbestos refers to several types of naturally-occurring fibrous minerals that found in many parts of California. Chrysotile represents the most common type of asbestos, but other types are also found in California. Asbestos fibers may be released and become airborne when asbestos-containing rock asbestos is broken or crushed, Health issues such as lung cancer, mesothelioma (a rare cancer of the thin membranes lining the lungs, chest and abdominal cavity), and asbestosis (a non-cancerous lung disease which causes scarring of the lungs) may result from exposure to asbestos fibers. Construction activities in ultramafic rock deposits, rock quarrying activities where

ultramafic rock is present, and unpaved roads or driveways surfaced with ultramafic rock are typical sources of asbestos emissions (California Air Resources Board 2008c).

Naturally Occurring Asbestos (NOA) most commonly occurs in ultramafic rock that has undergone partial or complete alteration to serpentine rock (proper rock name serpentinite) and often contains chrysotile asbestos. In addition, another form of asbestos, tremolite, can be found associated with ultramafic rock, particularly near faults. Sources of asbestos emissions include: unpaved roads or driveways surfaced with ultramafic rock, construction activities in ultramafic rock deposits, or rock quarrying activities where ultramafic rock is present. NOA is present in approximately 44 of California's 58 counties.

Serpentinite may contain chrysotile asbestos, especially near fault zones. Ultramafic rock, a rock closely related to serpentinite, may also contain asbestos minerals. Asbestos can also be associated with other rock types in California, though much less frequently than serpentinite and/or ultramafic rock. However, the information available at this time is insufficient to allow such occurrences to be mapped on a regional or statewide basis.

Asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects and at quarry operations. All of these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed

Exposure and disturbance of rock and soil that contains asbestos can result in the release of fibers to the air and consequent exposure to the public. Asbestos can result in a human health hazard when airborne. The inhalation of asbestos fibers into the lungs can result in a variety of adverse health effects, including inflammation of the lungs, respiratory ailments (such as asbestosis, which is scarring of lung tissue that results in constricted breathing), and cancer (such as lung cancer and mesothelioma, which is cancer of the linings of the lungs and abdomen).

To address some of the health concerns associated with exposure to asbestos from these activities, the Air Resources has adopted two Airborne Toxic Control Measures (ATCMs) to control exposure to asbestos:

- Asbestos ATCM for Construction, Grading, Quarrying, and Surface Mining Operations (17 CCR §93105, 7/26/01)
- Asbestos ATCM for Surfacing Applications (17 CCR §93106, 7/20/90, amended 07/20/00)

TOXIC AIR CONTAMINANTS

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 Air Resources has consistently 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 Air Resources established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Toxic Air Contaminant Identification and Control Act (Assembly Bill [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. In 1998, Air Resources identified diesel exhaust particulate matter as a TAC.

AMBIENT AIR QUALITY STANDARDS

Federal and State governments have established ambient air quality standards for the following six criteria pollutants: ozone, lead, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (particulate matter smaller than 10 microns or less in diameter [PM_{10}] and particulate matter smaller than 2.5 microns or less in diameter [$PM_{2.5}$]). Ozone, NO_2, and particulate matter are generally considered to be regional pollutants, as these pollutants or their precursors affect air quality on a regional scale. Pollutants such as lead, CO, SO_2, 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, PM_{10} and ozone are considered pollutants of concern. No State or federal ambient air quality standards exist for TACs, discussed above.

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). Pollutants of greatest concern in the Project Area are CO, ozone and particulate matter (PM_{10} and $PM_{2.5}$). Brief descriptions of these pollutants are provided below, and a complete summary of State and national ambient air quality standards (CAAQS and NAAQS, respectively) is provided in Table AQ-2.

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 U.S. Environmental Protection Agency (US EPA) has classified Sacramento County as a serious nonattainment area with regards to the federal 8-hour ozone standard. With regards to the federal CO standard, the US EPA has classified Sacramento County as a moderate (≤ 12.7 ppm) maintenance area. The US EPA has classified Sacramento County as a moderate nonattainment area with regards to the federal PM_{10} standard, while Sacramento County is classified as an unclassified/attainment area with regards to the federal $PM_{2.5}$ standard.

The California Air Resources Board (Air Resources) has classified Sacramento County as a serious nonattainment area with regard to the State 1-hour ozone standard. With regard to the State CO standard, the Air Resources has classified Sacramento County as an attainment area. The Air Resources has classified Sacramento County as a nonattainment area for the PM_{10} and $PM_{2.5}$ standards. Sacramento County's attainment status for each of these pollutants relative to the NAAQS and CAAQS is summarized in Table AQ-4.

Table AQ-4 State and Federal Attainment Designations for Sacramento County

Parameter	California Standard	Federal Standard
Ozone	Non-Attainment Classification = Serious (1 hour and 8 hour Standards)	Non-Attainment Classification = Serious (8 hour Standard)
Particulate Matter- 10 Micron	Non-Attainment (24 hour Standard and Annual Mean)	Non-Attainment*, Classification = Moderate (24 hr std)
Particulate Matter- 2.5 Micron	Non-Attainment (Annual Standard)	Attainment/Unclassified (24 hour Standard and Annual Mean)
Carbon Monoxide	Attainment (1 hour and 8 hour Standards)	Attainment (1 hour and 8 hour Standards)
Nitrogen Dioxide	Attainment (1 hour Standard)	Attainment (Annual Standard)
Sulfur Dioxide	Attainment (1 hour and 24 hour Standards)	Attainment (3 hour, 24 hour, and Annual Standards)
Lead	Attainment (30 Day Standard)	Attainment (Calendar Quarter)
Visibility Reducing Particles	Unclassified (8 hour Standard)	No Federal Standard
Sulfates	Attainment (24 hour Standard)	No Federal Standard
Hydrogen Sulfide	Unclassified (1 hour Standard)	No Federal Standard

Source: Sacramento Metropolitan Air Quality Management District 2008a.

AIR QUALITY MANAGEMENT

This section discusses the local, State, and federal policies and regulations that are relevant to the analysis of air quality in the Project area.

AIR QUALITY MANAGEMENT AT THE FEDERAL LEVEL

This section discusses the federal and State regulatory framework that governs air pollution control, followed by a description of the federal and State ambient air quality standards that have been established for particular air pollutants.

The federal Clean Air Act (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: ozone, CO, lead (Pb), NO_2, particulate matter, and SO_2. 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 Clean Air Act Amendments of 1990 (CAAA). The CAAA delegates primary responsibility for clean air to the US EPA. The US EPA develops rules and regulations to preserve and improve air quality, and delegates specific responsibilities to State and local agencies.

Areas that do not meet the federal ambient air quality standards shown in Table AQ-2 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 US EPA, must demonstrate how the federal standards will be achieved. Failing to submit a plan or secure approval could lead to denial of federal funding and permits for such improvements as highway construction and sewage treatment plants. In California, the US EPA has delegated authority to prepare SIPs to the Air Resources, and the state, in turn, has authorized individual air districts to prepare SIPs for approval by the state. In cases where the SIP is submitted by the State but fails to demonstrate achievement of the standards (or is not submitted on time), the US EPA is directed to prepare a federal implementation plan.

Air Quality Management at the State Level

Criteria Pollutants

Responsibility for achieving California's air quality standards, which are more stringent than federal standards, is placed on the Air Resources 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 US EPA has delegated authority to prepare SIPs to the Air Resources, which in turn has authorized individual air districts to prepare SIPs.

Air Resources has traditionally established State air quality standards, maintaining oversight authority in air quality planning, and developing programs for reducing emissions from mobile sources including motor vehicles. Air Resources shares responsibilities with local air districts in developing programs for reducing emissions from off-road equipment and consumer products, developing air emission inventories, collecting air quality and meteorological data, and approving SIPs.

Responsibilities of air districts include overseeing stationary source emissions, approving permits, preparing emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, reviewing air quality-related sections of environmental documents required by CEQA, revising air quality plans, and adopting rules for stationary and area sources.

The California Clean Air Act (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, SO_2, NO_2, or ozone. These Clean Air Plans are specifically designed to attain these standards and must achieve an annual 5 percent reduction in district-wide emissions of each nonattainment pollutant or its precursors. Where an air district is unable to achieve a 5 percent 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)). The CCAA also requires that air districts assess their progress toward attaining the air quality standards once every three years after the air quality attainment plan is adopted. No locally prepared attainment plans are required for areas that violate the State PM_{10} standards, but Air Resources is currently addressing PM_{10} attainment issues.

In 2003, the California Legislature passed Senate Bill 656 to reduce public exposure to PM_{10} and $PM_{2.5}$ and make progress towards attainment of state and federal standards. The legislation requires Air Resources, in consultation with local air pollution control and air quality management districts (air districts), to adopt a list of the most readily available, feasible, and cost effective control measures that could be implemented by air districts to reduce PM_{10} and $PM_{2.5}$.

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 or specify penalties for failures to meet requirements. 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 federal Clean Air Act defines an indirect source as:

> …a facility, building, structure, installation, real property, road, or highway, which at-tracts, or may attract, mobile sources of pollution. Indirect sources include 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."

California Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, codifies the State's GHG emissions target by requiring the State's global warming emissions be reduced to 1990 levels by 2020 and directs Air Resources 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.

AB 1493 required Air Resources to develop and adopt the nation's first greenhouse gas emission standards for automobiles. The legislature declared in AB 1493 that global warming was a matter of increasing concern for public health and the environment of the State. It cited several risks that California faces from climate change, including reduction in the State's water supply, increased air pollution creation by higher temperatures, harm to agriculture, and 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 greenhouse gas emissions would stimulate California's economy and provide jobs. Note that greenhouse gases and climate change are discussed in the Climate Change chapter of the EIR.

Air Quality Management in Sacramento County

The air quality management agencies of direct importance in Sacramento County include the US EPA, Air Resources, and SMAQMD. The US EPA has established federal standards for which Air Resources and SMAQMD have primary implementation responsibility. Air Resources and SMAQMD are responsible for ensuring that State standards are met. The SMAQMD 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 and measures addressing air quality are implemented in Sacramento County through the general planning process. Sacramento County's General Plan specifies that the evaluation of air quality impacts during the CEQA review process will be based on criteria and mitigation measures developed by the SMAQMD. The SMAQMD is responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and State air quality laws. The SMAQMD has also 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 District rules:

- SMAQMD RULE 201: General Permit Requirements: The purpose of this rule is to provide an orderly procedure for the review of new sources of air pollution and of the modification and operation of existing sources through the issuance of permits.
- SMAQMD RULE 202 (New Source Review): The purpose of this rule is to provide for the review of new and modified stationary air pollution sources and to provide mechanisms, including emission offsets, by which authorities to construct such sources may be granted without interfering with the attainment or maintenance of ambient air quality standards.
- SMAQMD RULE 204 (Emission Reduction Credits): The purpose of this rule is to provide an administrative mechanism for quantifying, adjusting and certifying

surplus emission reductions for: 101.1 later use as offsets pursuant to District, state or federal rules or regulations; or 101.2 transfer to other sources as offsets pursuant to Rule 202, New Source Review.

- SMAQMD RULE 205 (Community Bank and Priority Reserve Bank): The Community Bank and the Priority Reserve Bank are established within the emission reduction Register pursuant to Rule 204, Emission Reduction Credits. The Priority Reserve Bank is established for the purpose of providing loans of emission reduction credits for use as offsets for new or modified stationary sources that are essential public services, or use or reuse of a military base. The Priority Reserve Bank also may be used for the purpose of providing loans of emission reduction credits to comply with rules specified in Section 102.4, a conformity determination pursuant to Rule 104, General Conformity or mitigation under the California Environmental Quality Act (CEQA). The Community Bank is established for the purpose of providing loans of emission reduction credits to comply with specified prohibitory rules, New Source Review, a conformity determination pursuant to Rule 104, General Conformity or for use as mitigation under either CEQA or a functionally equivalent program pursuant to Public Resources Code Section 21080.5.
- SMAQMD RULE 207 (Federal Operating Permit Program): The purpose of this rule is to establish an operating permitting system consistent with the requirements of 42 U.S.C. Section 7661 et seq. (Title V) and pursuant to 40 CFR Part 70. Stationary sources subject to the requirements of this Rule are also required to comply with any other applicable federal, state, or District orders, rules and regulations, including requirements pertaining to prevention of significant deterioration pursuant to Rule 203, Prevention of Significant Deterioration, requirements to obtain an authority to construct pursuant to Rule 201, General Permit Requirements, or applicable requirements under Rule 202, New Source Review.
- SMAQMD RULE 209 (Limiting Potential to Emit): The purpose of this rule is to eliminate the need for certain stationary sources to obtain a Title V operating permit pursuant to District Rule 207, Title V - Federal Operating Permit Program. Stationary sources subject to this rule are those whose actual emissions are less than or equal to 50% of those of a major stationary source, but whose potential emissions are equal to or greater than the major stationary source thresholds. These stationary sources must comply with emissions limitations set in this rule.
- SMAQMD RULE 301 (Stationary Source): The purpose of this rule is to establish fees to be charged to (1) owners/operators of a stationary source required to obtain an Authority to Construct or a Permit to Operate by Rule 201, (2) owners/operators of a stationary source required to obtain a Title V operating permit by Rule 207, and (3) applicants requesting to deposit or withdraw emission reduction credits from the District credit bank.
- SMAQMD RULE 401 (Ringelmann Chart): The purpose of this rule is to limit the discharge of air contaminants into the atmosphere through visible emissions and opacity.

- SMAQMD RULE 402 (Nuisance): The purpose of this rule is to protect the public's health and welfare from the emission of air contaminants that constitute a nuisance.
- SMAQMD RULE 403 (Fugitive Dust): The purpose of this rule is to reasonably regulate operations that periodically may cause fugitive dust emissions into the atmosphere.
- SMAQMD RULE 404 (Particulate Matter): The purpose of this rule is to limit the quantity of particulate matter in the atmosphere through establishment of an emission concentration limit.
- SMAQMD RULE 405 (Dust and Condensed Fumes): The purpose of this rule is to limit the discharge of dust and condensed fumes into the atmosphere by establishing emission rates based on process weight.
- SMAQMD RULE 406 (Specific Contaminants): The purpose of this rule is to limit the emission of sulfur compounds and combustion contaminants through establishment of emission concentrations.
- SMAQMD RULE 412 (Stationary Internal Combustion Engines Located at Major Stationary Sources of NO_X): The purpose of this rule is to limit emissions of nitrogen oxides, CO, and non-methane hydrocarbons from the operation of stationary internal combustion engines, rated at more than 50 brake horsepower, located at a major stationary source of nitrogen oxides.
- SMAQMD RULE 413 (Stationary Gas Turbines): The purpose of this rule is to limit emissions of nitrogen oxides to the atmosphere from the operation of stationary gas turbines.
- SMAQMD RULE 414 (Natural Gas-Fired Water Heaters): The purpose of this rule is to limit emissions of nitrogen oxides) from natural gas-fired water heaters.
- SMAQMD RULE 417: Wood Burning Appliances: The purpose of this rule is to limit emissions of particulate matter to the atmosphere from the operation of wood burning appliances.
- SMAQMD RULE 420 (Sulfur Content of Fuels): The purpose of this rule is to limit the emission of compounds of sulfur from combustion of fuels.
- SMAQMD RULE 442 (Architectural Coatings): The purpose of this rule is to limit the quantity of volatile organic compounds in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the District.
- SMAQMD RULE 446 (Storage of Petroleum Products): The purpose of this rule is to limit emissions from storage tanks for organic liquids with a vapor pressure greater than 1.5 psi (10.3 kPa) under actual storage conditions
- SMAQMD RULE 902: Asbestos: The purpose of this rule is to implement U.S. E.P.A.'s National Emission Standard for Hazardous Air Pollutants for Asbestos

(40 C.F.R. §61.140 et.seq.) and to limit the emission of asbestos to the atmosphere.

This list of rules may not be all-encompassing, as additional SMAQMD rules may apply to the Project as specific developments are identified. These are rules that have been adopted by the SMAQMD to reduce emissions throughout the Sacramento Valley Air Basin (SVAB), and are required. Failure to comply with any applicable District rule would be a violation of said rule, and is subject to District enforcement action.

Applicable Air Quality Plans

The following discussion describes applicable air quality plans in the project area. The most recent versions of the plans discussed are the 1994 Sacramento Regional Clean Air Plan for the 1-Hour National Ozone Standard (CAP); Sacramento Region Clean Air Plan Update, which also includes the 2008 Sacramento Regional Nonattainment Area 8-Hour Ozone Rate-of-Progress Plan (8-Hour Ozone Plan); 2008 Sacramento Regional 8-Hour Ozone Attainment Ozone Attainment And Reasonable Further Progress Plan (SIP); and the most recent state plan, the 1991 Air Quality Attainment Plan (AQAP).

1994 Sacramento Regional Clean Air Plan

The 1994 CAP was developed cooperatively with all the districts in the Sacramento Region (El Dorado APCD, Feather River AQMD, Placer County APCD, Sacramento Metropolitan AQMD, and Yolo-Solano AQMD). The Clean Air Plan was adopted in 1994 in compliance with the 1990 Amendments to the Federal Clean Air Act. At that time, the region could not show that it would meet the federal one-hour ozone standard by 1999. In exchange for moving the deadline to 2005, the region accepted a designation of “severe nonattainment” for the federal one-hour ozone standard, with additional emission requirements on stationary sources.

As a "severe nonattainment" area, the Sacramento Region is required to submit a rate-of-progress milestone evaluation report. The 1999 Milestone Report includes a compliance demonstration that the milestone requirement has been met for the Sacramento nonattainment area. The 2002 Milestone Report includes a compliance demonstration that the 2002 milestone requirement has been met for the Sacramento nonattainment area. The Milestone Report was presented to the SMAQMD Board of Directors on May 22, 2003 and will be submitted to Air Resources and the US EPA.

While the region has made significant progress in reducing ozone, a problem has arisen with regard to another Federal Clean Air Act requirement. The region’s transportation plan must “conform”, or show that it does not harm the region’s chances of reaching the ozone standard. Regions with a SIP have a “motor vehicle emissions budget” tied to the SIP. Transportation planners must analyze the emissions anticipated from transportation plans and transportation improvement programs and ensure that they remain within the SIP’s emissions budget (this is called demonstrating conformity). If the CAP is not updated, conformity will lapse and transportation funding can be withheld

from all but exempt projects. Since a conformity lapse for the Sacramento region began October 4, 2004, an expedited new CAP was prepared.

SACRAMENTO REGION CLEAN AIR PLAN UPDATE/SACRAMENTO REGIONAL NONATTAINMENT AREA 8-HOUR OZONE RATE-OF-PROGRESS PLAN

The Sacramento Region Clean Air Plan Update/Sacramento Regional Nonattainment Area 8-Hour Ozone Rate-of-Progress Plan (8-Hour Ozone Plan) updates the region's CAP to addresses the conformity lapse through updates to the emission inventory and establishing new motor vehicle emission budgets. In addition to updating the CAP, the Plan also fulfills the federal 8-hour ozone requirements for the 2002-2008 Rate-of-Progress Plan for the Sacramento regional nonattainment area

In July 1997, US EPA promulgated a new 8-hour standard for ozone. Key aspects of the 8-hour ozone rule are the new designations and nonattainment classifications and the revocation of the 1-hour ozone standard in June 2005. However, the new rule also addresses anti-backsliding provisions in the Clean Air Act, so 8-hour ozone nonattainment areas remain subject to control measure commitments that applied under the 1-hour ozone standard. The Sacramento region has been designated as a "serious" nonattainment area for the federal 8-hour ozone standard with an attainment deadline of June 2013. The 8-Hour Ozone Plan addresses how the region will meet the federal 8-hour ozone standard by this attainment deadline.

2008 SACRAMENTO REGIONAL 8-HOUR OZONE ATTAINMENT OZONE ATTAINMENT AND REASONABLE FURTHER PROGRESS PLAN (SIP)

The five air districts that comprise the Sacramento Metro Nonattainment Area requested voluntary reclassification to "severe-15" from the US EPA. As a "severe-15" area, the Sacramento Metro Area has until June 2019 to attain the 1997 8-hour ozone NAAQS.

The 2008 Sacramento Regional 8-Hour Ozone Attainment Ozone Attainment And Reasonable Further Progress Plan (SIP) attainment demonstration indicates that the local, State, and federal controls already in place, together with new local measures and reductions from the California 2007 State Strategy will allow the region to attain the ozone standard by the 2019 deadline. The Plan also contains a Reasonable Further Progress (RFP) demonstration. The RFP demonstration shows that existing local, State, and federal controls are sufficient for the Sacramento Metro Area to achieve the required minimum three percent per year reduction in ozone-precursor emissions. This Plan also sets the new transportation conformity budget for the Sacramento MTP area.

The Plan was approved by the five air districts in January and February 2009, and the Air Resources conducted a public meeting on March 26, 2009 to consider adoption and submission as a revision to the SIP.

1991 AIR QUALITY ATTAINMENT PLAN

The California Clean Air Act (CCAA) of 1988 requires nonattainment areas to achieve and maintain the state ambient air quality standards by the earliest practicable date and local air districts to develop plans for attaining the state ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide standards. In compliance with the CCAA, the SMAQMD prepared and submitted the Plan to mainly address Sacramento County's nonattainment status for ozone and carbon monoxide, and although not required, PM_{10}. The AQAP was designed to make expeditious progress toward attaining the state ozone standard and contained preliminary implementation schedules for control programs on stationary sources, transportation, and indirect sources, and a vehicle/fuels program. Sacramento County has met the ambient air quality standards for sulfur dioxide and nitrogen dioxide.

The CCAA also requires that by the end of 1994 and once every three years thereafter, the districts are to assess their progress toward attaining the air quality standards. The triennial assessment is to report the extent of air quality improvement and the amounts of emission reductions achieved from control measures for the preceding three year period. The SMAQMD shall also review and revise its attainment plan, if necessary, to correct for deficiencies in meeting progress, to incorporate new data or projections, to mitigate ozone transport, and to pursue the expeditious adoption of all feasible control measures.

The AQMD Board of Directors adopted the 2003 Triennial Report April 28, 2005. The report identifies "all feasible measures" the SMAQMD will study or adopt over the next three years. The report also describes historical trends in air quality, updates emissions inventories, and evaluates the SMAQMD's implementation of air pollution control measures. In addition to the Triennial Progress Report requirement, Section 40924(a) of the California Health and Safety Code requires the SMAQMD to prepare and submit an Annual Progress Report to the Air Resources by December 31 of each year. The Annual Progress Report contains the proposed and actual dates for the adoption and implementation of each measure listed in the previous Triennial Plan. The 2006 Annual Progress provides updates for all the proposed District control programs, the schedule for adopting control measure commitments, and the evaluation of further study measures. On October 23, 2008, the SMAQMD Board of Directors received the 2007 Annual Progress Report which was submitted to Air Resources on October 24, 2008.

SIGNIFICANCE CRITERIA

This impact discussion utilizes the thresholds identified below to determine the level of significance associated with the Project impacts, 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 is considered significant if it would:

1. Conflict with or obstruct implementation of the applicable air quality management plan;
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
3. Expose sensitive receptors to substantial pollutant concentrations; or
4. Create objectionable odors affecting a substantial number of people.
5. 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).

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. Therefore, impacts to air quality are assessed based on information contained in the SMAQMD's *Guide to Air Quality Assessment in Sacramento County (Sacramento Metropolitan Air Quality Management District* ***December 2009*** ~~*2004*~~*)*. The SMAQMD's thresholds of significance for construction- and operation-related emissions are presented in Table AQ-5.

Table AQ-5 Sacramento Metropolitan Air Quality Management District Thresholds of Significance

	Ozone precursor emissions (pounds per day			
Phase	**ROG**	**NOX**	**CO**	**PM_{10}**
Construction (short-term)	None	85	CAAQS[a]	CAAQS[a]
Operational (long-term)	65	65	CAAQS[a]	CAAQS[a]

[a] A project that may cause an exceedence of a State air quality standard, or may make a substantial contribution to an existing exceedence of an air quality standard will have a significant adverse air quality impact. "Substantial" is defined as making measurably worse, which is 5 percent or more of an existing exceedence of a State ambient air quality standard.

Source: Sacramento Metropolitan Air Quality Management District 2004

For the assessment of significant impacts from exposure to TACs from mobile sources, the SMAQMD has issued the Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways. The Protocol does not establish a threshold of significance for mobile sources, but indicates an evaluation criterion of 296 cases of cancer per million, which was selected as that level of increased individual risk corresponding to a 70 percent reduction from the highest risk calculated at 50 feet (Sacramento Metropolitan Air Quality Management District 2009). At this level, an HRA is recommended. Because the SMAQMD does not provide a threshold of significance for evaluating health risks from mobile sources, a significance threshold of a lifetime probability of contracting cancer of greater than 10 in one million is used in this analysis.

For the assessment of significant impacts from construction-related emissions of particulate matter, the SMAQMD has established **a screening level of 15 acres**

~~screening levels based on a project's maximum~~ **of** actively disturbed area; **projects which exceed that size will result in significant impacts.** ~~Based on the maximum area disturbed, the~~ **Whether above or below the 15-acre level,** SMAQMD recommends **the** mitigation measures ~~that would reduce particulate matter emissions to a less-than-significant level~~ **published in the December 2009 Guide To Air Quality Assessment (under the heading Basic Construction Emission Control Practices)**. ~~Table AQ-6 summarizes the mitigation measures the SMAQMD recommends for various project sizes.~~

~~Table AQ-6 Sacramento Metropolitan Air Quality Management District Particulate Matter Screening Levels for Construction Projects~~

~~Screening Level~~	~~Mitigation~~
~~5 acres and below~~	~~No mitigation required~~
~~5.1 – 8 acres~~	~~Level One Mitigation Required: Water exposed soil twice daily. Maintain 2 feet of freeboard space on haul trucks.~~
~~8.1 – 12 acres~~	~~Level Two Mitigation Required: Water exposed soil three times daily. Water soil piles three times daily. Maintain 2 feet of freeboard space on haul trucks.~~
~~12.1 – 15 acres~~	~~Level Three Mitigation Required: Keep soil moist at all times. Maintain 2 feet of freeboard space on haul trucks. Use emulsified diesel or diesel catalysts on applicable heavy-duty diesel construction equipment.~~

~~Source: Sacramento Metropolitan Air Quality Management District 2004~~

METHODOLOGY

This section discusses the approach and methodology used to assess impacts of the proposed Project on air quality.

CONSTRUCTION-RELATED EMISSIONS ANALYSIS

It is currently unknown what level of construction activities would occur with implementation of the Project and Alternatives. Consequently, emissions from construction activities associated with buildout of the Project and Alternatives are not quantified, and are evaluated qualitatively.

OPERATION-RELATED EMISSIONS ANALYSIS

ON-ROAD MOBILE SOURCE EMISSIONS

On-road mobile source emissions associated with the Sacramento County General Plan Update project were evaluated for the following nine scenarios:

- 2005 Existing Conditions,

- 2030 with Current 1993 General Plan,
- 2030 with No Project,
- 2030 with Proposed General Plan,
- 2030 with Arterial Downgrade,
- 2030 with Thoroughfare Downgrade,
- 2030 with Remove Grant Line East,
- 2030 with Focused Growth, and
- 2030 with Mixed Use.

The analysis of on-road mobile source emissions evaluated the following pollutants:

- reactive organic gases (ROG);
- nitrogen oxides (NO_X);
- carbon monoxide (CO);
- inhalable particulate matter (PM_{10});
- fine particulate matter ($PM_{2.5}$);
- carbon dioxide (CO_2);
- methane (CH_4);
- diesel exhaust particulate matter; and
- benzene (C_6H_6)

EMISSIONS MODEL

The forecasts of on-road mobile source emissions associated with the General Plan Update project were prepared using the latest version of the Air Resources' EMFAC2007 emissions model (version 2.3) in BURDEN mode (California Air Resources Board 2009). Default values contained within the EMFAC2007 were used to prepare the emissions forecasts, except where noted below.

With the exception of one type of pollutants (benzene), all the forecasts are directly estimated using EMFAC2007. The amount of benzene emissions were estimated by applying a factor to ROG emissions estimated. This approach assumes benzene emissions are 2.2257% of ROG emissions. This percentage is calculated as the ratio of statewide 2006 benzene emissions from on-road mobile sources to statewide 2006 ROG emissions from on-road mobile sources. The statewide 2006 emissions estimates from the California Air Resources Board (http://www.Air Resources.ca.gov/aqd/almanac/almanac08/almanac08.htm) were used to calculate this ratio, as 2005 represents the latest year statewide data is available from Air Resources at the time this analysis was prepared.

ANALYSIS YEAR

The analysis year was set to 2005 for the 2005 Base Year scenario. The analysis year was set to 2030 for all other scenarios.

ANALYSIS SEASON

The analysis season was set to Annual Average. This setting was chosen because the pollutants analyzed for this letter report include those that are of greatest concern during both the summer season (e.g., ROG), and the winter season (e.g., CO).

REPORTING PERIOD

Emissions forecasts are reported in tons per day. This period was chosen because the Sacramento Metropolitan Air Quality Management District significance thresholds are based on a daily period.

TRAFFIC DATA

Traffic data used in the emissions forecasts were provided by the traffic consultant working on the Sacramento County General Plan Update project, DKS Associates. The traffic data received from DKS Associates are found in Appendix F. The traffic data include an estimate of countywide vehicle miles traveled (VMT) for each of the study scenarios. The VMT data were disaggregated into 10 miles per hour (mph) speed ranges for each of four periods of the day:

- a.m. peak;
- midday;
- p.m. peak; and
- evening.

The estimate of total VMT for each study scenario was used in the EMFAC analysis. In addition, the disaggregation into speed ranges was used to develop "speed bin" data for each scenario. "Speed bin" is a term used by EMFAC2007 to describe the percentage of travel in each 10 mph range, in each hour of the day.

VMT for the nine scenarios are summarized below, in ranked order from least to most, and speed bin data are found in Appendix F.

- 2005 Existing Conditions 31,186,861
- 2030 with Current 1993 General Plan 43,745,523
- 2030 with No Project 44,204,138
- 2030 with Mixed Use 44,686,294
- 2030 with Focused Growth 45,612,582

- 2030 with Remove Grant Line East 45,827,896
- 2030 with Thoroughfare Downgrade 46,712,781
- 2030 with Arterial Downgrade 46,981,107
- 2030 with Proposed General Plan 47,009,821

This approach results in the emissions estimates reflecting factors that change VMT (e.g., changes in land use that affect the number of vehicle trips) and factors that change vehicle speed (e.g., changes in the number of lanes on roadways).

CARBON MONOXIDE HOTSPOT MODELING

The ambient air quality effects of traffic emissions of CO at roadway intersections associated with the Sacramento County General Plan Update project were evaluated for the nine scenarios indicated above.

A screening assessment was conducted to select five locations for microscale dispersion modeling under each of the nine study scenarios indicated above. The screening assessment evaluated roadway intersections for elevated levels of traffic congestion and traffic volumes, as well as the proximity of sensitive receptors. A detailed description of the screening assessment is provided in Appendix F. Based on the results of the screening assessment, the following intersections were modeled under all nine scenarios:

- Power Inn Road & Calvine Road;
- Watt Avenue & Folsom Boulevard;
- Sunrise Boulevard & Zinfandel Drive;
- Sunrise Boulevard & Fair Oaks Boulevard; and
- Hazel Avenue & Madison Avenue.

Microscale dispersion modeling of the Sacramento County General Plan Update study scenarios was conducted using Caltrans' CALINE4 dispersion model (Benson 1989), guidance from Caltrans, including Caltrans' *Air Quality Technical Analysis Notes* (California Department of Transportation 1988) and Caltrans' *Transportation Project-Level Carbon Monoxide Protocol* developed for Caltrans by the Institute of Transportation Studies at the University of California, Davis (Garza et al. 1997), and the SMAQMD's *Guide to Air Quality Assessment in Sacramento County (Sacramento Metropolitan Air Quality Management District 2004)*.

TRAFFIC DATA

The traffic data used in the microscale dispersion modeling was provided by the traffic consultant working on the Sacramento County General Plan Update project, DKS

Associates (Fugitt pers. comm.). Table AQ-7 and Table AQ-8 present a summary of the traffic data. More detailed traffic data is presented in Appendix F.

EMISSION RATES

Motor vehicle emission rates used in the microscale dispersion modeling are from the Air Resources' EMFAC2007 emission rate model (California Air Resources Board 2009). The EMFAC2007 model was configured to generate emission rates specific to Sacramento County, based on the default values incorporated into EMFAC2007.

Existing conditions are assumed to be for the year 2006 (Fugitt pers. comm.), and all the Cumulative scenarios are assumed to be for the year 2030. Motor vehicle emission rates change over time. Therefore, EMFAC2007 was used to generate emission rates for both the year 2006 and 2030.

Carbon monoxide concentrations are higher in the winter season. Therefore, for the Sacramento County General Plan Update CO analysis, EMFAC2007 was used to generate emission rates, applying the winter temperature default values incorporated into EMFAC2007. Output files from the EMFAC2007 emission rate model are presented in Appendix F.

RECEPTORS

The CALINE4 model was used to estimate CO concentrations at specific receptors in the vicinity of the five study intersections identified above. Based on field reconnaissance conducted by KD Anderson & Associates, 20 receptors were identified in the vicinity of each study intersection. Occupied structures closest to the intersection were used as receptors. In those cases where the nearest occupied structures were non-residential, the nearest residential structures were also used as receptors. The receptors used for each intersection are listed in Table AQ-9. The location of each receptor is also indicated in Plates AQ-1 through AQ-5.

Table AQ-7 Sacramento County General Plan Cumulative PM Intersection Operating Conditions

Intersection		2006 Existing		1993 General Plan		No Project		Proposed General Plan		No Grant Line East		Focused Growth		Mixed-Use		Arterial Downgrade		Thoroughfare Downgrade	
# North-South Street	East-West Street	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
1 Power Inn Rd	Cosumnes River-Calvine	1.31	F	1.23	F	1.26	F	1.27	F	1.27	F	1.29	F	1.29	F	1.30	F	1.29	F
2 Power Inn Rd	Florin Rd	1.00	E	1.16	F	1.16	F	1.27	F	1.26	F	1.26	F	1.15	F	1.27	F	1.19	F
3 San Juan Ave	Madison Ave	1.10	F	1.23	F	1.22	F	1.25	F	1.21	F	1.22	F	1.22	F	1.23	F	1.24	F
4 S.Watt Ave	Jackson Rd	0.91	E	0.93	E	0.94	E	1.06	F	1.07	F	1.09	F	0.92	E	1.06	F	1.01	F
5 S.Watt Ave	Folsom Blvd	0.99	E	1.17	F	1.18	F	1.29	F	1.27	F	1.28	F	1.14	F	1.29	F	1.05	F
6 Bradshaw Rd	Jackson Rd	0.87	D	1.00	E	1.02	F	1.18	F	1.18	F	1.21	F	0.94	E	1.17	F	1.22	F
7 Sunrise Blvd	Fair Oaks Blvd	1.15	F	1.24	F	1.23	F	1.26	F	1.26	F	1.25	F	1.26	F	1.28	F	1.25	F
8 Hazel Ave	Madison Ave	0.97	E	1.03	F	1.03	F	1.10	F	1.04	F	1.03	F	1.06	F	1.09	F	1.35	F
9 Hazel Ave	Gold Country	0.99	E	1.21	F	1.21	F	1.19	F	1.20	F	1.20	F	1.24	F	1.19	F	1.17	F
10 Sunrise Bl	Zinfandel Bl	0.96	E	1.82	F	1.83	F	1.82	F	1.82	F	1.82	F	1.83	F	1.82	F	1.82	F
11 Grant Line Rd	White Rock Rd	NA[1]	NA	0.66	B	0.75	C	1.41	F	0.78	C	0.78	C	0.75	C	1.41	F	1.03	F
12 MLK	Fruitridge	1.40	F	1.22	F	1.21	F	1.29	F	1.25	F	1.26	F	1.25	F	1.23	F	1.33	F

[1] Stop Sign Controlled Intersection

Table AQ-8 Summary of PM Peak Hour Intersection Approach Volumes for Sacramento General Plan Update Scenarios

Intersection		2006 Existing	1993 General Plan	No Project	Proposed General Plan	No Grant Line East	Focused Growth	Mixed-Use	Arterial Downgrade	Thoroughfare Downgrade
# North-South Street	East-West Street									
1 Power Inn Rd	Cosumnes River-Calvine	6,978	9,048	9,051	9,624	9,597	9,674	9,493	9,683	9,576
2 Power Inn Rd	Florin Rd	5,076	6,846	6,860	7,265	7,243	7,258	6,829	7,308	7,133
3 San Juan Ave	Madison Ave	6,959	7,464	7,461	7,648	7,628	7,610	7,735	7,659	7,618
4 S.Watt Ave	Jackson Rd	2,973	7,603	7,702	8,831	8,797	8,989	5,859	8,875	6,519
5 S.Watt Ave	Folsom Blvd	6,636	9,776	9,793	10,452	10,373	10,418	9,555	10,415	9,325
6 Bradshaw Rd	Jackson Rd	3,689	7,821	7,996	9,509	9,338	9,442	6,468	9,490	7,064
7 Sunrise Blvd	Fair Oaks Blvd	8,287	8,731	8,741	8,960	8,877	8,873	8,984	8,967	8,916
8 Hazel Ave	Madison Ave	6,126	9,450	9,408	9,667	9,558	9,472	9,695	9,687	8,989
9 Hazel Ave	Gold Country	5,185	8,552	8,562	8,695	8,316	8,612	8,742	8,696	8,425
10 Sunrise Bl	Zinfandel Bl	5,501	6,173	6,204	6,122	6,045	6,043	6,066	6,130	5,879
11 Grant Line Rd	White Rock Rd	1,095	3,598	4,559	6,860	4,166	4,116	4,024	6,866	5,918
12 MLK	Fruitridge	5,555	6,667	6,658	6,997	6,939	6,975	6,928	6,942	7,194

[1] Stop Sign Controlled Intersection

Table AQ-9 Locations of Carbon Monoxide Modeled Receptors

Power Inn Road & Calvine Road	Watt Avenue & Folsom Boulevard	Sunrise Boulevard & Zinfandel Drive	Sunrise Boulevard & Fair Oaks Boulevard	Hazel Avenue & Madison Avenue
Northeast Quadrant	**North Quadrant**	**Northeast Quadrant**	**Northeast Quadrant**	**Northeast Quadrant**
Countryside Community Park	Access Dental Office	Residence at 143 Gumtree Drive	AT&T	Residence at 8901 Barhill Way
Residence at 8152 Gualala Court	Stanford Home for Children Office	Residence at 142 Gumtree Drive	Jiffy Lube	Residence at 8900 Barhill Way
Residence at 8155 Gualala Court	American Red Cross Office	Residence at 141 Gumtree Drive	4140 Sunrise Blvd Retail Commercial	AM/PM Gas Station
Residence at 8154 Gualala Court	Stonecreeks Restaurant	Residence at 140 Gumtree Drive	"The Village" Building	Vacant Retail Bldg Facing Madison Ave
Residence at 8254 Albion River Court		Residence at 139 Gumtree Drive		
Residence at 8258 Albion River Court				
Residence at 8262 Albion River Court				
Residence at 8259 Albion River Court				
Residence at 8255 Albion River Court				
Southeast Quadrant	**East Quadrant**	**Southeast Quadrant**	**Southeast Quadrant**	**Southeast Quadrant**
McDonald's Restaurant	Light Rail Transit Passenger Platform	Shell Gas Station	Smog 'N Go Automotive Repair	Chevron Gas Station
Del Taco Restaurant	Bus Stop	In-N-Out Restaurant	Recognition Group	Subway Restaurant
Residence at 8282 Calvine - Broadstone	Residence at 8901 New Dawn Drive	2489 Hazel Avenue Office Building	Players - The Neighborhood Pub	Residence at 8914 Street of Dreams
Lowe's Store	Residence at 8900 New Dawn Drive	Residence at 431 Royal Crest Circle	Residence at 4062/4064 Howard Street	Residence at 8902 Vincent Avenue

Power Inn Road & Calvine Road	Watt Avenue & Folsom Boulevard	Sunrise Boulevard & Zinfandel Drive	Sunrise Boulevard & Fair Oaks Boulevard	Hazel Avenue & Madison Avenue
	Residence at 8901 Talisman Drive	Residence at 432 Royal Crest Circle	Residence at 7952 Canyon Drive	Eva's Nails
	Residence at 8900 Talisman Drive	Residence at 433 Royal Crest Circle	Residence at 7964 Canyon Drive	Residence at 5224 Hazel Avenue
	Residence at 8901 Rosewood Drive	Residence at 434 Royal Crest Circle		
	Residence at 8900 Rosewood Drive			
Southwest Quadrant	**South Quadrant**	**Southwest Quadrant**	**Southwest Quadrant**	**Southwest Quadrant**
76 Union Gas Station	Teichert Mobile Equipment	McDonald's Restaurant	Bob's Cycle Center	Raley's Gas Station
Big O Tires Store		China Garden Restaurant	Residence at 9909 Portofine Oak Lane	Del Taco Restaurant
Smog 'N Go Automotive Repair		Denny's Restaurant	Residence at 9913 Portofine Oak Lane	Leslie's Pool Supplies
Burger King Restaurant/Shell Gas Station		Family Fitness	Residence at 9916 Portofine Oak Lane	Residence at 5221 Hazel Avenue
Chevron Gas Station		Residence at 2330 Vehicle Drive	Residence at 9912 Portofine Oak Lane	Residence at 5213 Hazel Avenue
Marriott Fairfield Inn & Suites				
Northwest Quadrant	**West Quadrant**	**Northwest Quadrant**	**Northwest Quadrant**	**Northwest Quadrant**
Sam's Club Store (Future)	Residence at 8780 Brigham Way	Hollywood Video Store	Fair Oaks Auto Sales	Residence at 8865 Piedra Way
	Residence at 8776 Brigham Way	Kmart Store	Salon Nouveau	Residence at 8864 Piedra Way
	Residence at 8772 Brigham Way	Chevron Gas Station	Residence at 4132 Pennsylvania Avenue	Vacant Gas Station
	8801 Folsom Boulevard Office Bldg		Residence at 4124 Pennsylvania Avenue	Washington Mutual Bank

Power Inn Road & Calvine Road	Watt Avenue & Folsom Boulevard	Sunrise Boulevard & Zinfandel Drive	Sunrise Boulevard & Fair Oaks Boulevard	Hazel Avenue & Madison Avenue
	California Community Credit Union		Residence at 4112 Pennsylvania Avenue	Residence at 8856 Mohawk Way
	8795 Folsom Boulevard Office Bldg			
	Harper Medical Group Office Bldg			

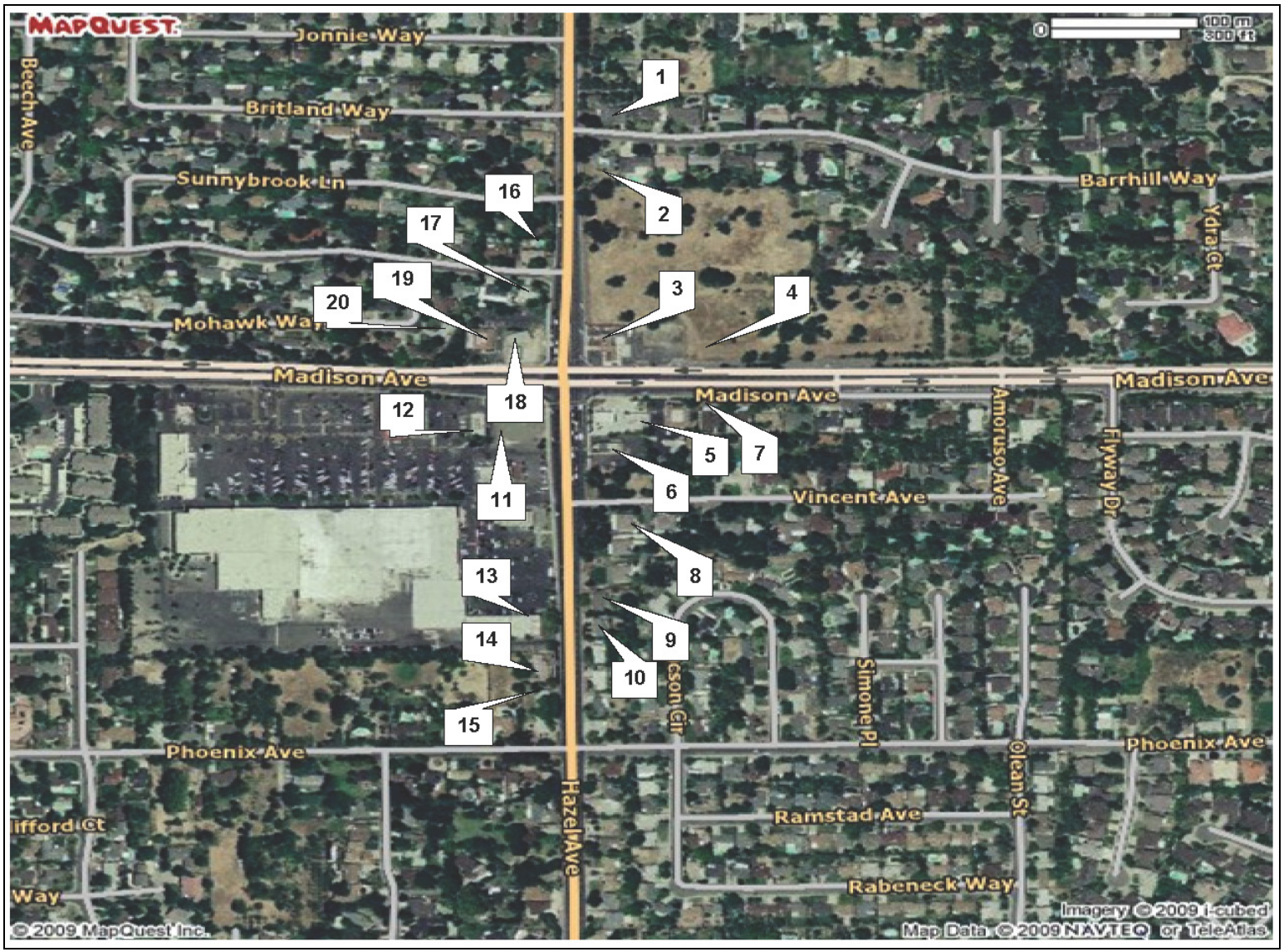
Plate AQ-1 CALINE 4 Receptors—Intersection of Power Inn Road & Calvine Road

Plate AQ-2 CALINE 4 Receptors—Intersection of Watt Avenue & Folsom Boulevard

Plate AQ-3 CALINE 4 Receptors—Intersection of Sunrise Boulevard & Zinfandel Drive

Plate AQ-4 CALINE 4 Receptors—Intersection of Sunrise Boulevard & Fair Oaks Boulevard

Plate AQ-5 CALINE 4 Receptors—Intersection of Hazel Avenue & Madison Avenue



Stationary, Area, and Off-Road Emissions

An analysis of stationary, area, and off-road emissions associated with buildout of the Project and Alternatives was performed. The emissions analysis was based on Air Resources emissions forecast and inventory data for Sacramento County and anticipated buildout under the Project alternatives by generalized land use categories. A detailed inventory of anticipated land use quantities associated with buildout of the Project and Alternatives was not available at the time the analysis was prepared. Instead, the generalized inventory of land uses associated with the traffic analysis was used to forecast stationary, area, and off-road emissions associated with the Project alternatives. These forecast emissions are based on the 2006 Sacramento County emissions inventory found in Table AQ-1. The emissions data in Table AQ-1 were adjusted based on the growth anticipated for each land use analyzed under the Project and Alternatives. Table AQ-10 presents the land use data from the traffic analysis that was used to prepare the emissions inventory. Table AQ-10 presents the number of households and employment data associated with scenario, as well as the projected increase in the various land use scenarios used to adjust the 2006 inventory to 2030 conditions.

The following seven land uses were analyzed as part of the traffic study for each scenario:

- Category 1: Single-family residential
- Category 2: Multi-family residential
- Category 3: Retail
- Category 4: Office
- Category 5: Medical
- Category 6: Education
- Category 7: Manufacture/Other

The traffic study evaluated increases/decreases in each of the seven land uses indicated above under the Project and Alternatives. Each of the seven land use categories was then assigned to the Sacramento County 2006 inventory presented in Table AQ-1 to indicate how changes in the seven land uses would result in changes to each of the emissions categories identified in the 2006 emissions inventory. Tables 1-11 through 1-16 summarize how the seven land use categories were assigned to the emissions inventory categories. The changes to each of the seven land use categories under each scenario were then applied to the existing inventory to estimate changes in emissions between existing and 2030 scenario conditions. Table AQ-10 summarizes land use data from the traffic analysis and the increases between existing and 2030 scenario conditions that was used to prepare the emissions inventory.

Table AQ-10 Land Use Assumptions in Growth for Sacramento County – Number of Households and Employment Data

	1	2	3	4	5	6	7		Increase from Existing 2006 to 2030 Condition	
Alternative	**Single-family residential**	**Multi-family residential**	**Retail**	**Office**	**Medical**	**Education**	**Manufacture/ Other**	**Total**	**Land Use Type**	**Percent increase**
2006 Existing Conditions	347,184	132,880	167,158	212,968	49,831	31,978	217,518	1,159,517	NA	
2030 with 1993 General Plan	469,681	225,570	214,009	350,912	72,364	45,866	280,350	1,658,752	1, 2	144.82
									1, 2, 7	139.85
									1, 2, 3, 6	140.63
									1, 2, 5, 7	140.21
									3	128.03
									3, 7	128.51
									7	128.89
									All	143.06
2030 with No Project	475,296	228,296	217,042	351,813	72,421	46,758	281,197	1,672,823	1, 2	146.56
									1, 2, 7	141.17
									1, 2, 3, 6	142.43
									1, 2, 5, 7	141.45
									3	129.84
									3, 7	129.52
									7	129.28
									All	144.27
2030 with Remove Grant Line East	495,783	257,613	228,163	367,493	71,806	47,509	279,155	1,747,522	1, 2	156.94
									1, 2, 7	148.02
									1, 2, 3, 6	151.51
									1, 2, 5, 7	147.76
									3	136.50
									3, 7	131.88

Alternative	1 Single-family residential	2 Multi-family residential	3 Retail	4 Office	5 Medical	6 Education	7 Manufacture/ Other	Total	Increase from Existing 2006 to 2030 Condition Land Use Type	 Percent increase
									7	128.34
									All	150.71
2030 with Focused Growth	496,439	256,957	228,156	367,408	71,325	47,508	276,250	1,744,043	1, 2	156.94
									1, 2, 7	147.60
									1, 2, 3, 6	151.51
									1, 2, 5, 7	147.30
									3	136.49
									3, 7	131.12
									7	127.00
									All	150.41
2030 with Mixed Use	491,755	248,082	218,438	350,912	72,364	46,191	280,350	1,708,092	1, 2	154.11
									1, 2, 7	146.25
									1, 2, 3, 6	147.89
									1, 2, 5, 7	146.18
									3	130.68
									3, 7	129.66
									7	128.89
									All	147.31
2030 with Arterial Downgrade	509,057	267,313	234,904	376,502	72,182	48,931	282,534	1,791,423	1, 2	161.72
									1, 2, 7	151.80
									1, 2, 3, 6	156.10
									1, 2, 5, 7	151.33
									3	140.53
									3, 7	134.51

Alternative	1 Single-family residential	2 Multi-family residential	3 Retail	4 Office	5 Medical	6 Education	7 Manufacture/ Other	Total	Increase from Existing 2006 to 2030 Condition Land Use Type	 Percent increase
									7	129.89
									All	154.50
2030 with Thoroughfare Downgrade	509,057	267,313	234,904	376,502	72,182	48,931	282,534	1,791,423	1, 2	161.72
									1, 2, 7	151.80
									1, 2, 3, 6	156.10
									1, 2, 5, 7	151.33
									3	140.53
									3, 7	134.51
									7	129.89
									All	154.50
2030 with Proposed General Plan	509,057	267,313	234,904	376,502	72,182	48,931	282,534	1,791,423	1, 2	161.72
									1, 2, 7	151.80
									1, 2, 3, 6	156.10
									1, 2, 5, 7	151.33
									3	140.53
									3, 7	134.51
									7	129.89
									All	154.50

Elevated Health Risks to Sensitive Receptors from Airport, Rail Yard, On Road Vehicular Activities, and Other Sources

Potential health risks to sensitive receptors located in the vicinity of the Sacramento International Airport, Roseville Rail Yard, major roadways, and other sources were evaluated based on published reports, guidance from the SMAQMD, and site-specific dispersion modeling.

Sacramento International Airport

An evaluation of site-specific health risks from the Sacramento International Airport were not conducted for this analysis. Instead, a review of relevant literature was performed, and applicable studies are summarized.

Roseville Rail Yard

An evaluation of site specific health risks of diesel particulate matter from the Roseville Rail Yard were not conducted for this analysis. Instead, a review of relevant literature was performed, and applicable studies are summarized.

On Road Vehicles

In January 2007, the SMAQMD issued the Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways (Sacramento Metropolitan Air Quality Management District 2009). This document, which has been subsequently updated in March 2009 to version 2.2, provides a methodology for the assessment and disclosure of potential cancer risk from diesel particulate matter attributable to siting sensitive land uses adjacent to major roadways. This protocol contains screening criteria for potential cancer risks resulting from exposure to diesel exhaust from vehicles traveling on major roadways (a freeway, urban roadway with greater than 100,000 vehicles/day, or rural roadway with 50,000 vehicles/day). Based on roadway volumes and receptor distance from edge of nearest travel lane, the screening criteria establishes the anticipated incremental cancer risk per million. If roadway volumes and receptor distances indicate that cancer risks may exceed 296 per million then a site-specific evaluation of health risks must be undertaken. The SMAQMD's Roadway Protocol also establishes screening-level health risks for receptors at varying distances from roadways of varying volumes. These screening tables, for east-west and north-south oriented roadways, are provided below in Table AQ-17 and Table AQ-18. It should be noted that the screening data listed in the tables are updated yearly and available at:
http://www.airquality.org/ceqa/RoadwayProtocol.shtml
~~http://www.airquality.org/ceqa/SLUMajorRoadway/SLURecommendedProtocol2.2-Mar2009.pdf~~.

Table AQ-11 Sacramento County Air Quality Emissions – 2030 1993 General Plan Buildout

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Stationary sources								
Fuel combustion								
Stationary	Electric utilities	All	0.20	1.33	0.73	0.03	0.23	0.23
Stationary	Oil and gas production (combustion)	7	0.01	0.34	0.10	0.00	0.00	0.00
Stationary	Manufacturing and industrial	7	0.03	1.26	1.10	0.01	0.10	0.09
Stationary	Food and agricultural processing	3,7	0.04	0.23	0.46	0.00	0.04	0.04
Stationary	Service and commercial	3	0.10	1.24	1.46	0.01	0.15	0.15
Stationary	Other (fuel combustion)	All	0.11	1.39	1.63	0.01	0.17	0.17
Total fuel combustion			*0.49*	*5.79*	*5.48*	*0.07*	*0.70*	*0.68*
Waste disposal								
Stationary	Sewage treatment	All	0.03	0.00	0.00	0.00	0.00	0.00
Stationary	Landfills	All	0.43	0.07	0.07	0.01	0.03	0.03
Stationary	Incinerators	All	0.00	0.01	0.01	0.00	0.00	0.00
Stationary	Soil remediation	All	0.01	0.00	0.00	0.00	0.00	0.00
Stationary	Other (waste disposal)	All	0.00	0.00	0.00	0.00	0.00	0.00
Total waste disposal			*0.47*	*0.09*	*0.09*	*0.01*	*0.03*	*0.03*
Cleaning and surface coatings								
Stationary	Laundering	3	0.03	0.00	0.00	0.00	0.00	0.00
Stationary	Degreasing	7	0.97	0.00	0.00	0.00	0.00	0.00
Stationary	Coatings and related process solvents	7	2.36	0.00	0.00	0.00	0.00	0.00
Stationary	Printing	3	1.04	0.00	0.00	0.00	0.00	0.00
Stationary	Adhesives and sealants	7	0.53	0.00	0.00	0.00	0.00	0.00
Stationary	Other (cleaning and surface coatings)	7	0.00	0.00	0.00	0.00	0.00	0.00
Total cleaning and surface coatings			*4.92*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Petroleum production and marketing								
Stationary	Oil and gas production	7	0.21	0.00	0.00	0.00	0.00	0.00
Stationary	Petroleum marketing	7	2.90	0.00	0.00	0.00	0.00	0.00
Total petroleum production and marketing			*3.11*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Industrial processes								
Stationary	Chemical	7	0.67	0.03	0.06	0.00	0.04	0.04
Stationary	Food and agriculture	7	0.41	0.00	0.00	0.00	0.24	0.13
Stationary	Mineral processes	7	0.09	0.18	0.18	0.03	1.56	0.43
Stationary	Metal processes	7	0.00	0.00	0.00	0.00	0.00	0.00
Stationary	Wood and paper	7	0.04	0.04	0.00	0.00	0.18	0.10
Stationary	Electronics	7	0.00	0.00	0.00	0.00	0.00	0.00
Stationary	Other (industrial processes)	7	0.00	0.00	0.00	0.00	0.01	0.01
Total industrial processes			*1.21*	*0.24*	*0.24*	*0.03*	*2.04*	*0.71*
Total stationary sources			***10.20***	***6.12***	***5.81***	***0.11***	***2.76***	***1.42***
Area-wide sources								
Solvent evaporation								
Area-wide	Consumer products	All	12.60	0.00	0.00	0.00	0.00	0.00
Area-wide	Architectural coatings and related process solvents	All	5.14	0.00	0.00	0.00	0.00	0.00
Area-wide	Pesticides/fertilizers	All	0.49	0.00	0.00	0.00	0.00	0.00
Area-wide	Asphalt paving/roofing	All	0.49	0.00	0.00	0.00	0.01	0.01
Total solvent evaporation			*18.71*	*0.00*	*0.00*	*0.00*	*0.01*	*0.01*
Miscellaneous processes								
Area-wide	Residential fuel combustion	1, 2	3.14	54.06	4.26	0.14	7.30	7.04
Area-wide	Farming operations	7	2.00	0.00	0.00	0.00	2.41	0.41
Area-wide	Construction and demolition	All	0.00	0.00	0.00	0.00	10.80	1.07
Area-wide	Paved road dust	All	0.00	0.00	0.00	0.00	22.03	3.30
Area-wide	Unpaved road dust	All	0.00	0.00	0.00	0.00	10.63	1.06
Area-wide	Fugitive windblown dust	All	0.00	0.00	0.00	0.00	0.63	0.10
Area-wide	Fires	1, 2, 7	0.04	0.59	0.01	0.00	0.08	0.07
Area-wide	Waste burning and disposal	1, 2, 5, 7	0.41	3.24	0.20	0.03	0.48	0.46
Area-wide	Cooking	1, 2, 3, 6	0.11	0.00	0.00	0.00	0.82	0.82
Total miscellaneous processes			*5.70*	*57.89*	*4.47*	*0.17*	*55.18*	*14.34*
Total area-wide sources			***24.41***	***57.89***	***4.47***	***0.17***	***55.19***	***14.35***

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Off road mobile sources								
Other mobile sources								
Mobile	AIRCRAFT	7	0.67	7.24	2.38	0.18	0.09	0.09
Mobile	Trains	7	0.30	0.86	4.59	0.26	0.13	0.12
Mobile	Ships and commercial boats	7	0.03	0.13	0.00	0.00	0.00	0.00
Mobile	Recreational boats	7	5.17	34.72	1.68	0.00	0.18	0.14
Mobile	Off-road recreational vehicles	7	0.31	0.90	0.01	0.00	0.00	0.00
Mobile	Off-road equipment	7	9.40	64.22	22.27	0.17	1.48	1.33
Mobile	Farm equipment	7	0.64	3.22	3.18	0.03	0.19	0.18
Mobile	Fuel storage and handling	7	1.65	0.00	0.00	0.00	0.00	0.00
Total off road mobile sources			***18.16***	***111.31***	***34.12***	***0.63***	***2.08***	***1.86***
Sacramento County total			**52.77**	**175.32**	**44.40**	**0.91**	**60.03**	**17.63**

Notes on land us category assumptions:
Category 1: Single-family residential
Category 2: Multi-family residential
Category 3: Retail
Category 4: Office
Category 5: Medical
Category 6: Education
Category 7: Manufacture/Other

Table AQ-12 Sacramento County Air Quality Emissions – 2030 No Project

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Stationary sources								
Fuel combustion								
Stationary	Electric utilities	All	0.20	1.34	0.74	0.03	0.23	0.23
Stationary	Oil and gas production (combustion)	7	0.01	0.34	0.10	0.00	0.00	0.00
Stationary	Manufacturing and industrial	7	0.03	1.27	1.10	0.01	0.10	0.09
Stationary	Food and agricultural processing	3,7	0.04	0.23	0.47	0.00	0.04	0.04
Stationary	Service and commercial	3	0.10	1.26	1.48	0.01	0.16	0.16
Stationary	Other (fuel combustion)	All	0.12	1.40	1.64	0.01	0.17	0.17
Total fuel combustion			*0.50*	*5.84*	*5.53*	*0.07*	*0.70*	*0.69*
Waste disposal								
Stationary	Sewage treatment	All	0.03	0.00	0.00	0.00	0.00	0.00
Stationary	Landfills	All	0.43	0.07	0.07	0.01	0.03	0.03
Stationary	Incinerators	All	0.00	0.01	0.01	0.00	0.00	0.00
Stationary	Soil remediation	All	0.01	0.00	0.00	0.00	0.00	0.00
Stationary	Other (waste disposal)	All	0.00	0.00	0.00	0.00	0.00	0.00
Total waste disposal			*0.48*	*0.09*	*0.09*	*0.01*	*0.03*	*0.03*
Cleaning and surface coatings								
Stationary	Laundering	3	0.03	0.00	0.00	0.00	0.00	0.00
Stationary	Degreasing	7	0.97	0.00	0.00	0.00	0.00	0.00
Stationary	Coatings and related process solvents	7	2.37	0.00	0.00	0.00	0.00	0.00
Stationary	Printing	3	1.05	0.00	0.00	0.00	0.00	0.00
Stationary	Adhesives and sealants	7	0.53	0.00	0.00	0.00	0.00	0.00
Stationary	Other (cleaning and surface coatings)	7	0.00	0.00	0.00	0.00	0.00	0.00
Total cleaning and surface coatings			*4.94*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Petroleum production and marketing								
Stationary	Oil and gas production	7	0.21	0.00	0.00	0.00	0.00	0.00
Stationary	Petroleum marketing	7	2.91	0.00	0.00	0.00	0.00	0.00
Total petroleum production and marketing			*3.12*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Industrial processes								
Stationary	Chemical	7	0.67	0.03	0.06	0.00	0.04	0.04
Stationary	Food and agriculture	7	0.41	0.00	0.00	0.00	0.25	0.13
Stationary	Mineral processes	7	0.09	0.18	0.18	0.03	1.56	0.43
Stationary	Metal processes	7	0.00	0.00	0.00	0.00	0.00	0.00
Stationary	Wood and paper	7	0.04	0.04	0.00	0.00	0.18	0.10
Stationary	Electronics	7	0.00	0.00	0.00	0.00	0.00	0.00
Stationary	Other (industrial processes)	7	0.00	0.00	0.00	0.00	0.01	0.01
Total industrial processes			*1.22*	*0.25*	*0.25*	*0.03*	*2.04*	*0.71*
Total stationary sources			***10.25***	***6.17***	***5.86***	***0.11***	***2.77***	***1.43***
Area-wide sources								
Solvent evaporation								
Area-wide	Consumer products	All	12.71	0.00	0.00	0.00	0.00	0.00
Area-wide	Architectural coatings and related process solvents	All	5.18	0.00	0.00	0.00	0.00	0.00
Area-wide	Pesticides/fertilizers	All	0.49	0.00	0.00	0.00	0.00	0.00
Area-wide	Asphalt paving/roofing	All	0.49	0.00	0.00	0.00	0.01	0.01
Total solvent evaporation			*18.87*	*0.00*	*0.00*	*0.00*	*0.01*	*0.01*
Miscellaneous processes								
Area-wide	Residential fuel combustion	1, 2	3.18	54.71	4.31	0.15	7.39	7.12
Area-wide	Farming operations	7	2.00	0.00	0.00	0.00	2.42	0.41
Area-wide	Construction and demolition	All	0.00	0.00	0.00	0.00	10.89	1.08
Area-wide	Paved road dust	All	0.00	0.00	0.00	0.00	22.22	3.33
Area-wide	Unpaved road dust	All	0.00	0.00	0.00	0.00	10.72	1.07
Area-wide	Fugitive windblown dust	All	0.00	0.00	0.00	0.00	0.63	0.10
Area-wide	Fires	1, 2, 7	0.04	0.59	0.01	0.00	0.08	0.07
Area-wide	Waste burning and disposal	1, 2, 5, 7	0.41	3.27	0.20	0.03	0.48	0.47
Area-wide	Cooking	1, 2, 3, 6	0.11	0.00	0.00	0.00	0.83	0.83
Total miscellaneous processes			*5.75*	*58.57*	*4.52*	*0.17*	*55.66*	*14.48*
Total area-wide sources			***24.62***	***58.57***	***4.52***	***0.17***	***55.67***	***14.50***

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Off road mobile sources								
Other mobile sources								
Mobile	AIRCRAFT	7	0.67	7.27	2.39	0.18	0.09	0.09
Mobile	Trains	7	0.30	0.87	4.60	0.26	0.13	0.12
Mobile	Ships and commercial boats	7	0.03	0.13	0.00	0.00	0.00	0.00
Mobile	Recreational boats	7	5.18	34.83	1.68	0.00	0.18	0.14
Mobile	Off-road recreational vehicles	7	0.31	0.90	0.01	0.00	0.00	0.00
Mobile	Off-road equipment	7	9.42	64.42	22.34	0.17	1.49	1.33
Mobile	Farm equipment	7	0.65	3.23	3.19	0.03	0.19	0.18
Mobile	Fuel storage and handling	7	1.65	0.00	0.00	0.00	0.00	0.00
Total off road mobile sources			***18.21***	***111.64***	***34.22***	***0.63***	***2.08***	***1.86***
Sacramento County total			**53.08**	**176.38**	**44.60**	**0.92**	**60.53**	**17.79**

Notes on land us category assumptions:
Category 1: Single-family residential
Category 2: Multi-family residential
Category 3: Retail
Category 4: Office
Category 5: Medical
Category 6: Education
Category 7: Manufacture/Other

Table AQ-13 Sacramento County Air Quality Emissions – 2030 Remove Grant Line East

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Stationary sources								
Fuel combustion								
Stationary	Electric utilities	All	0.21	1.40	0.77	0.03	0.24	0.24
Stationary	Oil and gas production (combustion)	7	0.01	0.33	0.10	0.00	0.00	0.00
Stationary	Manufacturing and industrial	7	0.03	1.26	1.09	0.01	0.10	0.09
Stationary	Food and agricultural processing	3,7	0.04	0.24	0.47	0.00	0.04	0.04
Stationary	Service and commercial	3	0.11	1.32	1.56	0.01	0.16	0.16
Stationary	Other (fuel combustion)	All	0.12	1.46	1.72	0.02	0.18	0.18
Total fuel combustion			*0.52*	*6.02*	*5.71*	*0.07*	*0.73*	*0.72*
Waste disposal								
Stationary	Sewage treatment	All	0.03	0.00	0.00	0.00	0.00	0.00
Stationary	Landfills	All	0.45	0.08	0.08	0.02	0.03	0.03
Stationary	Incinerators	All	0.00	0.02	0.02	0.00	0.00	0.00
Stationary	Soil remediation	All	0.02	0.00	0.00	0.00	0.00	0.00
Stationary	Other (waste disposal)	All	0.00	0.00	0.00	0.00	0.00	0.00
Total waste disposal			*0.50*	*0.09*	*0.09*	*0.02*	*0.03*	*0.03*
Cleaning and surface coatings								
Stationary	Laundering	3	0.03	0.00	0.00	0.00	0.00	0.00
Stationary	Degreasing	7	0.96	0.00	0.00	0.00	0.00	0.00
Stationary	Coatings and related process solvents	7	2.35	0.00	0.00	0.00	0.00	0.00
Stationary	Printing	3	1.11	0.00	0.00	0.00	0.00	0.00
Stationary	Adhesives and sealants	7	0.53	0.00	0.00	0.00	0.00	0.00
Stationary	Other (cleaning and surface coatings)	7	0.00	0.00	0.00	0.00	0.00	0.00
Total cleaning and surface coatings			*4.97*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Petroleum production and marketing								
Stationary	Oil and gas production	7	0.21	0.00	0.00	0.00	0.00	0.00
Stationary	Petroleum marketing	7	2.89	0.00	0.00	0.00	0.00	0.00
Total petroleum production and marketing			*3.09*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Industrial processes								
Stationary	Chemical	7	0.67	0.03	0.06	0.00	0.04	0.04
Stationary	Food and agriculture	7	0.41	0.00	0.00	0.00	0.24	0.13
Stationary	Mineral processes	7	0.09	0.18	0.18	0.03	1.55	0.42
Stationary	Metal processes	7	0.00	0.00	0.00	0.00	0.00	0.00
Stationary	Wood and paper	7	0.04	0.04	0.00	0.00	0.18	0.10
Stationary	Electronics	7	0.00	0.00	0.00	0.00	0.00	0.00
Stationary	Other (industrial processes)	7	0.00	0.00	0.00	0.00	0.01	0.01
Total industrial processes			*1.21*	*0.24*	*0.24*	*0.03*	*2.03*	*0.71*
Total stationary sources			***10.29***	***6.35***	***6.05***	***0.11***	***2.79***	***1.45***
Area-wide sources								
Solvent evaporation								
Area-wide	Consumer products	All	13.28	0.00	0.00	0.00	0.00	0.00
Area-wide	Architectural coatings and related process solvents	All	5.41	0.00	0.00	0.00	0.00	0.00
Area-wide	Pesticides/fertilizers	All	0.51	0.00	0.00	0.00	0.00	0.00
Area-wide	Asphalt paving/roofing	All	0.51	0.00	0.00	0.00	0.02	0.02
Total solvent evaporation			*19.71*	*0.00*	*0.00*	*0.00*	*0.02*	*0.02*
Miscellaneous processes								
Area-wide	Residential fuel combustion	1, 2	3.41	58.58	4.61	0.16	7.91	7.63
Area-wide	Farming operations	7	1.99	0.00	0.00	0.00	2.40	0.41
Area-wide	Construction and demolition	All	0.00	0.00	0.00	0.00	11.38	1.13
Area-wide	Paved road dust	All	0.00	0.00	0.00	0.00	23.21	3.48
Area-wide	Unpaved road dust	All	0.00	0.00	0.00	0.00	11.20	1.12
Area-wide	Fugitive windblown dust	All	0.00	0.00	0.00	0.00	0.66	0.11
Area-wide	Fires	1, 2, 7	0.04	0.62	0.01	0.00	0.09	0.07
Area-wide	Waste burning and disposal	1, 2, 5, 7	0.43	3.41	0.21	0.03	0.50	0.49
Area-wide	Cooking	1, 2, 3, 6	0.12	0.00	0.00	0.00	0.88	0.88
Total miscellaneous processes			*5.99*	*62.62*	*4.84*	*0.19*	*58.23*	*15.31*
Total area-wide sources			***25.70***	***62.62***	***4.84***	***0.19***	***58.24***	***15.33***

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Off road mobile sources								
Other mobile sources								
Mobile	AIRCRAFT	7	0.67	7.21	2.37	0.18	0.09	0.09
Mobile	Trains	7	0.30	0.86	4.57	0.26	0.13	0.12
Mobile	Ships and commercial boats	7	0.03	0.13	0.00	0.00	0.00	0.00
Mobile	Recreational boats	7	5.15	34.57	1.67	0.00	0.18	0.14
Mobile	Off-road recreational vehicles	7	0.31	0.90	0.01	0.00	0.00	0.00
Mobile	Off-road equipment	7	9.36	63.95	22.18	0.17	1.48	1.32
Mobile	Farm equipment	7	0.64	3.21	3.17	0.03	0.19	0.18
Mobile	Fuel storage and handling	7	1.64	0.00	0.00	0.00	0.00	0.00
Total off road mobile sources			***18.08***	***110.83***	***33.97***	***0.63***	***2.07***	***1.85***
Sacramento County total			**54.07**	**179.80**	**44.85**	**0.93**	**63.10**	**18.62**

Notes on land us category assumptions:
Category 1: Single-family residential
Category 2: Multi-family residential
Category 3: Retail
Category 4: Office
Category 5: Medical
Category 6: Education
Category 7: Manufacture/Other

Table AQ-14 Sacramento County Air Quality Emissions – 2030 Focused Growth

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Stationary sources								
Fuel combustion								
Stationary	Electric utilities	All	0.21	1.40	0.77	0.03	0.24	0.24
Stationary	Oil and gas production (combustion)	7	0.01	0.33	0.10	0.00	0.00	0.00
Stationary	Manufacturing and industrial	7	0.03	1.24	1.08	0.01	0.10	0.09
Stationary	Food and agricultural processing	3,7	0.04	0.24	0.47	0.00	0.04	0.04
Stationary	Service and commercial	3	0.11	1.32	1.56	0.01	0.16	0.16
Stationary	Other (fuel combustion)	All	0.12	1.46	1.71	0.02	0.18	0.18
Total fuel combustion			*0.52*	*5.99*	*5.69*	*0.07*	*0.73*	*0.71*
Waste disposal								
Stationary	Sewage treatment	All	0.03	0.00	0.00	0.00	0.00	0.00
Stationary	Landfills	All	0.45	0.08	0.08	0.02	0.03	0.03
Stationary	Incinerators	All	0.00	0.02	0.02	0.00	0.00	0.00
Stationary	Soil remediation	All	0.02	0.00	0.00	0.00	0.00	0.00
Stationary	Other (waste disposal)	All	0.00	0.00	0.00	0.00	0.00	0.00
Total waste disposal			*0.50*	*0.09*	*0.09*	*0.02*	*0.03*	*0.03*
Cleaning and surface coatings								
Stationary	Laundering	3	0.03	0.00	0.00	0.00	0.00	0.00
Stationary	Degreasing	7	0.95	0.00	0.00	0.00	0.00	0.00
Stationary	Coatings and related process solvents	7	2.32	0.00	0.00	0.00	0.00	0.00
Stationary	Printing	3	1.11	0.00	0.00	0.00	0.00	0.00
Stationary	Adhesives and sealants	7	0.52	0.00	0.00	0.00	0.00	0.00
Stationary	Other (cleaning and surface coatings)	7	0.00	0.00	0.00	0.00	0.00	0.00
Total cleaning and surface coatings			*4.93*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Petroleum production and marketing								
Stationary	Oil and gas production	7	0.20	0.00	0.00	0.00	0.00	0.00
Stationary	Petroleum marketing	7	2.86	0.00	0.00	0.00	0.00	0.00
Total petroleum production and marketing			*3.06*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Industrial processes								
Stationary	Chemical	7	0.66	0.03	0.06	0.00	0.04	0.04
Stationary	Food and agriculture	7	0.41	0.00	0.00	0.00	0.24	0.13
Stationary	Mineral processes	7	0.09	0.18	0.18	0.03	1.54	0.42
Stationary	Metal processes	7	0.00	0.00	0.00	0.00	0.00	0.00
Stationary	Wood and paper	7	0.04	0.04	0.00	0.00	0.18	0.10
Stationary	Electronics	7	0.00	0.00	0.00	0.00	0.00	0.00
Stationary	Other (industrial processes)	7	0.00	0.00	0.00	0.00	0.01	0.01
Total industrial processes			*1.19*	*0.24*	*0.24*	*0.03*	*2.01*	*0.70*
Total stationary sources			***10.20***	***6.32***	***6.02***	***0.11***	***2.76***	***1.44***
Area-wide sources								
Solvent evaporation								
Area-wide	Consumer products	All	13.25	0.00	0.00	0.00	0.00	0.00
Area-wide	Architectural coatings and related process solvents	All	5.40	0.00	0.00	0.00	0.00	0.00
Area-wide	Pesticides/fertilizers	All	0.51	0.00	0.00	0.00	0.00	0.00
Area-wide	Asphalt paving/roofing	All	0.51	0.00	0.00	0.00	0.02	0.02
Total solvent evaporation			*19.67*	*0.00*	*0.00*	*0.00*	*0.02*	*0.02*
Miscellaneous processes								
Area-wide	Residential fuel combustion	1, 2	3.41	58.58	4.61	0.16	7.91	7.63
Area-wide	Farming operations	7	1.97	0.00	0.00	0.00	2.37	0.41
Area-wide	Construction and demolition	All	0.00	0.00	0.00	0.00	11.36	1.13
Area-wide	Paved road dust	All	0.00	0.00	0.00	0.00	23.16	3.47
Area-wide	Unpaved road dust	All	0.00	0.00	0.00	0.00	11.18	1.11
Area-wide	Fugitive windblown dust	All	0.00	0.00	0.00	0.00	0.66	0.11
Area-wide	Fires	1, 2, 7	0.04	0.62	0.01	0.00	0.09	0.07
Area-wide	Waste burning and disposal	1, 2, 5, 7	0.43	3.40	0.21	0.03	0.50	0.49
Area-wide	Cooking	1, 2, 3, 6	0.12	0.00	0.00	0.00	0.88	0.88
Total miscellaneous processes			*5.97*	*62.61*	*4.83*	*0.19*	*58.11*	*15.29*
Total area-wide sources			***25.64***	***62.61***	***4.83***	***0.19***	***58.12***	***15.31***

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Off road mobile sources								
Other mobile sources								
Mobile	AIRCRAFT	7	0.66	7.14	2.35	0.18	0.09	0.09
Mobile	Trains	7	0.29	0.85	4.52	0.25	0.13	0.11
Mobile	Ships and commercial boats	7	0.03	0.13	0.00	0.00	0.00	0.00
Mobile	Recreational boats	7	5.09	34.21	1.65	0.00	0.18	0.14
Mobile	Off-road recreational vehicles	7	0.30	0.89	0.01	0.00	0.00	0.00
Mobile	Off-road equipment	7	9.26	63.28	21.95	0.17	1.46	1.31
Mobile	Farm equipment	7	0.64	3.18	3.14	0.03	0.19	0.18
Mobile	Fuel storage and handling	7	1.63	0.00	0.00	0.00	0.00	0.00
Total off road mobile sources			***17.89***	***109.68***	***33.62***	***0.62***	***2.04***	***1.83***
Sacramento County total			**53.73**	**178.61**	**44.47**	**0.92**	**62.93**	**18.58**

Notes on land us category assumptions:
Category 1: Single-family residential
Category 2: Multi-family residential
Category 3: Retail
Category 4: Office
Category 5: Medical
Category 6: Education
Category 7: Manufacture/Other

Table AQ-15 Sacramento County Air Quality Emissions – 2030 Mixed Use

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Stationary sources								
Fuel combustion								
Stationary	Electric utilities	All	0.21	1.37	0.75	0.03	0.24	0.24
Stationary	Oil and gas production (combustion)	7	0.01	0.34	0.10	0.00	0.00	0.00
Stationary	Manufacturing and industrial	7	0.03	1.26	1.10	0.01	0.10	0.09
Stationary	Food and agricultural processing	3,7	0.04	0.23	0.47	0.00	0.04	0.04
Stationary	Service and commercial	3	0.10	1.27	1.49	0.01	0.16	0.16
Stationary	Other (fuel combustion)	All	0.12	1.43	1.68	0.01	0.18	0.18
Total fuel combustion			*0.51*	*5.90*	*5.59*	*0.07*	*0.71*	*0.70*
Waste disposal								
Stationary	Sewage treatment	All	0.03	0.00	0.00	0.00	0.00	0.00
Stationary	Landfills	All	0.44	0.07	0.07	0.01	0.03	0.03
Stationary	Incinerators	All	0.00	0.01	0.01	0.00	0.00	0.00
Stationary	Soil remediation	All	0.01	0.00	0.00	0.00	0.00	0.00
Stationary	Other (waste disposal)	All	0.00	0.00	0.00	0.00	0.00	0.00
Total waste disposal			*0.49*	*0.09*	*0.09*	*0.01*	*0.03*	*0.03*
Cleaning and surface coatings								
Stationary	Laundering	3	0.03	0.00	0.00	0.00	0.00	0.00
Stationary	Degreasing	7	0.97	0.00	0.00	0.00	0.00	0.00
Stationary	Coatings and related process solvents	7	2.36	0.00	0.00	0.00	0.00	0.00
Stationary	Printing	3	1.06	0.00	0.00	0.00	0.00	0.00
Stationary	Adhesives and sealants	7	0.53	0.00	0.00	0.00	0.00	0.00
Stationary	Other (cleaning and surface coatings)	7	0.00	0.00	0.00	0.00	0.00	0.00
Total cleaning and surface coatings			*4.94*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Petroleum production and marketing								
Stationary	Oil and gas production	7	0.21	0.00	0.00	0.00	0.00	0.00
Stationary	Petroleum marketing	7	2.90	0.00	0.00	0.00	0.00	0.00
Total petroleum production and marketing			*3.11*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Industrial processes								
Stationary	Chemical	7	0.67	0.03	0.06	0.00	0.04	0.04
Stationary	Food and agriculture	7	0.41	0.00	0.00	0.00	0.24	0.13
Stationary	Mineral processes	7	0.09	0.18	0.18	0.03	1.56	0.43
Stationary	Metal processes	7	0.00	0.00	0.00	0.00	0.00	0.00
Stationary	Wood and paper	7	0.04	0.04	0.00	0.00	0.18	0.10
Stationary	Electronics	7	0.00	0.00	0.00	0.00	0.00	0.00
Stationary	Other (industrial processes)	7	0.00	0.00	0.00	0.00	0.01	0.01
Total industrial processes			*1.21*	*0.24*	*0.24*	*0.03*	*2.04*	*0.71*
Total stationary sources			***10.25***	***6.23***	***5.92***	***0.11***	***2.78***	***1.44***
Area-wide sources								
Solvent evaporation								
Area-wide	Consumer products	All	12.98	0.00	0.00	0.00	0.00	0.00
Area-wide	Architectural coatings and related process solvents	All	5.29	0.00	0.00	0.00	0.00	0.00
Area-wide	Pesticides/fertilizers	All	0.50	0.00	0.00	0.00	0.00	0.00
Area-wide	Asphalt paving/roofing	All	0.50	0.00	0.00	0.00	0.01	0.01
Total solvent evaporation			*19.27*	*0.00*	*0.00*	*0.00*	*0.01*	*0.01*
Miscellaneous processes								
Area-wide	Residential fuel combustion	1, 2	3.34	57.53	4.53	0.15	7.77	7.49
Area-wide	Farming operations	7	2.00	0.00	0.00	0.00	2.41	0.41
Area-wide	Construction and demolition	All	0.00	0.00	0.00	0.00	11.12	1.10
Area-wide	Paved road dust	All	0.00	0.00	0.00	0.00	22.69	3.40
Area-wide	Unpaved road dust	All	0.00	0.00	0.00	0.00	10.95	1.09
Area-wide	Fugitive windblown dust	All	0.00	0.00	0.00	0.00	0.65	0.10
Area-wide	Fires	1, 2, 7	0.04	0.61	0.01	0.00	0.09	0.07
Area-wide	Waste burning and disposal	1, 2, 5, 7	0.42	3.38	0.20	0.03	0.50	0.48
Area-wide	Cooking	1, 2, 3, 6	0.12	0.00	0.00	0.00	0.86	0.86
Total miscellaneous processes			*5.93*	*61.52*	*4.75*	*0.18*	*57.02*	*15.02*
Total area-wide sources			***25.20***	***61.52***	***4.75***	***0.18***	***57.04***	***15.03***

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Off road mobile sources								
Other mobile sources								
Mobile	AIRCRAFT	7	0.67	7.24	2.38	0.18	0.09	0.09
Mobile	Trains	7	0.30	0.86	4.59	0.26	0.13	0.12
Mobile	Ships and commercial boats	7	0.03	0.13	0.00	0.00	0.00	0.00
Mobile	Recreational boats	7	5.17	34.72	1.68	0.00	0.18	0.14
Mobile	Off-road recreational vehicles	7	0.31	0.90	0.01	0.00	0.00	0.00
Mobile	Off-road equipment	7	9.40	64.22	22.27	0.17	1.48	1.33
Mobile	Farm equipment	7	0.64	3.22	3.18	0.03	0.19	0.18
Mobile	Fuel storage and handling	7	1.65	0.00	0.00	0.00	0.00	0.00
Total off road mobile sources			***18.16***	***111.31***	***34.12***	***0.63***	***2.08***	***1.86***
Sacramento County total			**53.60**	**179.06**	**44.79**	**0.93**	**61.89**	**18.32**

Notes on land us category assumptions:
Category 1: Single-family residential
Category 2: Multi-family residential
Category 3: Retail
Category 4: Office
Category 5: Medical
Category 6: Education
Category 7: Manufacture/Other

Table AQ-16 Sacramento County Air Quality Emissions – 2030 Arterial Downgrade, 2030 Thoroughfare Downgrade, and 2030 Proposed General Plan

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Stationary sources								
Fuel combustion								
Stationary	Electric utilities	All	0.22	1.44	0.79	0.03	0.25	0.25
Stationary	Oil and gas production (combustion)	7	0.01	0.34	0.10	0.00	0.00	0.00
Stationary	Manufacturing and industrial	7	0.03	1.27	1.10	0.01	0.10	0.09
Stationary	Food and agricultural processing	3,7	0.04	0.24	0.48	0.00	0.04	0.04
Stationary	Service and commercial	3	0.11	1.36	1.60	0.01	0.17	0.17
Stationary	Other (fuel combustion)	All	0.12	1.50	1.76	0.02	0.19	0.19
Total fuel combustion			*0.53*	*6.15*	*5.84*	*0.07*	*0.75*	*0.73*
Waste disposal								
Stationary	Sewage treatment	All	0.03	0.00	0.00	0.00	0.00	0.00
Stationary	Landfills	All	0.46	0.08	0.08	0.02	0.03	0.03
Stationary	Incinerators	All	0.00	0.02	0.02	0.00	0.00	0.00
Stationary	Soil remediation	All	0.02	0.00	0.00	0.00	0.00	0.00
Stationary	Other (waste disposal)	All	0.00	0.00	0.00	0.00	0.00	0.00
Total waste disposal			*0.51*	*0.09*	*0.09*	*0.02*	*0.03*	*0.03*
Cleaning and surface coatings								
Stationary	Laundering	3	0.03	0.00	0.00	0.00	0.00	0.00
Stationary	Degreasing	7	0.97	0.00	0.00	0.00	0.00	0.00
Stationary	Coatings and related process solvents	7	2.38	0.00	0.00	0.00	0.00	0.00
Stationary	Printing	3	1.14	0.00	0.00	0.00	0.00	0.00
Stationary	Adhesives and sealants	7	0.53	0.00	0.00	0.00	0.00	0.00
Stationary	Other (cleaning and surface coatings)	7	0.00	0.00	0.00	0.00	0.00	0.00
Total cleaning and surface coatings			*5.05*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Petroleum production and marketing								
Stationary	Oil and gas production	7	0.21	0.00	0.00	0.00	0.00	0.00
Stationary	Petroleum marketing	7	2.92	0.00	0.00	0.00	0.00	0.00

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Total petroleum production and marketing			*3.13*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Industrial processes								
Stationary	Chemical	7	0.68	0.03	0.06	0.00	0.04	0.04
Stationary	Food and agriculture	7	0.42	0.00	0.00	0.00	0.25	0.13
Stationary	Mineral processes	7	0.09	0.18	0.18	0.03	1.57	0.43
Stationary	Metal processes	7	0.00	0.00	0.00	0.00	0.00	0.00
Stationary	Wood and paper	7	0.04	0.04	0.00	0.00	0.18	0.10
Stationary	Electronics	7	0.00	0.00	0.00	0.00	0.00	0.00
Stationary	Other (industrial processes)	7	0.00	0.00	0.00	0.00	0.01	0.01
Total industrial processes			*1.22*	*0.25*	*0.25*	*0.03*	*2.05*	*0.71*
Total stationary sources			***10.44***	***6.49***	***6.18***	***0.11***	***2.83***	***1.48***
Area-wide sources								
Solvent evaporation								
Area-wide	Consumer products	All	13.61	0.00	0.00	0.00	0.00	0.00
Area-wide	Architectural coatings and related process solvents	All	5.55	0.00	0.00	0.00	0.00	0.00
Area-wide	Pesticides/fertilizers	All	0.53	0.00	0.00	0.00	0.00	0.00
Area-wide	Asphalt paving/roofing	All	0.53	0.00	0.00	0.00	0.02	0.02
Total solvent evaporation			*20.21*	*0.00*	*0.00*	*0.00*	*0.02*	*0.02*
Miscellaneous processes								
Area-wide	Residential fuel combustion	1, 2	3.51	60.37	4.75	0.16	8.15	7.86
Area-wide	Farming operations	7	2.01	0.00	0.00	0.00	2.43	0.42
Area-wide	Construction and demolition	All	0.00	0.00	0.00	0.00	11.66	1.16
Area-wide	Paved road dust	All	0.00	0.00	0.00	0.00	23.79	3.57
Area-wide	Unpaved road dust	All	0.00	0.00	0.00	0.00	11.48	1.14
Area-wide	Fugitive windblown dust	All	0.00	0.00	0.00	0.00	0.68	0.11
Area-wide	Fires	1, 2, 7	0.05	0.64	0.02	0.00	0.09	0.08
Area-wide	Waste burning and disposal	1, 2, 5, 7	0.44	3.50	0.21	0.03	0.51	0.50
Area-wide	Cooking	1, 2, 3, 6	0.12	0.00	0.00	0.00	0.91	0.91
Total miscellaneous processes			*6.13*	*64.50*	*4.98*	*0.19*	*59.71*	*15.74*

Source type	Subcategory	Land Use Category	Annual emissions (tons per day)					
			ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Total area-wide sources			***26.34***	***64.50***	***4.98***	***0.19***	***59.72***	***15.75***
Off road mobile sources								
Other mobile sources								
Mobile	AIRCRAFT	7	0.68	7.30	2.40	0.18	0.09	0.09
Mobile	Trains	7	0.30	0.87	4.62	0.26	0.13	0.12
Mobile	Ships and commercial boats	7	0.03	0.13	0.00	0.00	0.00	0.00
Mobile	Recreational boats	7	5.21	34.99	1.69	0.00	0.18	0.14
Mobile	Off-road recreational vehicles	7	0.31	0.91	0.01	0.00	0.00	0.00
Mobile	Off-road equipment	7	9.47	64.72	22.45	0.17	1.49	1.34
Mobile	Farm equipment	7	0.65	3.25	3.21	0.03	0.19	0.18
Mobile	Fuel storage and handling	7	1.66	0.00	0.00	0.00	0.00	0.00
Total off road mobile sources			***18.30***	***112.17***	***34.38***	***0.64***	***2.09***	***1.87***
Sacramento County total			**55.08**	**183.17**	**45.55**	**0.94**	**64.64**	**19.10**

Notes on land us category assumptions:
Category 1: Single-family residential
Category 2: Multi-family residential
Category 3: Retail
Category 4: Office
Category 5: Medical
Category 6: Education
Category 7: Manufacture/Other

Table AQ-17 SMAQMD Roadway Protocol Year 2009 Diesel PM Screening-Level Cancer Risks from an East-West Roadway

	Receptor Distance from Edge of Nearest Travel Lane (feet)							
Peak Hour Traffic (vehicle/hr)	**10**	**25**	**50**	**100**	**200**	**300**	**400**	**500**
Incremental Cancer Risk Per Million: North (downwind)								
4,000	204	181	149	111	73	54	45	38
8,000	407	363	299	219	143	108	89	73
12,000	614	541	448	331	216	162	134	111
16,000	935	830	690	512	337	254	207	172
20,000	1,021	903	750	553	363	273	219	184
24,000	1,224	1,084	900	661	432	328	264	223
Incremental Cancer Risk Per Million: South (upwind)								
4,000	114	95	76	54	35	25	19	16
8,000	229	191	149	108	70	51	41	35
12,000	343	286	226	162	105	76	60	51
16,000	493	407	321	229	149	111	89	73
20,000	572	477	375	267	172	127	102	86
24,000	687	572	452	321	207	156	124	102

Source: Sacramento Metropolitan Air Quality Management District 2009

Table AQ-18 SMAQMD Roadway Protocol Year 2009 Diesel PM Screening-Level Cancer Risks from a North-South Roadway

	Receptor Distance from Edge of Nearest Travel Lane (feet)							
Peak Hour Traffic (vehicle/hr)	**10**	**25**	**50**	**100**	**200**	**300**	**400**	**500**
Incremental Cancer Risk Per Million: North (downwind)								
4,000	242	207	165	114	73	54	45	35
8,000	483	413	328	232	146	108	86	73
12,000	725	623	493	347	223	162	130	108
16,000	1,094	932	735	518	331	245	194	159
20,000	1,212	1,037	820	579	369	273	216	178
24,000	1,453	1,243	986	693	442	328	261	216
Incremental Cancer Risk Per Million: South (upwind)								
4,000	153	121	89	60	38	29	22	19
8,000	308	242	178	121	76	54	45	35
12,000	461	366	267	181	114	83	67	54
16,000	728	576	423	289	181	134	105	86
20,000	770	611	448	305	191	140	111	89
24,000	922	731	623	366	229	169	130	108

Source: Sacramento Metropolitan Air Quality Management District 2009.

Potential health risks from exposure of sensitive receptors to exhaust from major roadways within the Project area were quantitatively evaluated using dispersion modeling in accordance with the SMAQMD's Roadway Protocol. This methodology is described below.

EMISSIONS MODEL

The evaluation of health risks from exposure to roadway exhaust was conducted using emission rates from the latest version of the Air Resources' EMFAC2007 emissions model (version 2.3) in BURDEN mode (California Air Resources Board 2009). Output files from the EMFAC2007 emission rate model are presented in Appendix F. Default values contained within the EMFAC2007 were used to prepare the emissions forecasts, except where noted below.

ANALYSIS YEAR

The analysis year was set to 2006 for the 2006 Base Year scenario. The analysis year was set to 2030 for all other scenarios.

ANALYSIS SEASON

The analysis season was set to Annual Average. This setting was chosen based on SMAQMD guidance (Sacramento Metropolitan Air Quality Management District 2009).

OUTPUT FREQUENCY

The output frequency set to hourly, per SMAQMD guidance (Sacramento Metropolitan Air Quality Management District 2009).

TRAFFIC DATA

Traffic data used in the emissions forecasts were provided by the traffic consultant working on the Sacramento County General Plan Update project, DKS Associates. The traffic data, as received from DKS Associates are found in Appendix F. A review of the traffic data indicated that Hazel Avenue near Gold Country Boulevard represented the roadway with the highest peak hour traffic volume for all scenarios and alternatives except existing conditions. Under existing conditions, Sunrise Boulevard near Fair Oaks Boulevard had the highest peak hour traffic volume. Consequently, Hazel Avenue was evaluated for all scenarios and Alternatives (including existing conditions), and Sunrise Boulevard was also evaluated under existing conditions. Peak hour traffic count data and grams-per-vehicle-mile peak hour emissions data were calculated using SMAQMD methodology (Sacramento Metropolitan Air Quality Management District 2009). Impacts from traffic associated with freeways is not evaluated in this analysis as implementation of the Project and Alternatives is not anticipated to result in substantial increases in traffic volumes on freeways in the Project area. In addition, SMAQMD's Protocol indicates that **the screening level for "major roadways" is** ~~projects with~~ average daily traffic (ADT) of ~~less than~~ 100,000 on urban roadways and 50,000 on rural

roadways ~~are not anticipated to result in elevated health risks at nearby sensitive receptors, but~~ **Projects must be within 500 feet of a defined major roadway in order to be subject to the Protocol.** Receptors located in the vicinity of roadways in excess of these volumes could be subject to increased health risks.

DISPERSION MODEL

Ambient concentrations of diesel particulate matter as a function of distance from the roadways were estimated using the CAL3QHCR line source model. CAL3QHCR is a refined version of the original CALINE (California Line Source Dispersion Model) that was developed as a modeling tool to predict roadside CO concentrations. CAL3QHCR can be used to estimate PM_{10} concentrations at defined receptor locations by processing hourly meteorological data over a year, hourly emissions, and traffic volume. Table AQ-19 summarizes SMAQMD recommended CAL3QHCR input parameters used in the analysis. Output files from the CAL3QHCR model are presented in Appendix F.

Table AQ-19 Sacramento Metropolitan Air Quality Management District Recommended CAL3QHCR Input Parameters

Parameter	Default
Calculation averaging time (min)	60
Single family surface roughness (cm)	108
Settling velocity (cm/s)	0
Deposition velocity (cm/s)	0
Site setting (U=urban, R=rural)	U
Form of traffic volume, emission rate data	2
Pollutant (P for PM10 to give output in $\mu g/m^3$) (1=one hour's data, 2=one week of hourly data)	P
Hourly ambient background concentration ($\mu g/m^3$)	0
Roadway height indicator (AG=at grade, FL=elevated and filled, BR=bridge, DP=depressed)	AG
Roadway height (ft, 0 if AG, relative height if FL, BR, or DP)	0

Source: Sacramento Metropolitan Air Quality Management District 2009

HEALTH RISK CALCULATIONS

The calculation of health risks associated with CAL3QHCR concentrations were based on the recommendations contained within Air Resources' Recommended Interim Risk Management Policy for Inhalation Based Cancer Risk, which was established in consultation with the Office of Environmental Health and Hazard Assessment (OEHHA). This guidance is found in the SMAQMD's Roadway Protocol. Table AQ-20 summarizes the default dose values recommended by the SMAQMD to calculate health risks from exposure of roadway exhaust. The HRA calculations used in this analysis are found in Appendix F.

Table AQ-20 Sacramento Metropolitan Air Quality Management District Recommended Health Risk Dose Values

Variable	Value
Exposure frequency (EF)	350 days/year
Exposure duration (ED)	70 years
Averaging time (AT)	70 years (25,550 days)
Daily breathing rate DBR)	302 (80th percentile) Litres/kilogram body weight-day
Inhalation absorption factor (A)	1

Source: Sacramento Metropolitan Air Quality Management District 2009

OTHER SOURCES

In 2005, the Air Resources published the Air Quality and Land Use Handbook: A Community Health Perspective (California Air Resources Board 2005), which provides Air Resources 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 Air Resources' Air Quality and Land Use Handbook are not required by any regulations and are entirely voluntary. The recommendations from the Air Resources' Land Use Handbook were included in the analysis of potential health effects to sensitive land uses near common sources of toxic air contaminants.

IMPACTS AND ANALYSIS

This section discusses 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.

IMPACT: TEMPORARY INCREASE IN OZONE PRECURSOR (ROG AND NO_X), CO, PARTICULATE MATTER EXHAUST, AND FUGITIVE DUST EMISSIONS DURING GRADING AND CONSTRUCTION ACTIVITIES

Construction allowed in the Project area would result in the temporary generation of ozone precursor (ROG, NO_X), CO, and particulate matter exhaust emissions that would result in short-term impacts on ambient air quality in the Project 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.

As previously indicated, it is currently unknown what level of construction activities would occur with implementation of the Project and quantification of emissions from construction activities is not appropriate at this time. However, should construction activities exceed the SMAQMD's thresholds shown in Table AQ-5 a significant impact would occur. The SMAQMD requires the implementation of measures to reduce construction-related emissions. These include measures to reduce NO_X and visible emissions from off-road diesel powered equipment, the preparation and submission of an off-road construction inventory, and payment of offsite mitigation offset fees if construction emissions are in excess of SMAQMD construction-threshold levels. For fugitive dust, this includes dust-control activities. Though compliance with measures required for NO_X and visible emissions from equipment would reduce construction-related emissions to a *less than significant* level, this is not the case for fugitive dust. Fugitive dust (which is also a PM_{10} emission) can be controlled by mitigation for active grading of up to 15 acres, but beyond that amount the control becomes less effective. It should be assumed that grading activities as a result of the Project will, in some cases, exceed the acreage at which control is possible, resulting in *significant and unavoidable* impacts despite the application of feasible mitigation.

MITIGATION MEASURES:

General Plan policy and existing regulatory requirements represent all feasible mitigation. No further mitigation is recommended.

IMPACT: ELEVATED HEALTH RISK FROM THE EXPOSURE OF NEARBY SENSITIVE RECEPTORS TO DIESEL PARTICULATE MATTER DURING CONSTRUCTION

Construction activities are anticipated to involve the operation of diesel-powered equipment for various activities. In 1998, Air Resources identified diesel exhaust as a toxic air contaminant (TAC). It is anticipated that cleaner diesel powered equipment will replace older construction equipment, leading to an overall decrease in emissions of exhaust particulate matter and ozone precursor emissions. Air Resources adopted the In-Use Off-Road Diesel Regulation on July 26, 2007. The regulation establishes fleet emission standards requiring fleet emissions standards and control technology requirements to reduce diesel particulate matter (PM) and oxides of nitrogen (NO_X) emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. However, emission reductions are still needed on individual construction projects to reduce the exposure of sensitive receptors to toxic air contaminants and reduce ozone levels.

The assessment of cancer health risks associated with exposure to diesel exhaust is typically associated with chronic exposure, in which a 70-year exposure period is often assumed. However, while excess cancer can result from exposure periods of less than 70 years, temporary exposure periods (i.e. exposure periods of less than 5 years) to diesel exhaust are not anticipated to result in an increased health risk, as health risks

associated with exposure to diesel exhaust are typically seen in exposure periods that are chronic in nature.

It is anticipated that construction activities associated with the individual Project elements will be short-term and will occur over a period of several months to several years in duration, and will not result in long-term emissions of diesel exhaust in any given locale of the Project area. Consequently, this impact is *less than significant*. In addition, implementation of SMAQMD-required measures to reduce construction-related emissions would serve to further reduce construction emissions and minimize this impact.

MITIGATION MEASURES:

General Plan policy and existing regulatory requirements represent all feasible mitigation. No further mitigation is recommended.

IMPACT: TEMPORARY GENERATION OF NATURALLY OCCURRING ASBESTOS DURING GRADING AND CONSTRUCTION ACTIVITIES

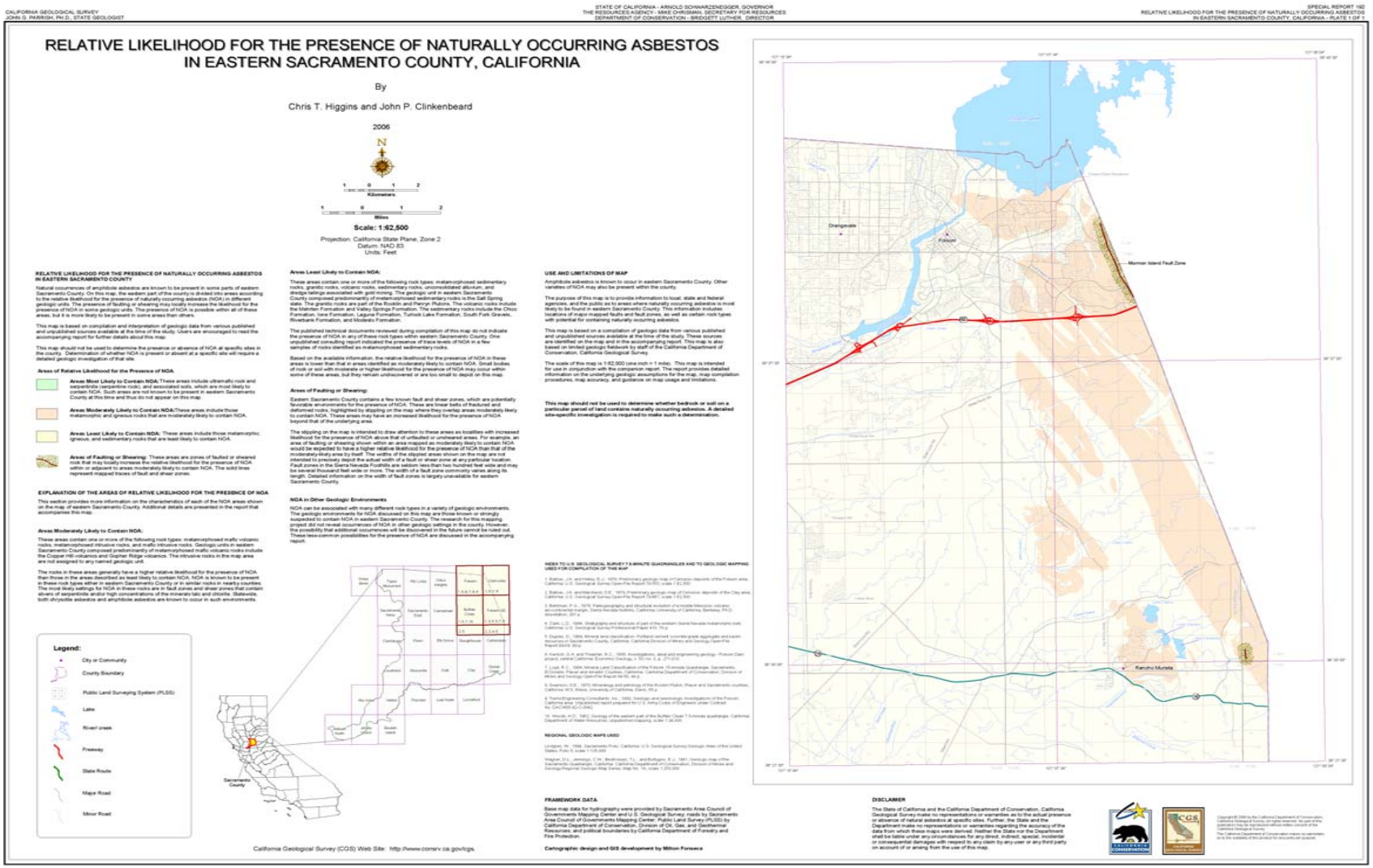
Naturally occurring asbestos is known to be present in eastern Sacramento County. California Geological Survey reports indicate that review of published geologic literature indicates no reports of naturally occurring asbestos in eastern Sacramento County, while the amphibole minerals tremolite, actinolite, and anthophyllite are known to extend into the County. The presence of these minerals indicates that conditions necessary to form amphibole asbestos occurred in these areas (Higgins, Chris and Clinkenbeard 2006). Consequently, NOA is likely to be found in certain areas within eastern Sacramento County. Plate AQ-6 summarizes locations in Sacramento County where NOA is likely to be found.

Project elements resulting in grading and ground-disturbing activities in areas with a moderate likelihood of containing naturally occurring asbestos, such as eastern Sacramento County, may disturb asbestiform-containing soils and generate asbestos dust. As also discussed in the Geology and Soils chapter, the only change proposed by the Project that appears to be affected by NOA is some small portion of the Grant Line East New Growth Area. As previously discussed, Air Resources has adopted an ATCM to control exposure to asbestos from construction, grading, quarrying, and surface mining operations (17 CCR §93105, 7/26/01). Compliance with the requirements of the ATCM would offset any potential impacts associated with NOA. Consequently, this impact is *less than significant*.

MITIGATION MEASURES:

Existing regulatory requirements represent all feasible mitigation. No further mitigation is recommended.

Plate AQ-6 Relative Likelihood for the Presence of Naturally Occurring Asbestos in Eastern Sacramento County, California



CALIFORNIA GEOLOGICAL SURVEY
JOHN G. PARRISH, PH.D., STATE GEOLOGIST

STATE OF CALIFORNIA - ARNOLD SCHWARZENEGGER, GOVERNOR
THE RESOURCES AGENCY - MIKE CHRISMAN, SECRETARY FOR RESOURCES
DEPARTMENT OF CONSERVATION - BRIDGETT LUTHER, DIRECTOR

SPECIAL REPORT 192
RELATIVE LIKELIHOOD FOR THE PRESENCE OF NATURALLY OCCURRING ASBESTOS IN EASTERN SACRAMENTO COUNTY, CALIFORNIA - PLATE 1 OF 1

RELATIVE LIKELIHOOD FOR THE PRESENCE OF NATURALLY OCCURRING ASBESTOS IN EASTERN SACRAMENTO COUNTY, CALIFORNIA

By

Chris T. Higgins and John P. Clinkenbeard

2006

N

1 0 1 2
Kilometers

1 0 1 2
Miles

Scale: 1:62,500

Projection: California State Plane, Zone 2
Datum: NAD 83
Units: Feet

RELATIVE LIKELIHOOD FOR THE PRESENCE OF NATURALLY OCCURRING ASBESTOS IN EASTERN SACRAMENTO COUNTY

Natural occurrences of amphibole asbestos are known to be present in some parts of eastern Sacramento County. On this map, the eastern part of the county is divided into areas according to the relative likelihood for the presence of naturally occurring asbestos (NOA) in different geologic units. The presence of faulting or shearing may locally increase the likelihood for the presence of NOA in some geologic units. The presence of NOA is possible within all of these areas, but it is more likely to be present in some areas than others.

This map is based on compilation and interpretation of geologic data from various published and unpublished sources available at the time of this study. Users are encouraged to read the accompanying report for further details about this map.

This map should not be used to determine the presence or absence of NOA at specific sites in the county. Determination of whether NOA is present or absent at a specific site will require a detailed geologic investigation of that site.

Areas of Relative Likelihood for the Presence of NOA

Areas Most Likely to Contain NOA: These areas include ultramafic rock and serpentinite (serpentine rock), and associated soils, which are most likely to contain NOA. Such areas are not known to be present in eastern Sacramento County at this time and thus do not appear on this map.

Areas Moderately Likely to Contain NOA: These areas include those metamorphic and igneous rocks that are moderately likely to contain NOA.

Areas Least Likely to Contain NOA: These areas include those metamorphic, igneous, and sedimentary rocks that are least likely to contain NOA.

Areas of Faulting or Shearing: These areas are zones of faulted or sheared rock that may locally increase the relative likelihood for the presence of NOA within or adjacent to areas moderately likely to contain NOA. The solid lines represent mapped traces of fault and shear zones.

EXPLANATION OF THE AREAS OF RELATIVE LIKELIHOOD FOR THE PRESENCE OF NOA

This section provides more information on the characteristics of each of the NOA areas shown on the map of eastern Sacramento County. Additional details are presented in the report that accompanies this map.

Areas Moderately Likely to Contain NOA:

These areas contain one or more of the following rock types: metamorphosed mafic volcanic rocks, metamorphosed intrusive rocks, and mafic intrusive rocks. Geologic units in eastern Sacramento County composed predominantly of metamorphosed mafic volcanic rocks include the Copper Hill volcanics and Gopher Ridge volcanics. The intrusive rocks in the map area are not assigned to any named geologic unit.

The rocks in these areas generally have a higher relative likelihood for the presence of NOA than those in the areas described as least likely to contain NOA. NOA is known to be present in these rock types either in eastern Sacramento County or in similar rocks in nearby counties. The most likely settings for NOA in these rocks are in fault zones and shear zones that contain slivers of serpentinite and/or high concentrations of the minerals talc and chlorite. Stateside, both chrysotile asbestos and amphibole asbestos are known to occur in such environments.

Areas Least Likely to Contain NOA:

These areas contain one or more of the following rock types: metamorphosed sedimentary rocks, granitic rocks, volcanic rocks, sedimentary rocks, unconsolidated alluvium, and dredge tailings associated with gold mining. The geologic unit in eastern Sacramento County composed predominantly of metamorphosed sedimentary rocks is the Salt Spring slate. The granitic rocks are part of the Rocklin and Penryn Plutons. The volcanic rocks include the Mehrten Formation and Valley Springs Formation. The sedimentary rocks include the Chico Formation, Ione Formation, Laguna Formation, Turlock Lake Formation, South Fork Gravels, Riverbank Formation, and Modesto Formation.

The published technical documents reviewed during compilation of this map do not indicate the presence of NOA in any of these rock types within eastern Sacramento County. One unpublished consulting report indicated the presence of trace levels of NOA in a few samples of rocks identified as metamorphosed sedimentary rocks.

Based on the available information, the relative likelihood for the presence of NOA in these areas is lower than that in areas identified as moderately likely to contain NOA. Small bodies of rock or soil with moderate or higher likelihood for the presence of NOA may occur within some of these areas, but they remain undiscovered or are too small to depict on this map.

Areas of Faulting or Shearing:

Eastern Sacramento County contains a few known fault and shear zones, which are potentially favorable environments for the presence of NOA. These are linear belts of fractured and deformed rocks, highlighted by stippling on the map where they overlap areas moderately likely to contain NOA. These areas may have an increased likelihood for the presence of NOA beyond that of the underlying area.

The stippling on the map is intended to draw attention to these areas as localities with increased likelihood for the presence of NOA above that of unfaulted or unsheared areas. For example, an area of faulting or shearing shown within an area mapped as moderately likely to contain NOA would be expected to have a higher relative likelihood for the presence of NOA than that of the moderately-likely area by itself. The widths of the stippled areas shown on the map are not intended to precisely depict the actual width of a fault or shear zone at any particular location. Fault zones in the Sierra Nevada Foothills are seldom less than two hundred feet wide and may be several thousand feet wide or more. The width of a fault zone commonly varies along its length. Detailed information on the width of fault zones is largely unavailable for eastern Sacramento County.

NOA in Other Geologic Environments

NOA can be associated with many different rock types in a variety of geologic environments. The geologic environments for NOA discussed on this map are those known or strongly suspected to contain NOA in eastern Sacramento County. The research for this mapping project did not reveal occurrences of NOA in other geologic settings in the county. However, the possibility that additional occurrences will be discovered in the future cannot be ruled out. These less-common possibilities for the presence of NOA are discussed in the accompanying report.

USE AND LIMITATIONS OF MAP

Amphibole asbestos is known to occur in eastern Sacramento County. Other varieties of NOA may also be present within the county.

The purpose of this map is to provide information to local, state and federal agencies, and the public as to areas where naturally occurring asbestos is most likely to be found in eastern Sacramento County. This information includes locations of major mapped faults and fault zones, as well as certain rock types with potential for containing naturally occurring asbestos.

This map is based on a compilation of geologic data from various published and unpublished sources available at the time of the study. These sources are identified on the map and in the accompanying report. This map is also based on limited geologic fieldwork by staff of the California Department of Conservation, California Geological Survey.

The scale of this map is 1:62,500 (one inch = 1 mile). This map is intended for use in conjunction with the companion report. The report provides detailed information on the underlying geologic assumptions for the map, map compilation procedures, map accuracy, and guidance on map usage and limitations.

This map should not be used to determine whether bedrock or soil on a particular parcel of land contains naturally occurring asbestos. A detailed site-specific investigation is required to make such a determination.

Legend:

- City or Community
- County Boundary
- Public Land Surveying System (PLSS)
- Lake
- River/ creek
- Freeway
- State Route
- Major Road
- Minor Road

Sacramento County

California Geological Survey (CGS) Web Site: http://www.consrv.ca.gov/cgs

INDEX TO U.S. GEOLOGICAL SURVEY 7.5-MINUTE QUADRANGLES AND TO GEOLOGIC MAPPING USED FOR COMPILATION OF THIS MAP

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FRAMEWORK DATA

Base map data for hydrography were provided by Sacramento Area Council of Governments Mapping Center and U.S. Geological Survey; roads by Sacramento Area Council of Governments Mapping Center, Public Land Survey (PLSS) by California Department of Conservation, Division of Oil, Gas, and Geothermal Resources; and political boundaries by California Department of Forestry and Fire Protection.

Cartographic design and GIS development by Milton Fonseca

DISCLAIMER

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IMPACT: GENERATION OF ON-ROAD MOBILE SOURCE CRITERIA POLLUTANT EMISSIONS IN EXCESS OF SMAQMD THRESHOLDS

Long-term air quality impacts from motor vehicles operating within the Project area were evaluated using traffic data provided by the project traffic engineers, DKS Associates, and the Air Resources' EMFAC2007 emissions model (version 2.3) in BURDEN mode.

Table AQ-21 summarizes the results of the on-road mobile source emissions modeling, and presents emissions estimates for each of the nine study scenarios in tons per day. Because emissions are often directly related to VMT (assuming speed is constant), the ranking of scenarios by emissions generally follows the ranking by VMT. Those scenarios that result in the largest amount of VMT generally also result in the largest amount of emissions.

The rank order of scenarios by amount of emissions varies somewhat between different types of emissions. This is because some types of emissions are relatively sensitive to changes in vehicle speed (e.g., CO), while other types of emissions are relatively insensitive to changes in vehicle speed (e.g., PM_{10}). Output files of the EMFAC2007 model generated for this analysis are presented in Appendix F.

The results in Table AQ-21 indicate that implementation the Project would result in operational emissions in excess of SMAQMD threshold levels (Table AQ-5). The County has adopted Transit-Oriented Development Design Guidelines as part of the County's General Plan; General Plan Policy AQ-15, which requires a 15% reduction of emissions for significant projects; and the smart growth Policies listed in Appendix A and the Transportation and Circulation chapter, which will help to reduce vehicle trips, reduce vehicle miles traveled, and support non-automotive trips (bicycling, walking, etc) to reduce vehicle activity within the County. The SMAQMD has developed emission reductions for land use projects that can be incorporated into the project design of land use projects to help lessen operational emissions, including vehicle emissions. The SMAQMD's land use emission reductions are found in Appendix F. As the basis for AQ-15, the SMAQMD requires the preparation and implementation of a SMAQMD-approved Air Quality Mitigation Plan (AQMP) for individual projects with emissions in excess of SMAQMD threshold levels. The AQMP requires a project's operational emissions to be reduced by 15%. A 15% reduction is considered to comply with the CEQA definition of "all feasible mitigation" for projects that are within the land use assumptions for the SIP. Projects not considered in the SIP may have to achieve higher emissions reductions – typically 35%. Although all feasible mitigation is applied to individual projects, this mitigation is not sufficient to reduce the aggregate effect of all the development that will result from Project implementation to levels that fall below SMAQMD threshold levels.

Although a 15% reduction is typically sufficient, the proposed General Plan is not consistent with the land use assumptions of the SIP. The SIP uses the assumptions of the Metropolitan Transportation Plan (MTP), which assumed a total of 88,000 new housing units. The difference between this assumption and

the 100,000-unit SACOG assumption for Sacramento County is not substantial enough to warrant significant concern, especially given that the SACOG assumptions of growth are based on the needs of the Blueprint (which is intended to reduce vehicle miles traveled). However, as discussed in the Land Use chapter, the proposed General Plan has the capacity to support up to 150,000 units. As comments from SMAQMD indicate, this excess capacity is not consistent with the SIP assumptions, and as a consequence will result in more air quality impacts than planned for within the SIP. SMAQMD notes that this can be mitigated with a phasing plan for growth. Mitigation Measure LU-1 requires a phasing plan for the Jackson Highway Corridor and Grant Line East New Growth Areas.

Even with the preparation of AQMPs on a project-level basis and the County's General Plan policies aimed at promoting smart growth, reducing vehicle trips and trip lengths, and improving air quality, it is anticipated that emissions from development anticipated under the Project would still exceed SMAQMD threshold levels. Consequently, this impact is *significant and unavoidable*.

MITIGATION MEASURES:

General Plan policy, **Mitigation Measure LU-1,** and existing regulatory requirements represent all feasible mitigation. No further mitigation is recommended.

Table AQ-21 On-Road Mobile Source Emissions in Sacramento County (tons per day)

	Criteria Pollutants					Hazardous Air Pollutants	
Scenario	**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**Diesel Exhaust Particulate Matter**	**C_6H_6**
2005 Existing Condition	27.91	51.59	257.26	2.14	1.54	1.08	0.62
2030 with Current 1993 General Plan	9.14	11.94	65.94	2.10	1.35	0.22	0.20
2030 No Project	9.16	12.02	66.43	2.12	1.37	0.22	0.20
2030 with Proposed General Plan	9.29	12.56	69.65	2.26	1.46	0.24	0.21
2030 with Arterial Downgrade	9.29	12.56	69.64	2.26	1.46	0.24	0.21
2030 with Thoroughfare Downgrade	9.29	12.52	69.55	2.26	1.46	0.23	0.21
2030 with Remove Grant Line East	9.23	12.34	68.32	2.21	1.42	0.23	0.21
2030 with Focused Growth	9.22	12.30	68.10	2.20	1.42	0.23	0.21
2030 with Mixed Use	9.18	12.12	67.10	2.15	1.39	0.22	0.20
Comparison of Alternatives							
Scenario Minus the Existing 2005 Emissions: Change from the baseline							
2030 with Proposed General Plan	-18.62	-39.03	-187.61	0.12	-0.08	-0.84	-0.41
2030 with Arterial Downgrade	-18.62	-39.03	-187.62	0.12	-0.08	-0.84	-0.41
2030 with Thoroughfare Downgrade	-18.62	-39.07	-187.71	0.12	-0.08	-0.85	-0.41
2030 with Remove Grant Line East	-18.68	-39.25	-188.94	0.07	-0.12	-0.85	-0.42
2030 with Focused Growth	-18.69	-39.29	-189.16	0.06	-0.12	-0.85	-0.42
2030 with Mixed Use	-18.73	-39.47	-190.16	0.01	-0.15	-0.86	-0.42
Scenario Minus the Existing 1993 General Plan Emissions: Change from the Existing General Plan							
2030 with Proposed General Plan	0.15	0.62	3.71	0.16	0.11	0.02	0.00
2030 with Arterial Downgrade	0.15	0.62	3.70	0.16	0.11	0.02	0.00
2030 with Thoroughfare Downgrade	0.15	0.58	3.61	0.16	0.11	0.01	0.00
2030 with Remove Grant Line East	0.09	0.40	2.38	0.11	0.07	0.01	0.00
2030 with Focused Growth	0.08	0.36	2.16	0.10	0.07	0.01	0.00
2030 with Mixed Use	0.04	0.18	1.16	0.05	0.04	0.00	0.00
Scenario Minus the No Project Emissions: Change from the No Project							
2030 with Proposed General Plan	0.13	0.54	3.22	0.14	0.09	0.02	0.00
2030 with Arterial Downgrade	0.13	0.54	3.21	0.14	0.09	0.02	0.00
2030 with Thoroughfare Downgrade	0.13	0.50	3.12	0.14	0.09	0.01	0.00

	Criteria Pollutants					Hazardous Air Pollutants	
Scenario	**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**Diesel Exhaust Particulate Matter**	**C_6H_6**
2030 with Remove Grant Line East	0.07	0.32	1.89	0.09	0.05	0.01	0.00
2030 with Focused Growth	0.06	0.28	1.67	0.08	0.05	0.01	0.00
2030 with Mixed Use	0.02	0.10	0.67	0.03	0.02	0.00	0.00

Source: EMFAC2007 in BURDEN mode, KD Anderson & Associates, and DKS Associates

IMPACT: GENERATION OF STATIONARY, AREA, AND OFF-ROAD CRITERIA POLLUTANT EMISSIONS IN EXCESS OF SMAQMD THRESHOLDS

Emissions of stationary, area, and off-road emissions were estimated for each of the Project alternatives based on the existing 2006 Sacramento County inventory and anticipated growth under the Project and Alternatives. Anticipated growth under the Project and Alternatives is based on land use data for each of the scenarios provided by the traffic engineer.

Table AQ-11 through Table AQ-16 summarize stationary, area, and off-road emissions for each of the Project scenarios, while Table AQ-22 compares the emissions associated with the Project and Alternatives to 2006 existing, 2030 with Current 1993 General Plan, and 2030 No Project conditions. This analysis indicates that implementation of the Project and Alternatives would result in increased emission levels for all pollutants analyzed, when compared to the 2030 with Current 1993 General Plan and 2030 No Project conditions. Application of an AQMP Plan, as discussed in the previous section, would reduce these impacts – but not below SMAQMD significance thresholds. Consequently, this impact is *significant and unavoidable*.

MITIGATION MEASURES:

General Plan policy and existing regulatory requirements represent all feasible mitigation. No further mitigation is recommended.

IMPACT: EXPOSURE OF SENSITIVE RECEPTORS TO SUBSTANTIAL CONCENTRATIONS OF CARBON MONOXIDE

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 potential sensitive receptors near congested roadways and intersections were estimated using CALINE4 dispersion modeling. Table AQ-23 through Table AQ-27 summarize CO modeling results for existing-year (2006) and cumulative-year (2030) with-project and without-project conditions. Output files from the CALINE4 dispersion model for each intersection and each scenario are presented in Appendix F.

Table AQ-22 Summary of Stationary, Area, and Off-Road Emissions and Comparison of Project and Alternatives to Existing and 2030 1993 General Plan Conditions (pounds per day)

	Pollutant					
Condition	**ROG**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
2005 Existing Condition	78,280.00	260,360.00	66,560.00	1,360.00	84,700.00	24,880.00
2030 with Current 1993 General Plan	105,547.32	350,631.07	88,792.42	1,826.20	120,051.04	35,252.26
2030 with No Project	106,169.43	352,766.58	89,203.32	1,835.55	121,057.64	35,576.51
2030 with Remove Grant Line East	108,140.31	359,602.89	89,703.36	1,855.55	126,191.66	37,250.00
2030 with Focused Growth	107,467.21	357,218.98	88,949.26	1,841.23	125,863.50	37,157.46
2030 with Mixed Use	107,209.34	358,116.77	89,570.74	1,851.09	123,776.07	36,647.82
2030 with Arterial Downgrade	110,169.25	366,336.43	91,093.08	1,886.54	129,284.28	38,197.44
2030 with Thoroughfare Downgrade	110,169.25	366,336.43	91,093.08	1,886.54	129,284.28	38,197.44
2030 with Proposed General Plan	110,169.25	366,336.43	91,093.08	1,886.54	129,284.28	38,197.44
Scenario Minus the Existing 2005 Emissions: Change from the baseline						
2030 Without Grant Line East	29,860	99,243	23,143	496	41,492	12,370
2030 with Focused Growth	29,187	96,859	22,389	481	41,164	12,277
2030 with Mixed Use	28,929	97,757	23,011	491	39,076	11,768
2030 with Proposed General Plan	31,889	105,976	24,533	527	44,584	13,317
Scenario Minus the 1993 General Plan Emissions: Change from the existing General Plan						
2030 Without Grant Line East	2,593	8,972	911	29	6,141	1,998
2030 with Focused Growth	1,920	6,588	157	15	5,812	1,905
2030 with Mixed Use	1,662	7,486	778	25	3,725	1,396
2030 with Proposed General Plan	4,622	15,705	2,301	60	9,233	2,945
Scenario Minus the No Project Emissions: Change from the No Project						
2030 Without Grant Line East	1,971	6,836	500	20	5,134	1,673

Condition	Pollutant					
	ROG	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
2030 with Focused Growth	1,298	4,452	-254	6	4,806	1,581
2030 with Mixed Use	1,040	5,350	367	16	2,718	1,071
2030 with Proposed General Plan	4,000	13,570	1,890	51	8,227	2,621

Table AQ-23 Carbon Monoxide Concentrations at the Intersection of Power Inn Road & Calvine Road

Receptor Number and Location		Existing (2006) Conditions		Cumulative Future Year 2030 Scenarios													
				1993 General Plan		No Project		Proposed General Plan		Without Grant Line East		Focused Growth		Mixed Use		Arterial Downgrade		Thoroughfare Downgrade	
		1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average
Northeast Quadrant																			
1	Countryside Community Park	6.1	4.3	1.5	1.1	1.5	1.1	1.6	1.1	1.6	1.1	1.6	1.1	1.6	1.1	1.6	1.1	1.6	1.1
2	Residence at 8152 Gualala Court	4.3	3.0	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8
3	Residence at 8155 Gualala Court	4.1	2.9	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
4	Residence at 8154 Gualala Court	4.0	2.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
5	Residence at 8254 Albion River Court	3.9	2.7	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
6	Residence at 8258 Albion River Court	4.0	2.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
7	Residence at 8262 Albion River Court	4.0	2.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
8	Residence at 8259 Albion River Court	3.9	2.7	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
9	Residence at 8255 Albion River Court	3.9	2.7	1.0	0.7	1.0	0.7	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
Southeast Quadrant																			
10	McDonald's Restaurant	4.3	3.0	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8
11	Del Taco Restaurant	4.0	2.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
12	Residence at 8282 Calvine—Broadstone	4.1	2.9	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
13	Lowe's Store	3.7	2.6	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
Southwest Quadrant																			
14	76 Union Gas Station	4.1	2.9	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
15	Big O Tires Store	4.0	2.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
16	Smog 'N Go Automotive Repair	4.0	2.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
17	Burger King Restaurant/Shell Gas Station	3.9	2.7	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
18	Chevron Gas Station	3.9	2.7	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
19	Marriott Fairfield Inn & Suites	3.8	2.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
Northwest Quadrant																			
20	Sam's Club Store (Future)	3.7	2.6	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7

Notes: All values are in parts per million of carbon monoxide (CO). The location of the receptors is shown on Figure 1. State one-hour standard for CO is 20 parts per million. State eight-hour standard for CO is 9 parts per million.

Sources: CALINE4 microscale dispersion model, EMFAC2007 mobile source emissions rates model, DKS Associates 2009, KD Anderson & Associates.

Table AQ-24 Carbon Monoxide Concentrations at the Intersection of Watt Avenue & Folsom Boulevard

				Cumulative Future Year 2030 Scenarios													
		Existing (2006) Conditions		1993 General Plan		No Project		Proposed General Plan		Without Grant Line East		Focused Growth		Mixed Use		Arterial Downgrade		Thoroughfare Downgrade	
	Receptor Number and Location	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average
North Quadrant																			
1	Access Dental Office	4.1	2.9	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.1	0.8	1.2	0.8	1.1	0.8
2	Stanford Home for Children Office	4.3	3.0	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.2	0.8	1.3	0.9	1.2	0.8
3	American Red Cross Office	4.4	3.1	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.2	0.8	1.3	0.9	1.2	0.8
4	Stonecreeks Restaurant	3.9	2.7	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
East Quadrant																			
5	Light Rail Transit Passenger Platform	4.1	2.9	1.1	0.8	1.1	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.1	0.8	1.2	0.8	1.1	0.8
6	Bus Stop	3.8	2.7	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.0	0.7
7	Residence at 8901 New Dawn Drive	3.8	2.7	1.0	0.7	1.0	0.7	1.1	0.8	1.1	0.8	1.1	0.8	1.0	0.7	1.1	0.8	1.0	0.7
8	Residence at 8900 New Dawn Drive	3.5	2.5	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
9	Residence at 8901 Talisman Drive	3.5	2.5	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
10	Residence at 8900 Talisman Drive	3.5	2.5	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
11	Residence at 8901 Rosewood Drive	3.5	2.5	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
12	Residence at 8900 Rosewood Drive	3.5	2.5	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
South Quadrant																			
13	Teichert Mobile Equipment	3.4	2.4	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
West Quadrant																			
14	Residence at 8780 Brigham Way	3.7	2.6	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.0	0.7	1.1	0.8	1.0	0.7
15	Residence at 8776 Brigham Way	3.7	2.6	1.0	0.7	1.0	0.7	1.1	0.8	1.1	0.8	1.1	0.8	1.0	0.7	1.1	0.8	1.0	0.7
16	Residence at 8772 Brigham Way	3.6	2.5	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
17	8801 Folsom Boulevard Office Bldg	3.8	2.7	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
18	California Community Credit Union	4.1	2.9	1.1	0.8	1.1	0.8	1.2	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
19	8795 Folsom Boulevard Office Bldg	3.8	2.7	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.0	0.7	1.1	0.8	1.0	0.7
20	Harper Medical Group Office Bldg	3.9	2.7	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8

Notes: All values are in parts per million of carbon monoxide (CO). The location of the receptors is shown on Figure 2. State one-hour standard for CO is 20 parts per million. State eight-hour standard for CO is 9 parts per million.
Sources: CALINE4 microscale dispersion model, EMFAC2007 mobile source emissions rates model, DKS Associates 2009, KD Anderson & Associates.

Table AQ-25 Carbon Monoxide Concentrations at the Intersection of Sunrise Boulevard & Zinfandel Drive

		Existing 2006 Conditions		Cumulative Future Year 2030 Scenarios													
				1993 General Plan		No Project		Proposed General Plan		Without Grant Line East		Focused Growth		Mixed Use		Arterial Downgrade		Thoroughfare Downgrade	
Receptor Number and Location		1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average
Northeast Quadrant																			
1	Residence at 143 Gumtree Drive	4.4	3.1	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
2	Residence at 142 Gumtree Drive	4.4	3.1	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
3	Residence at 141 Gumtree Drive	4.4	3.1	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
4	Residence at 140 Gumtree Drive	4.3	3.0	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
5	Residence at 139 Gumtree Drive	4.0	2.8	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
Southeast Quadrant																			
6	Shell Gas Station	4.2	2.9	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
7	In-N-Out Restaurant	4.4	3.1	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
8	2489 Hazel Avenue Office Building	4.1	2.9	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
9	Residence at 431 Royal Crest Circle	4.5	3.2	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
10	Residence at 432 Royal Crest Circle	4.5	3.2	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
11	Residence at 433 Royal Crest Circle	4.5	3.2	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
12	Residence at 434 Royal Crest Circle	4.5	3.2	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
Southwest Quadrant																			
13	McDonald's Restaurant	3.8	2.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
14	Chana Garden Restaurant	3.4	2.4	0.9	0.6	0.9	0.6	0.9	0.6	0.9	0.6	0.9	0.6	0.9	0.6	0.9	0.6	0.9	0.6
15	Denny's Restaurant	3.8	2.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
16	Family Fitness	3.7	2.6	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
17	Residence at 2330 Vehicle Drive	3.4	2.4	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	0.9	0.6	0.9	0.6	1.0	0.7	1.0	0.7
Northwest Quadrant																			
18	Hollywood Video Store	4.4	3.1	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
19	Kmart Store	3.3	2.3	0.9	0.6	0.9	0.6	0.9	0.6	0.9	0.6	0.9	0.6	0.9	0.6	0.9	0.6	0.9	0.6
20	Chevron Gas Station	3.9	2.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7

Notes: All values are in parts per million of carbon monoxide (CO). The location of the receptors is shown on Figure 3. State one-hour standard for CO is 20 parts per million. State eight-hour standard for CO is 9 parts per million.
Sources: CALINE4 microscale dispersion model, EMFAC2007 mobile source emissions rates model, DKS Associates 2009, KD Anderson & Associates.

Table AQ-26 Carbon Monoxide Concentrations at the Intersection of Sunrise Boulevard & Fair Oaks Boulevard

		Existing 2006 Conditions		Cumulative Future Year 2030 Scenarios													
				1993 General Plan		No Project		Proposed General Plan		Without Grant Line East		Focused Growth		Mixed Use		Arterial Downgrade		Thoroughfare Downgrade	
Receptor Number and Location		1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average
Northeast Quadrant																			
1	AT&T	6.5	4.6	1.5	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5	1.1
2	Jiffy Lube	6.8	4.8	1.5	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5	1.1
3	4140 Sunrise Blvd Retail Commercial	7.5	5.3	1.6	1.1	1.6	1.1	1.6	1.1	1.6	1.1	1.6	1.1	1.7	1.2	1.6	1.1	1.6	1.1
4	"The Village" Building	4.8	3.4	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8
Southeast Quadrant																			
5	Smog 'N Go Automotive Repair	6.3	4.4	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0
6	Recognition Group	5.4	3.8	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9
7	Players - The Neighborhood Pub	5.5	3.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9
8	Residence at 4062/4064 Howard Street	4.2	2.9	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
9	Residence at 7952 Canyon Drive	6.4	4.5	1.4	1.0	1.4	1.0	1.5	1.1	1.4	1.0	1.4	1.0	1.5	1.1	1.5	1.1	1.5	1.1
10	Residence at 7964 Canyon Drive	7.5	5.3	1.6	1.1	1.6	1.1	1.6	1.1	1.6	1.1	1.6	1.1	1.6	1.1	1.6	1.1	1.6	1.1
Southwest Quadrant																			
11	Bob's Cycle Center	4.2	2.9	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
12	Residence at 9909 Portofine Oak Lane	3.9	2.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
13	Residence at 9913 Portofine Oak Lane	4.1	2.9	1.0	0.7	1.0	0.7	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
14	Residence at 9916 Portofine Oak Lane	4.2	2.9	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
15	Residence at 9912 Portofine Oak Lane	4.1	2.9	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7	1.0	0.7
Northwest Quadrant																			
16	Fair Oaks Auto Sales	4.4	3.1	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
17	Salon Nouveau	4.7	3.3	1.1	0.8	1.1	0.8	1.2	0.8	1.1	0.8	1.1	0.8	1.2	0.8	1.1	0.8	1.1	0.8
18	Residence at 4132 Pennsylvania Avenue	4.3	3.0	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
19	Residence at 4124 Pennsylvania Avenue	4.2	2.9	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8
20	Residence at 4112 Pennsylvania Avenue	4.4	3.1	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8

Notes: All values are in parts per million of carbon monoxide (CO). The location of the receptors is shown on Figure 4. State one-hour standard for CO is 20 parts per million. State eight-hour standard for CO is 9 parts per million.
Sources: CALINE4 microscale dispersion model, EMFAC2007 mobile source emissions rates model, DKS Associates 2009, KD Anderson & Associates.

Table AQ-27 Carbon Monoxide Concentrations at the Intersection of Hazel Avenue & Madison Avenue

		Existing 2006 Conditions		Cumulative Future Year 2030 Scenarios													
				1993 General Plan		No Project		Proposed General Plan		Without Grant Line East		Focused Growth		Mixed Use		Arterial Downgrade		Thoroughfare Downgrade	
	Receptor Number and Location	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average	1-Hour Average	8-Hour Average
Northeast Quadrant																			
1	Residence at 8901 Barhill Way	3.8	2.7	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8
2	Residence at 8900 Barhill Way	4.0	2.8	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9
3	AM/PM Gas Station	3.8	2.7	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9
4	Vacant Retail Bldg Facing Madison Ave	3.8	2.7	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8
Southeast Quadrant																			
5	Chevron Gas Station	3.6	2.5	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8
6	Subway Restaurant	3.8	2.7	1.3	0.9	1.2	0.8	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9
7	Residence at 8914 Street of Dreams	3.6	2.5	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8
8	Residence at 8902 Vincent Avenue	3.6	2.5	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8
9	Eva's Nails	3.8	2.7	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0
10	Residence at 5224 Hazel Avenue	3.8	2.7	1.4	1.0	1.3	0.9	1.4	1.0	1.4	1.0	1.3	0.9	1.4	1.0	1.4	1.0	1.3	0.9
Southwest Quadrant																			
11	Raley's Gas Station	3.5	2.5	1.1	0.8	1.1	0.8	1.2	0.8	1.1	0.8	1.1	0.8	1.2	0.8	1.2	0.8	1.1	0.8
12	Del Taco Restaurant	3.6	2.5	1.1	0.8	1.1	0.8	1.2	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.2	0.8	1.1	0.8
13	Leslie's Pool Supplies	3.7	2.6	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8
14	Residence at 5221 Hazel Avenue	4.1	2.9	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0
15	Residence at 5213 Hazel Avenue	4.1	2.9	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.3	0.9
Northwest Quadrant																			
16	Residence at 8865 Piedra Way	4.0	2.8	1.3	0.9	1.3	0.9	1.4	1.0	1.4	1.0	1.3	0.9	1.4	1.0	1.4	1.0	1.3	0.9
17	Residence at 8864 Piedra Way	4.0	2.8	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9
18	Vacant Gas Station	3.9	2.7	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3	0.9
19	Washington Mutual Bank	3.6	2.5	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8
20	Residence at 8856 Mohawk Way	3.4	2.4	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1	0.8

Notes: All values are in parts per million of carbon monoxide (CO). The location of the receptors is shown on Figure 5. State one-hour standard for CO is 20 parts per million. State eight-hour standard for CO is 9 parts per million.
Sources: CALINE4 microscale dispersion model, EMFAC2007 mobile source emissions rates model, DKS Associates 2009, KD Anderson & Associates.

As indicated in Table AQ-23 through Table AQ-27, no violations of the state or federal 1- or 8-hour CO standards are anticipated in the Project area under cumulative-year conditions. Due to continuing improvements in engine technology due to relatively stricter emission control standards and the retirement of older, higher-emitting vehicles, it is anticipated that vehicle emissions in future years will be lower than current years. As a result, although roadway volumes increase in future years, intersection congestion and volumes are not sufficient to result in elevated CO levels. Consequently, Table AQ-23 through Table AQ-27 indicate that future year CO concentrations will be lower than existing concentrations. Therefore, the impact of project traffic conditions on ambient CO levels in the project area is considered *less than significant*.

MITIGATION MEASURES:

None recommended.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO SACRAMENTO INTERNATIONAL AIRPORT EMISSIONS

The Final Environmental Impact Report prepared for the Sacramento International Airport Master Plan (County of Sacramento 2007) evaluated health risks associated with the Sacramento International Airport's Master Plan. The Final Environmental Impact Report found that health risks ranged from 0 to 0.64 in 1 million for the maximum exposed individual receptors analyzed (i.e., residence, school, and offsite worker). These values are below the threshold of 10 in 1 million. Consequently, this impact is considered *less than significant*.

MITIGATION MEASURES:

None recommended.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO ROADWAY EMISSIONS

An evaluation of potential health impacts at County roadways with the greatest peak hour traffic volumes (Hazel Avenue near Gold Country Boulevard and Sunrise Boulevard near Fair Oaks Boulevard) was prepared using traffic data provided by the project traffic consultant, the SMAQMD's Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways, version 2.2 (Sacramento Metropolitan Air Quality Management District), and the CAL3QHCR dispersion model. The results of the dispersion modeling indicates that potential cancer risks from roadway emissions would vary between 13 and 121 in one million, well in excess of the threshold of 10 in one million. SMAQMD's Protocol indicates that **the screening level for "major roadways" is** ~~projects with~~ average daily traffic (ADT) of ~~less than~~ 100,000 on urban roadways and 50,000 on rural roadways ~~are not anticipated to result in elevated health risks at nearby sensitive receptors~~. **Projects must be within 500 feet**

of a defined major roadway in order to be subject to the Protocol. ~~Consequently,~~ **R**eceptors located in the vicinity of roadways with ADT in excess of these volumes could be subject to increased health risks. Implementation of measures to reduce pollutant exposure would help to reduce potential health risks. Such measures include, but are not limited to the following:

Distance

Exposure to diesel PM, and all roadway-generated pollutants is best reduced by increasing project distance from the freeway or major roadway.

Site Redesign

In some cases, SMAQMD may recommend site redesign. The SMAQMD will work closely with the local jurisdiction and project consultant in developing a design that is more appropriate for the site.

For mixed use projects, the sensitive uses could be located as far from the freeway or major roadway as possible. For example, commercial uses and parking lots could be placed closest to the freeway or major roadway, and residential uses could be located furthest from the toxic sources.

Land uses not considered sensitive in nature include retail, services (banks, fast food, etc) and offices.

Tiered Vegetative Plantings

A laboratory study measured the removal rates of particulate matter passing through leaves and needles of vegetation. Particles were generated in a wind tunnel and a static chamber and passed through vegetative layers at low wind velocities. Redwood, deodar cedar, live oak, and oleander were tested. The results indicate that all forms of vegetation were able to remove 65-85 percent of very fine particles at wind velocities below 1.5 meters per second (roughly 3 miles per hour) with redwood and deodar cedar being the most effective. Even greater removal rates were predicted for ultra-fine particle < 0.1 µm in diameter. All projects within 500 feet of a freeway or major roadway should incorporate vegetative plantings.

General Plan Policy AQ-3 will help to reduce this impact, but not to a less-than-significant level. Consequently, this impact is considered *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO OTHER EMISSION SOURCES

As previously indicated, the Air Resources published guidance regarding the siting of new sensitive land uses (including residences) near freeways, distribution centers, ports, refineries, chrome-plating facilities, dry cleaners, gasoline stations and other common sources of TACs. The following lists sensitive land use siting recommendations from the Air Resources' Land Use Handbook.

FREEWAYS AND HIGH-TRAFFIC ROADS

- Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.

DISTRIBUTION CENTERS

- Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week).
- Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.

RAIL YARDS

- Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard.
- Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.

PORTS

- Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the Air Resources on the status of pending analyses of health risks.

REFINERIES

- Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.

CHROME PLATERS

- Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.

DRY CLEANERS USING PERCHLORO-ETHYLENE

- Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district.
- Do not site new sensitive land uses in the same building with perc dry cleaning operations.

GASOLINE DISPENSING FACILITIES

- Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities

Sensitive ~~land uses~~ **receptors** located in closer proximity to these types of TAC sources could experience elevated health risks. Consequently, a policy in the Land Use Element of the General Plan will be established incorporating the land use citing recommendations found in the Air Resources' Air Quality and Land Use Handbook. General Plan Policy AQ-3 will help to reduce this impact, but not to a less-than-significant level. Consequently, this impact is considered *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO ROSEVILLE RAIL YARD EMISSIONS

The Roseville Rail Yard Study prepared by Air Resources (California Air Resources Board 2004) evaluated health risks associated with operation of Union Pacific Railroad's J.R. Davis Yard in Roseville. While Roseville is not located within Sacramento County, its proximity to the eastern portion of Sacramento County could potentially expose sensitive receptors in Sacramento County to unhealthy levels of diesel particulate matter.

The health risk assessment performed by Air Resources for the Roseville Rail Yard evaluated health risks using multiple sets of meteorological data (Roseville and McClellan Air Force Base data), and evaluated cancer risks on two dispersion coefficients, urban and rural, and two breathing rates, 65th and 95th percentiles.

The use of an urban dispersion coefficient can lessen the estimated potential cancer risk values and the size of the impacted area, as urban dispersion coefficients assume greater surface roughness (from buildings and other structures), which can lead to increased dispersion when compared with rural dispersion coefficients. Increased dispersion can result in a larger, but less concentrated plume, which can lead to reduced potential values at nearby areas.

The assessment of health risks using the Roseville meteorological data indicates that the upwind risk contour of 100 in a million crosses Interstate 80, which is about one mile from the Yard boundary, while the downwind risk contour of 100 in a million reaches approximately 4.5 miles from the Yard boundary. The area where predicted cancer risks are in excess of 100 in a million is estimated to be approximately 4 miles by 4 miles in size, while the area where predicted cancer risks are in excess of 10 in a million is approximately 10 miles by 10 miles in size.

Table AQ-28 summarizes the results of the Air Resources' heath risk analysis for the Roseville Rail Yard using the Roseville meteorological data, while Plate AQ-7 and Plate AQ-8 indicate 10 in a million and 100 in a million risk isopleths for rural and urban dispersion coefficients, respectively.

Table AQ-28 Estimated Offsite Health Risks from the Roseville Rail Yard (Roseville Meteorological Data)

Estimated Risk (per million)	Rural Disp, 95th percentile BR (acres)	Rural Disp, 65th percentile BR (acres)	Urban Disp, 95th percentile BR (acres)	Urban Disp, 65th percentile BR (acres)
Risk ≥ 10 and < 100	45,900	45,500	35,300	29,300
Risk ≥ 100 and < 500	10,500	5,840	2,360	1,260
Risk ≥ 500	120	10	50	20

Source: California Air Resources Board 2004

Plate AQ-7 Roseville Rail Yard Estimated 10 in a Million and 100 in a Million Cancer Risks (Roseville Meteorological Data, Rural Dispersion Coefficient

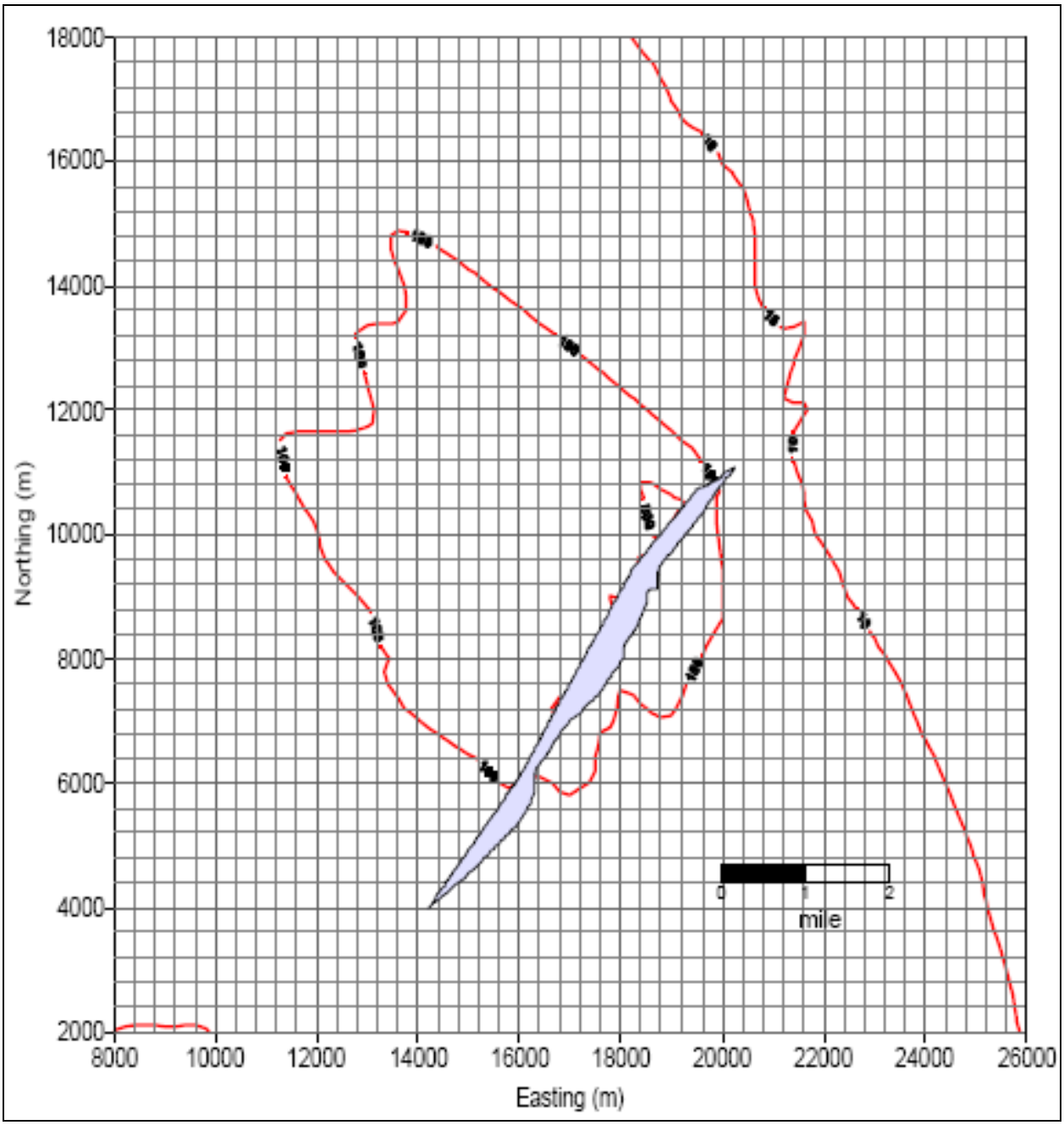
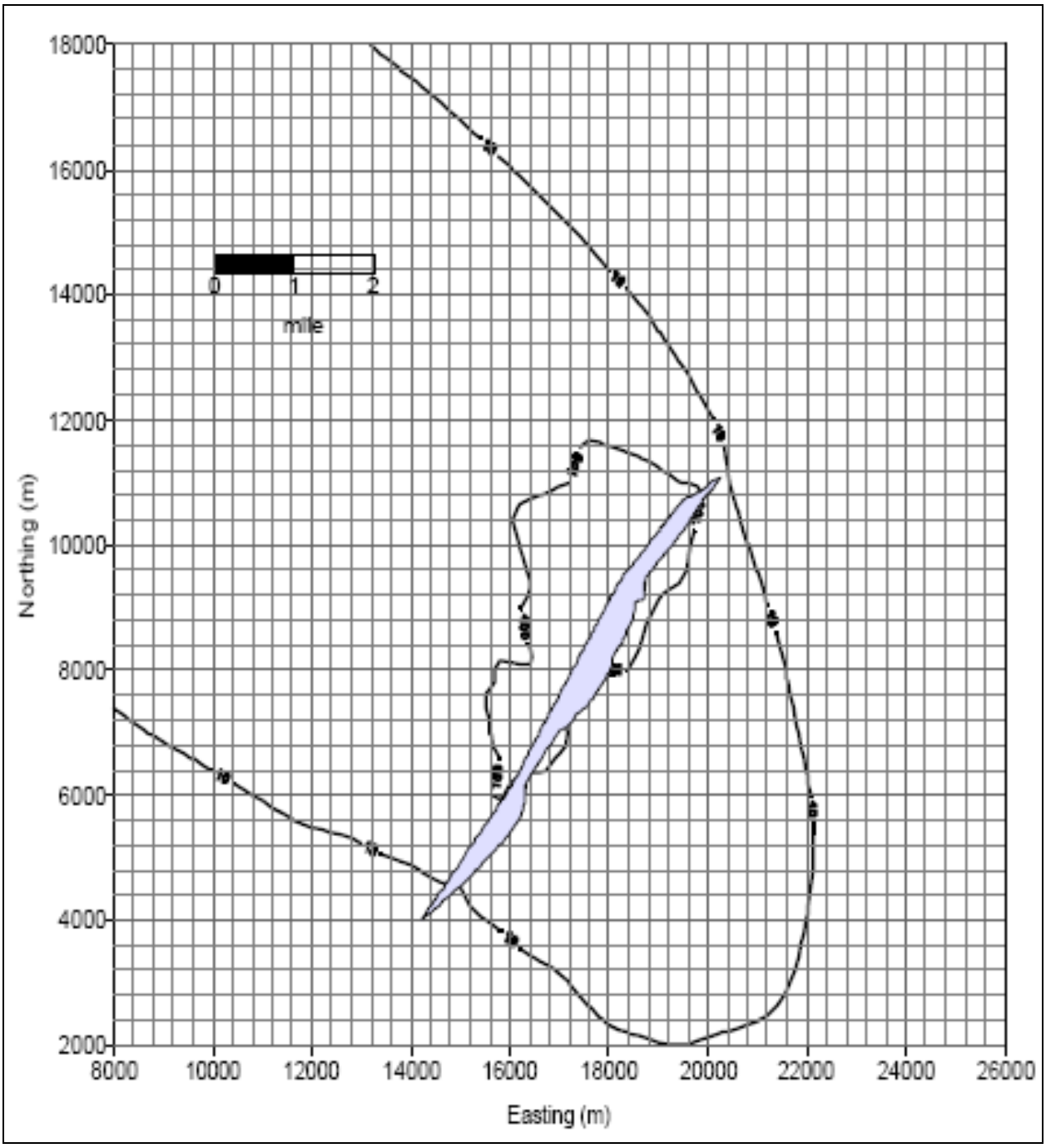


Plate AQ-8 Roseville Rail Yard Estimated 10 in a Million and 100 in a Million Cancer Risks (Roseville Meteorological Data, Urban Dispersion Coefficient



The assessment of health risks using the McClellan Air Force Base meteorological data indicates that the area where predicted cancer risks are in excess of 100 in a million is approximately two miles from the Rail Yard boundary in the predominant wind direction. This area is approximately 2 by 4 miles is size. The area where predicted risk levels exceed 10 in a million is approximately 10 by 10 miles in size.

Table AQ-29 summarizes the results of the Air Resources' heath risk analysis for the Roseville Rail Yard using the McClellan Air Force Base meteorological data, while Plate AQ-9 and Plate AQ-10 indicate 10 in a million and 100 in a million risk isopleths for rural and urban dispersion coefficients, respectively.

Table AQ-29 Estimated Offsite Health Risks from the Roseville Rail Yard (McClellan AFB e Meteorological Data)

Estimated Risk (per million)	Rural Disp, 95th percentile BR (acres)	Rural Disp, 65th percentile BR (acres)	Urban Disp, 95th percentile BR (acres)	Urban Disp, 65th percentile BR (acres)
Risk ≥ 10 and < 100	61,250	52,300	29,150	18,800
Risk ≥ 100 and < 500	4,840	2,425	1,080	485
Risk ≥ 500	40	10	10	0

Source: California Air Resources Board 2004

Plate AQ-9
Roseville Rail Yard Estimated 10 in a Million and 100 in a Million Cancer Risks
(McClellan AFB Meteorological Data, Rural Dispersion Coefficient)

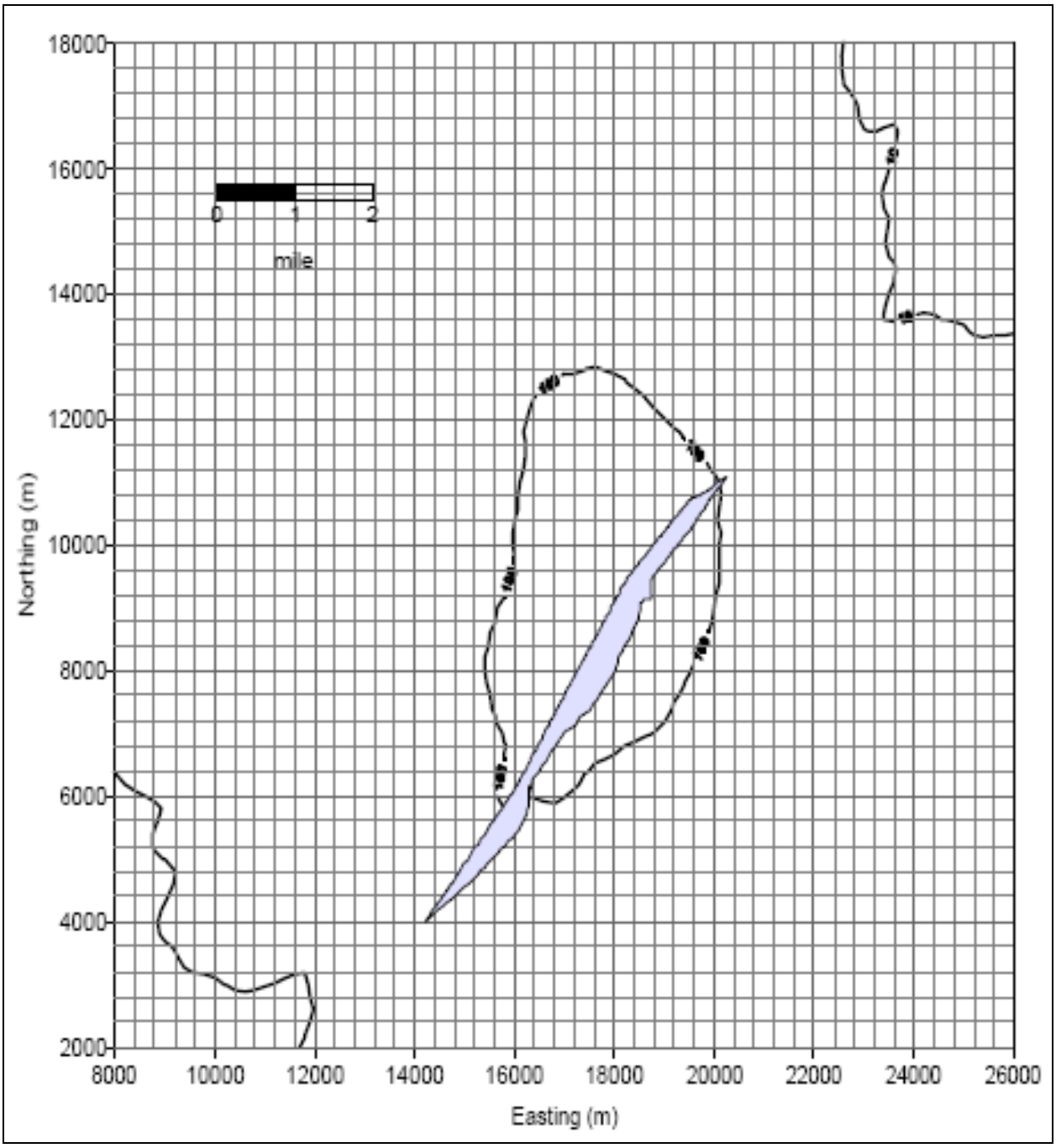
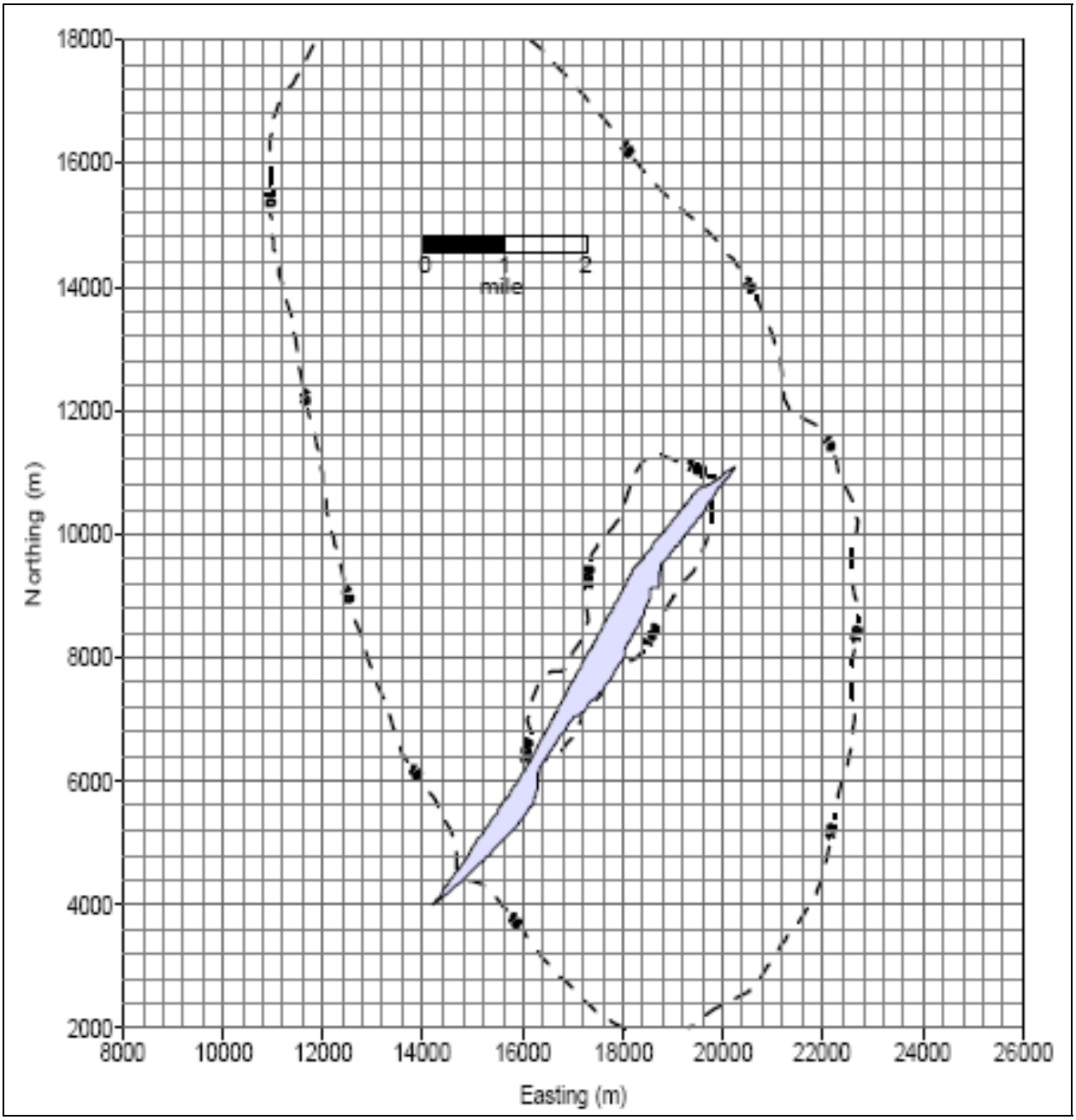


Plate AQ-10
Roseville Rail Yard Estimated 10 in a Million and 100 in a Million Cancer Risks
(McClellan AFB, Urban Dispersion Coefficient)



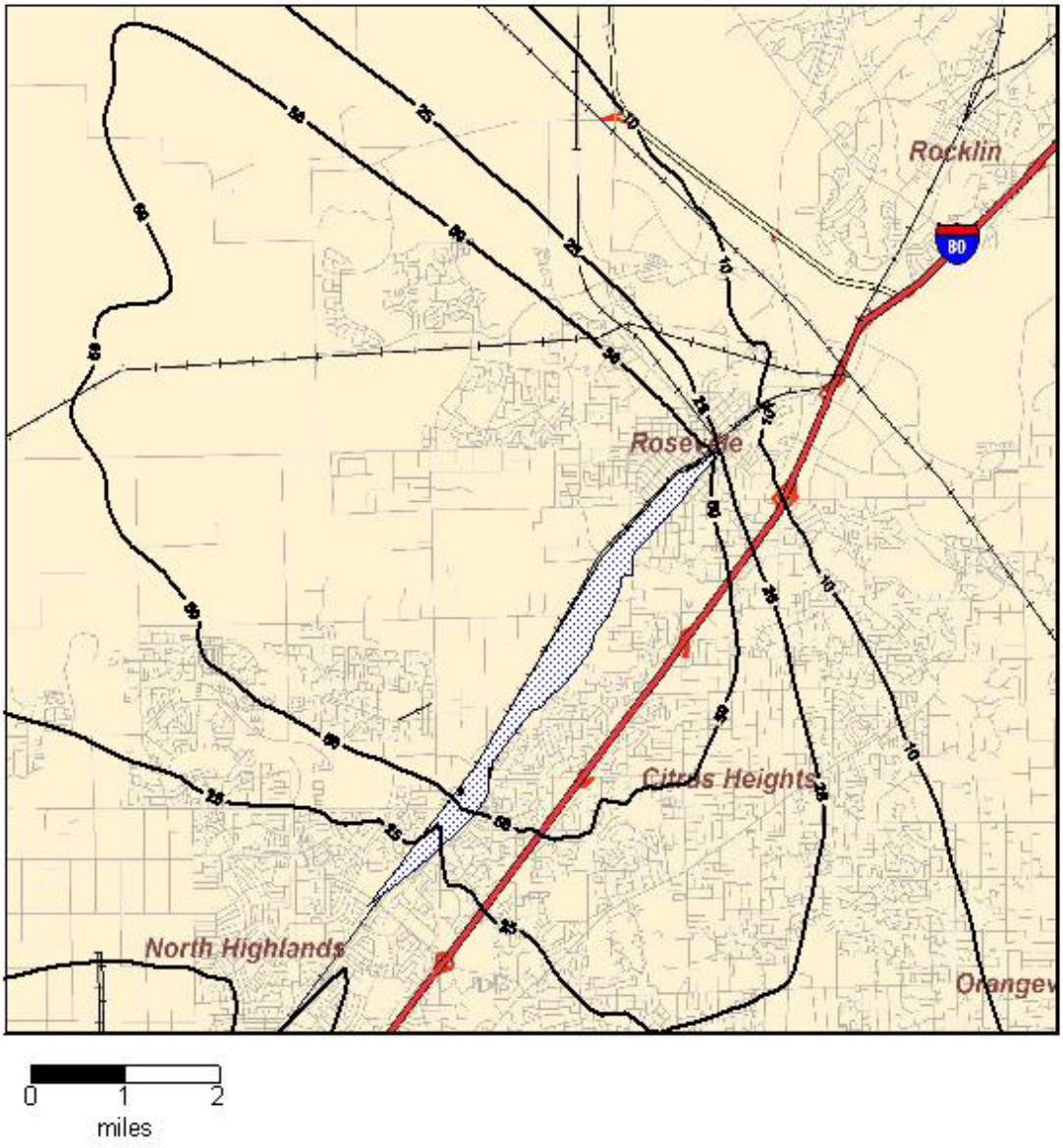
As indicated in Table AQ-28 and Table AQ-29 and Plates AQ-6 through AQ-9, diesel exhaust from the Roseville Rail Yards could result in adverse health risks to nearby sensitive receptors. The Plates are from the Roseville Rail Yard Health Risk Assessment, which unfortunately does not overlay the isopleths over the existing landscape. This makes it difficult to determine which areas within the County may be affected by the isopleths. However, the California Air Resources Board did take the data from the Roseville Rail Yard study and create some basic maps showing areas affected by the 10, 25, and 50 in a million cancer risks. These maps do not contain significant detail, but general conclusions can be drawn (Plate AQ-11 and Plate AQ-12).

Based on Roseville meteorological data, the 50 in a million isopleths includes most of Antelope, the easternmost portion of Rio Linda, and portions of Citrus Heights. The 25 in a million isopleth expands to include all of Antelope, most of Rio Linda, a portion of North Highlands, and most of Citrus Heights. The 10 in a million isopleth extends outside the map boundaries, but it seems apparent that it includes large portions of the County. The McClellan data shows a similar pattern to the south, but the northern end of the isopleths does not extend as deeply into Rio Linda. From this it can be determined that most of the growth areas of the proposed General Plan are not located within the highest risk isopleths, but that the Commercial Corridors located west of Orangevale and north of Arden Arcade, and the West of Watt New Growth Area are likely to be within the 10 in a million risk area. Developing in these areas could result in potentially significant health effects to new residents.

Plate AQ-11 Air Resources Board Roseville Met Data Rail Yard Exhibit

Estimated Cancer Risk from the Yard Using Roseville Met Data

(10, 25, and 50 in a million risk isopleths)



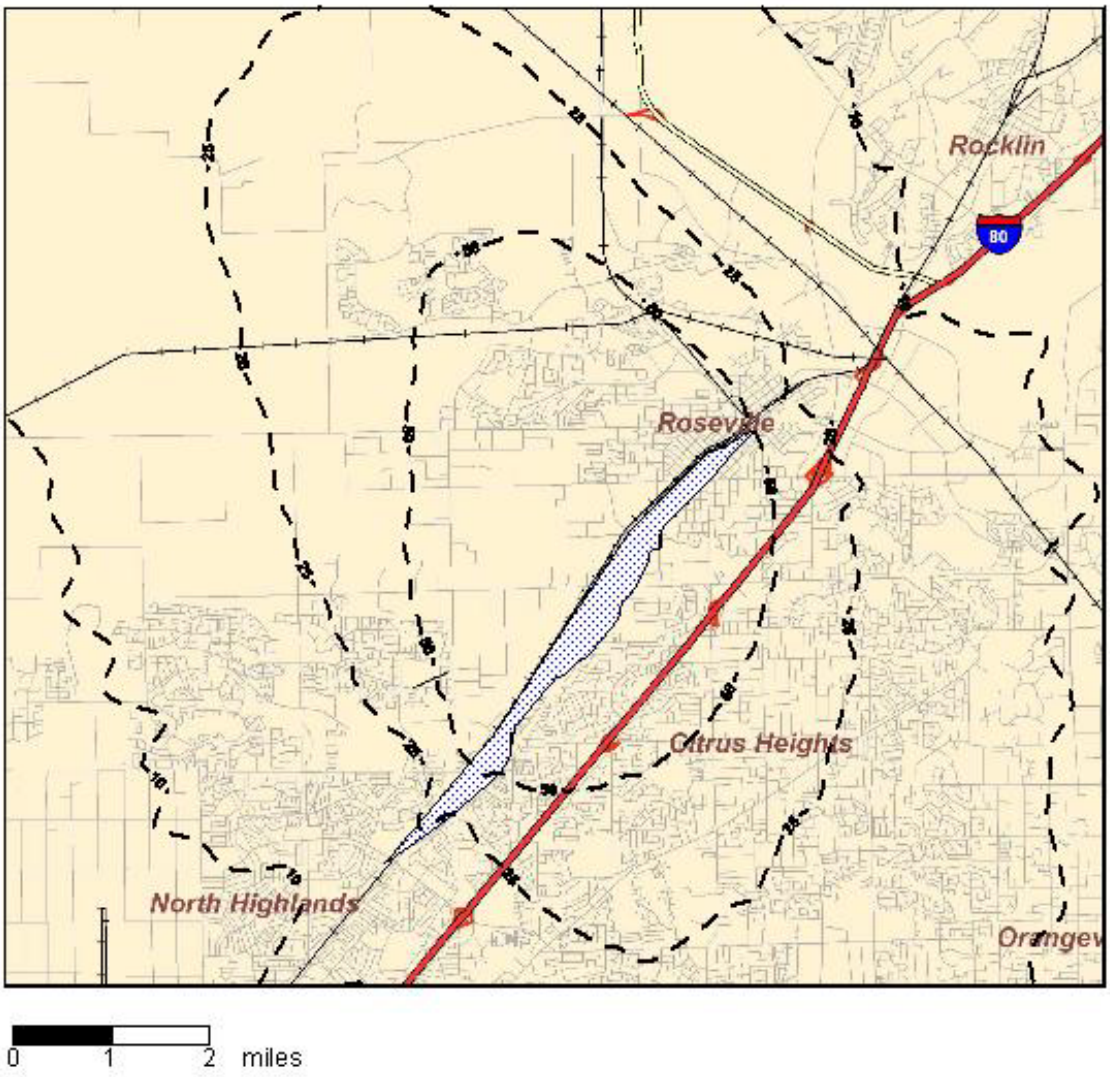
otes: Estimated Diesel PM Cancer Risk - 10, 25, & 50/million Contours (Roseville Meteorological Data, Rural Dispersion Coefficients, 80th Percentile Breathing Rate, All Locomotive's Activities [23 TPY], 70-Year Exposure)

Source: California Air Resources Board

Plate AQ-12 Air Resources Board McClellan Met Data Rail Yard Exhibit

Estimated Cancer Risk from the Yard Using McClellan Met Data

(10, 25, and 50 in a million risk isopleths)



Notes: Estimated Diesel PM Cancer Risk - 10, 25, and 50/million Contours (McClellen Met Data, Rural Dispersion Coefficients, 80th Percentile Breathing Rate, All Locomotive's Activities [23 TPY], 70-Year Exposure)

Source: California Air Resources Board

In December 2004, the Placer County Air Pollution Control District (PCAPCD) entered into a memorandum of understanding (MOU) with Union Pacific (UP). This MOU states that UP and the PCAPCD will work cooperatively to develop and implement a Mitigation Plan to reduce rail yard emissions. This MOU is in effect for three years. During this time UP has agreed to:

- Provide at least $100,000 for implementing an air monitoring program for the rail yard.
- Reduce emissions by an additional 10 percent over three years.
- Grant at least $50,000 each year during 2005, 2006 and 2007, to achieve immediate PM reductions in the Roseville area.
- Evaluate specific mitigation measures and present results to the public by April 2005. These included installing new switches, use of cleaner fuels and reducing locomotive idling.

In addition, the PCAPCD has received funding from EPA to develop a prototype for an Advanced Locomotive Emissions Control System, which could reduce diesel PM health risk of the entire rail yard by 38 percent. Development and testing of this device is underway. Further, the SMAQMD has provided the following funding assistance to the UP Rail Yards:

- The SMAQMD has provided funding to assist PCAPCD, and UP has provided in-kind contribution, to develop and test an Advanced Locomotive Emissions Control System, which once implemented, will reduce diesel emissions from the rail yard 38 percent.
- The SMAQMD has given UP $319,000 in incentive funds, which have been used to purchase 21 “Smart Start” units for rail yard switching locomotives. Instead of keeping the locomotive idling all the time in order to maintain proper air pressure to keep brakes activated, a Smart Start unit shuts off the engine and then restarts it automatically when brake pressure falls to low levels.

The SMAQMD is funding the purchase of a Gen Set Switcher locomotive for use by UP at the rail yard. This switcher uses the cleanest diesel engines available to reduce smog-forming and toxic emissions by over 80 percent compared to UP’s current fleet. Emission reductions from this project are equal to removing 2,000 light duty vehicles from the road

The same measures used to reduce pollutant exposure to roadway exhaust emissions could be used for projects in proximity to the Rail Yard. Proposed General Plan Policy AQ-3 requires that buffers be set to provide for separation between sensitive land uses and sources of pollution or odor. The policy further states that the “Air Quality and Land Use Handbook: A Community Health Perspective”, and the SMAQMD’s approved Protocol (Protocol for Evaluating the Location of Sensitive Land uses Adjacent to Major Roadways) shall be used to establish the buffer. This policy will help to reduce this impact, but not to a less-than-significant level. Consequently, this impact is considered *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

NO PROJECT ALTERNATIVE

IMPACT: TEMPORARY INCREASE IN OZONE PRECURSOR (ROG AND NO_X), CO, PARTICULATE MATTER EXHAUST, AND FUGITIVE DUST EMISSIONS DURING GRADING AND CONSTRUCTION ACTIVITIES

Under the No Project Alternative, impacts would be similar to those evaluated for the Project. The SMAQMD requires the implementation of measures to reduce construction-related emissions. These include measures to reduce NO_X and visible emissions from off-road diesel powered equipment, the preparation and submission of an off-road construction inventory, and payment of offsite mitigation offset fees if construction emissions are in excess of SMAQMD construction-threshold levels. Compliance with these required measures would reduce construction-related ozone precursor emissions to a *less-than-significant* level, but for larger projects the fugitive dust emissions will remain *significant and unavoidable*.

IMPACT: ELEVATED HEALTH RISK FROM THE EXPOSURE OF NEARBY SENSITIVE RECEPTORS TO DIESEL PARTICULATE MATTER

Under the No Project Alternative, impacts would be similar to those described for the Project. It is anticipated that construction emissions would not result in adverse health impacts due to the limited short-term nature of construction activities and the emissions reductions associated with the Air Resources' In-Use Off-Road Diesel Regulation and SMAQMD-required measures. Consequently, this impact is considered *less than significant*.

IMPACT: TEMPORARY GENERATION OF NATURALLY OCCURRING ASBESTOS DURING GRADING AND CONSTRUCTION ACTIVITIES

Under the No Project Alternative, impacts would be similar to those described for the Project. Compliance with the requirements of the Air Resources' ATCM to control exposure to asbestos from construction, grading, quarrying, and surface mining operations would offset any potential impacts resulting associated with NOA. Consequently, this impact is considered *less than significant*.

IMPACT: GENERATION OF ON-ROAD MOBILE SOURCE CRITERIA POLLUTANT EMISSIONS IN EXCESS OF SMAQMD THRESHOLDS

Table AQ-21 summarizes the results of the on-road mobile source emissions modeling, and presents emissions estimates in tons per day. The results in Table AQ-21 indicate that implementation the No Project Alternative would result in operational emissions in excess of SMAQMD threshold levels (Table AQ-5). As with the Project, even with the preparation of AQMPs on a project-level basis and the County's General Plan policies aimed at promoting smart growth, reducing vehicle trips and trip lengths, and improving air quality, it is anticipated that emissions from development anticipated under the No Project would still exceed SMAQMD threshold levels. Consequently, this impact is considered *significant and unavoidable*.

IMPACT: GENERATION OF STATIONARY, AREA, AND OFF-ROAD CRITERIA POLLUTANT EMISSIONS IN EXCESS OF SMAQMD THRESHOLDS

Table AQ-11 through Table AQ-16 summarize stationary, area, and off-road emissions for the No Project Alternative, while Table AQ-22 compares the emissions associated with the different Alternatives to 2006 existing, 2030 with Current 1993 General Plan, and 2030 No Project conditions. This analysis indicates that implementation of the No Project Alternative would result in increased emission levels for all pollutants analyzed. Consequently, this impact is considered *significant and unavoidable*.

IMPACT: EXPOSURE OF SENSITIVE RECEPTORS TO SUBSTANTIAL CONCENTRATIONS OF CARBON MONOXIDE

As indicated in Table AQ-23 through Table AQ-27, no violations of the state or federal 1- or 8-hour CO standards are anticipated in the project area under cumulative-year conditions. Due to continuing improvements in engine technology due to relatively stricter emission control standards and the retirement of older, higher-emitting vehicles, it is anticipated that vehicle emissions in future years will be lower than current years. As a result, although roadway volumes increase in future years, intersection congestion and volumes are not sufficient to result in elevated CO levels. Consequently, Table AQ-23 through Table AQ-27 indicate that future year CO concentrations will be lower than existing concentrations. Therefore, the impact of No Project Alternative traffic conditions on ambient CO levels in the project area is considered *less than significant*

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO SACRAMENTO INTERNATIONAL AIRPORT EMISSIONS

The Final Environmental Impact Report prepared for the Sacramento International Airport Master Plan (County of Sacramento 2007) evaluated health risks associated with the Sacramento International Airport's Master Plan. The Final Environmental Impact Report found that health risks ranged from 0 to 0.64 in 1 million for the maximum

exposed individual receptors analyzed (i.e., residence, school, and offsite worker). These values are below the threshold of 10 in 1 million. Consequently, this impact is considered *less than significant*.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO ROSEVILLE RAIL YARD EMISSIONS

As indicated in Table AQ-28 and Table AQ-29 and Plates AQ-7 through AQ-10, diesel exhaust from the Roseville Rail Yards could result in adverse health risks to nearby sensitive receptors. General Plan Policy AQ-3 would help to reduce this impact, but not to a less-than-significant level. Consequently, this impact is considered *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO ROADWAY EMISSIONS

Potential cancer risks from roadway emissions would vary between 13 and 121 in one million, well in excess of the threshold of 10 in one million. The SMAQMD's Protocol indicates that **the screening level for "major roadways" is** urban roadways with 100,000 ~~or less~~ ADT or rural roadways with 50,000 ~~or less~~ ADT. ~~are not anticipated to result in elevated health risks at nearby sensitive receptors~~. **Projects must be within 500 feet of a defined major roadway in order to be subject to the Protocol.** Consequently, receptors located in the vicinity of roadways with ADT in excess of these volumes could be subject to increased health risks. General Plan Policy AQ-3 would help to reduce this impact, but not to a less-than-significant level. Consequently, this impact is considered *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO OTHER EMISSION SOURCES

As discussed in the Project impact section, the Air Resources published guidance regarding the siting of new sensitive land uses (including residences) near freeways, distribution centers, ports, refineries, chrome-plating facilities, dry cleaners, gasoline stations and other common sources of TACs. The Project discussion lists sensitive land use siting recommendations from the Air Resources' Land Use Handbook. General

Plan Policy AQ-3 will ensure that all feasible measures to reduce exposure to pollutants is included, but even with this measure impacts are *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

IMPACT: TEMPORARY INCREASE IN OZONE PRECURSOR (ROG AND NO_X), CO, PARTICULATE MATTER EXHAUST, AND FUGITIVE DUST EMISSIONS DURING GRADING AND CONSTRUCTION ACTIVITIES

Under the Remove Grant Line East Alternative, impacts would be similar to those evaluated for the Project. The SMAQMD requires the implementation of measures to reduce construction-related emissions. These include measures to reduce NO_X and visible emissions from off-road diesel powered equipment, the preparation and submission of an off-road construction inventory, and payment of offsite mitigation offset fees if construction emissions are in excess of SMAQMD construction-threshold levels. Compliance with these required measures would reduce construction-related ozone precursor emissions to a *less-than-significant* level, but for larger projects the fugitive dust emissions will remain *significant and unavoidable*.

IMPACT: ELEVATED HEALTH RISK FROM THE EXPOSURE OF NEARBY SENSITIVE RECEPTORS TO DIESEL PARTICULATE MATTER

Under the Remove Grant Line East Alternative, impacts would be similar to those evaluated for the Project. It is anticipated that construction emissions would not result in adverse health impacts due to the limited short-term nature of construction activities and the emissions reductions associated with the Air Resources' In-Use Off-Road Diesel Regulation and SMAQMD-required measures. Consequently, this impact is considered *less than significant*.

IMPACT: TEMPORARY GENERATION OF NATURALLY OCCURRING ASBESTOS DURING GRADING AND CONSTRUCTION ACTIVITIES

Under the Remove Grant Line East Alternative, impacts would be similar to those evaluated for the Project. Compliance with the requirements of the Air Resources' ATCM to control exposure to asbestos from construction, grading, quarrying, and surface mining operations would offset any potential impacts resulting associated with NOA. Consequently, this impact is considered *less than significant*.

IMPACT: GENERATION OF ON-ROAD MOBILE SOURCE CRITERIA POLLUTANT EMISSIONS IN EXCESS OF SMAQMD THRESHOLDS

Table AQ-21 summarizes the results of the on-road mobile source emissions modeling, and presents emissions estimates in tons per day. The results in Table AQ-21 indicate that implementation of the Remove Grant Line East Alternative would result in operational emissions in excess of SMAQMD threshold levels (Table AQ-5). As with the Project, even with the preparation of AQMPs on a project-level basis and the County's General Plan policies aimed at promoting smart growth, reducing vehicle trips and trip lengths, and improving air quality, it is anticipated that emissions from development anticipated under the Remove Grant Line East Alternative would still exceed SMAQMD threshold levels. Consequently, this impact is considered *significant and unavoidable*.

IMPACT: GENERATION OF STATIONARY, AREA, AND OFF-ROAD CRITERIA POLLUTANT EMISSIONS IN EXCESS OF SMAQMD THRESHOLDS

Table AQ-11 through Table AQ-16 summarize stationary, area, and off-road emissions for the Remove Grant Line East Alternative, while Table AQ-22 compares the emissions associated with the different Alternatives to 2006 existing, 2030 with Current 1993 General Plan, and 2030 No Project conditions. This analysis indicates that implementation of the Remove Grant Line East Alternative would result in increased emission levels for all pollutants analyzed. Consequently, this impact is considered *significant and unavoidable*.

IMPACT: EXPOSURE OF SENSITIVE RECEPTORS TO SUBSTANTIAL CONCENTRATIONS OF CARBON MONOXIDE

As indicated in Table AQ-23 through Table AQ-27, no violations of the state or federal 1- or 8-hour CO standards are anticipated in the project area under cumulative-year conditions. Due to continuing improvements in engine technology due to relatively stricter emission control standards and the retirement of older, higher-emitting vehicles, it is anticipated that vehicle emissions in future years will be lower than current years. As a result, although roadway volumes increase in future years, intersection congestion and volumes are not sufficient to result in elevated CO levels. Consequently, Table AQ-23 through Table AQ-27 indicate that future year CO concentrations will be lower than existing concentrations. Therefore, the impact of Remove Grant Line East Alternative traffic conditions on ambient CO levels in the project area is considered *less than significant*

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO SACRAMENTO INTERNATIONAL AIRPORT EMISSIONS

The Final Environmental Impact Report prepared for the Sacramento International Airport Master Plan (County of Sacramento 2007) evaluated health risks associated with the Sacramento International Airport's Master Plan. The Final Environmental Impact Report found that health risks ranged from 0 to 0.64 in 1 million for the maximum exposed individual receptors analyzed (i.e., residence, school, and offsite worker). These values are below the threshold of 10 in 1 million. Consequently, this impact is considered *less than significant*.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO ROSEVILLE RAIL YARD EMISSIONS

As indicated in Table AQ-28 and Table AQ-29 and Plates 1-7 through 1-10, diesel exhaust from the Roseville Rail Yards could result in adverse health risks to nearby sensitive receptors. General Plan Policy AQ-3 would help to reduce this impact, but not to a less-than-significant level. Consequently, this impact is considered *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO ROADWAY EMISSIONS

Potential cancer risks from roadway emissions would vary between 13 and 121 in one million, well in excess of the threshold of 10 in one million. The SMAQMD's Protocol indicates that **the screening level for "major roadways" is** urban roadways with 100,000 ~~or less~~ ADT or rural roadways with 50,000 ~~or less~~ ADT. ~~are not anticipated to result in elevated health risks at nearby sensitive receptors~~. **Projects must be within 500 feet of a defined major roadway in order to be subject to the Protocol.** Consequently, receptors located in the vicinity of roadways with ADT in excess of these volumes could be subject to increased health risks. General Plan Policy AQ-3 would help to reduce this impact, but not to a less-than-significant level. Consequently, this impact is considered *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO OTHER EMISSION SOURCES

As discussed in the Project impact section, the Air Resources published guidance regarding the siting of new sensitive land uses (including residences) near freeways, distribution centers, ports, refineries, chrome-plating facilities, dry cleaners, gasoline stations and other common sources of TACs. The Project discussion lists sensitive land use siting recommendations from the Air Resources' Land Use Handbook. General Plan Policy AQ-3 will ensure that all feasible measures to reduce exposure to pollutants is included, but even with this measure impacts are *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

ALTERNATIVE 2: FOCUSED GROWTH

IMPACT: TEMPORARY INCREASE IN OZONE PRECURSOR (ROG AND NO_X), CO, PARTICULATE MATTER EXHAUST, AND FUGITIVE DUST EMISSIONS DURING GRADING AND CONSTRUCTION ACTIVITIES

Under the Focused Growth Alternative, impacts would be similar to those evaluated for the Project. The SMAQMD requires the implementation of measures to reduce construction-related emissions. These include measures to reduce NO_X and visible emissions from off-road diesel powered equipment, the preparation and submission of an off-road construction inventory, and payment of offsite mitigation offset fees if construction emissions are in excess of SMAQMD construction-threshold levels. Compliance with these required measures would reduce construction-related ozone precursor emissions to a *less-than-significant* level, but for larger projects the fugitive dust emissions will remain *significant and unavoidable*.

IMPACT: ELEVATED HEALTH RISK FROM THE EXPOSURE OF NEARBY SENSITIVE RECEPTORS TO DIESEL PARTICULATE MATTER

Under the Focused Growth Alternative, impacts would be similar to those evaluated for the Project. It is anticipated that construction emissions would not result in adverse health impacts due to the limited short-term nature of construction activities and the emissions reductions associated with the Air Resources' In-Use Off-Road Diesel Regulation and SMAQMD-required measures. Consequently, this impact is considered *less than significant*.

IMPACT: TEMPORARY GENERATION OF NATURALLY OCCURRING ASBESTOS DURING GRADING AND CONSTRUCTION ACTIVITIES

Under the Focused Growth Alternative, impacts would be similar to those evaluated for the Project. Compliance with the requirements of the Air Resources' ATCM to control exposure to asbestos from construction, grading, quarrying, and surface mining operations would offset any potential impacts resulting associated with NOA. Consequently, this impact is considered *less than significant*.

IMPACT: GENERATION OF ON-ROAD MOBILE SOURCE CRITERIA POLLUTANT EMISSIONS IN EXCESS OF SMAQMD THRESHOLDS

Table AQ-21 summarizes the results of the on-road mobile source emissions modeling, and presents emissions estimates in tons per day. The results in Table AQ-21 indicate that implementation the Focused Growth Alternative would result in operational emissions in excess of SMAQMD threshold levels (Table AQ-5). As with the Project, even with the preparation of AQMPs on a project-level basis and the County's General Plan policies aimed at promoting smart growth, reducing vehicle trips and trip lengths, and improving air quality, it is anticipated that emissions from development anticipated under the Focused Growth Alternative would still exceed SMAQMD threshold levels. Consequently, this impact is considered *significant and unavoidable*.

IMPACT: GENERATION OF STATIONARY, AREA, AND OFF-ROAD CRITERIA POLLUTANT EMISSIONS IN EXCESS OF SMAQMD THRESHOLDS

Table AQ-11 through Table AQ-16 summarize stationary, area, and off-road emissions for the Focused Growth Alternative, while Table AQ-22 compares the emissions associated with the different Alternatives to 2006 existing, 2030 with Current 1993 General Plan, and 2030 No Project conditions. This analysis indicates that implementation of the Focused Growth Alternative would result in increased emission levels for all pollutants analyzed. Consequently, this impact is considered *significant and unavoidable*.

IMPACT: EXPOSURE OF SENSITIVE RECEPTORS TO SUBSTANTIAL CONCENTRATIONS OF CARBON MONOXIDE

As indicated in Table AQ-23 through Table AQ-27, no violations of the state or federal 1- or 8-hour CO standards are anticipated in the project area under cumulative-year conditions. Due to continuing improvements in engine technology due to relatively stricter emission control standards and the retirement of older, higher-emitting vehicles, it is anticipated that vehicle emissions in future years will be lower than current years. As a result, although roadway volumes increase in future years, intersection congestion and volumes are not sufficient to result in elevated CO levels. Consequently, Table AQ-23 through Table AQ-27 indicate that future year CO concentrations will be lower

than existing concentrations. Therefore, the impact of Focused Growth Alternative traffic conditions on ambient CO levels in the project area is considered *less than significant.*

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO SACRAMENTO INTERNATIONAL AIRPORT EMISSIONS

The Final Environmental Impact Report prepared for the Sacramento International Airport Master Plan (County of Sacramento 2007) evaluated health risks associated with the Sacramento International Airport's Master Plan. The Final Environmental Impact Report found that health risks ranged from 0 to 0.64 in 1 million for the maximum exposed individual receptors analyzed (i.e., residence, school, and offsite worker). These values are below the threshold of 10 in 1 million. Consequently, this impact is considered *less than significant*.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO ROSEVILLE RAIL YARD EMISSIONS

As indicated in Table AQ-28 and Table AQ-29 and Plates AQ-7 through AQ-10, diesel exhaust from the Roseville Rail Yards could result in adverse health risks to nearby sensitive receptors. General Plan Policy AQ-3 would help to reduce this impact, but not to a less-than-significant level. Consequently, this impact is considered *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO ROADWAY EMISSIONS

Potential cancer risks from roadway emissions would vary between 13 and 121 in one million, well in excess of the threshold of 10 in one million. The SMAQMD's Protocol indicates that **the screening level for "major roadways" is** urban roadways with 100,000 ~~or less~~ ADT or rural roadways with 50,000 ~~or less~~ ADT. ~~are not anticipated to result in elevated health risks at nearby sensitive receptors~~. **Projects must be within 500 feet of a defined major roadway in order to be subject to the Protocol.** Consequently, receptors located in the vicinity of roadways with ADT in excess of these volumes could be subject to increased health risks. General Plan Policy AQ-3 would help to reduce this impact, but not to a less-than-significant level. Consequently, this impact is considered *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO OTHER EMISSION SOURCES

As discussed in the Project impact section, the Air Resources published guidance regarding the siting of new sensitive land uses (including residences) near freeways, distribution centers, ports, refineries, chrome-plating facilities, dry cleaners, gasoline stations and other common sources of TACs. The Project discussion lists sensitive land use siting recommendations from the Air Resources' Land Use Handbook. General Plan Policy AQ-3 will ensure that all feasible measures to reduce exposure to pollutants is included, but even with this measure impacts are *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

ALTERNATIVE 3: MIXED USE

IMPACT: TEMPORARY INCREASE IN OZONE PRECURSOR (ROG AND NO_X), CO, PARTICULATE MATTER EXHAUST, AND FUGITIVE DUST EMISSIONS DURING GRADING AND CONSTRUCTION ACTIVITIES

Under the Mixed Use Alternative, impacts would be similar to those evaluated for the Project. The SMAQMD requires the implementation of measures to reduce construction-related emissions. These include measures to reduce NO_X and visible emissions from off-road diesel powered equipment, the preparation and submission of an off-road construction inventory, and payment of offsite mitigation offset fees if construction emissions are in excess of SMAQMD construction-threshold levels. Compliance with these required measures would reduce construction-related ozone precursor emissions to a *less-than-significant* level, but for larger projects the fugitive dust emissions will remain *significant and unavoidable*.

IMPACT: ELEVATED HEALTH RISK FROM THE EXPOSURE OF NEARBY SENSITIVE RECEPTORS TO DIESEL PARTICULATE MATTER

Under the Mixed Use Alternative, impacts would be similar to those evaluated for the Project. It is anticipated that construction emissions would not result in adverse health impacts due to the limited short-term nature of construction activities and the emissions reductions associated with the Air Resources' In-Use Off-Road Diesel Regulation and

SMAQMD-required measures. Consequently, this impact is considered *less than significant*.

IMPACT: TEMPORARY GENERATION OF NATURALLY OCCURRING ASBESTOS DURING GRADING AND CONSTRUCTION ACTIVITIES

Under the Mixed Use Alternative, impacts would be similar to those evaluated for the Project. Compliance with the requirements of the Air Resources' ATCM to control exposure to asbestos from construction, grading, quarrying, and surface mining operations would offset any potential impacts resulting associated with NOA. Consequently, this impact is considered *less than significant*.

IMPACT: GENERATION OF ON-ROAD MOBILE SOURCE CRITERIA POLLUTANT EMISSIONS IN EXCESS OF SMAQMD THRESHOLDS

Table AQ-21 summarizes the results of the on-road mobile source emissions modeling, and presents emissions estimates in tons per day. The results in Table AQ-21 indicate that implementation of the Mixed Use Alternative would result in operational emissions in excess of SMAQMD threshold levels (Table AQ-5). As with the Project, even with the preparation of AQMPs on a project-level basis and the County's General Plan policies aimed at promoting smart growth, reducing vehicle trips and trip lengths, and improving air quality, it is anticipated that emissions from development anticipated under the Mixed Use Alternative would still exceed SMAQMD threshold levels. Consequently, this impact is considered *significant and unavoidable*.

IMPACT: GENERATION OF STATIONARY, AREA, AND OFF-ROAD CRITERIA POLLUTANT EMISSIONS IN EXCESS OF SMAQMD THRESHOLDS

Table AQ-11 through Table AQ-16 summarize stationary, area, and off-road emissions for the Mixed Use Alternative, while Table AQ-22 compares the emissions associated with the different Alternatives to 2006 existing, 2030 with Current 1993 General Plan, and 2030 No Project conditions. This analysis indicates that implementation of the Mixed Use Alternative would result in increased emission levels for all pollutants analyzed. Consequently, this impact is considered *significant and unavoidable*.

IMPACT: EXPOSURE OF SENSITIVE RECEPTORS TO SUBSTANTIAL CONCENTRATIONS OF CARBON MONOXIDE

As indicated in Table AQ-23 through Table AQ-27, no violations of the state or federal 1- or 8-hour CO standards are anticipated in the project area under cumulative-year conditions. Due to continuing improvements in engine technology due to relatively stricter emission control standards and the retirement of older, higher-emitting vehicles, it is anticipated that vehicle emissions in future years will be lower than current years.

As a result, although roadway volumes increase in future years, intersection congestion and volumes are not sufficient to result in elevated CO levels. Consequently, Table AQ-23 through Table AQ-27 indicate that future year CO concentrations will be lower than existing concentrations. Therefore, the impact of Mixed Use Alternative traffic conditions on ambient CO levels in the project area is considered *less than significant*

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO SACRAMENTO INTERNATIONAL AIRPORT EMISSIONS

The Final Environmental Impact Report prepared for the Sacramento International Airport Master Plan (County of Sacramento 2007) evaluated health risks associated with the Sacramento International Airport's Master Plan. The Final Environmental Impact Report found that health risks ranged from 0 to 0.64 in 1 million for the maximum exposed individual receptors analyzed (i.e., residence, school, and offsite worker). These values are below the threshold of 10 in 1 million. Consequently, this impact is considered *less than significant*.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO ROSEVILLE RAIL YARD EMISSIONS

As indicated in Table AQ-28 and Table AQ-29 and Plates AQ-7 through AQ-10, diesel exhaust from the Roseville Rail Yards could result in adverse health risks to nearby sensitive receptors. General Plan Policy AQ-3 would help to reduce this impact, but not to a less-than-significant level. Consequently, this impact is considered *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO ROADWAY EMISSIONS

Potential cancer risks from roadway emissions would vary between 13 and 121 in one million, well in excess of the threshold of 10 in one million. The SMAQMD's Protocol indicates that **the screening level for "major roadways" is** urban roadways with 100,000 ~~or less~~ ADT or rural roadways with 50,000 ~~or less~~ ADT. ~~are not anticipated to result in elevated health risks at nearby sensitive receptors~~. **Projects must be within 500 feet of a defined major roadway in order to be subject to the Protocol.** Consequently, receptors located in the vicinity of roadways with ADT in excess of these volumes could be subject to increased health risks. General Plan Policy AQ-3 would help to reduce this impact, but not to a less-than-significant level. Consequently, this impact is considered *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO OTHER EMISSION SOURCES

As discussed in the Project impact section, the Air Resources published guidance regarding the siting of new sensitive land uses (including residences) near freeways, distribution centers, ports, refineries, chrome-plating facilities, dry cleaners, gasoline stations and other common sources of TACs. The Project discussion lists sensitive land use siting recommendations from the Air Resources' Land Use Handbook. General Plan Policy AQ-3 will ensure that all feasible measures to reduce exposure to pollutants is included, but even with this measure impacts are *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

ARTERIAL DOWNGRADE AND THOROUGHFARE DOWNGRADE

IMPACT: TEMPORARY INCREASE IN OZONE PRECURSOR (ROG AND NO_X), CO, PARTICULATE MATTER EXHAUST, AND FUGITIVE DUST EMISSIONS DURING GRADING AND CONSTRUCTION ACTIVITIES

Under the Arterial Downgrade and Thoroughfare Downgrade Project Alternatives, impacts would be similar to those evaluated for the Project. The SMAQMD requires the implementation of measures to reduce construction-related emissions. These include measures to reduce NO_X and visible emissions from off-road diesel powered equipment, the preparation and submission of an off-road construction inventory, and payment of offsite mitigation offset fees if construction emissions are in excess of SMAQMD construction-threshold levels. Compliance with these required measures would reduce construction-related ozone precursor emissions to a *less-than-significant* level, but for larger projects the fugitive dust emissions will remain *significant and unavoidable*.

IMPACT: ELEVATED HEALTH RISK FROM THE EXPOSURE OF NEARBY SENSITIVE RECEPTORS TO DIESEL PARTICULATE MATTER

Under the Arterial Downgrade and Thoroughfare Downgrade Project Alternatives, impacts would be similar to those evaluated for the Project. It is anticipated that construction emissions would not result in adverse health impacts due to the limited

short-term nature of construction activities and the emissions reductions associated with the Air Resources' In-Use Off-Road Diesel Regulation and SMAQMD-required measures. Consequently, this impact is considered *less than significant*.

IMPACT: TEMPORARY GENERATION OF NATURALLY OCCURRING ASBESTOS DURING GRADING AND CONSTRUCTION ACTIVITIES

Under the Arterial Downgrade and Thoroughfare Downgrade Project Alternatives, impacts would be similar to those evaluated above. Compliance with the requirements of the Air Resources' ATCM to control exposure to asbestos from construction, grading, quarrying, and surface mining operations would offset any potential impacts resulting associated with NOA. Consequently, this impact is considered *less than significant*.

IMPACT: GENERATION OF ON-ROAD MOBILE SOURCE CRITERIA POLLUTANT EMISSIONS IN EXCESS OF SMAQMD THRESHOLDS

Table AQ-21 summarizes the results of the on-road mobile source emissions modeling, and presents emissions estimates in tons per day. The results in Table AQ-21 indicate that implementation of either the Arterial Downgrade or Thoroughfare Downgrade Project Alternatives would result in operational emissions in excess of SMAQMD threshold levels (Table AQ-5). As with the Project, even with the preparation of AQMPs on a project-level basis and the County's General Plan policies aimed at promoting smart growth, reducing vehicle trips and trip lengths, and improving air quality, it is anticipated that emissions from development anticipated under the Project would still exceed SMAQMD threshold levels. Consequently, this impact is considered *significant and unavoidable*.

IMPACT: GENERATION OF STATIONARY, AREA, AND OFF-ROAD CRITERIA POLLUTANT EMISSIONS IN EXCESS OF SMAQMD THRESHOLDS

Table AQ-11 through Table AQ-16 summarize stationary, area, and off-road emissions for the Arterial Downgrade or Thoroughfare Downgrade Project Alternatives, while Table AQ-22 compares the emissions associated with the different Alternatives to 2006 existing, 2030 with Current 1993 General Plan, and 2030 No Project conditions. This analysis indicates that implementation of either the Arterial Downgrade or Thoroughfare Downgrade Project Alternative would result in increased emission levels for all pollutants analyzed, when compared to the 2030 with Current 1993 General Plan and 2030 No Project conditions. Consequently, this impact is considered *significant and unavoidable*.

IMPACT: EXPOSURE OF SENSITIVE RECEPTORS TO SUBSTANTIAL CONCENTRATIONS OF CARBON MONOXIDE

As indicated in Table AQ-23 through Table AQ-27, no violations of the state or federal 1- or 8-hour CO standards are anticipated in the he Arterial Downgrade or Thoroughfare Downgrade Project Alternatives area under cumulative-year conditions. Due to continuing improvements in engine technology due to relatively stricter emission control standards and the retirement of older, higher-emitting vehicles, it is anticipated that vehicle emissions in future years will be lower than current years. As a result, although roadway volumes increase in future years, intersection congestion and volumes are not sufficient to result in elevated CO levels. Consequently, Table AQ-23 through Table AQ-27 indicate that future year CO concentrations will be lower than existing concentrations. Therefore, the impact of the Arterial Downgrade or Thoroughfare Downgrade Project Alternatives traffic conditions on ambient CO levels in the project area is considered *less than significant*

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO SACRAMENTO INTERNATIONAL AIRPORT EMISSIONS

The Final Environmental Impact Report prepared for the Sacramento International Airport Master Plan (County of Sacramento 2007) evaluated health risks associated with the Sacramento International Airport's Master Plan. The Final Environmental Impact Report found that health risks ranged from 0 to 0.64 in 1 million for the maximum exposed individual receptors analyzed (i.e., residence, school, and offsite worker). These values are below the threshold of 10 in 1 million. Consequently, this impact is considered *less than significant*.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO ROSEVILLE RAIL YARD EMISSIONS

As indicated in Table AQ-28 and Table AQ-29 and Plates AQ-7 through AQ-10, diesel exhaust from the Roseville Rail Yards could result in adverse health risks to nearby sensitive receptors. General Plan Policy AQ-3 would help to reduce this impact, but not to a less-than-significant level. Consequently, this impact is considered *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO ROADWAY EMISSIONS

Potential cancer risks from roadway emissions would vary between 13 and 121 in one million, well in excess of the threshold of 10 in one million. The SMAQMD's Protocol indicates that **the screening level for "major roadways" is** urban roadways with 100,000 ~~or less~~ ADT or rural roadways with 50,000 ~~or less~~ ADT. ~~are not anticipated to result in elevated health risks at nearby sensitive receptors~~. **Projects must be within 500 feet of a defined major roadway in order to be subject to the Protocol.** Consequently, receptors located in the vicinity of roadways with ADT in excess of these volumes could be subject to increased health risks. General Plan Policy AQ-3 would help to reduce this impact, but not to a less-than-significant level. Consequently, this impact is considered *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

IMPACT: ELEVATED HEALTH RISKS FROM EXPOSURE OF SENSITIVE RECEPTORS TO OTHER EMISSION SOURCES

As discussed in the Project impact section, the Air Resources published guidance regarding the siting of new sensitive land uses (including residences) near freeways, distribution centers, ports, refineries, chrome-plating facilities, dry cleaners, gasoline stations and other common sources of TACs. The Project discussion lists sensitive land use siting recommendations from the Air Resources' Land Use Handbook. General Plan Policy AQ-3 will ensure that all feasible measures to reduce exposure to pollutants is included, but even with this measure impacts are *significant and unavoidable*.

MITIGATION MEASURES:

Refer to General Plan Policy AQ-3.

12 CLIMATE CHANGE

INTRODUCTION TO CLIMATE CHANGE AND GLOBAL WARMING

The average surface temperature of the Earth has risen by about 1 degree Fahrenheit in the past century, with most of that occurring during the past two decades (World Meteorological Organization, 2005). To the layperson, this apparently small amount of warming may appear insignificant. Correspondingly, the probable increases in average temperatures of between 3 to 8 degrees Fahrenheit (Cayan, et al., 2006) may appear noticeable, but still insignificant. The word *average* is of critical importance to understanding climate change and global warming. In July, the average high temperature in Sacramento is 94 degrees Fahrenheit (The Weather Channel website, 2007). This number is created by averaging temperatures over decades, not just for one particular year. Although the average is 94 degrees Fahrenheit, residents know that the individual days and weeks making up that average are as much as 20 degrees warmer or cooler in the extreme cases and up to 10 degrees warmer or cooler on a more regular basis. Therefore, applying an average increase of 8 degrees in a strictly linear way (omitting forcing effects) would mean that the *average* July temperature in Sacramento would be 102 degrees, and that temperatures could get as hot as 122 degrees in an extreme event (the current record is 114) and could regularly reach 112 degrees. This kind of temperature shift would have significant consequences to citizens and the environment alike.

There is evidence that most of the warming over the last 50 years is due to human activities. Human activities, such as energy production and internal combustion vehicles, have increased the amount of greenhouse gases in the atmosphere, which in turn is causing the Earth's average temperature to rise. Rises in average temperature are leading to changes in climate patterns, shrinking polar ice caps and a rise in sea level, with a host of corresponding impacts to humans and ecosystems.

Greenhouse gases are atmospheric gases that act as global insulators by reflecting visible light and infrared radiation back to Earth. Some greenhouse gases, such as water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), occur naturally and are emitted to the atmosphere through natural processes. Although CO_2, CH_4, and N_2O occur naturally in the atmosphere, human activities have changed their atmospheric concentrations. From 1750 to 2004, concentrations of CO_2, CH_4, and N_2O have increased globally by 35, 143, and 18 percent, respectively. Other greenhouse gases, such as fluorinated gases, are created and emitted solely through human activities. (EPA 2006)

The principal greenhouse gases that enter the atmosphere because of human activities are CO_2, CH_4, N_2O, and fluorinated gases. Carbon dioxide, or CO_2, is the gas that is most commonly referenced when discussing climate change because it is the most commonly emitted gas. While some of the less common gases do make up less of the

total greenhouse gases emitted to the atmosphere, some have a greater climate-forcing effect per molecule and/or are more toxic than carbon dioxide.

"In order to stabilize the concentration of GHGs in the atmosphere, emissions would need to peak and decline thereafter. The lower the stabilization level, the more quickly this peak and decline would need to occur. Mitigation efforts over the next two to three decades will have a large impact on opportunities to achieve lower stabilization levels." (IPCC 2007c)

CARBON DIOXIDE

The natural production and absorption of carbon dioxide (CO_2) is achieved through the terrestrial biosphere and the ocean. However, humankind has altered the natural carbon cycle by burning coal, oil, natural gas, and wood. Since the industrial revolution began in the mid-1700s, each of these activities has increased in scale and distribution. Carbon dioxide was the first greenhouse gas demonstrated to be increasing in atmospheric concentration, with the first conclusive measurements being made in the last half of the 20th Century. Prior to the industrial revolution, concentrations were fairly stable at 280 ppm. Today, they are around 370 ppm, an increase of well over 30% (EPA 2006). Left unchecked, the concentration of carbon dioxide in the atmosphere is projected to increase to a minimum of 535 ppm by 2100 as a direct result of anthropogenic sources (IPCC 2007a). This could result in an average global temperature rise of at least two degrees Celsius (IPCC 2007a).

Carbon dioxide emissions are mainly associated with combustion of carbon-bearing fossil fuels such as gasoline, diesel, and natural gas used in mobile sources and energy-generation-related activities. The U.S. EPA estimates that CO_2 emissions accounted for 84.6% of greenhouse gas emissions in the United States in 2004. (EPA 2006) The California Energy Commission (CEC) estimates that CO_2 emissions account for 84% of California's anthropogenic (manmade) greenhouse gas emissions, nearly all of which is associated with fossil fuel combustion. (CEC 2005) Total CO_2 emissions in the United States increased by 20% from 1990 to 2004. (EPA 2006)

METHANE

Methane (CH_4) is an extremely effective absorber of radiation, though its atmospheric concentration is less than carbon dioxide and its lifetime in the atmosphere is brief (10-12 years), compared to some other greenhouse gases (such as CO_2, N_2O, and CFCs). CH_4 has both natural and anthropogenic sources. Landfills, natural gas distribution systems, agricultural activities, fireplaces and wood stoves, stationary and mobile fuel combustion, and gas and oil production fields categories are the major sources of these emissions. (EPA 2006)

The U.S. EPA estimates that CH_4 emissions accounted for 7.9% of total greenhouse gas emissions in the United States in 2004 (EPA 2006). The CEC estimates that in CH_4 emissions from various sources represent 6.2% of California's total greenhouse gas

emissions (CEC 2005). Total CH_4 emissions in the United States decreased by 10% from 1990 to 2004 (EPA 2006).

NITROUS OXIDE

Concentrations of nitrous oxide (N_2O) also began to rise at the beginning of the industrial revolution. N_2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizers that contain nitrogen. Use of these fertilizers has increased over the last century. Global concentration for N_2O in 1998 was 314 ppb, and in addition to agricultural sources for the gas, some industrial processes (fossil fuel fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. (EPA 2006)

The U.S. EPA estimates that N_2O emissions accounted for 5.5% of total greenhouse gas emissions in the United States in 2004 (EPA 2006). The CEC estimates that nitrous oxide emissions from various sources represent 6.6% of California's total greenhouse gas emissions (CEC 2005). Total N_2O emissions in the United States decreased by 2% from 1990 to 2004. (EPA 2006.)

FLUORINATED GASES (HFCS, PFCS, AND SF_6)

Fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfurhexafluoride (SF_6), are powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are occasionally used as substitutes for ozone-depleting substances such as chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and halons, which have been regulated since the mid-1980s because of their ozone destroying potential. Fluorinated gases are typically emitted in smaller quantities than CO_2, CH_4, and N_2O, but each molecule can have a much greater global warming effect. Therefore, fluorinated gases are sometimes referred to as High Global Warming Potential (GWP) gases. (EPA 2006)

The primary sources of fluorinated gas emissions in the United States include the production of HCFC-22 production, electrical transmission and distribution systems, semiconductor manufacturing, aluminum production, magnesium production and processing, and substitution for ozone-depleting substances. The U.S. EPA estimates that fluorinated gas (HFC, PFC, and SF_6) emissions accounted for 2.0% of total greenhouse gas emissions in the United States in 2004. (EPA 2006) The CEC estimates that fluorinated gas emissions from various sources represent 3.4% of California's total greenhouse gas emissions. (CEC 2005) Total fluorinated gas emissions in the United States increased by 58% from 1990 to 2004. (EPA 2006)

WORLDWIDE, NATIONAL AND STATEWIDE EMISSIONS

Table CC-1 presents estimated GHG emissions from California, the United States, and from worldwide sources. The results are presented in units of million metric tons per

year of CO_2 equivalents (MMTCO2Eq). Worldwide GHG emissions were taken from the World Resources Institute's Climate Analysis Indicators Tool (CAIT) version 4 for calendar year 2000 (the latest year for which complete data are available). The United States GHG emissions were taken from Energy Information Administration's Emissions of Greenhouse Gases in the United States 2004. While data for 2005 are available, 2004 data were used because the California data are for 2004. California GHG emissions were taken from the California Energy Commission's Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004 (the latest year for which complete data are available).

Table CC-1
Greenhouse Gases Emissions Worldwide, United States, and California

Geographic Region	CO_2	CH_4	N_2O
	$MMTCO_2Eq$[a]	$MMTCO_2Eq$[b]	$MMTCO_2Eq$[c]
Worldwide GHG Emissions for calendar year 2000[1]	32,541.3	5,854.9	3,349.4
United States GHG Emissions for calendar year 2004[2]	5,973.0	639.5	353.7
California GHG Emissions for calendar year 2004[3]	427.4	27.9	33.3

Notes:

[a]$MMTCO_2Eq$ means million metric tons per year of CO_2 equivalent, using Global Warming Potential (GWP) values provided by IPCC in its Fourth Assessment Report (TAR) (IPCC 2007a). The GWP for CO_2 is 1.

[b]The GWP from IPCC's TAR for CH_4 is 21.

[c]The GWP from IPCC's TAR for N_2O is 310.

CO_2 = carbon dioxide; N_2O = Nitrous oxide; CH_4 = Methane.

[1]Worldwide GHG emissions taken from Climate Analysis Indicators Tool (CAIT) version 4.0. Washington, DC: World Resources Institute, 2007. Available at http://cait.wri.org.

[2]United States GHG emissions taken from *Emissions of Greenhouse Gases in the United States 2004*, Energy Information Administration, U.S. Department of Energy, Washington, DC, December 2005.

[3]California GHG emissions taken from *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004*, California Air Resources Board, November 2007.

California Emissions of Greenhouse Gases

Worldwide, California is estimated to be the 12th to 16th largest emitter of CO_2 (California Energy Commission 2006) and is responsible for approximately 2 percent of the world's CO_2 emissions (California Energy Commission 2006).

The California Energy Commission's Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004 estimates that California is the second largest emitter of GHG emissions of the United States (only Texas emits more GHG). The CEC estimates that in 2004, California's gross GHG emissions were 492 million metric tons (MMT) of CO_2 equivalent (CO_2e). The transportation sector produced approximately 41 percent of

California's GHG emissions in 2004. Electric power production accounted for approximately 22 percent of emissions (including estimated emissions from out-of-state coal-fired power plants), the industrial sector contributed 21 percent of the total; agriculture and forestry contributed 8 percent, and other sectors contributed 8 percent (California Energy Commission 2006).

Transportation is responsible for 41 percent of the state's GHG emissions, followed by the industrial sector (23%), electricity generation (20%), agriculture and forestry (8%) and other sources (8%). California GHG emissions in 2004 (exclusive of land use changes and forestry) totaled approximately 484 MMT of CO_2e (California Air Resources Board 2007).

EMISSIONS THRESHOLDS

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of carbon dioxide needed to stabilize global temperatures and climate change impacts. It concluded that a stabilization of greenhouse gases at 400 – 450 ppm carbon dioxide-equivalent concentration is required to keep global mean warming below 2°C, which in turn is assumed to be necessary to avoid dangerous climate change (IPCC 2007a). The California Climate Change Center (CCCC) at UC Berkeley has determined that an 11 percent reduction of greenhouse gases from present levels is required by year 2010, a 25 percent reduction is required by 2020, and an 80 reduction by 2050 in order to stabilize greenhouse gases at 400 – 450 ppm carbon dioxide-equivalent concentrations and avoid potentially dangerous climate change impacts (CCCC 2006). The California Legislature required these reduction levels by enacting AB 32.

Though reduction rates were established in California law (AB 32), as of the writing of this document there are no established CEQA thresholds for greenhouse gases. AB 32 requires ARB to adopt a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions levels in 1990 to be achieved by 2020, as specified.

AB 1493 – GREENHOUSE GAS EMISSION STANDARDS FOR AUTOMOBILES

California Assembly Bill (AB) 1493 in 2002 required the California Air Resources Board (CARB) to develop and adopt the nation's first 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 reduction in the state's water supply, increased air pollution creation by higher temperatures, harm to agriculture, and 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 economy and provide jobs.

The State of California in 2004 submitted a request for a waiver from federal clean air regulations (as the State is authorized to do under the Clean Air Act) to allow the State to require reduced tailpipe emissions of CO_2. In late 2007, the EPA denied California's waiver request and declined to promulgate adequate federal regulations limiting GHG emissions. In early 2008, the State brought suit against EPA related to this denial.

A recent CARB study (CARB 2008a) showed that in calendar year 2016, AB 1493 (also referred to as the Pavley standard or the Pavley rules) would reduce California's GHG annual emissions by 16.4 million metric tons (MMT) of carbon dioxide equivalents (CO_2e). This is almost 50% more than the 11.1 MMT reduction produced by currently proposed federal fleet average standards for model years 2011 – 2015.

Further, by 2020, California is committed to implement revised, more stringent GHG emission limits, the Pavley Phase 2 rules (See discussion of scoping plan below). California's requirements would reduce California GHG emissions by 31.7 $MMTCO_2e$ in calendar year 2020, 45 percent more than the 21.9 MMTs reductions under the proposed federal rules in that year. Since the California rules are significantly more effective at reducing GHGs than the federal CAFE (fuel economy) program, they also result in better fuel efficiency – roughly 43 miles per gallon (mpg) in 2020 for the California vehicle fleet as compared to the new CAFE standard of 35 mpg.

EXECUTIVE ORDER S-3-05

Executive Order S-3-05 was the precursor to Assembly Bill 32 (AB 32 is described in the next section) and was signed by Governor Schwarzenegger in June 2005. This Executive Order was significant because of its clear declarative statements that climate change poses a threat to the State of California. The Executive Order states that California is "particularly vulnerable" to the impacts of climate change, and that climate change has the potential to reduce Sierra snowpack (a primary source of drinking water), exacerbate existing air quality problems, adversely impact human health, threaten coastal real estate and habitat by causing sea level rise, and impact crop production. The Executive Order also states that "mitigation efforts will be necessary to reduce greenhouse gas emissions".

To address the issues described above, the Executive Order established emission reduction targets for the state: reduce GHG emissions to 2000 levels by 2010, to 1990 levels by 2020 and to 80% below 1990 levels by 2050. The Secretary of the California Environmental Protection Agency was named as coordinator for this effort, and the Executive Order required a progress report by January 2006 and biannually thereafter. As a result, the Climate Act Team was created by the California Environmental Protection Agency. The first report from the Climate Act Team was released in March of 2006, which proposed to meet the emissions targets through voluntary compliance and state incentive and regulatory programs.

Currently only the 2020 target has been adopted by the state through legislation (see Assembly Bill 32, below). As a result, all of the impact discussions, mitigation, and strategies are based on meeting the 2020 target, not the longer-

term 2050 target. If the 2050 target is adopted during the life of the General Plan, amendments to the General Plan strategies outlined in the sections to follow will become necessary.

ASSEMBLY BILL 32

In September 2006, Assembly Bill (AB) 32 was signed by Governor Schwarzenegger of California. AB 32 requires that California GHG emissions be reduced to 1990 levels by the year 2020, just like Executive Order S-3-05. However, AB 32 is a comprehensive bill that requires the California Air Resources Board (ARB) to adopt regulations requiring the reporting and verification of statewide greenhouse gas emissions, and it establishes a schedule of action measures. AB 32 also requires that a list of emission reduction strategies be published to achieve emissions reduction goals.

The following is a list of critical path items incorporated into AB 32 – deadlines that cannot be extended unless the Governor agrees there are "extraordinary circumstances", and then only for one year:

January 1, 2007: AB 32 goes into effect;

June 30, 2007: ARB must publish "a list of discrete early action GHG emission reduction measures" (Cal. Health & Safety Code § 38560.5(a)); this list is not just advisory - the measures must be implemented by regulations by 2010;

January 1, 2008: ARB must establish the 1990 baseline of statewide GHG emissions that will be the cap to be implemented by 2020 (*id*. at § 38550);

January 1, 2008: ARB must also adopt regulations requiring the monitoring and annual reporting of GHG emissions from all significant sources (*id.* at § 38530);

January 1, 2009: ARB must prepare and approve a "scoping plan" for "achieving the maximum technologically feasible and cost-effective reductions in GHG emissions from sources or categories of sources of GHG gases by 2020" (*id.* at § 38561); this scoping plan will be the template for the regulations that will be adopted by 2011;

January 1, 2010: ARB must "adopt regulations to implement" the list of reduction measures that it publishes by June 30, 2007 *(id.* at § 38560.5(b));

January 1, 2011: ARB must adopt regulations establishing "GHG emission limits and emission reduction measures" (*id.* at § 38562(a)); and

January 1, 2012: the 2011 regulations must become operative.

As of this writing, the first five critical path items have occurred. AB 32 is in effect and the list of early action measures was adopted by the ARB on June 21, 2007 (Resolution 07-25), and many other measures were added at a hearing on October 25, 2007. The Scoping Plan was adopted on December 11, 2008.

SENATE BILL 375

On September 30, 2008, Senate Bill (SB) 375 was signed by Governor Schwarzenegger of California. SB 375 combines regional transportation planning with sustainability strategies in order to reduce greenhouse gas emissions in California's urbanized areas. Existing law requires each regional transportation planning agency, with in Sacramento County's case is the Sacramento Area Council of Governments (SACOG), to adopt a Regional Transportation Plan. SB 375 requires that the Regional Transportation Plan must now include a "sustainable communities strategy". To this end, the ARB must provide SACOG and other regions with GHG emissions reduction targets by June 30, 2010. **The Regional Technical Advisory Committee formed to generate recommendations published their final report on September 29, 2009. The report recommends that the Air Resources Board adopt a uniform statewide target expressed as a per capita reduction metric from 2005 levels.**

SENATE BILL 97 CHAPTER 185, STATUTES OF 2007

Senate Bill 97 (SB 97) requires that Office of Planning and Research (OPR) to prepare guidelines to submit to the California Resources Agency regarding feasible mitigation of greenhouse gas emissions or the effects of GHG emissions as required by CEQA. The California Resources Agency is required to certify and adopt these revisions to the State CEQA Guidelines by January 1, 2010. The Guidelines will apply retroactively to any incomplete Environmental Impact Report, Negative Declaration, Mitigated Negative Declaration, or other related document.

ENDANGERMENT FINDING

On December 7, 2009, the U.S. EPA made an Endangerment Finding and a Cause or Contribute Finding related to greenhouse gases. The U.S. EPA Administrator found that the current and projected concentrations of the six key well-mixed greenhouse gases – carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) – in the atmosphere threaten the public health and welfare of current and future generations (endangerment). The Administrator also found that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare (Cause or Contribute).

STATE OF CALIFORNIA EMISSION REDUCTION/ADAPTATION STRATEGIES

Several strategies to reduce vehicle emissions have been identified by the California Environmental Protection Agency's Climate Action Team. These include, but are not limited to, the following:

VEHICLE CLIMATE CHANGE STANDARDS

With the passage of AB 1493, Pavley, Chapter 200, Statutes of 2002, California moved to the forefront of reducing vehicle climate change emissions. This bill required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by the ARB in September 2004. The ARB analysis of this regulation indicates emissions savings of 1 million tons CO_2 equivalent ($MMTCO_2e$) by 2010 and 30 million tons CO_2 equivalent by 2020.

DIESEL ANTI-IDLING

Reduced idling times and the electrification of truck stops can reduce diesel use in trucks by about 4 percent, with major air quality benefits. In July 2004 the ARB adopted a measure to limit diesel-fueled commercial motor vehicle idling. AB 32 analysis indicates that anti-idling measures could reduce climate change emissions by 1.2 MMtCO2e in 2020.

OTHER NEW LIGHT DUTY VEHICLE TECHNOLOGY IMPROVEMENTS

In September 2004 the California Air Resources Board approved regulations to reduce climate change emissions from new motor vehicles. The regulations apply to new passenger vehicles and light duty trucks beginning with the 2009 model year. The standards adopted by the Board phase in during the 2009 through 2016 model years. When fully phased in, the near term (2009 – 2012) standards will result in about a 22 percent reduction as compared to the 2002 fleet, and the mid-term (2013 – 2016) standards will result in about a 30 percent reduction.

New standards would be adopted to phase in beginning in the 2017 model year (following up on the existing mid-term standards that reach maximum stringency in 2016). Assuming that the new standards call for about a 50 percent reduction, phased in beginning in 2017, this measure would achieve about a 4 MMT reduction in 2020. The reduction achieved by this measure would significantly increase in subsequent years as clean new vehicles replace older vehicles in the fleet—staff estimates a 2030 reduction of about 27 MMT.

EXECUTIVE ORDER S-01-07

This Executive Order was signed by Governor Schwarzenegger on January 18, 2007 and directed the Climate Action Team to determine whether the items in the Order could be established as an early action measure pursuant to AB 32 – which the Climate Action Team has now done. The Executive Order states that the State of California relies on petroleum-based fuels for 96% of its transportation needs, there were more than 24 million motor vehicles registered in California, and statewide gasoline consumption was almost 16 billion gallons in 2005. To address the carbon emitted by this use of fuel, the Executive Order states that a statewide goal must be established to reduce the “carbon intensity of California’s transportation fuels” by at least 10% by the

year 2020 and that a Low Carbon Fuel Standard for transportation fuels be established. The Low Carbon Fuel Standard applies to all "refiners, blenders, producers or importers of transportation fuels in California".

CALIFORNIA CLIMATE ADAPTATION STRATEGY

In December 2009, the California Resources Agency, in coordination and partnership with multiple other state agencies, released their California Climate Adaptation Strategy. This document summarizes the best known science on climate change impacts in seven specific sectors, including: public health, biodiversity-habitat, ocean & coastal resources, water management, agriculture, forestry, and transportation and energy infrastructure. The strategy provides recommendations on how to manage against threats to these sectors. The strategy is in direct response to Gov. Schwarzenegger's November 2008 Executive Order S-13-08 that specifically asked the Natural Resources Agency to identify how state agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events.

SACRAMENTO COUNTY EMISSION REDUCTION EFFORTS

CHICAGO CLIMATE EXCHANGE

In February 2007, the County joined the Chicago Climate Exchange. The Chicago Climate Exchange is the world's first and North America's only voluntary, legally binding rules-based greenhouse gas (GHG) emission reduction and trading system. Chicago Climate Exchange Phase I members commit to reduce GHG emissions 1% per year over the years 2003 through 2006 relative to a 1998 through 2001 average baseline. Members agree to reduce GHG emissions by a total of 4% below the baseline by 2006. Chicago Climate Exchange Phase II members commit to reduce GHG emissions from 1¼% to ½% per year through the years 2007 through 2010 for grand total of 6% below the baseline.

Those members that reduce their emissions annually beyond the committed level can sell surplus emission allowances on the Chicago Climate Exchange or bank them. A member that cannot achieve the annual reduction target within its organization can meet its commitment by purchasing emissions allowances through the Chicago Climate Exchange from other Chicago Climate Exchange members that reduce their emissions beyond the reduction target.

The goals of Chicago Climate Exchange are:

1. To facilitate the transaction of GHG emissions allowance trading with price transparency, design excellence and environmental transparency.

2. To build the skills and institutions needed to cost-effectively manage GHG emissions.
3. To facilitate capacity-building in both public and private sector to facilitate mitigation.
4. To strengthen the intellectual framework required for cost effective and valid reduction.
5. To help inform the public debate on managing the risk of global climate change.

Chicago Climate Exchange members make a commitment to:

1. Measure, report, and reduce GHG emissions.
2. Establish an emission reduction schedule.
3. Implement GHG emissions management.
4. Participate in annual emissions audits.

ENERGY CONSERVATION/ENERGY EFFICIENCY PROGRAM

For years, the County of Sacramento has taken a leadership role in implementing policies and programs to conserve energy in County facilities and reduce emissions from the County fleet of vehicles.

The Board of Supervisors approved an Energy Conservation/Energy Efficiency Program in 2001. The essence of the program is to reduce electrical energy usage during peak periods of the day. The program contains ten measures such as participating in Sacramento Municipal Utility Districts Voluntary Emergency Curtailment Program, setting building temperatures to 78° F to decrease cooling demand and dual switching of lights.

The County converted 108 of 150 trucks to liquid natural gas (LNG) in the Refuse Collection Fleet. The Heavy Rental Fleet now includes 18 propane powered vehicles. The Light Fleet includes 95 hybrid vehicles and 3 Compressed Natural Gas (CNG) vehicles. Replacement vehicles to the Light Fleet will be hybrid vehicles. The Sacramento International Airport operates LNG Shuttle buses.

GHG emissions from County operations are either direct emissions or indirect emissions. Direct emissions result from on-site direct combustion by the County of fossil fuels such as natural gas to heat facilities and gasoline to fuel vehicles. Therefore, increasing the number of vehicles, which use alternative fuels, reduces GHG emissions.

Indirect emissions result from the purchase of energy, such as electricity, and the corresponding emissions associated with that generation. Therefore, purchasing electricity from green energy sources, or reducing energy use reduces GHG emissions. Direct and indirect emissions are the GHG emissions, expressed in metric tons of carbon dioxide (CO_2) equivalent.

The County provided Chicago Climate Exchange current and historical energy and fuel purchase data for fiscal years 2000, 2001, 2002, 2003, 2004, and 2005. The data submitted is for County-owned facilities and vehicles. The County's commitment to join does not apply to businesses, other government agencies or residents within the County boundary, only to emissions generated by Sacramento County as an organization. Preliminary review by the Chicago Climate Exchange indicates the County could be in a position to sell surplus emission allowances for the period of 2003 through 2010. This data will be subject to an audit before a formal Baseline is established and exact credits can be calculated.

It is expected, based on information available and preliminary review by the Chicago Climate Exchange, that the County will receive potential financial reward from participation in the Chicago Climate Exchange. The County may be eligible to sell excess allowances for 2003, 2004 and 2005. Fiscal year 2006 is half-complete and it would appear the County would again be in a sell position. Fiscal years 2007 through 2010 will be dependent on the County's continued commitment to energy conservation and fleet conversion. The preliminary baseline for direct and indirect emissions for the County is 226,700 metric tons of CO_2.

CALIFORNIA CLIMATE ACTION REGISTRY

The County joined the California Climate Action Registry (Registry) in December 2006. The Registry is non-profit public/private partnership that serves as a voluntary GHG registry to protect, encourage and promote early actions to reduce GHG emissions. Registry participants agree to calculate, certify and publicly report GHG emissions. The Registry provides a reporting tool, standards and protocol for reporting GHG emissions.

AB32 recognizes participation in the Registry in a number of ways. First, AB 32 requires the ARB to incorporate the standards and protocols developed by the Registry in the rulemaking process. Second, AB 32 provides that entities that join the Registry prior to December 31, 2006 and report their emissions according to the Registry protocols will not be required to significantly alter their reporting program.

CITIES FOR CLIMATE PROTECTION (ICLEI)

Sacramento County joined ICLEI in 2007. The Cities for Climate Protection is administered under the International Council for Local Environmental Initiatives (ICLEI). The following is a brief description of the program from their website (www.iclei.org):

> The Cities for Climate Protection™ (CCP) Campaign enlists cities to adopt policies and implement measures to achieve quantifiable reductions in local greenhouse gas emissions, improve air quality, and enhance urban livability and sustainability. More than 650 local governments participate in the CCP, integrating climate change mitigation into their decision-making processes.
>
> The campaign is based on an innovative performance framework structured around five milestones that local governments commit to undertake. The

milestones allow local governments to understand how municipal decisions affect energy use and how these decisions can be used to mitigate global climate change while improving community quality of life. The CCP methodology provides a simple, standardized way of acting to reduce greenhouse gas emissions and of monitoring, measuring, and reporting performance.

Benefits of Participation

Communities that participate in the CCP benefit from the actions that they take to reduce greenhouse gas emissions through:

- Financial savings in reduced utility and fuel costs to the local government, households, and businesses.
- Improved local air quality, contributing to the general health and well being of the community. Economic development and new local jobs as investments in locally produced energy products and services keep money circulating in the local economy.
- ICLEI provides regionally specific tools and technical assistance to assist local governments in reducing their greenhouse gas emissions.

Cities for Climate Protection™ (CCP) is ICLEI's flagship campaign. The program is designed to educate and empower local governments worldwide to take action on climate change. CCP is a performance-oriented campaign that offers a framework for local governments to reduce greenhouse gas emissions and improve livability within their municipalities. This campaign would give Sacramento County a framework and tools to develop a plan for greenhouse emissions. The basic framework is called the 5 Milestones and consists of the following steps:

1. Conduct a baseline emissions inventory and forecast. Based on energy and waste data, the member calculates greenhouse gas emissions for a base year (e.g., 2000) and for a forecast year (e.g., 2015). The inventory and the forecast capture emissions from all municipal operations (e.g., city owned and/or operated buildings, streetlights, transit systems, wastewater treatment facilities) and from all community-related activities (e.g., residential and commercial buildings, motor vehicles, waste streams, industry). The inventory and forecast provide a benchmark against which the city can measure progress.
2. Adopt an emissions reduction target for the forecast year. The city passes a council resolution establishing an emission reduction target for the city. The target is essential both to foster political will and to create a framework to guide the planning and implementation of measures.
3. Develop a Local Action Plan. The local government develops a Local Action Plan that describes or lists the policies and measures that the local government will take to reduce greenhouse gas emissions and achieve its emissions reduction target. Most plans include a timeline, a description of financing mechanisms, and an assignment of responsibility to departments and staff. In

addition to direct greenhouse gas reduction measures, most plans also incorporate public awareness and education efforts. The development of the Local Action Plan should include strong public input and involvement in order to build the consensus among stakeholders required to implement measures.

4. Implement policies and measures. The city implements the policies and measures contained in their Local Action Plan. Typical policies and measures implemented by CCP participants include energy efficiency improvements to municipal buildings and water treatment facilities, streetlight retrofits, public transit improvements, installation of renewable power applications, and methane recovery from waste management.
5. Monitor and verify results. Monitoring and verifying progress on the implementation of measures to reduce or avoid greenhouse gas emissions is an ongoing process. Monitoring begins once measures are implemented and continues for the life of the measures, providing important feedback that can be use to improve the measures over time. ICLEI's software provides a uniform methodology for cities to report on measures.

The County has completed the baseline emissions inventory. This document sets a framework to proceed with steps 2 – 5, above.

GREEN FLEETS

The City and County of Sacramento have adopted a heavy-duty low-emission vehicle (LEV) acquisition policy. The policy goal is to reduce oxides of nitrogen (NOx) emissions from heavy-duty fleet vehicles to meet the year 2005 standard for ozone in the Sacramento Federal Ozone Non-attainment area.

The foundation statements for this project are:

1. We recognize that the region has an air quality problem which is related to vehicle operations, especially the operation of heavy-duty vehicles;

2. We recognize that public agencies in Sacramento County operate large vehicle fleets which have significant numbers of heavy-duty vehicles.

3. We recognize that public agencies have a significant role to play in improving air quality by reducing the emissions from their fleet operations, especially their heavy-duty vehicles.

The commitments of this program are to show how fleets can aggressively incorporate low-emission vehicles into fleet operations, and how fleets can overcome training, facility and operational issues with resolve. The efforts will focus on the conversion of the on-road, heavy-duty equipment fleets to certified low-emission vehicles as these vehicles are replaced as part of regular systematic replacement programs. As of 2004 the County has committed to replace 50% off the fleet to low-emission vehicles.

IMPACTS AND MITIGATION MEASURES

The following section discloses the potential impacts of the proposed project on global climate change, and the potential impacts of global climate change on the proposed project. Mitigation measures have been identified where feasible.

SIGNIFICANCE CRITERIA

CEQA Guidelines defines "significant" as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be 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." (Section 15382) For this analysis, a climate change impact is considered significant if any portion of the Project will significantly hinder attainment of the state's goals to reduce greenhouse gas emissions to 1990 levels by the year 2020.

METHODOLOGY

The ICLEI Clean Air and Climate Protection Model (CACP) was used to estimate unincorporated Sacramento County emissions, along with the emissions of all of the incorporated cities in the County. This complete inventory was done to provide a regional picture, but the County does not have control over incorporated city emissions **(http://www.climatechange.saccounty.net/default.htm, click on the Reports and Publications link to download the full Greenhouse Gas Emissions Inventory for Sacramento County)**. The baseline year 2005 was chosen based on availability of information. In cases where 2005 data was unavailable, 2006 or other recent-year data was substituted. The software inventories community GHG emissions for all operations, with a separate government analysis tab that determines GHG emissions of local government operations as a subset of the community analysis. The community analysis divides GHG emissions among residential **(energy usage)**, commercial **(energy usage)**, industrial **(energy usage)**, transportation **(exhaust emissions)**, **off-road vehicle use (exhaust emissions),** waste **(landfill emissions), wastewater treatment (energy usage), agriculture (fertilizers, enteric fermentation, etc), High GWP (high global warming potential, such are refrigerants), and airport (emissions from County buildings and fleets – does not include fleet owned by airlines)** sectors. The government analysis divides emissions among buildings, vehicle fleet, employee commute, streetlights, water/sewage, and waste sectors.

For the community analysis, energy use was obtained for the Sacramento Municipal Utility District (SMUD) and the Pacific Gas and Electric Company (PG&E). Community waste generation for Sacramento County was collected through the California Integrated Waste Management Board (CIWMB) web site and through consultation with staff of Sacramento County Municipal Services Agency. The SMUD reported its 2005 GHG emissions and an emissions factor for all electricity sold to customers that was

verified and certified by the California Climate Action Registry. This emissions factor was input into the model as a replacement for the statewide emissions factor for electricity consumption to generate more accurate GHG emissions estimates for Sacramento County electricity consumption. The software default emissions factors for other GHGs, which is based on statewide averages, were used in all other instances.

Increases in CO_2e emissions associated with the Project and Alternatives were calculated using the same methods outlined in the Air Quality chapter Methodology section for Stationary, Area, and Off-Road emissions. The County's 2005 GHG baseline from which CO_2e emissions were adjusted was obtained from the County's Greenhouse Gas Inventory completed in 2009.

IMPACTS TO THE PROJECT FROM CLIMATE CHANGE

Global climate change is a complex phenomenon that is influenced by many environmental factors. There are also many different climate or hydrologic modeling tools available, each with strengths and weaknesses. While changes to the existing climate landscape can be demonstrated by looking at the historic record, it becomes challenging to predict future trends. The process must be simplified to some extent. Climatologists and others who model climate change must make certain assumptions, such as establishing a fixed rate of temperature change, in order to proceed with modeling. Therefore, scientists involved in these modeling efforts do not try to be absolutely predictive, but instead use different model types with different sets of assumptions to capture a range of possible scenarios. It is also necessary to update the model with the latest available data on a regular basis in order to sync the models with current conditions. Therefore, there is no single, certain prediction related to the probability of environmental effects. Scenarios are rated as being very likely if many different models come up with very similar results, and as uncertain if many different models report very different results. The sections below rely on information from several different published sources and provide a qualitative analysis of potential impacts as they affect North America, California, Sacramento County, and the project area.

TEMPERATURE

Significant increases in the frequency, intensity, and duration of summertime extreme heat days, defined as the 10% warmest days of summer, are projected due to climate change (Miller et. al., 2007). Temperature change is the driver for climate change, impacting environmental processes that will in turn impact human life. Plate CC-1 is taken directly from the IPCC 2007 report prepared by the second Working Group. This table represents the potential impacts to various segments of the environment depending on how much the temperature increases relative to the 1980 to 1990 period. Bear in mind that all of the data in the following sections use the metric standard, so all temperatures are typically given in Celsius. To convert from Celsius to Fahrenheit one uses the formula Tf = (9/5)*Tc+32 (Tc = temperature in degrees Celsius, Tf =

temperature in degrees Fahrenheit). To understand the exhibit below, simply note that a change of one degree Celsius equals a change of 1.8 degrees Fahrenheit.

Plate CC-1
Impacts as a Function of Increasing
Average Global Temperature Change (IPCC, 2007b)

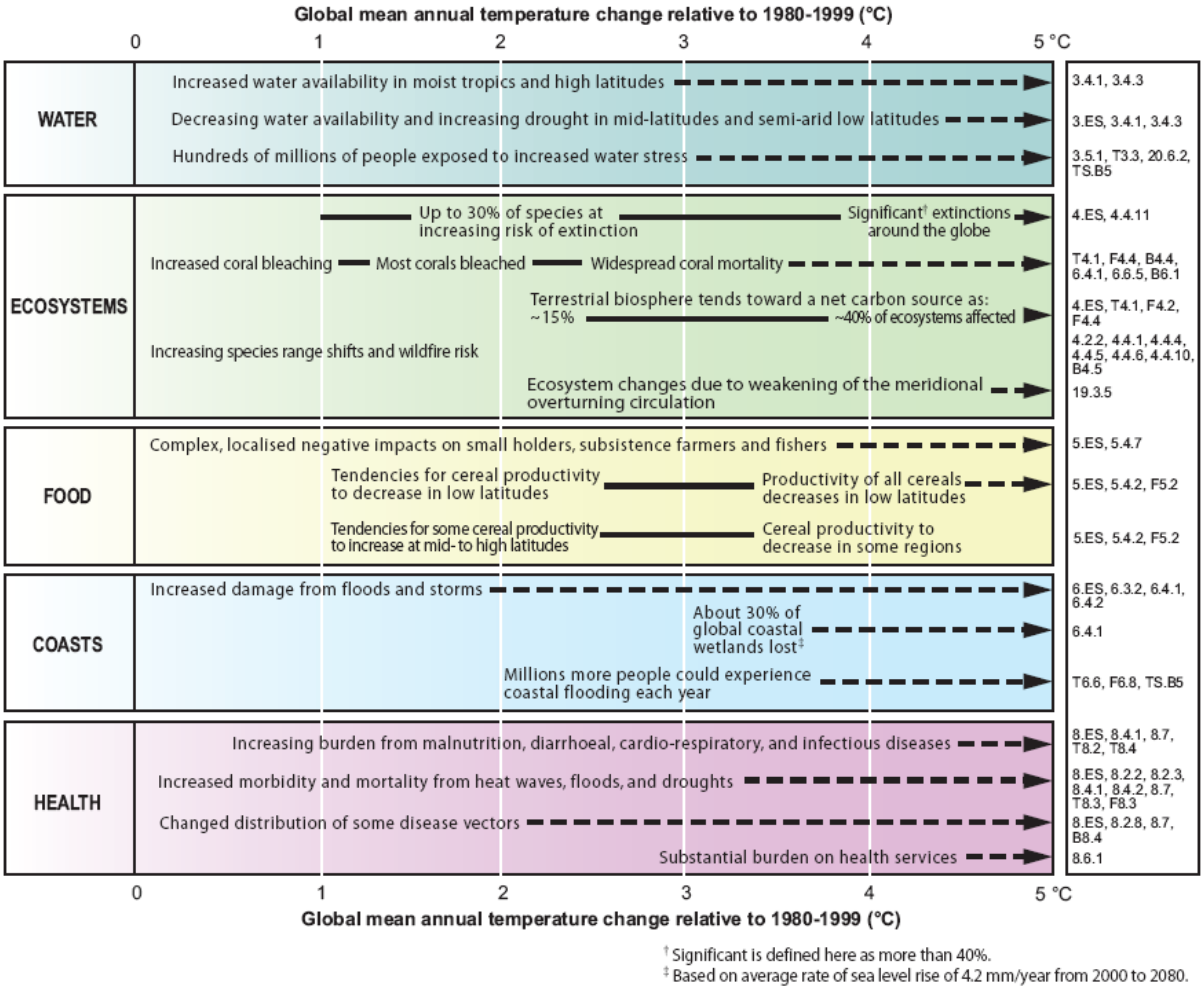


Figure SPM.2. *Illustrative examples of global impacts projected for climate changes (and sea level and atmospheric carbon dioxide where relevant) associated with different amounts of increase in global average surface temperature in the 21st century [T20.8]. The black lines link impacts, dotted arrows indicate impacts continuing with increasing temperature. Entries are placed so that the left-hand side of the text indicates the approximate onset of a given impact. Quantitative entries for water stress and flooding represent the additional impacts of climate change relative to the conditions projected across the range of Special Report on Emissions Scenarios (SRES) scenarios A1FI, A2, B1 and B2 (see Endbox 3). Adaptation to climate change is not included in these estimations. All entries are from published studies recorded in the chapters of the Assessment. Sources are given in the right-hand column of the Table. Confidence levels for all statements are high.*

There is strong agreement that many of the most damaging effects of climate change will begin to occur after temperatures increase beyond 2 degrees Celsius into the 3 or 4 degree range. This is observable in Plate CC-1. The IPCC Working Group III report determined that reductions of 50 to 80% would be needed by 2050 in order to stabilize temperature rise at no more than 2 degrees Celsius (IPCC, 2007c). The limits set forth in Executive Order S-3-05 and in AB 32 mirror this research.

For California as a whole, the total number of days of extreme heat is projected to *double* relative to historical mean of 12 days per summer, to an average of 23–24 days per summer by 2034. By 2064, this is projected to increase to 27 – 39 days.

Plate CC-2
Projected California Temperature Change, December through February (DJF) and June through July (JJA), degrees Celsius

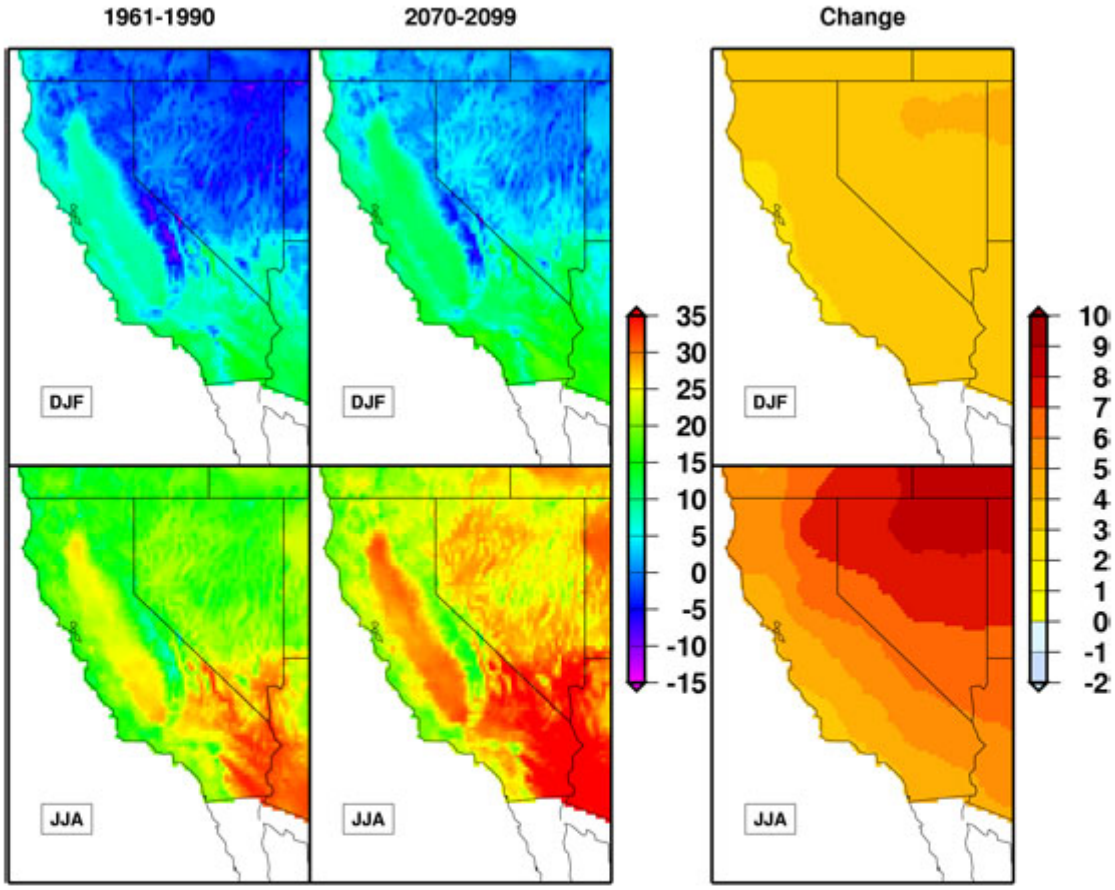


Figure 14. Temperature change from GFDL A2 simulation (right), and downscaled temperatures for (1961–1990) and (2070–2099) using Wood et al. (2002) statistical scheme (left).

Aside from this global research, various research papers and technical studies have been produced that look specifically at impacts in California. One of these is a white paper titled "Climate Scenarios for California", sponsored by the California Energy Commission, which used many of the same assumptions and scenarios as the IPCC reports, but scaled the modeling down to the California level. Plate CC-2 is an exhibit from the white paper depicting average winter and summer temperatures in the past and in the projected 2070 – 2099 future, with the degrees of change on the right-hand side (Cayan et. al., 2006a). As shown, the amount of change that resulted from the modeling is greater during the summer months than during the winter months.

Higher temperatures would have direct effects on the health of many organisms, including humans. It is probable that rising temperatures will cause an increase in the number of humans who die or become ill due to heatwaves, may change the range (geographically or seasonally) of various infectious disease vectors (such as mosquitoes), and increase cardio-respiratory disease prevalence and mortality associated with ground-level ozone (IPCC, 2007b). Many individual plants may also die or become damaged during heatwaves, as even if there is ample water in the soil, water loss through the leaves will outpace the ability of the plant to draw water from the soil. Warmer winters would bring some benefits to some parts of California, where cold-related deaths and illnesses during the wintertime would be reduced. (Cayan et. al., 2006a) However, the greater Sacramento area does not typically experience extreme cold under current conditions, and in any case the stated negative effects would be expected to outweigh this positive effect.

Water Supply and Flooding

Although current forecasts vary, the effects of global climate change on precipitation and temperature regimes in California could lead to significant challenges in securing an adequate water supply for a growing population and California's agricultural industry. An increase in precipitation falling as rain rather than snow could also lead to increased potential for floods because water that would normally be held in the Sierra Nevada until spring could flow into the Central Valley concurrently with winter storm events. This scenario would place more pressure on California's levee/flood control system. California also relies heavily on gradual snowmelt from the Sierra Nevada to supply water.

According to the Intergovernmental Panel on Climate Change (IPCC) 2007 report, the annual mean warming in North America is likely to exceed the global mean warming in most areas and snow season length and snow depth are very likely to decrease in most of North America (IPCC, 2007a). These trends have already been observed, as the snow pack in the Sierra Nevada and the Cascade Range has been declining over the last few decades of record, and the average temperature in California has increased one degree Fahrenheit over the past 50 years (Cayan et.al., 2006a). Although these general statements are made, it is recognized that although there is high model agreement on warming trends the agreement among precipitation and hydrologic trend models is not nearly so strong.

The Climate Scenarios for California white paper modeled changes in Snow Water Equivalent as of April 1, when the snow season begins to taper off. Snow Water Equivalent is the amount of water contained within the snowpack. It can be thought of as the depth of water that would theoretically result if you melted the entire snowpack instantaneously. The analysis results differ widely depending on which model and emissions scenario is used. As compared to the 1961 – 1990 period of record, the net change in Snow Water Equivalent ranges from +6% to -29% (for the 2005 – 2034 period), from -12% to -42% (for 2035 – 2064), and from -32% to -79% (for the 2070 – 2099 period). These results highlight the lack of agreement found amongst hydrologic models. The ranges of projected change vary widely, and in the near-term some

modeling even predicts an *increase* in Snow Water Equivalent. However, in the long-term all of the models do agree that Snow Water Equivalent will be reduced, even though further refinement of the modeling will need to be completed to narrow down the range of reductions. (Cayan et. al., 2006a)

The modeling results indicate that snow losses have greatest impact in relatively warm low-middle and middle elevations between about 3280 feet and 6560 feet (losses of 60% to 93%) and between about 6560 feet and 9840 feet (losses of 25% to 79%). The central and northern portions of the Sierra Nevada contain large portions of this low-middle and middle elevations, and are subject to the heaviest reductions in snow accumulation. This is depicted on Plate CC-3. (Cayan et. al., 2006a).

The effect of climate change on future demand of water supply remains uncertain (DWR 2006), but changes in water supply are expected. The California Department of Water Resources (DWR) has sponsored or published a number of papers on the interaction between climate change and water supply, and has included a Climate Change Portal on the DWR website (www.climatechange.water.ca.gov). Climate change is also be addressed in the 2009 California Water Plan update (public review draft of Volumes 1, 2, and 3 released January 2009). Adaptation is the primary thrust of the strategies outlined in the public review draft, with a focus on reducing water demand, improvements in operational efficiency, and increasing water supply.

The American River and many other major and minor rivers within the County are largely fed by snowmelt within the low-middle and middle elevation range that is expected to suffer the greatest reductions in snowpack. It can be concluded that Sacramento County will see a significant reduction in snowmelt-driven water supply by the end of this century. In the shorter term, over the life of the proposed General Plan, it is less clear whether there will be a significant reduction in snowpack. Modeling results indicate that snowpack may either increase by 6% or decrease by as much as 29% by the year 2034. Given this uncertainty, it would be speculative to attempt to provide a quantified analysis of the effects of climate change on current water sources within Sacramento County. The most reasonable approach is to determine that an unknown amount of reduction in water supply is likely by 2030, and to implement adaptive measures over the life of this General Plan intended to reduce water usage and increase conveyance efficiency.

Mitigation in this EIR recommends adoption of a Climate Action Plan, which will include a green building program and other measures that are designed to reduce the use of resources, including water. Though this will reduce water usage by future developments, it does not address the existing developed environment. Many areas within the areas just south of the American River are served by the Sacramento County Water Agency, so through the Climate Action Plan the County can also consider changes to the rate structure or other service modifications that could reduce water usage. The areas of the County that are most densely developed and contain most of the County population are not served by County water supplies, but by other public water districts. The County has no ability to directly affect water service in these areas, though a cooperative effort may be possible.

Plate CC-3
Potential Changes in Snow Accumulation, as of April 1

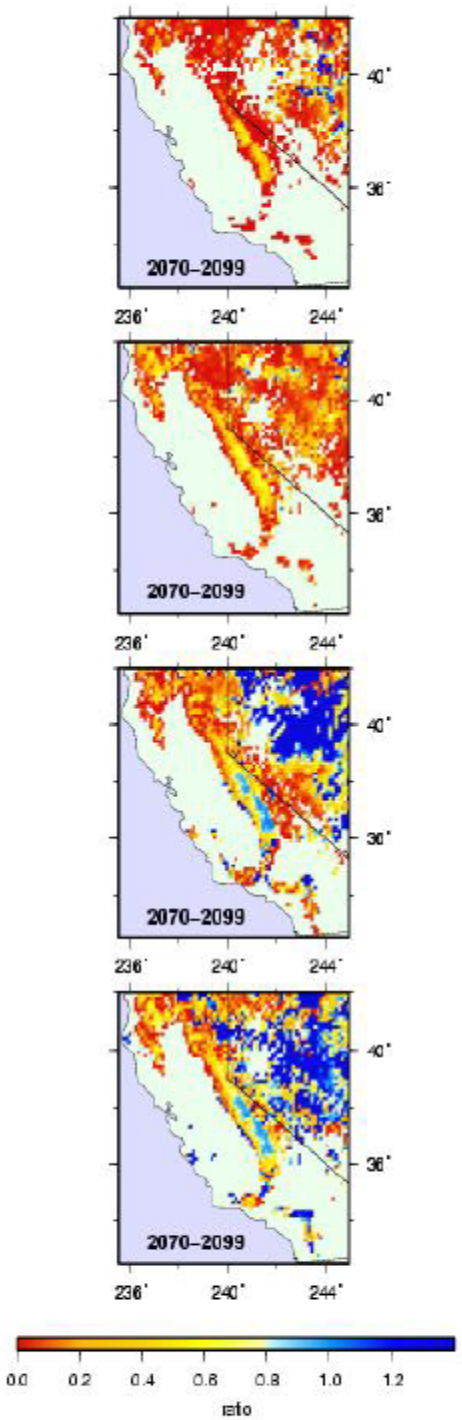


Figure 19. Change in spring snow accumulation from VIC, as driven by climate changes from four different climate change simulations. Changes are expressed as. ratio of 2070-2099 April 1 snow water equivalent (SWE) to that of historical (1961-1990).

The changes in snowmelt described above are not because significantly less precipitation is projected to fall, but rather on earlier melting of the snowpack and more precipitation falling as rain than as snow. If in future conditions more of the precipitation in the watersheds falls as rain rather than snow, runoff into the area rivers and creeks will increase and the potential for flooding will increase. The outcome of climate change on flooding will depend on several factors, including whether or not storms increase in severity, duration, or frequency. If more precipitation is falling as rain in the Sierra Nevada, then soils will be warmer and will have an opportunity to dry between storms rather than remaining wet with snow or frozen. Warmer, drier soils would absorb more of the rainfall, and therefore lessen the amount of runoff that could be expected. On the contrary, if greater portions of the watershed are subject to a mix of rain events and snow events, there could be a larger incidence of flood events that are driven by the sudden melting of snow by rain. The possible negative results are either an increase in the average number of flooding events and/or an increase in the severity of flood events.

Although strong model agreement has not been reached, it is probable that flooding regimes will alter in the Sacramento region. Current floodplain locations could expand or contract, changing the number of people in the region that would be affected by flood events, and floods could increase in number, increasing the frequency of negative effects to residents.

Surface Water Quality

Water quality is affected by several variables, including the physical characteristics of the watershed, water temperature, and runoff rate and timing. A combination of a reduction in precipitation, and/or shifts in volume and timing of runoff flows, and the increased temperature in lakes and rivers could affect a number of natural processes that eliminate pollutants in water bodies. For example, although there may be more flood events, the overall stream flow decrease from a lack of summer snowpack could potentially concentrate pollutants and prevent the flushing of contaminants from point sources. The increased storm flows could tax urban water systems and cause greater flushing of pollutants to the Sacramento-San Joaquin Delta and coastal regions (Kiparsky and Gleick 2003). Still, considerable work remains to determine the potential effect of global climate change to water quality.

Groundwater

A shift from snowfall to rainfall could reduce groundwater recharge, even if total precipitation remains constant. However, little work has been done on the effects of climate change on specific groundwater basins, groundwater quality, or groundwater recharge characteristics (Kiparsky and Gleick 2003). Research has focused more heavily on solidifying precipitation and streamflow projections, which are both necessary elements to determining which of the many possible groundwater scenarios are most probable. Water recharge could be increased if winters are warmer and wetter, and more water can filter into the soil, or this benefit could be offset by greater rates of

evaporation and shorter rainfall seasons. Until more research into groundwater effects is completed, climate change impacts to groundwater will remain highly uncertain.

Fisheries and Aquatic Resources

The health of river ecosystems is highly dependent on water temperatures and stream flows. The IPCC Working Group II report recites a litany of temperature and flow effects on fisheries that have already been observed: the sea-run[3] salmon stocks are in steep decline throughout much of North America (Gallagher and Wood, 2003), Pacific salmon have been appearing in Arctic rivers (Babaluk et al., 2000), and salmonid species have been affected by warming in U.S. streams (O'Neal, 2002). Many species that either live, migrate through or breed in the rivers and creeks of Sacramento County are cold-water species. It is probable that increases in average temperatures in the state will cause corresponding increases in water temperatures. Rates of fish-egg development and mortality increase with temperature rise within species-specific tolerance ranges (Kamler, 2002). Also, many fish species migrate into Sacramento County waterways during specific seasons to breed, and these fish rely on increased late-fall and early winter flows in order to complete the migration. If increased flows are delayed, possibly as a result of lessened groundwater recharge or shifts in the onset of the rainy season, this would be a barrier to migration. These potential effects could further endanger the sustainability of aquatic populations that are already listed through the Federal or California Endangered Species Acts, or could cause non-listed species to require listing under the Act.

Sea Levels

The IPCC Working Group I report contains a thorough discussion of the current understanding of sea level rise and climate change. After the last ice age ended, it is estimated that sea levels rose 120 meters (394 feet) before ultimately stabilizing. This period of stabilization lasted for several thousand years, until the late 19th century when sea levels began to rise. Part of this rise is attributed to thermal expansion (most substances expand when they warm, including water) and part is attributed to the melting of land ice. As global mean temperatures warm, the rate at which the sea level rises is expected to increase. While there is strong model agreement that sea levels will continue to rise and that the rate of rise will increase, the ultimate amount of rise is uncertain. (IPCC 2007a) A white paper entitled Projecting Future Sea Level, published by the California Climate Change Center, estimated a sea level rise from 4 – 35 inches every century (0.3 – 2.9 feet), depending on the model and assumptions used (Cayan et. al., 2006b).

Although Sacramento County contains no coastal land, the Delta region of Sacramento County is hydrologically connected to the San Francisco Bay and will be directly influenced by sea level rise. Moreover, as water levels rise in the bay and estuary environments, there will be a rise in the ordinary water surface elevations of the rivers and streams that feed the seas. Therefore, sea level rise can be expected to impact the

Delta region as well as the ordinary high water elevations of the rivers in Sacramento County.

Among the more critical potential effects of sea level rise in Sacramento County are threats to flood protection and increased salinity in the Delta (Kiparsky and Gleick 2003). Many areas in Sacramento County are protected from floods by systems of levees. In addition to the potential negative effects of increased runoff and rainfall discussed in the flooding discussion above, rises in the ordinary water surface elevations of area rivers will leave less freeboard in the rivers (freeboard is the distance between the water surface and the top of the levee) to accommodate flood flows. Some of the "islands" in the Delta region which are protected by levees are actually below sea level, and would be particularly vulnerable to flooding if a levee were overtopped or breached. In recognition of this concern, California passed a bond measure intended to finance the process of stabilizing and improving California's levee systems. The California Department of Water Resources is also continuing to study the issue to determine what other system improvements may be necessary to adapt to changes in water surface elevations.

Water for the State Water Project and the federal Central Valley Project is taken from the south Delta. The 1993 Sacramento County General Plan indicates that the State has contracts to export up to 4.2 million acre-feet per year, and the federal project another 3.3 million acre-feet per year, approximately 83% of which is used for agriculture with the remainder used for "urban" purposes. If salt water from the San Francisco Bay backs upward through the Delta system, freshwater supplies could be degraded. There are potential solutions to this problem, should it occur, that continue to be examined by the California Department of Water Resources. A purification process could be implemented, but extracting salt from water tends to be costly. A peripheral canal that would bypass the Delta is another option that was originally suggested in the early 1980's, but remains highly controversial.

Wildland Fire Risk

With climate change, the potential for wildland fires may change due to changes in fuel conditions (transitioning forests to chaparral/grasslands for example), precipitation (longer dry seasons, higher extreme temperatures), and wind (affecting potential spread), among other variables.

Westerling and Bryant (2006) estimated future statewide wildfire risk from a statistical model based on temperature, precipitation, and simulated hydrologic variables. These are conservative estimates because they do not include effects of extreme fire weather, but implications are nonetheless quite alarming. Projections made for the probabilities of "large fires" – defined as fires that exceed an arbitrary threshold of 200 hectares (approximately 500 acres) – indicate that the risk of large wildfires statewide would rise almost 35% by mid-century and 55% by the end of the century under a medium-high emissions scenario, almost twice that expected under lower emissions scenarios. Estimates of increased damage costs from the increases in fire season severity

(Westerling and Bryant 2006) are on the order of 30% above current average annual damage costs.

A second study explored, through a case study in Amador and El Dorado Counties, the effects of projected climate change on fire behavior, fire suppression effort, and wildfire outcomes (California Climate Change Center 2006b). Climate and site-specific data were used in California Department of Forestry and Fire Protection (CDF) standard models to predict wildfire behavior attributes such as rate of spread and burning intensity. The study found an increase in the projected area burned (10% – 20%) and number of escaped fires (10% – 40%) by the end of century, under the drier climate scenarios. However, the less dry model showed little change.

AGRICULTURE

Agriculture, along with forestry, is the sector of the California economy that may be most affected by a change in climate. Regional analyses of climate trends over agricultural regions of California suggest that climate change is already in motion. Over the period 1951 to 2000, the growing season has lengthened by about a day per decade, and warming temperatures have resulted in an increase of 30 to 70 growing degree days per decade, with much of the increase occurring in the spring. Climate change affects agriculture directly through increasing temperatures and rising CO_2 concentrations, and indirectly through changes in water availability and pests (California Climate Change Center 2006a).

Crop growth models show that a warming from a low to a higher temperature generally raises yield at first, but then becomes harmful. Possible effects of excessively high temperature include: decreased fruit size and quality for stone fruits, premature ripening and possible quality reduction for grapes, reduced fruit yield for tomatoes, increased incidence of tipburn for lettuce, and similar forms of burn for other crops. From a variety of studies in the literature, photosynthesis increases when a plant is exposed to a doubling of CO_2. However, whether this translates into increased yield of economically valuable plant product is uncertain and highly variable. Also, elevated CO_2 levels are associated with decreased concentrations of mineral nutrients in plant tissues, especially a decrease in plant nitrogen, which plays a central role in plant metabolism. Some crops may benefit in quality from an increase in CO_2 while some crops are harmed by an increase in CO_2. Growth rates of weeds, insect pests, and pathogens are also likely to increase with elevated temperatures, and their ranges may expand (California Climate Change Center 2006a).

Over time, new seed varieties could be developed that are better adapted to the changed climate and pest conditions, and entirely new crops may be found to meet pharmaceutical or energy supply needs. However, some of these adaptations may require publicly supported research and development if they are to materialize (California Climate Change Center 2006a).

RAPID CLIMATE CHANGE

Most global climate models project that anthropogenic climate change will be a continuous and fairly gradual process through the end of this century (DWR 2006). California is expected to be able to adapt to the water supply challenges posed by climate change, even at some of the warmer and dryer projections for change. However, sudden and unexpected changes in climate could leave many of the agencies responsible for management of vulnerable sectors (water supply, levees, health, etc) unprepared, and in extreme situations would have significant implications for California and the health and safety of its denizens. For example, there is speculation that some of the recent droughts that occurred in California and the western United States could have been due, at least in part, to oscillating oceanic conditions resulting from climatic changes. The exact causes of these events are, however, unknown, and evidence suggests such events have occurred during at least the past 2000 years (DWR 2006).

CONCLUSION

The effects of climatic changes on the Sacramento region are potentially significant, and can only be mitigated through both adaptation and reduction strategies. Sacramento County is requiring that this project, as well as other projects in the County, mitigate for their emissions. Adaptation strategies related to climate change may involve new water supply reservoirs or other storage options, changes to dam release schedules, reductions in water usage, changes to medical and social service programs, and other broad-level actions. Many of these strategies are within the auspices of the State of California, not local government. This is recognized within the AB 32 Scoping Plan that has been adopted by the State, as well as publications by agencies such as the California Department of Water Resources. This EIR requires the County to adopt a Climate Action Plan containing both adaptation and reduction strategies and programs to require mitigation of projects that may result in significant greenhouse gas emissions. The County is also implementing changes in government operations (as described in the Sacramento County Emission Reduction Efforts section). Therefore, the County is implementing all feasible strategies to reduce the effects of climate change on the region.

It will be challenging for the State to implement appropriate adaptation strategies given that the ultimate severity and type of climate change effects are difficult to model. Furthermore, though the State and many local governments are taking steps to address emissions, the entire world must do likewise in order for serious climate effects to be avoided. Impacts to the County from climate change remain *significant and unavoidable*, due to the uncertain nature of the impact.

IMPACTS OF THE PROJECT ON CLIMATE CHANGE

Project emissions were estimated using the CACP model. **As stated in the Methodology section of this chapter, the community analysis divides GHG emissions among residential (energy usage), commercial (energy usage), industrial (energy usage), transportation (exhaust emissions), off-road vehicle**

use (exhaust emissions), waste (landfill emissions), wastewater treatment (energy usage), agriculture (fertilizers, enteric fermentation, etc), High GWP (high global warming potential, such are refrigerants), and airport (emissions from County buildings and fleets – does not include fleet owned by airlines) sectors.

As shown in Table CC-2, the County emission baseline is approximately 6.5 MMT per year, with the transportation sector as the largest contributor at 55% of the total. The emissions per sector drop precipitously from there, with the residential sector emitting only a quarter of the transportation sector total. However, the residential and commercial sectors can be combined to give a more overarching view, because though these sectors operate differently, the source of emissions are the same: private building and interior equipment energy usage. Combining these sectors, transportation accounts for 55% of emissions, and operation of residential, commercial, and industrial buildings accounts for 28% of emissions. The industrial-specific, off-road vehicle, waste, wastewater, agriculture, and high global warming potential greenhouse gases (High GWP GHG) sectors combined are responsible for only 14% of the County emissions, with the airport as an additional 3%.

Table CC-2 2005 Community Emissions by Sector

Sector	CO_2e (metric tons)	Percent
Residential	1,033,142	15.8
Commercial and Industrial	791,059	12.1
Industrial Specific	2,104	0.0
Transportation	3,610,937	55.1
Off-Road Vehicle Use	236,466	3.6
Waste	201,399	3.1
Wastewater Treatment	54,391	0.8
Agriculture	197,132	3.0
High GWP GHGs	228,768	3.5
Airport	200,404	3.1
Total	**6,555,802**	**100**

Table CC-3 compares existing (2005) unincorporated and incorporated County emissions, as well as State emissions. Table CC-4 provides the emissions estimated to result from implementation of the Project and Alternatives in the year 2030, unmitigated. The differences between the scenarios are not substantial, for reasons that are discussed in more detail in the analysis of the Alternatives, in following sections. These emissions are broken out into more detail in Table CC-5 and Table CC-6. Table CC-5 displays transportation emissions of carbon dioxide and methane, in tons per day. Table CC-6 shows the community emissions for all of the Alternatives, without the transportation sector.

Table CC-7 compares projected annual 2030 emissions to existing emissions levels. As described in the Regulatory Setting section, AB 32 requires emissions be reduced to 1990 levels by the year 2020, which is estimated in the AB 32 Scoping Plan to be 15% below existing (2005) emissions. **As the only regulatory document adopted by the State that sets a greenhouse gas reduction goal, the EIR preparers have decided to rely on the underlying strategy and assumptions of the AB 32 Scoping Plan to develop County targets. For this analysis, it is assumed that emissions must be reduced to 1990 levels by 2020. Reducing the modeled 2005** ~~For~~ County emissions **by 15%**, the **County** 1990 baseline is 5,572,432 metric tons. Table CC-8 compares projected 2030 emissions to the 1990 baseline. Buildout of the proposed General Plan will result in a 6.7 MMT increase in emissions above 2005 baseline levels by the year 2030. This is 7.7 MMT above the 1990 levels required by AB 32, and is a significant impact.

Addressing these emissions efficiently and effectively requires a multi-layered strategy that includes a new General Plan policy setting the 2020 reduction goal, a comprehensive plan laying out the policy framework and general strategies that will be implemented by 2020, a set of new thresholds to be used to determine if new development is compliant with this plan, and a detailed implementation plan that includes a means of tracking progress toward the 2020 target. The strategy must also take into account how the plans interface with the AB 32 Scoping Plan, with SB 375, and with CEQA requirements.

Table CC-3 Relative Existing CO_2 Emissions (in CO_2 Equivalents)

Scenario	CO_2e	% of State - 2004	% of State - 1990	% of Entire County	% of Unincorporated County
Unincorporated County – 2005	6.5 MMT/yr	1.5%	1.7%	46%	
Entire County – 2005	14 MMT/yr	3.2%	3.6%		
State – 1990	389 MMT/yr				
State – 2004	427 MMT/yr				

MMT: Million Metric Tons

Table CC-4 2030 CO_2e Emissions (in metric tons per year)

Scenario	On-Road	Off-Road	Total
1993 General Plan	8,060,450	4,248,006	12,308,456
No Project	8,143,231	4,284,934	12,428,165
Proposed General Plan	8,689,861	4,593,202	13,283,063
CEQA Alternative 1: Remove Grant Line East	8,461,317	4,480,178	12,941,494
CEQA Alternative 2: Focused Growth	8,428,205	4,470,516	12,898,720
CEQA Alternative 3: Mixed Use	8,262,504	4,389,186	12,651,690
Project Alternative 1: Arterial Downgrade	8,689,861	4,593,202	13,283,063
Project Alternative 2: Thoroughfare Downgrade	8,686,619	4,593,202	13,279,821

Table CC-5 Mobile Source 2030 CO_2 and CH_4 Emissions (in tons per day)

	Greenhouse Gases	
Scenario	**CO_2**	**CH_4**
2005 Existing Condition	17,860	2.03
Project	24,580	0.61
Proposed General Plan	26,230	0.65
Arterial Downgrade	26,230	0.65
Thoroughfare Downgrade	26,220	0.66
Remove Grant Line East	25,540	0.64
Focused Growth	25,440	0.64
Mixed Use	24,940	0.62
Comparison of Alternatives		
Scenario Minus the Existing 2005 Emissions: Change from the baseline		
Proposed General Plan	8,370.00	-1.38
Arterial Downgrade	8,370.00	-1.38
Thoroughfare Downgrade	8,360.00	-1.37
Remove Grant Line East	7,680.00	-1.39
Focused Growth	7,580.00	-1.39
Mixed Use	7,080.00	-1.41
Scenario Minus the Existing 1993 General Plan Emissions: Change from the Existing General Plan		
Proposed General Plan	1,900.00	0.04
Arterial Downgrade	1,900.00	0.04
Thoroughfare Downgrade	1,890.00	0.05
Remove Grant Line East	1,210.00	0.03
Focused Growth	1,110.00	0.03
Mixed Use	610.00	0.01
Scenario Minus the No Project Emissions: Change from the No Project		
Proposed General Plan	1,650.00	0.04
Arterial Downgrade	1,650.00	0.04
Thoroughfare Downgrade	1,640.00	0.05
Remove Grant Line East	960.00	0.03
Focused Growth	860.00	0.03
Mixed Use	360.00	0.01

Source: EMFAC2007 in BURDEN mode, KD Anderson & Associates, and DKS Associates.

Table CC-6 CO_2e Emissions for Alternatives (tons annually) – All Sectors but Transportation

Sector	1993 General Plan	No Project	Remove Grant Line East	Focused Growth	Mixed Use	Arterial Downgrade Thoroughfare Downgrade Proposed General Plan
Residential	1,496,245	1,514,195	1,621,378	1,621,378	1,592,198	1,670,820
Commercial and Industrial	1,168,299	1,175,247	1,205,433	1,201,215	1,174,063	1,230,808
Industrial Specific	2,712	2,720	2,700	2,672	2,712	2,733
Off-road Vehicle Use	338,277	341,147	356,381	355,671	348,340	365,334
Waste	288,112	290,556	303,531	302,927	296,682	311,156
Wastewater Treatment	77,809	78,469	81,973	81,810	80,124	84,033
Agriculture	254,076	254,843	252,993	250,360	254,076	256,055
High GWP GHGs	327,265	330,041	344,779	344,093	337,000	353,441
Water Related	8,522	8,594	8,978	8,960	8,775	9,203
Sacramento International Airport	286,689	289,121	302,031	301,430	295,216	309,619
Total	**4,248,006**	**4,284,934**	**4,480,178**	**4,470,516**	**4,389,186**	**4,593,202**

Table CC-7 CO_2e Emissions Relative to 2005 levels (per year)

Scenario	2030 MT CO_2e	MT Above the 2005 Baseline	% Above the 2005 Baseline
1993 General Plan	12,308,456	5,752,654	47%
No Project	12,428,165	5,872,363	47%
Proposed Project	13,283,063	6,727,261	51%
CEQA Alternative 1	12,941,494	6,385,692	49%
CEQA Alternative 2	12,898,720	6,342,918	49%
CEQA Alternative 3	12,651,690	6,095,888	48%
Project Alternative 1	13,283,063	6,727,261	51%
Project Alternative 2	13,279,821	6,724,019	51%

Table CC-8 CO_2e Emissions Relative to 1990 levels (per year)

Scenario	2030 MT CO_2e	MT Above the 1990 Baseline	% Above the 1990 Baseline
1993 General Plan	12,308,456	6,736,024	55%
No Project	12,428,165	6,855,733	55%
Proposed Project	13,283,063	7,710,631	58%
CEQA Alternative 1	12,941,494	7,369,062	57%
CEQA Alternative 2	12,898,720	7,326,288	57%
CEQA Alternative 3	12,651,690	7,079,258	56%
Project Alternative 1	13,283,063	7,710,631	58%
Project Alternative 2	13,279,821	6,707,389	58%

Comprehensive plans to address climate change are being adopted by many jurisdictions, and they have come to be called Climate Action Plans. Part of the mitigation for significant impacts related to GHG emissions included in this EIR requires adoption of a Sacramento County Climate Action Plan. Though the Climate Action Plan is a mitigation measure for the impacts of the proposed General Plan, it will also serve many other functions. There were, and will continue to be, numerous contributors and County Departments involved in the writing of the Draft Sacramento County Climate Action Plan. According to the Sacramento County Sustainability Coordinator, Cecilia Jensen, the Climate Action Plan is intended to be completed in two phases, with the first phase being the strategy document to be adopted concurrently with the General Plan. The second phase will flesh out the strategies outlined in the phase I plan, and will include economic analysis, intensive vetting with all internal departments, community

outreach/information sharing, timelines, and detailed performance measures. This more detailed plan will take at least a year to complete, both because of the level of detailed analysis necessary and because of the lengthy public outreach and vetting component. Phasing the Climate Action Plan allows the County to consider and adopt the overall strategies and goals as a first step, rather than delaying County action until the more lengthy and detailed part of the process is complete. Mitigation in this EIR recognizes this two step process.

The draft first phase of the Sacramento County Climate Action Plan contains policies/goals related to agriculture, energy, transportation/land use, waste, and water. Goals in the section on agriculture focus on promoting the consumption of locally-grown produce, protection of local farmlands, educating the community about the intersection of agriculture and climate change, educating the community about the importance of open space, pursuing sequestration opportunities, and promoting water conservation in agriculture. Actions related to these goals cover topics related to urban forest management, water conservation programs, open space planning, and sustainable agriculture programs.

Goals in the section on energy focus on increasing energy efficiency and increasing the usage of renewable sources. Actions include implementing green building ordinances and programs, community outreach, renewable energy policies, and partnerships with local energy producers.

Goals in the section on transportation/land use cover a wide range of topics but are principally related to reductions in vehicle miles traveled, usage of alternative fuel types, and increases in vehicle efficiency. Actions include programs to increase the efficiency of the County vehicle fleet, and an emphasis on mixed use and higher density development, implementation of technologies and planning strategies that improve non-vehicular mobility.

Goals in the section on waste include reductions in waste generation, maximizing waste diversion, and reducing methane emissions at Kiefer landfill. Actions include solid waste reduction and recycling programs, a regional composting facility, changes in the waste vehicle fleet to use non-petroleum fuels, carbon sequestration at the landfill, and methane capture at the landfill.

Goals in the section on water include reducing water consumption, emphasizing water efficiency, reducing uncertainties in water supply by increasing the flexibility of the water allocation/distribution system, and emphasizing the importance of floodplain and open space protection as a means of providing groundwater recharge. Actions include metering, water recycling programs, water use efficiency policy, water efficiency audits, greywater programs/policies, river-friendly landscape demonstration gardens, participation in the water forum, and many other related measures.

Though the Climate Action Plan is intended to benefit the County in a variety of ways, there are potential negative physical consequences associated with implementation. Certain alternative fuels are generated using food crops, which can have many potential

effects, including limiting the total food supply and reducing the availability of local food crops, as local foods may be shipped elsewhere for energy production. These impacts would be counterproductive to the stated need to increase the reliance of locally-grown foods, and could result in a net increase in fuel usage associated with transporting foods.

In the energy sector, the generation of renewable energy will affect aesthetics and may affect open space areas (and any resources within them). Solar panels and other renewable energy technologies within existing urban communities – on rooftops, within yards, or within community parks and other areas – will fundamentally alter the visual environment in ways that could be significant. Large-scale renewable energy facilities may be proposed and constructed within undeveloped areas of the County, which will negatively affect the visual environment and may also result in a loss of habitat for special status species, and/or of cultural or paleontological resources. Certain types of facilities may not only affect habitat, but may result in "take" of protected species (birds striking windmills and other hazards). Both the further the goal of providing alternative energy sources, and to ensure that some of these potential impacts are addressed comprehensively, mitigation recommends an update to the Energy Element of the General Plan.

In the transportation/land use sector, the goals and actions have the potential to result in negative impacts to vehicular mobility. This is also discussed in the EIR chapter Transportation and Circulation. Historically, the emphasis within Sacramento County has been on vehicular mobility, which has meant that mitigation funds and other money have been funneled primarily to roadway and intersection improvements. Changing the emphasis to include non-vehicular mobility will draw some of those funds that would have gone to vehicle improvements to pedestrian, bicycle, and transit improvements instead. Although this is intended to improve overall mobility, the result will be some localized decreases in vehicle mobility.

Potential impacts in the waste and water sectors are related to the construction of new facilities, such as the regional composting facility, pipelines, and other infrastructure. This will include construction impacts to air quality, biological resources, cultural and paleontological resources, hazardous materials, and water quality. These impacts must all be addressed as part of the environmental documents prepared for these infrastructure projects.

Though the Climate Action Plan will result in certain environmental impacts, the benefits of implementing the plan and potentially avoiding or adapting to the most serious effects of climate change far outweigh the potential negative impacts of implementation of the plan. Many of these impacts are also local, and the trade-off will be regional benefits. For instance there will be local increases in pollutants (associated with congestion and construction) but reductions in pollution on a regional scale.

The California Air Pollution Control Officer's Association (CAPCOA) published a document entitled "Model Policies for Greenhouse Gases in General Plans" (June 2009). The policies were reviewed to determine which of the proposed General

Plan policies were similar to those listed within the CAPCOA publication, and to determine if there were any new policies that could be added. A significant number of policies within the CAPCOA document have analogues within the proposed General Plan. These policies and their analogues are detailed in Appendix H of this document. Policies present within the CAPCOA document that are absent in the General Plan tend to deal with the provision of transit or energy production/efficiency. Although there are cities and counties that provide transit service, Sacramento County is not one of these, so adding policies guaranteeing certain transit provisions is not feasible. The policies related to energy will be an eminently useful source for material as part of the update to the Energy Element required by mitigation.

A set of thresholds are necessary to determine compliance of future development with the Climate Action Plan and with AB 32. A set of thresholds, or targets, is proposed within this EIR that can be used for this purpose (see Table CC-9). Note that though all sectors are shown on the table, most sectors do not include a threshold (the industrial-specific sector, because it was such a small number, was added to the Commercial and Industrial sector). **These sectors mimic the sector analysis of the County greenhouse gases inventory – refer to the beginning of this analysis on page 12-26 for a description of the sectors.** The residential, commercial/industrial, and transportation sectors are directly related to development that may be subject to CEQA. The other sectors either cannot be addressed through CEQA, or are best addressed by other means. *Wastewater* and *Waste* emissions will be indirectly addressed by the Green Building Program being developed by the County, but the most significant emissions reductions can be realized by focusing on wastewater treatment, wastewater reuse, and landfill operations. The Wastewater and Waste sectors will be addressed by the activities of the Sacramento Regional County Sanitation District (which is preparing a Climate Action Plan specific to wastewater operations), by the County Climate Action Plan, and by implementation of measures within the AB 32 Scoping Plan. **These thresholds will require periodic updating, to reflect changes to the Greenhouse Gases Inventory and any changes in the regulatory environment.**

Agriculture, *Airport, and High Global Warming Potential* (High GWP) gases emissions are not within the jurisdiction of the County. Agricultural activities are regulated by a number of state agencies, including the State Water Resources Control Board and the California Department of Food and Agriculture. The County cannot pursue reductions in the agricultural sector without any substantive regulatory or discretionary control over agricultural activities. Similarly, the County does not have regulatory or operational control over airlines and their air and ground fleets, or over High GWP gases (which come primarily from refrigerants). Though the County will not be responsible for reducing airline fleet emissions, as part of reducing its government emissions the County will address those airport facility emissions that are within County control.

Off-Road Vehicle Use includes construction equipment, rail, recreational watercraft and land craft, and other such combustion vehicles. Except for construction equipment, the County does not have a means to offset emissions from the other types of uses in these

sectors. There is no reasonable and feasible way to determine, for instance, how many recreational watercraft might be added to area lakes as part of a particular development or what the emissions factors from those vehicles would be. Nor is there any reasonable mitigation the County could employ to reduce the use of recreational watercraft or reduce the usage of such watercraft. The County will need to rely on State implementation of the AB 32 Scoping Plan to address most emissions from this sector. For construction equipment, reductions will be required by the County. There are established and reasonable methods available to calculate construction equipment emissions from a given project, and there are also reasonable means to offset those emissions available. Construction equipment emissions will need to be addressed on a per-project basis, according to the size of the site, the type of development proposed, and the type of equipment that will be used.

The AB 32 Scoping Plan indicates that a 15% reduction below 2005 levels will achieve the 1990 level. The 2020 target total in the table below represents a 15% reduction below the 2005 baseline. Each sector 2020 target was derived by using their percent of the 2005 baseline total and multiplying it by the total minimum reduction required (e.g. 1,033,142 – (15.80% x 983,370) = the residential sector 2020 target). The targets were derived using housing projections and projections of commercial and industrial square footage provided by the Sacramento Area Council of Governments (SACOG). Note that for the commercial and industrial sector, the target is reported as being per 1,000 square feet (Kft^2).

Table CC-9 Sector Analysis (in MT) and Thresholds for Development

Sector	2005 Baseline	Percent of Total	Total Minimum Reduction in CO_2e	2020 Target	Thresholds
Residential Energy	1,033,142	15.80%	155,373	877,769	1.30 per capita
Commercial & Industrial Energy	793,163	12.10%	118,988	674,175	8.08 per Kft^2
Wastewater	54,391	0.80%	7,867	46,524	--
Transportation Use	3,610,937	55.0%	540,854	3,070,083	4.56 per capita
Waste	201,399	3.10%	30,484	170,915	--
Agriculture	197,132	3.00%	29,501	167,631	--
High GWP	228,768	3.50%	34,418	194,350	--
Off-Road Vehicle Use	236,466	3.60%	35,401	201,065	--
Airport	200,404	3.10%	30,484	169,920	--
Total	6,555,802	100%	983,370	5,572,432	--

NOTES:

1. Population, commercial square footage, and industrial square footage data forecasts for the 2020 year provided by SACOG.
2. Baseline Year emissions from the County Inventory prepared by ICF Jones and Stokes
3. Table assumes that total County 2005 emissions must be reduced by 15%, consistent with the AB 32 Scoping Plan
4. The Total Minimum Reduction is based on the proportion that each sector contributes to emissions (e.g. Commercial/Industrial emissions are 12.1% of the total 2005 emissions, so that sector is also responsible for 12.1% of the total minimum reduction required: 12.1% x 983,370).
5. Development thresholds are not calculated for all sectors because:

Wastewater and *Waste* emissions will be reduced through government activities and implementation of the AB 32 Scoping Plan, not through development thresholds.

Agriculture and *Airport* emissions are not within the jurisdiction of the County, and must be reduced through State and Federal actions

High Global Warming Potential (High GWP) gases are not directly related to development (they come primarily from refrigerants), and must be reduced by State and Federal actions

Off-Road Vehicle Use includes construction equipment, rail, recreational watercraft and land craft, and other such combustion vehicles. Except for construction equipment, the County does not have jurisdiction over these uses. Development projects will be required to reduce emissions from construction equipment, but that will need to be determined on a per-project basis, depending on the size of the site and the number and type of equipment that will be used.

State implementation of the strategies listed within the AB 32 Scoping Plan will offset the emissions of future projects by an unknown amount, which may in fact result in a project falling below the target even without additional revisions or mitigation. In fact, full implementation of AB 32 is expected to result in the reduction of statewide emissions to 1990 levels by 2020. If AB 32 implementation were further along, this analysis and the Climate Action Plan may have been able to rely on the programs and rules implemented under AB 32 to ensure that future project emissions would be reduced by the required amounts. As it is, the Scoping Plan for AB 32 was only recently adopted, and many of the reduction strategies will take years to implement. To be compliant with CEQA, a lead agency must be able to demonstrate that the reductions assumed have a reasonable expectation of being achieved. As implementation of the AB 32 Scoping Plan progresses, it can be presumed that state programs will become established and the burden on local governments to demonstrate new construction compliance will be reduced.

Though over time it is expected that the County will not need to demonstrate development compliance with most of the emissions sectors, it is expected that the transportation sector will largely remain County responsibility. Transportation emissions are strongly related to vehicle miles traveled, which is itself strongly influenced by land use planning and design. Local governments have the most control over this connection between land use and transportation. As a reflection of this, implementation of SB 375 will identify a specific amount by which local jurisdictions must reduce transportation-related ghg emissions. SACOG will be the entity responsible for organizing and ultimately setting the target for the Sacramento region. Sacramento County staff requested guidance from SACOG on the amount of reduction that may ultimately be required through SB 375. Though SACOG noted that it would not be known for certain for some time, they did write a letter estimating that the statewide target could be approximately 11 MMT, which would make Sacramento County's target 451,000 MT. At a minimum, Sacramento County should retain this amount, or the finalized SB 375 amount, in any future version of development thresholds.

As stated, mitigation below requires County adoption of the AB 32 goal as a General Plan policy, a Climate Action Plan, and development thresholds. In concert with state and federal activities, this mitigation is intended to offset the Project climate change impact, which has been determined to be significant. Ideally, this mitigation would reduce the Project emissions and climate change impacts to levels that are not cumulatively significant, but there are many unknown variables and implementation challenges. Research is constantly generating new and better data, and modeling software for local emissions continues to be refined. It is possible that the 15% emissions reduction estimated by the state will be revised upward, or future modeling refinements will require the County to reexamine and revise the baseline emissions inventory. Even if the baseline analysis and target were unchanged, the County contribution to this global phenomenon can only be called cumulatively inconsiderable if all other parts of the world contribute to the needed reduction as well. If the County, or the State, or even the United States were the only entities to reach the necessary targets, the worst effects of climate change would not be averted. Therefore, though the County is taking all reasonable and feasible steps to reduce the Project effects on

climate change, the impact is still *significant and unavoidable*, due to the uncertain nature of the impact.

MITIGATION MEASURES

CC-1. The following policy shall be added to the General Plan: It is the goal of the County to reduce greenhouse gas emissions to 1990 levels by the year 2020. This shall be achieved through a mix of State and local action.

CC-2. The following shall be included as implementation measures to the policy required by CC-1:

A. The County shall adopt a first-phase Climate Action Plan, concurrent with approval of the General Plan update, that contains the following elements and policies:

   a. The County shall complete a GHG emissions inventory every three years to track progress with meeting emission reduction targets.

   b. The County shall adopt a Green Building Program **by 2012**, which shall be updated a minimum of every 5 years.

   c. The County shall enact a Climate Change Program that includes the following:

      i. A fee assessed for all new development projects for the purpose of funding the ongoing oversight and maintenance of the Climate Action Plan.

      ii. Reduction targets that apply to new development **(Table CC-9).**

   d. A section on Targets that discusses the 2020 reduction target.

B. The County shall adopt a second-phase Climate Action Plan within one year of adoption of the General Plan update that includes economic analysis and detailed programs and performance measures, **including timelines and the estimated amount of reduction expected from each measure**.

C. The County shall update the Energy Element of the General Plan to include policies related to alternative energy production within the County, which may include a General Plan Land Use Diagram overlay designation reflecting prime or allowable areas for alternative energy production (such as solar or wind farms).

CEQA ALTERNATIVES

Impacts of climate change to the Alternatives described below would be virtually identical to those described for the Project. Climate change effects to unincorporated Sacramento County will be based on global and regional trends, and the effects themselves will be regional in nature. What can generally be observed is that certain aspects of the Alternatives may make them less vulnerable to particular climate change effects. An Alternative that accommodates less growth will need less water, a resource that is likely to become more scarce in this region as a result of climate change; however, this benefit may not be realized if reducing development in Sacramento County simply shifts development to other incorporated cities or other counties that also rely on middle-range Sierra snowpack.

NO PROJECT

The No Project Alternative will emit 12.4 MMT each year, once full buildout is reached. This is a 5.9 MMT increase in emissions above baseline levels and is 6.9 MMT above the 1990 levels required by AB 32. Table CC-4 shows the CO_2e emissions all of the Alternatives compared to each other, Table CC-7 shows the emissions compared to the 2005 baseline, and Table CC-8 shows the emissions compared to the 1990 baseline. As shown in the table, the No Project Alternative would result in the least emissions of all the Alternatives.

Though this Alternative would result in the least emissions originating in the County, it is also inconsistent with the Blueprint. The Blueprint assumes, reasonably, that population growth will continue in California and the region over the long term, and lays out a more optimal growth pattern for that growth. The unincorporated Sacramento County area was allocated approximately 100,000 new dwelling units by 2030. If the No Project Alternative is chosen, the County will only be able to accommodate approximately half of this amount. The remaining growth will need to be accommodated within other areas of the County, perhaps leading to greater sprawl effects and increases in vehicle miles traveled when compared with the Blueprint scenario. Therefore, even though this Alternative results in the least County emissions, it is likely that it would result in higher regional emissions.

The Project discussion of climate change impacts also applies to this Alternative. Though the mitigation recommended for the Project should apply to the No Project Alternative, adoption of the No Project Alternative is accomplished via denial of the Project – mitigation cannot be applied to the No Project Alternative. Impacts would be *significant and unavoidable* both because of the uncertainties inherent in the analysis and because the County would not be taking local action on climate change.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

The Remove Grant Line East Alternative will emit 12.9 MMT each year, once full buildout is reached. This is a 6.4 MMT increase in emissions above baseline levels and

is 7.4 MMT above the 1990 levels required by AB 32. Table CC-4 shows the CO_2e emissions of all of the Alternatives compared to each other, Table CC-7 shows the emissions compared to the 2005 baseline, and Table CC-8 shows the emissions compared to the 1990 baseline. As shown in the table, the Remove Grant Line East Alternative would result in the most emissions of all the Alternatives, but 0.4 MMT less than the Project.

This Alternative results in less emissions than the Project, and is also more consistent with the Blueprint. Though the Blueprint does show eventual growth within the Grant Line East area, it is not shown **within SACOG land use forecasts through the year 2035, five years beyond the planning horizon of this General Plan Update** ~~until the year 2050~~. As discussed in the Land Use chapter discussion of smart growth, retaining the Grant Line East New Growth Area makes the Project susceptible to leapfrog and sprawl development. Allocating more land than is necessary may also result in lower housing densities (which is associated with higher vehicle miles traveled) and/or in growth that the Blueprint allocated to other areas occurring in the east County instead. Removing the Grant Line East New Growth Area reduces these potential effects, and makes the project more consistent with the Blueprint. Therefore, this Alternative both results in fewer County emissions than the Project, and also may result in lower regional emissions than the Project.

The Project discussion of climate change impacts also applies to this Alternative. The mitigation recommended for the Project should apply to the Remove Grant Line East Alternative. Impacts would remain *significant and unavoidable* because of the uncertainties inherent in the analysis.

ALTERNATIVE 2: FOCUSED GROWTH

The Focused Growth Alternative will emit 12.9 MMT each year, once full buildout is reached. This is a 6.3 MMT increase in emissions above baseline levels and is 7.3 MMT above the 1990 levels required by AB 32. Table CC-4 shows the CO_2e emissions of all of the Alternatives compared to each other, Table CC-7 shows the emissions compared to the 2005 baseline, and Table CC-8 shows the emissions compared to the 1990 baseline. As shown in the table, the Focused Growth Alternative results in 0.4 MMT fewer emissions than the Project.

This Alternative results in less emissions than the Project and is also consistent with the Blueprint. The Alternative accommodates the approximate amount of housing allocated to Sacramento County, and shows 2030 growth in approximately the same areas as the Blueprint. Therefore, this Alternative results in fewer County emissions than the Project, and also will result in lower regional emissions than the Project. Despite these factors, the analysis shows that the emissions are only marginally lower than the Alternative 1 emissions. This is because traditional traffic modeling does not address the reductions in trip lengths and trip number associated with increased densities, mixed use, and other features – which is why the Transportation and Circulation chapter also includes a separate smart growth analysis. Based on the smart growth analysis, it should be assumed that the emissions resulting from the Focused Growth Alternative would be

lower than the estimated 12.9 MMT, because growth would be more dense and more centralized.

The Project discussion of climate change impacts also applies to this Alternative. The mitigation recommended for the Project should apply to the Focused Growth Alternative. Impacts would remain *significant and unavoidable* because of the uncertainties inherent in the analysis.

ALTERNATIVE 3: MIXED USE

The Mixed Use Alternative will emit 12.7 MMT each year, once full buildout is reached. This is a 6.1 MMT increase in emissions above baseline levels and is 7.1 MMT above the 1990 levels required by AB 32. Table CC-4 shows the CO_2e emissions of all of the Alternatives compared to each other, Table CC-7 shows the emissions compared to the 2005 baseline, and Table CC-8 shows the emissions compared to the 1990 baseline. As shown in the table, aside from the No Project Alternative the Mixed Use Alternative results in the least emissions, and emits 0.6 MMT less than the Project.

This Alternative results in less emissions than the Project and is consistent with the Blueprint housing allocation, though not with the areas designated for growth. The Blueprint shows a portion of the Jackson Highway Corridor developing in the 2030 time horizon, and this Alternative eliminates all of that growth area. Even so, this inconsistency is not likely to result in higher regional emissions, because the appropriate housing allocation is still accommodated. According to the smart growth analysis in the traffic study, the Mixed Use Alternative would also result in the lowest vehicle miles traveled because it would have the highest densities, access to non-vehicular travel modes, and highest mix of uses. This reduction in vehicle miles traveled is not reflected in the estimated emissions for this Alternative, because the emissions were derived from traditional traffic modeling results.

Based on the smart growth analysis, it should be assumed that the emissions resulting from the Mixed Use Alternative would be lower than the estimated 12.7 MMT – perhaps substantially lower. The smart growth analysis found that development in Grant Line East would have an average vehicle miles traveled per household of 49.4 miles, Jackson Highway Corridor would have 39.2, and the Commercial Corridors 31.3. With all of the necessary development that would have occurred in these areas instead occurring in the Commercial Corridors and through infill, approximately 15,700 households that would have been traveling between 40 and 50 miles each day will only travel approximately 30 miles each day. This would equate to approximately 230,000 fewer vehicle miles traveled *every day*, and this fact will result in far fewer emissions than the more conservative traffic modeling estimate results indicate.

The Project discussion of climate change impacts also applies to this Alternative. The mitigation recommended for the Project should apply to the Mixed Use Alternative. Impacts would remain *significant and unavoidable* because of the uncertainties inherent in the analysis.

13 GEOLOGY AND SOILS

INTRODUCTION

This chapter describes the geologic and soil setting of the County, including descriptions of potential geologic hazards and the presence of mineral resources. The impacts and analysis section of the chapter evaluates the effects of the proposed new growth areas and commercial corridor redevelopment areas as well as new and revised General Plan policies related to geologic and soil resources. Impacts are described in terms of their significance to the affected environment.

ENVIRONMENTAL SETTING

REGIONAL GEOLOGY

The present-day landscape of Sacramento County has been shaped over time by the ongoing processes of erosion and deposition. Material eroded from the ancestral Sierra Nevada, formed over 100 million years ago, was deposited ~~in an ancient sea that once occupied the~~ **onto the** Sacramento Valley floor. ~~As this ancient sea receded from the valley about~~ **Approximately** 10 to 15 million years ago tectonic uplifts altered the geomorphology of the Sierra Nevada. Glaciation, volcanism, and ~~a series of interglacial seas~~ **erosion** followed the uplifting, adding layers of sediment to the valley floor. Under the present geologic conditions, the alteration of the local geomorphology continues through stream erosion of the valley sediments and subsequent deposition in adjacent floodplains.

A "geomorphic province" is comprised of an area of similar geologic origin and erosional/depositional history. Sacramento County is situated in portions of two geomorphic provinces. By far the largest portion of the County lies in the Great Valley province. A small area in the eastern part of the County is in the Sierra Nevada province. The Great Valley province is further divided into four geomorphic subunits, as described below:

> The Delta - The Delta, characterized by Holocene deposits, includes the low-lying lands located in the southwest portion of the county. The boundary of the Delta is arbitrarily fixed at the zero-elevation contour, which coincides with the contact between the organic and inorganic soils. Prior to human intervention, this region was dominated by tidal marshes that were traversed by meandering sloughs. Over time, however, the sloughs were altered and the marshes drained. Numerous islands have been created by the construction of a system of artificial levees.

River Floodplain - The river floodplain subunit consists of unconsolidated inorganic soils which were formed by the deposition of sediment when flood waters overtopped the natural levees of the County's rivers and major streams.

Alluvial Plain - To the east of the Sacramento River floodplain is an extensive area of former floodplain that has been highly dissected by subsequent stream erosion. This geomorphic subunit is comprised of older, Quaternary, deposits. This area is underlain by soil which is characterized by layers of hardpan or dense, impervious clay.

Low Foothills - The low foothill area, located east of the alluvial plain, is typified by rolling, boulder-strewn topography and is underlain by moderately consolidated silts, sands, and clays of continental origin. The small area in the northeast part of the County within the Sierra Nevada geomorphic province consists of Pliocene and older deposits and is characterized by steep-sided hills and narrow, rocky stream channels. Stream patterns here are well established and are controlled principally by bedrock features

GEOLOGICAL HAZARDS

SEISMIC HAZARDS

Geological literature indicates that active faults are largely considered those which have had movement within the last 11,000 years (within the Holocene or Historic time periods) and indicates that no major active faults transect the County; however, there is one known subsurface inactive fault in northern Sacramento County, and several subsurface faults in the Delta some of which may have had movement but during times which are speculative. Also, a number of other fault systems lie to the east and west of Sacramento County which can be considered active and subject to possible seismic events.

California Geological Survey (CGS) (formerly the California Division of Mines and Geology) staff (W. Bryant) was consulted with to obtain the most current seismic information in and around the Sacramento County Region. The closest known fault to the growth areas is the Willows Fault which is presumably inactive. The Willows Fault is located in the vicinity of Citrus Heights near Antelope Road. According to CGS staff, generalized geologic maps show the Willows Fault to be concealed by Pleistocene deposits and Harwood and Haley (1987) show this fault as pre-Quaternary (active 1.6 million years ago or longer).

The Midland fault, buried under alluvium, extends north of Bethel Island in the Delta to the east of Lake Berryessa and studies by Webber-Band (1998) suggest that the Midland Fault offsets Pleistocene strata (1.6 million to 10,000 years old) and possibly even deforms basal peat deposits thought to be of Holocene age (10,000 to 200 years old); however, according to CGS staff Holocene activity is unconfirmed. This fault is noted on the C.W. Jennings, Fault Activity Map of 1994 to be a pre-Quaternary fault (active 1.6 million years ago or longer). Although the timeframe of its most recent

activity is speculative this fault is considered capable of generating a near 6.6 (Richter Scale) earthquake. This figure is an assumption based on a 1892 earthquake measuring 6.6 on the Richter Scale with an epicenter possibly in the Midland Fault vicinity or the along blind-thrust faults in the Coast Range although the source of this earthquake is not known for sure according to CGS staff.

Another delta fault is located further west of the Midland Fault. This fault is currently unnamed and is concealed where it passes beneath the westernmost tip of Sacramento County, and may have been active within the past 11,000 years according to the C.W. Jennings Activity Map although, again, exact times of displacement are unknown. Oil and gas companies exploring the Delta area's energy potential have identified several subsurface faults, none of which show any recent surface rupture.

To the east of Sacramento County the Bear Mountain fault zone trends northwest-southeast through Amador and El Dorado Counties. This fault is associated with the Foothills Fault system. According to CGS staff, faults in this system are largely characterized by very slow slip rates (generally less than 0.01mm/yr) and have long recurrence intervals. CGS staff further indicated that the Foothills Fault system east of Sacramento County have evidence of late Pleistocene to Holocene displacement and have the potential to produce infrequent, moderate magnitude earthquakes.

While Sacramento County has experienced relatively little seismic activity, faulting in neighboring regions, especially the San Francisco Bay area and the Sierra Nevada, suggests that the County could be affected by future ground motion originating elsewhere.

The Richter Magnitude Scale is used to quantify the magnitude or strength of the seismic energy released by an earthquake. The Modified Mercalli Intensity Scale (MMI Scale) is used to measure the intensity of groundshaking at a given site in response to an earthquake. The MMI Scale is useful in planning for seismic safety, as it translates the intensity of earthquake shaking into possible damaging effects on structures. Table GS-1 below shows the relationship of an earthquake’s magnitude and intensity as well as describes the related intensity.

Table GS-1 Relationships Between Earthquake Magnitude and Intensity

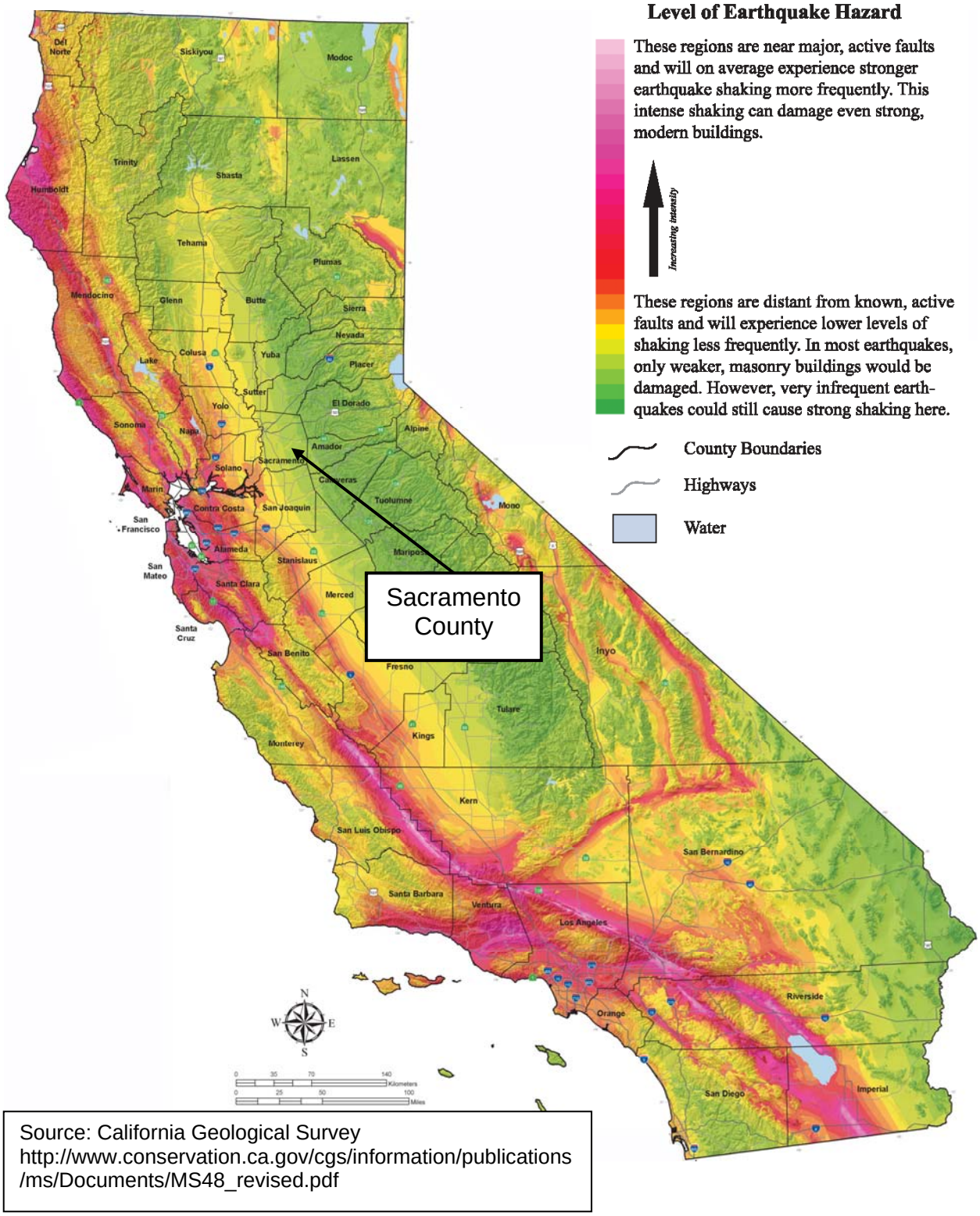
Magnitude	Intensity (MMI)	Description
1.0-2.9	I	I. Not felt except by a very few under conditions especially susceptible to seismic events
3.0-3.9	II – III	II. Felt only by a few persons at rest, especially on upper floors of buildings. III. Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
4.0-4.9	IV – V	IV. Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably. V. Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
5.0-5.9	VI – VII	VI. Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. VII. Damage negligible in buildings of gooddesign and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
6.0-6.9	VIII – IX	VIII. Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. IX. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.

Magnitude	Intensity (MMI)	Description
7.0 and higher	X and higher	X. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. XI. Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly. XII. Damage total. Lines of sight and level are distorted. Objects thrown into the air.
Source: California Geological Survey http://earthquake.usgs.gov/learning/topics/mercalli.php.		

The intensity of ground shaking and its potential impact on structures is determined by the physical characteristics of the underlying soil and rock, building materials and workmanship, earthquake magnitude and location of epicenter and the character and duration of ground motion. Much of the county is located on alluvium which increases the amplitude of the earthquake wave. Ground motion lasts longer and waves are amplified on loose, water saturated materials as compared with solid rock. As a result structures located on alluvium typically suffer greater damage than those located on solid rock.

The CGS has prepared a map of the state which show the earthquake shaking potential of areas throughout California based primarily on an areas distance from known active faults. The map shows the east and central portions of the County in a relatively low intensity groundshaking zone, while the westernmost portion of the County in a relatively moderate groundshaking zone (See Plate GS-1).

Plate GS-1 Earthquake Shaking Potential for California



Source: California Geological Survey
http://www.conservation.ca.gov/cgs/information/publications/ms/Documents/MS48_revised.pdf

LIQUEFACTION

Sacramento County has two areas that have been suggested as posing potential liquefaction problems - the downtown area and the Delta. Liquefaction is a process whereby the strength and stiffness of a soil is reduced by earthquake shaking or rapid cyclic loading. Liquefaction occurs in saturated, typically cohesionless soils. Earthquake shaking can cause the pore water pressure to increase to a point where the strength of the soil decreases and the ability of a soil deposit to support foundations for buildings and bridges is significantly reduced. A geological and seismological study in 1972 for a downtown building site concluded that potential liquefaction problems may exist throughout the downtown area where loose sands and silts are present below the groundwater table. Liquefaction may also pose a serious threat to levees in the Delta. Levee failure, depending on the extent, could have adverse effects on agriculture, natural gas supply, fisheries, and lead to salt water intrusion from the San Francisco Bay as well as property value declines and safety hazards.

Soils and Hazards

The soils of Sacramento County can be separated into three general classifications based on geographic factors: Delta soils, flood basin soils, and bench soils. The dark soils of the Delta area are primarily fertile peat comprised of slow to decay organic matter. The geologically recent flood basin soils, rich with organic and mineral compounds, are alluvium formed by historic and ancient flood depositing from swollen rivers overflowing into adjacent floodplains. Lastly, the bench soils, elevated above the spreading basins are river terraces and due to erosion and leaching lack the high percentage of organic material found in the Delta and flood basin soils.

Soils in Sacramento County can be divided into eight broad landscape classifications, or groups, as described below (see Plate GS-2). These groups are further divided into 16 soil associations, which are landscapes that have distinctive patterns of soils, relief, and drainage. Normally a soil association consists of one or more major soils and at least one minor soil.

GROUP 1

These are very deep, nearly level to steep soils in the area of dredge tailings. These soils are in the northeastern portion of the County, near the American River. They are in areas that have been dredged for gold and make up about 3% of the County. They are extremely cobbly and/or gravelly and may have strata of loose gravel or cobbles. These soils are used mainly for wildlife habitat or urban development.

GROUP 2

Soils in this group are very deep, nearly level soils in freshwater marshes and swamps, on natural levees, and on low and high floodplains. The soils in this group occupy the lowest positions on the landscape. In Sacramento, they are in the Delta area and adjacent to major rivers and channels. Most have a high water table, which is controlled by pumping of water to drainage outlets. Both mineral and organic soils are in this

group. The surface layer of the soils in marshes and backswamps is commonly muck, mucky clay, clay loam, or clay. The surface layer of the soils on natural levees and flood plains is commonly silt loam, loam, sandy loam, or clay. These soils are used mainly for irrigated crops or for wildlife habitat.

GROUP 3

These soils are adjacent to the American River, the Cosumnes River, and other streams. Most of the soils are protected against flooding by levees or upstream dams, but some are subject to flooding. The soils are well drained. The soils on high flood plains are fine sandy loam throughout. The soils on terraces have a surface layer of silt loam or loam and a subsoil of silt loam or clay loam.

GROUP 4

These soils are in low areas in the western part of the County. These soils are moderately deep or deep and are somewhat poorly drained. The soils are protected by levees.

GROUP 5

These soils are in the western and central parts of the County. They are moderately deep and moderately well drained and are underlain by a hardpan. They have a surface layer of silt loam and have a claypan.

GROUP 6

These soils are in the eastern portion of the County. They are very shallow to very deep and are moderately well drained or well drained. They are underlain by weakly consolidated sediments or have a cemented hardpan underlain by consolidated sediments. The moderately deep soils have a surface layer of gravelly loam or fine sandy loam and are underlain by a claypan. The very shallow or shallow soils are sandy loam or fine sandy loam.

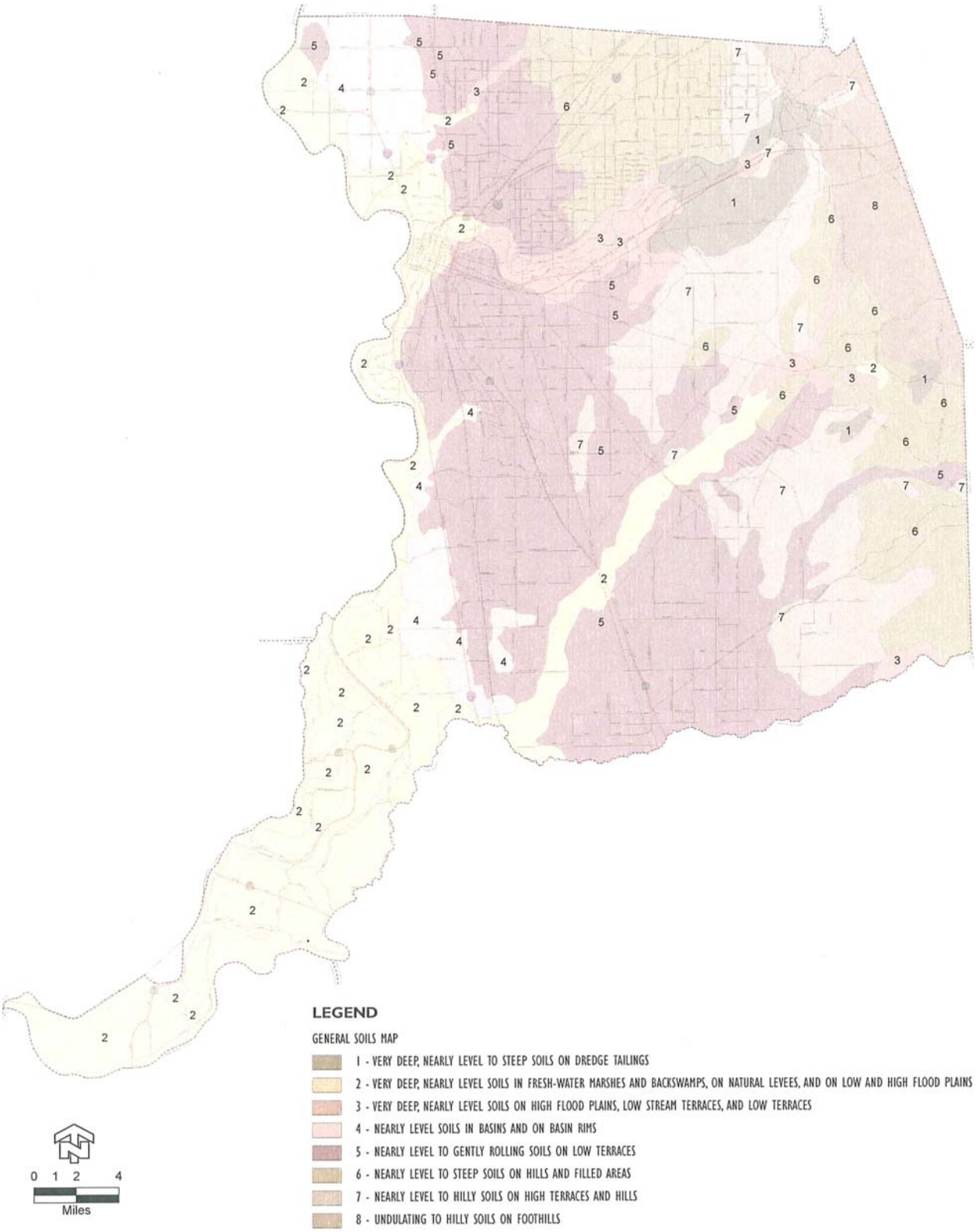
GROUP 7

These soils are in the eastern portion of the County. In some areas they are on the highest terraces in the County. They are moderately deep or very deep and are well drained or moderately well drained. They have a subsoil of sandy clay loam or gravelly clay or have a claypan.

GROUP 8

These soils are in the highest positions on the landscape. They are in the northeastern part of the County, mainly in areas north of the Cosumnes River. These soils are very shallow to moderately deep and are somewhat excessively drained and well drained. They are underlain by hard bedrock or by weathered bedrock. They are loam in the upper part. Some of the moderately deep soils have a claypan.

Plate GS-2 General Soils Map



Further specific classification of soils in the County is accomplished using the U.S. Natural Resource Conservation Service (NRCS) Agricultural Capability and Soils Suitability class systems. These soil classifications are used to derive soil suitability ratings for farmland productivity. Furthermore, the viability of agricultural cropland in the County is directly related to the preservation and conservation of the County's highly productive soils. To this end, community members in the southern portion of the County have established the Florin, Lower Cosumnes, and Sloughhouse Resource Conservation Districts (RCD). The RCDs, which receive technical and financial assistance to sustain soil and water conservation practices and agricultural production, encompass 386,920 acres.

SUBSIDENCE

Subsidence is the gradual settling or sinking of the earth's surface with little or no horizontal motion. Sacramento County is affected by five types of subsidence. They are compaction of unconsolidated soils by earthquake shaking, compaction by heavy structures, the erosion of peat soils, peat oxidation, and fluid withdrawal. The pumping of water for residential, commercial and agricultural uses from subsurface aquifers causes the greatest amount of subsidence in Sacramento County.

Subsidence has created major problems for flood control, particularly in the Delta. As levees sink under their own weight and are weakened by the erosive force of water, expensive periodic rebuilding is necessary. It is estimated that the Sacramento-San Joaquin Delta is subsiding at a rate of just over three inches per year. Many islands in the Delta that, at one time, were at or above sea level are now below sea level.

EXPANSIVE SOILS

Expansive soils represent approximately one third of all soil types in Sacramento County. They are largely comprised of clays, which greatly increase in volume when water is absorbed and shrink when dried. Expansive soils are of concern because building foundations may rise during the rainy season and fall during the dry season in response to the clay's action. If movement varies under different parts of the building, the result is that foundations crack, structural portions of the building are distorted, and doors and windows are warped so that they do not function properly.

LANDSLIDES

Landslide is a general term used for a falling mass of soil and rock. The topography of the majority of Sacramento County is relatively flat and not subject to landslide. In Sacramento County, only a narrow strip along the eastern boundary, from the Placer County line to the Cosumnes River, is considered to have landslide potential. However, future slides on these slopes are expected to be minor in nature and do not pose a large scale threat to life or property. The American River Bluffs downstream from Folsom and in Fair Oaks and Carmichael are considered stable and are generally not subject to fracture or landslides.

EROSION

Erosion is a natural geological process by which landforms are worn down or reshaped by wind and water and the eroded material is deposited elsewhere. While natural erosion of undisturbed areas occurs in Sacramento County, it does not appear to pose a significant hazard to property.

Erosion from agriculture seems to pose little problem in most of the County. The central and western portions of the County are fairly level and very little erosion takes place in these areas unless poor farming practices leave large areas of soil exposed and dry and subject to wind erosion.

There is a greater potential for erosion in the eastern foothills of the County, but extensive grass cover protects most of the vulnerable soils. Also, there is little agricultural activity with the exception of grazing in this area because the soils are generally of poor quality. The grasses, therefore, remain undisturbed unless a fire or some other event exposes the soil.

Perhaps the highest potential for erosion to occur is a result of construction activity where soils may be exposed for some length of time. However, Sacramento County, through Grading and Drainage Ordinances, provides measures to limit or restrict construction practices which might cause erosion, create a nuisance, constitute a hazard, or obstruct waterways. Permits issued under these ordinances ensure that projects avoid potentially significant erosion hazards.

NATURALLY OCCURRING ASBESTOS

Asbestos is a naturally occurring, fibrous silicate mineral mined for its useful properties, such as thermal insulation, chemical and thermal stability, and high tensile strength (greater resistance to longitudinal stress before rupturing). The most common type of asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Serpentinite may contain chrysotile asbestos, especially near fault zones. Ultramafic rock, a rock closely related to serpentinite, may also contain asbestos minerals. Asbestos can also be associated with other rock types in California, though much less frequently than serpentinite and/or ultramafic rock. However, the information available at this time is insufficient to allow such occurrences to be mapped on a regional or statewide basis.

Asbestos is classified as a known human carcinogen by state, federal, and international agencies and was identified as a toxic air contaminant by the California Air Resources Board (CARB) in 1986. Asbestos poses a health risk only when it becomes friable, such as through disturbance or damage. Once airborne, asbestos fibers may be inhaled into the lungs where they can cause serious health problems (US EPA, 2008). All types of asbestos are hazardous and may cause lung disease and cancer.

Asbestos is commonly used as an acoustic insulator and in thermal insulation (fire proofing and other building materials). Serpentinite and ultramafic rocks have been

commonly used for unpaved gravel roads, landscaping, fill projects and other improvement projects in some localities.

US EPA issued a final rule banning most asbestos-containing products in July 1989; however, this regulation was overturned in 1991, by the Fifth Circuit Court of Appeals in New Orleans. The Courts ruled that the US EPA ban shall remain for specific asbestos-containing products. These banned products are flooring felt; rollboard; and corrugated, commercial, or specialty paper. The regulation continues to ban the use of asbestos in products that have not historically contained asbestos, otherwise referred to as "new uses" of asbestos.

Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects and at quarry operations (broken or crushed serpentinite and ultramafic rocks). All of these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards.

The Sacramento Metropolitan Air Quality Management District (SMAQMD) has determined that Naturally Occurring Asbestos (NOA) is present within areas of eastern Sacramento County. SMAQMD commissioned the California Department of Conservation Geologic Survey to test for and map all areas of potential NOA within Sacramento County. The map depicts areas within Sacramento County that are known to contain NOA (see Plate GS-3). The map is divided up into the following three classifications:

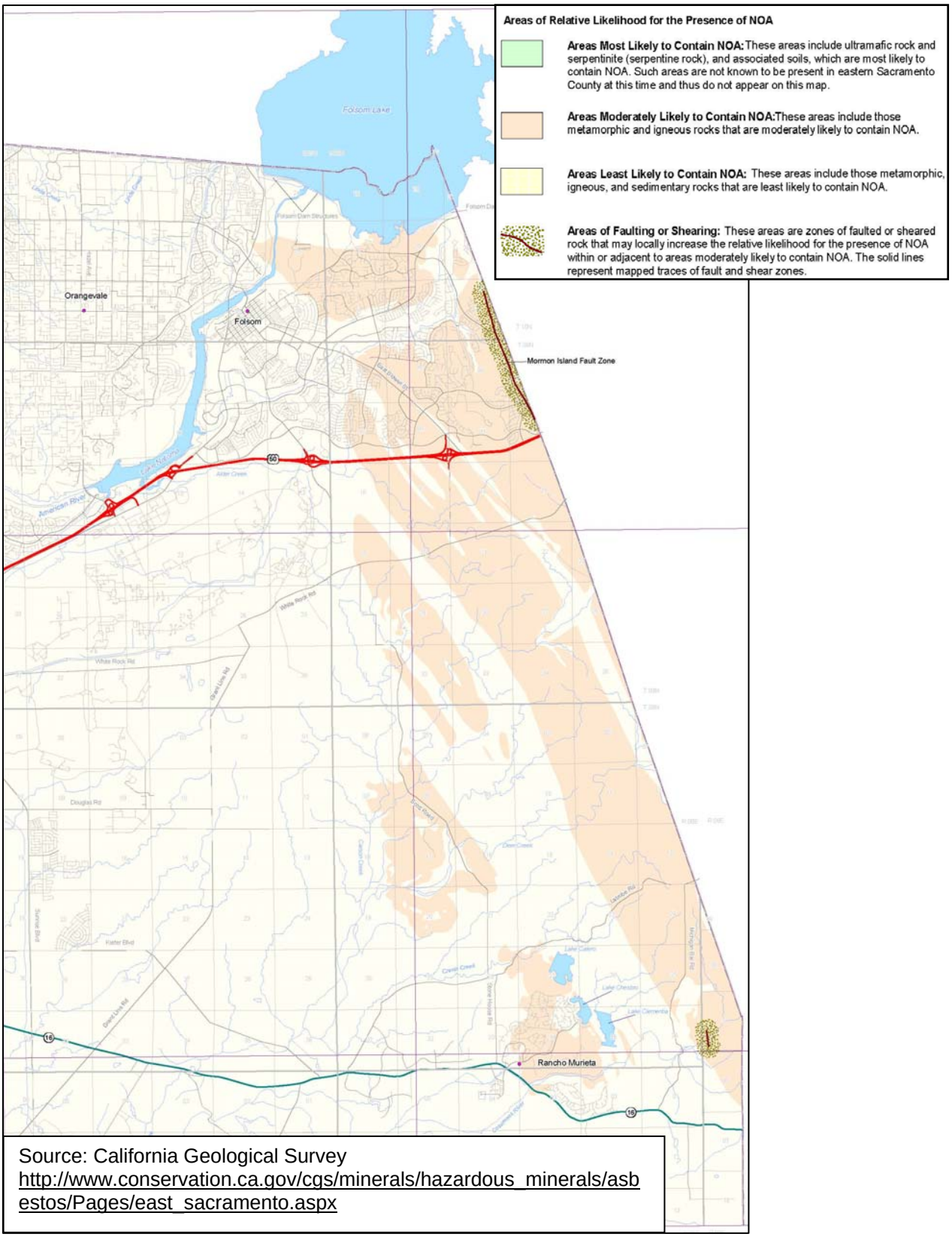
- Areas Most Likely to Contain NOA: These areas include ultramafic rock and serpentinite (serpentine rock), and associated soils, which are most likely to contain NOA. Such areas are not known to be present in eastern Sacramento County at this time, and thus do not appear on this map.

- Areas Moderately Likely to Contain NOA: These areas include those metamorphic and igneous rocks that are moderately likely to contain NOA.

- Areas Least Likely to Contain NOA: These areas include those metamorphic, igneous, and sedimentary rocks that are least likely to contain NOA.

The other area shown on this map is areas of faulting or shearing. These areas are zones of faulted or sheared rock that may locally increase the relative likelihood for the presence of NOA within or adjacent to areas moderately likely to contain NOA. The solid lines represent mapped traces of fault and shear zones. The SMAQMD Air Pollution Control Officer (APCO) has determined that properties located partially or totally within the “Moderately Likely to Contain NOA” are asbestos areas are subject to the requirements of Section 93105 of the California Code of regulations (SMAQMD, 2006). Sacramento Air Quality Management District (SMAQMD) has regulatory authority of NOA.

Plate GS-3 Relative Likelihood for the Presence of Naturally Occurring Asbestos in Eastern Sacramento County



Source: California Geological Survey
http://www.conservation.ca.gov/cgs/minerals/hazardous_minerals/asbestos/Pages/east_sacramento.aspx

The SMAQMD Air Pollution Control Officer has declared that land identified as "Moderately Likely to Contain NOA" is subject to the requirements of Section 93105 of the California Code of regulations, *Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations*.

In areas where NOA is located the ATCM establishes particular controls related to testing, engineering and notification prior to construction related activities in areas where NOA is located. Project located in these areas are required to submit a "Dust Mitigation Plan" which needs to be approved by SMAQMD prior to the start of the project. A property may be exempt from the requirements of the ATCM if no asbestos is found in concentrations greater than or equal to 0.25% through a geologic evaluation performed by a registered geologist.

The unincorporated areas in eastern Sacramento County with a moderate likelihood for the presence of NOA include portions of Rancho Murieta, areas south of US 50 in the City of Folsom's Sphere of Influence, and appears to be present in portions of the Grant Line East New Growth Area.

MINERAL RESOURCES

Mineral resources in Sacramento County include sand, gravel, clay, gold, silver, peat, topsoil, lignite, natural gas and petroleum (Plate GS-4). The principal resources which are in production are aggregate (sand and gravel) and natural gas. The natural gas production areas are located mostly in the Delta's Rio Vista Field, one of California's largest gas producing areas. There are three major and several smaller producers of sand and gravel in Sacramento County. They also produce asphaltic and Portland concrete cement along with free gold and silver recovered from the crushing process. Clay is surface mined in at least two locations and topsoil from one location on the Cosumnes River. At present, peat and lignite deposits in the Delta are not commercially mined. Resource conservation issues associated with natural gas production and the lesser minerals are not currently considered vital within Sacramento County and conservation issues related to mineral resources focus primarily on aggregate production.

The Surface Mining and Reclamation Act (SMARA) of 1975 requires the State Geologist to classify land into Mineral Resource Zones (MRZ's) based on the known or inferred mineral resource potential of that land. The classification process is based solely on geology, without regard to existing land use or land ownership. The purpose is to help ensure that the mineral resource potential of lands is recognized and considered in the land use planning process. Plate GS-5 below depicts the MRZ's in Sacramento County as well as their proximity to the General Plan Update growth areas. SMARA also requires that Sacramento County incorporate that information and develop policies in the General Plan that are related to mineral resource preservation. A 1988 special report ("*Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Sacramento-Fairfield Production Consumption Report*", Dupras 1988) was the source of much of the mineral resource information in the current General Plan.

Plate GS-4 Mineral Resources Map

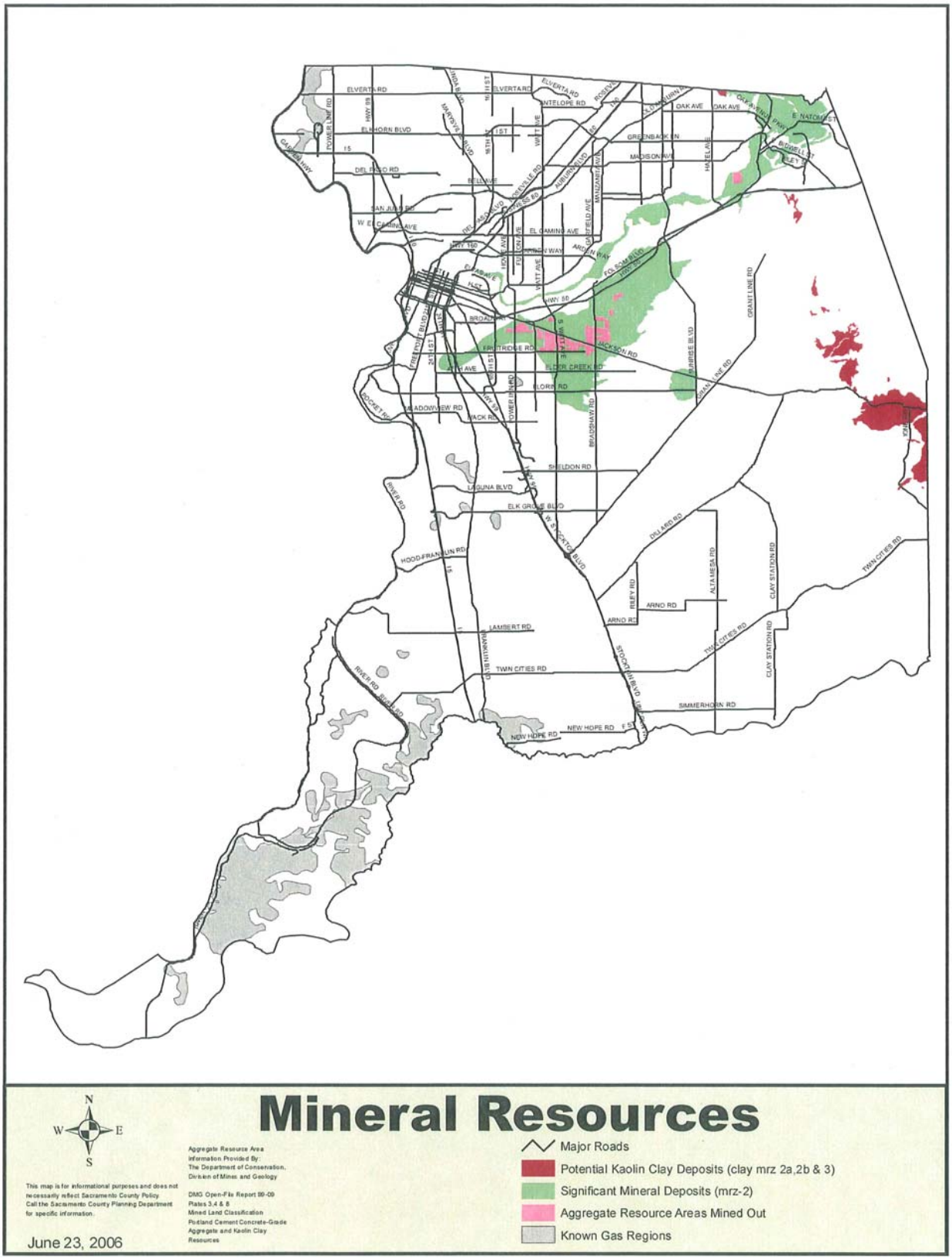
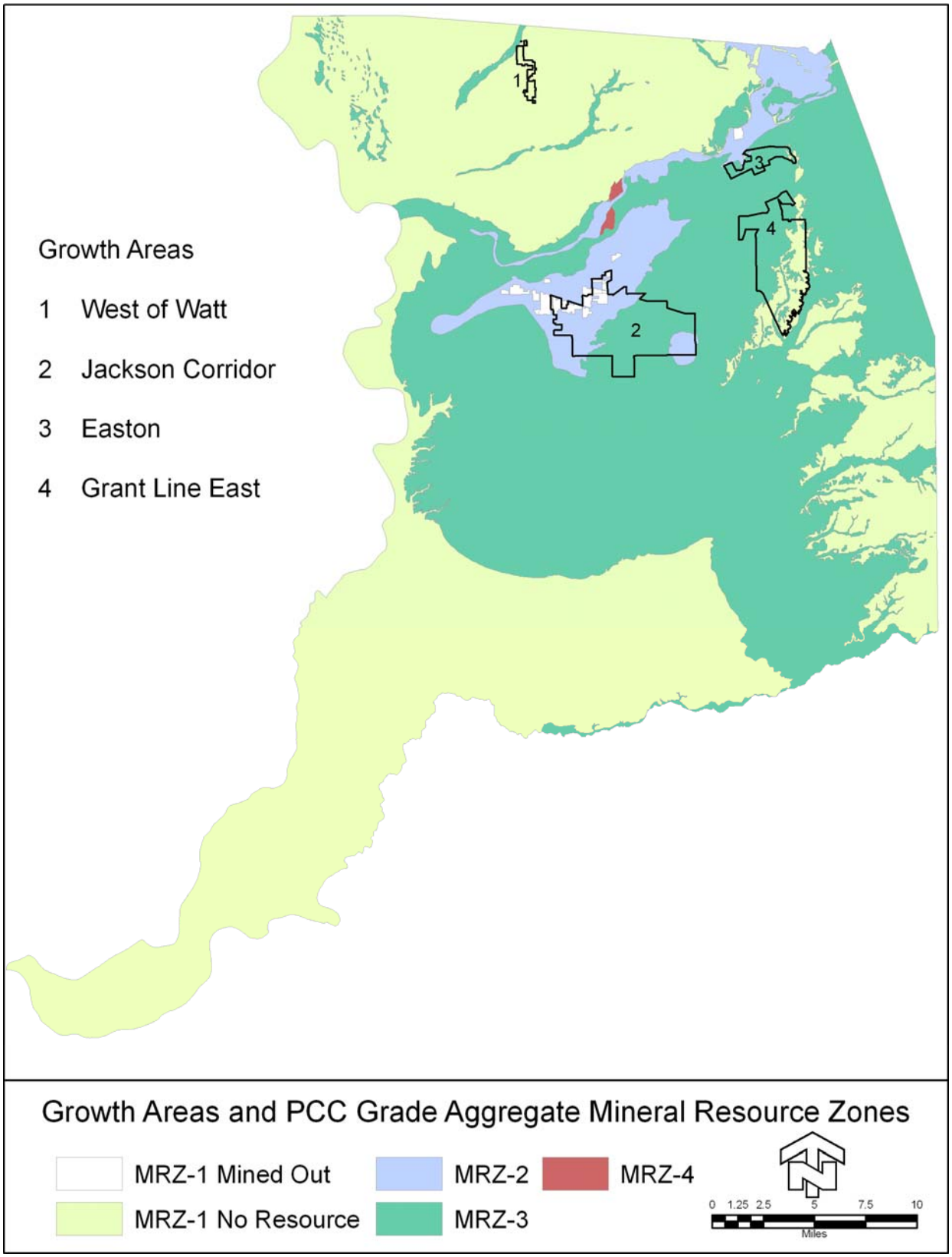


Plate GS-5 Growth Areas and Sacramento County MRZ Zones



Reviewers should note that in December 2008 Teichert, Inc. submitted a petition to the State Mining and Geology Board for mineral lands classification on one of its properties. The request is to change the designation on the site from MRZ-3 to MRZ-2. The petition was accepted on April 9, 2009, and it is anticipated that the new designation on the site will become effective by the fall of 2009. The property in question is located south of White Rock Road and east of Scott Road.

MRZ's are divided into six categories. The categories for establishing MRZ's are as follows:

MRZ-1: Areas where available geologic information indicates that little likelihood exists for the presence of significant mineral resources.

MRZ-2a: Areas underlain by mineral deposits where geologic data indicate that significant measured or indicates resources are present. Areas classified MRZ-2a contain discovered mineral deposits that are either measured or indicated reserves as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information. Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits.

MRZ-2b. Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Areas classified MRZ-2b contain discovered mineral deposits that are significant inferred resources as determined by their lateral extension from proven deposits or their similarity to proven deposits. Further exploration work could result in upgrading areas classified MRZ-2b to MRZ-2a.

MRZ-3a: Areas containing known mineral occurrences of undetermined mineral resource significance. Further exploration work within these areas could result in the reclassification of specific localities into MRZ-2a or MRZ-2b categories. MRZ-3 is divided on the basis of knowledge of economic characteristics of the resource.

MRZ-3b: Areas containing inferred mineral occurrences of undetermined mineral resource significance. Land classified MRZ-3b represents areas in geologic settings that appear to be favorable environments for the occurrence of specific mineral deposits. Further exploration work could result in the reclassification of all or part of these areas into the MRZ-2a or MRZ-2b categories.

MRZ-4: Areas of no known mineral occurrences where geologic information does not rule out either the presence or absence of significant mineral resources.

As shown in the MRZ definitions above MRZ-2a and MRZ-2b are the areas containing substantial aggregate resources. These areas contain geologic evidence which indicate that valuable resources are available and are of primary concern.

In 2001, the California Division of Mines and Geology submitted to the County of Sacramento Open File Report 99-09 titled "*Mineral Land Classification: Portland Cement Concrete-Grade Aggregate and Kaolin Clay Resources in Sacramento County*", which provides updated information on mineral resources in Sacramento County. The Open File Report details the mineral resource potential of Sacramento County for the presence of portland cement concrete (PCC) grade aggregate (aggregate suitable for use in portland cement concrete and asphaltic concrete) because it is the rarest, most threatened, most versatile, and most valuable type of construction aggregate. This report presents updated maps of State-designated Aggregate Resource Areas (ARA) for the County to utilize for land use planning and conservation.

An ARA is an area that has been classified as MRZ-2a or MRZ-2b for Portland Cement Concrete (PCC) Grade aggregate by the State Geologist and is deemed to be available for mining based on criteria for compatibility provided by the State Mining and Geology Board (SMGB). Areas within Sacramento County currently permitted for mining and areas found to have land uses compatible with possible future mining are considered available for mining. MRZ-2a and MRZ2b areas which are not yet developed, but which have Specific Plans approved by local governments, were not considered to be available for mining. In all, 22 ARAs are designated as available land in Open File Report 99-09 (see Plate GS-6). SMARA requires Sacramento County to incorporate information from Open File Report 99-09 and develop policies in the General Plan that are related to mineral resources preservation. The County need not accept all of the State's ARAs if the County deems that there are existing conflicts, such as other natural resources or planned development, that preclude mining in those areas.

The County subsequently adopted several amendments to the General Plan to incorporate the updated mineral resources information into the General Plan. However, some changes were made to the State's ARAs through a County project entitled (*Mineral Resource-Related General Plan Amendments,* Control No. 2002-0104) in order to account for existing local land use conflicts. Specifically, ARA #2, #11, #12, #14, #16 and #20 were removed due to existing plans, easements and preservation areas. The County adopted resource areas are known as Mineral Resource Areas (MRAs) which delineate the locations of high quality, available aggregate resources in Sacramento County. Plate GS-7 shows the location of the County MRAs. The MRA's are the areas of known, high quality aggregate resources that are considered vital to Sacramento County, the majority of which are located within the Jackson Highway Corridor New Growth Area.

Plate GS-6 State Aggregate Resource Areas

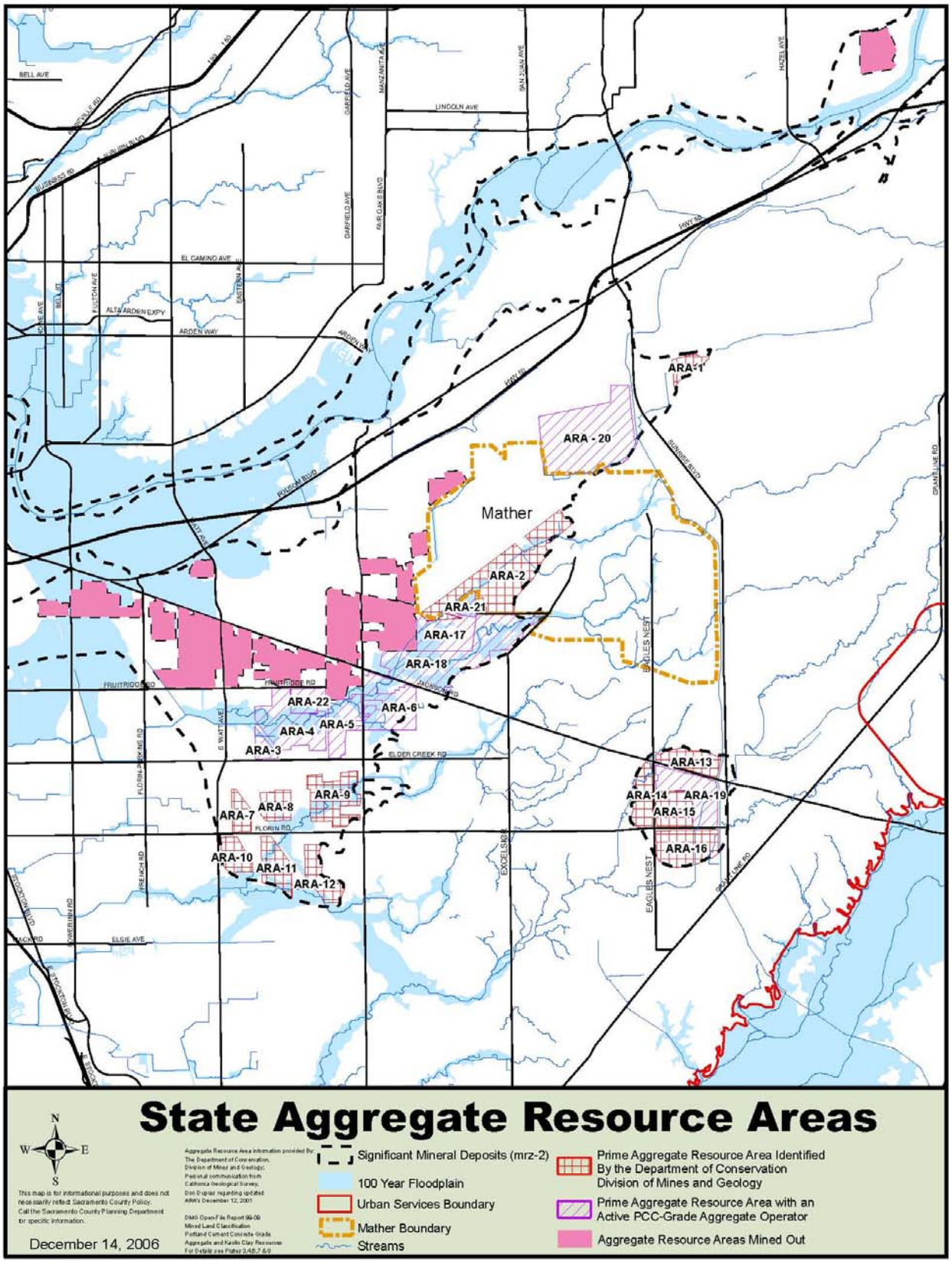
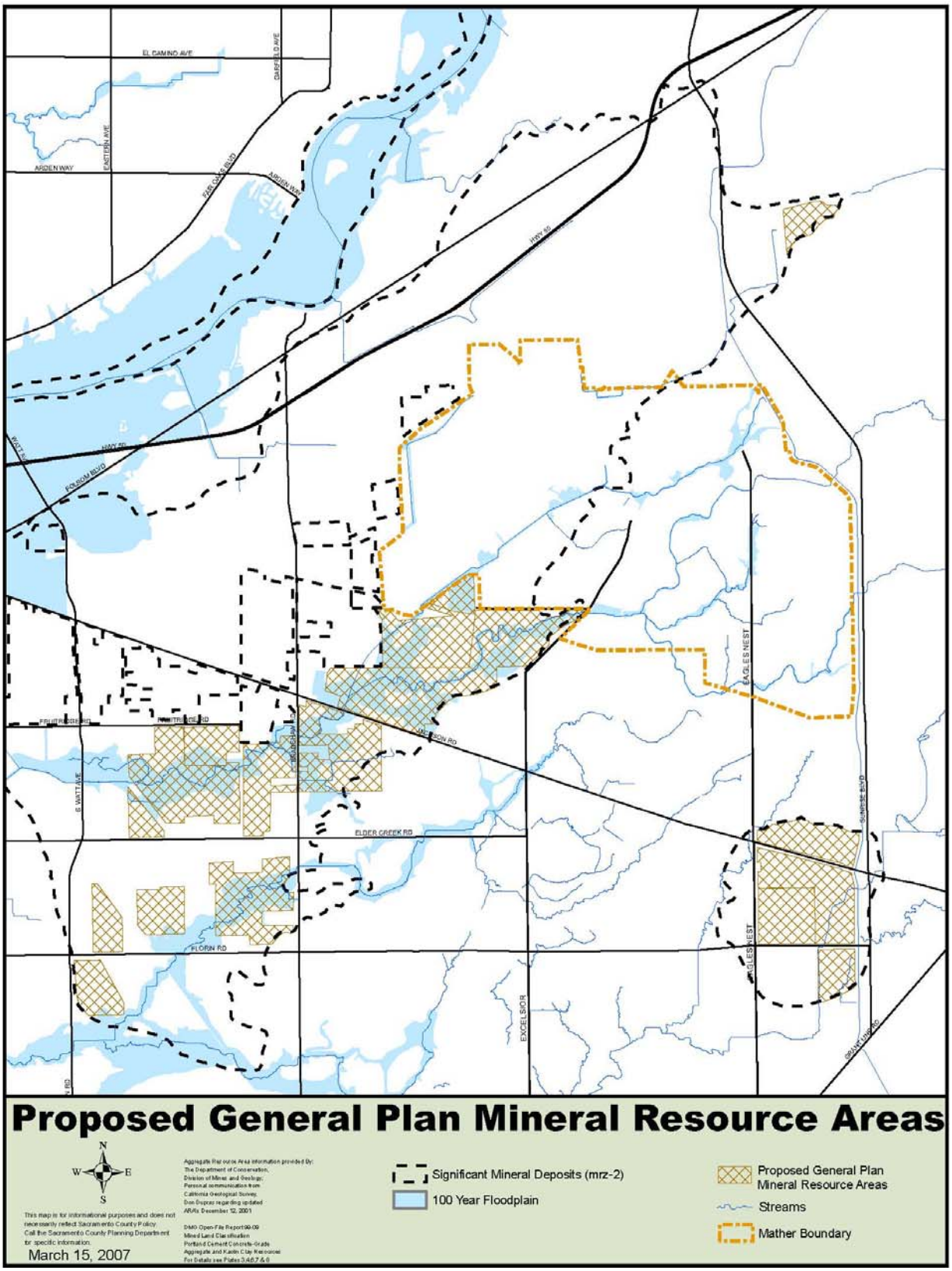


Plate GS-7 General Plan Mineral Resource Areas



REGULATORY SETTING

FEDERAL

Development within the Sate of California is required to at least adhere to the provisions of the Uniform Building Code (UBC). The UBC sets forth minimum standards related to development, seismic design, building siting and grading. Local jurisdictions typically adopt standards that are as stringent, if not more stringent than hose of the UBC. California has adopted the UBC but has amended it to better meet the need of the specific conditions of California.

STATE GUIDELINES

The 1972 Alquist-Priolo Earthquake Fault Zoning Act regulates development near active faults to mitigate the hazard of surface fault rupture. Under this act, the State Geologist is required to delineate earthquake fault zones along known active faults in California. Cities and counties affected by these zones must regulate certain developments within these zones, and withhold development permits for sites until geologic investigations demonstrate that they are not threatened by surface displacements from future faulting. For the purposes of this act, an active fault is defined as a fault that has "had surface displacement within Holocene time" (about the last 11,000 years). Sacramento County is not affected by Earthquake Fault Zones.

The Seismic Hazards Mapping Act of 1990 requires the State Geologist to delineate liquefaction and earthquake-induced landslide hazard zones in the state. Cities and counties affected by these hazard zones must regulate certain developments within these zones, and withhold development permits for sites until geologic investigations demonstrate they are not threatened by liquefaction, earthquake, or induced landsliding during future earthquakes. Sacramento County is located outside of the Seismic Hazard Mapping Zones, although according to the CGS, the county has not yet been evaluated for possible inclusion in a Seismic Hazard Zone.

The California Uniform Building Code (CBC) contains the minimum standards for design and construction in California. All development in California is subject to the regulations of the CBC. Local standards other than the code may be adopted if those standards more strict. Some design considerations associated with seismic hazards need to address the appropriate building codes for a particular site. The code adopts all the standards associated with seismic engineering detailed in the Uniform Building Code of 1997. The 2007 California Building Code is adopted and incorporated into Title 16 of the Sacramento County Code and all construction, alteration, moving, demolition, repair and use of any building or structure within Sacramento County shall be made in conformance with the CBC.

The California Air Resources Board (CARB) has adopted an Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations (17 CCR 93105). The Sacramento Metropolitan Air Quality Management

District (SMAQMD) has mapped areas of serpentine and ultramafic rock in eastern Sacramento County and determined that these areas are subject to the ATCM (SMAQMD 2006b).

LOCAL GUIDELINES

The existing County General Plan was adopted in 1993 and contains policies in the Conservation and Safety Elements to preserve and protect long-term health and resource value of agricultural soils; to protect mineral resources for economic extraction; and to identify and assess the potential of hazards and to formulate measures that provide adequate public protection. The goals of the existing General Plan policies related to soil resources, mineral resources, and seismic and geologic hazards are described below.

SOIL RESOURCES

The Conservation Element of the 1993 General Plan contains policies to achieve the following goals for conservation of soil resources:

> To compensate for the loss of important agricultural soils by the long-term protection of land with similar productivity value and through soil conservation practices. (Policies CO-54 through CO-56)
>
> To protect the agriculturally productive Delta soils from the effects of oxidation, shrinkage and erosion. (Policy CO-57)
>
> To encourage widespread farmer participation in Resource Conservation District programs. (Policies CO-58)
>
> To ensure that topsoil mining has a minimal effect on soil productivity. (Policy CO-59)

The project will be required to comply with the Sacramento County Land Grading and Erosion Control Ordinance (Sacramento County Code Ch. 16.44). The ordinance was established to minimize damage to surrounding properties and public rights-of-way; limit degradation to the water quality of watercourses; and curb the disruption of drainage system flow caused by the activities of clearing, grubbing, grading, filling, and excavating land. The ordinance establishes administrative procedures, minimum standards of review, and implementation and enforcement procedures for the control of erosion and sedimentation that are directly related to land grading activities.

MINERAL RESOURCES

The Conservation Element of the 1993 General Plan contains policies to achieve the following goals for protection of mineral resources:

To protect known mineral resources from land uses which would preclude or inhibit timely mineral extraction to meet market demand. (Policies CO-41 and CO-42)

To ensure the orderly extraction of minerals and subsequent reclamation of mined areas with minimal adverse impacts on aquifers, streams, scenic values, and surrounding residential uses. (Policies CO-43 through CO-47)

To aid in the sequential timing for mining of aggregate areas linked to the timing of urban development. (Policy CO-48)

To ensure that ten percent and twenty percent of the demand for aggregates are met by recycled or substitute materials by 2000 and 2010 respectively. (Policy CO-48)

Seismic and Geologic Hazards

The Safety Element of the 1993 General Plan contains policies to achieve the following goal of protection from seismic and geologic hazards:

To minimize the loss of life, injury and property damage due to seismic and geological hazards. (Policies SA-1 through SA-4)

Significance Criteria

Sacramento County considers impacts to geology, soils, and seismic areas of concern to be significant if a project would:

1. Expose people or structures to potentially substantial adverse effects, including the risk of loss, injury, or death involving:
    a. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist of the area or based on other substantial evidence of a known fault
    b. Strong seismic ground shaking
    c. Seismic-related ground failure, including liquefaction
    d. Landslides
    e. Unsafe exposure to naturally occurring asbestos
2. Result in substantial soil erosion or the loss of topsoil.

3. Be located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

4. Be located in expansive soil as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property.

5. Result in obstruction of access to, and removal of, mineral resources. In particular for aggregate resources, removal or disruption of mineral resources delineated on a local general plan, specific plan, or other land use plan

METHODOLOGY

In general, the geotechnical characteristics of the County determine the potential for structural and safety hazards as well as mineral resource impacts that could occur with development under the Proposed General Plan Update. Existing conditions data was summarized primarily from the previously identified documents and resources. The project was analyzed in terms of its consistency with Sacramento County General Plan policies and potential for geologic or soils-related hazards to people and property in the project area as well as potential for mineral resource impacts.

IMPACTS AND ANALYSIS

The proposed project includes a number of new growth areas and redevelopment areas which are located throughout the county. These include the Jackson Highway Corridor, Grant Line East and West of Watt New Growth Areas. The project also includes the Easton Planning Area as well as areas of proposed development and redevelopment noted within certain commercial corridors and residential infill areas. Please refer to the land use section of this document for details related to the new growth and redevelopment areas. Although identified as a new growth area, a private application for the Easton Planning Area was approved in December 2008. Geology and soil issues related to the Easton Planning Area were evaluated the EIR prepared for that project, and are summarized where appropriate below.

IMPACT: PROPOSED POLICY CHANGES

The draft General Plan has made a number of changes to policies regarding the protection and preservation of Soil and Mineral Resources in Sacramento County. Several policies were created, all have been renumbered, some have been modified or regrouped and two have been removed. A number of implementation measures applicable to Soil and Mineral Resources have also been altered, added or removed. A complete list of the draft new and amended policies and implementation measures related to Mineral and Soil Resources is located in Appendix A of this document. The

policies of the draft General Plan related to Seismic and Geologic hazards are identical to those of the 1993 general Plan.

Both the proposed and existing policies and implementation measures that are associated with Soil and Mineral resources are designed to protect and preserve the resources that are located within unincorporated Sacramento County while simultaneously allowing for the effective utilization of needed mineral resources that fit into a logical pattern for future mining activities based on estimated mineral supply need, evaluation of environmental impacts and minimizing affects on adjacent land uses. Impacts related to General Plan Policy additions and amendments are considered to be *less than significant.*

MITIGATION MEASURES:

None recommended

IMPACT: SOILS AND SOIL HAZARDS

EROSION

Erosion is a natural process that occurs when wind and water reshape or wear down landforms and the eroded materials are deposited in another location. The erosion of soil can be accelerated when existing groundcover is removed from the surface of the ground such as during grading or clearing activities which expose underlying soil to erosional forces. The most likely potential for erosion to occur is as a result of construction activity where soils may be exposed for some length of time. The proposed General Plan identifies four new growth areas and a number of redevelopment areas and the implementation of the proposed Project may allow for development that could result in increased soil erosion.

The Project will be required to comply with the Sacramento County Land Grading and Erosion Control Ordinance (Sacramento County Code Ch. 16.44). The ordinance was established to minimize damage to surrounding properties and public rights-of-way; limit degradation to the water quality of watercourses; and curb the disruption of drainage system flow caused by the activities of clearing, grubbing, grading, filling, and excavating land. The ordinance establishes administrative procedures, minimum standards of review, and implementation and enforcement procedures for the control of erosion and sedimentation that are directly related to land grading activities.

As noted above the Easton Planning Area is not driven by the General Plan and has been evaluated in a separate environmental review. An assessment of erosion impacts was conducted which indicated that due to large scale project related cuts and fills a substantial amount of soil erosion would occur in the project area causing a significant impact. Mitigation was recommended requiring that an erosion control plan and stormwater prevention plan be implemented during construction. With mitigation impacts related to erosion were found to be less than significant.

Because development projects are already subject to the County Land grading and Erosion Control Ordinance and the State Water Resources Control Board stormwater permitting requirements any development related to the proposed project will be subject to erosion and sediment control measures as a mater of course. As such, the project will not result in substantial soil erosion or the loss of topsoil and impacts to soil resources are considered to be *less than significant.*

EXPANSIVE SOILS

Development related to the proposed Project may result in the addition of new structures and roadways located in areas containing expansive soils which have the ability to cause structural damage to both foundations and roads that do not have sound structural engineering.

The construction permitting process within Sacramento County requires completed geotechnical reports for development located within areas known to contain expansive soils to identify potential hazards that may impact a project as well as measures to eliminate the hazardous soil conditions. Measures related to eliminating potential hazards of expansive soils can include the excavation of silts and clays to a suitable depth, the replacement of these materials with engineered fill and compacted granular fill material. This effectively removes expansive soils from a project area. In addition structural design must conform to the criteria detailed in the UBC, CBC (Chapters 16, 18, 33 and the Appendix to Chapter 33). Policy SA-1 of the Safety Element of the General Plan also states that the County shall require geotechnical reports and impose appropriate mitigation measures for new development in geologically sensitive areas. The codes and policies are part of the existing regulatory framework of the County and reliance on them is assumed for any new development related to the proposed project.

Expansive soils issues were reviewed in the Easton project. It was found that expansive soils are located within the eastern and western portions of the project site that have the potential to pose a hazard to development in those areas. Mitigation was recommended requiring the use of engineered and compacted granular fill in areas subject to high risk of settlement and expansion, that design foundations and interior floors meet typical requirements for one and two story residences and that a qualified geotechnical engineer conduct a geotechnical investigation for areas that may require special preparation. With mitigation impacts related to erosion were found to be less than significant.

Any Project related development will need to adhere to the existing UBC, CBC and the County Policies contained in the General Plan which would ensure the maximum practicable protection available for development within areas known to contain expansive soils. As, such any development within areas known to contain expansive soils are considered to be *less than significant.*

NATURALLY OCCURRING ASBESTOS

Portions of the Grant Line East area may lie over geologic formation(s) known as “Areas Moderately Likely to Contain NOA.” The SMAQMD Air Pollution Control Officer (APCO)

has determined that properties located partially or totally within the "Moderately Likely to Contain NOA" are asbestos areas subject to the requirements of Section 93105 of the California Code of Regulations, *Asbestos Airborne Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations*.

NOA issues were addressed in the Easton Project. It was found that adequate site-specific geologic data exists to indicate that NOAs are not located within the Easton project area and impacts related to NOA were found to be less than significant.

All development located over geologic formations known as "Areas Moderately Likely to Contain NOA" is subject to the requirements of Section 93105 of the California Code of Regulations which establishes particular controls related to testing, engineering and notification prior to construction related activities in areas where NOA is located and requires that projects located in these areas to submit a "Dust Mitigation Plan" which needs to be approved by SMAQMD prior to the start of the project. Because development within areas known to contain naturally occurring asbestos is required to adhere to existing regulations intended to minimize unsafe exposure to naturally occurring asbestos project related impacts are considered to be *less than significant.*

MITIGATION MEASURES:

None recommended.

IMPACT: MINERAL RESOURCES

As noted above mineral resources in Sacramento County have been classified in a number of ways over the years including MRZ's, ARA's and MRA's. Although the MRZ's, noted above to be broad categories that take into account only geological factors, indicate that much of the County lies over mineral resources that range from areas considered to contain "known mineral occurrences of undetermined mineral resource significance"(MRZ-3b) to "areas underlain by mineral deposits where geologic data indicate that significant measured resources are present" (MRZ-2a). Only a relatively small portion of the county lies over known, high quality mineral resources that are available for extraction. These areas, which reflect the most recent mineral resource classification for the County, are the County MRA's (MRZ-2z or 2b and available for extraction).

The Jackson Highway Corridor growth area is located over many of the County MRA's depicted on the General Plan Land Use diagram. The majority of the MRA's are located within the northwest portion of the Jackson Highway Corridor growth area generally between the intersection of Elder Creek Road and Elk Grove Florin Road and the south side of Mather Airport. MRA's are also located southwest of Elder Creek Road and Bradshaw Road as well as east of Eagles Nest Road on both sides of Jackson Highway (see Plate GS-8). Approximately 2,860 acres of mineral resource area, is located within the Jackson Highway Corridor growth area.

The General Plan Land Use Diagram identifies primary aggregate resources with a combining land use designation, and the General Plan Update includes policies that encourage the protection of mineral resources included within the Land Use Diagram. In addition the Sacramento County Zoning Code includes a Combining Land Use Zone that applies to areas known to contain mineral resources. The (SM) Surface Mining Combining Land Use Zone is designed to allow for mining subject to the approval of a use permit and subject to the regulations that provide for the protection of public health and safety, the environment, and the reclamation of mined lands.

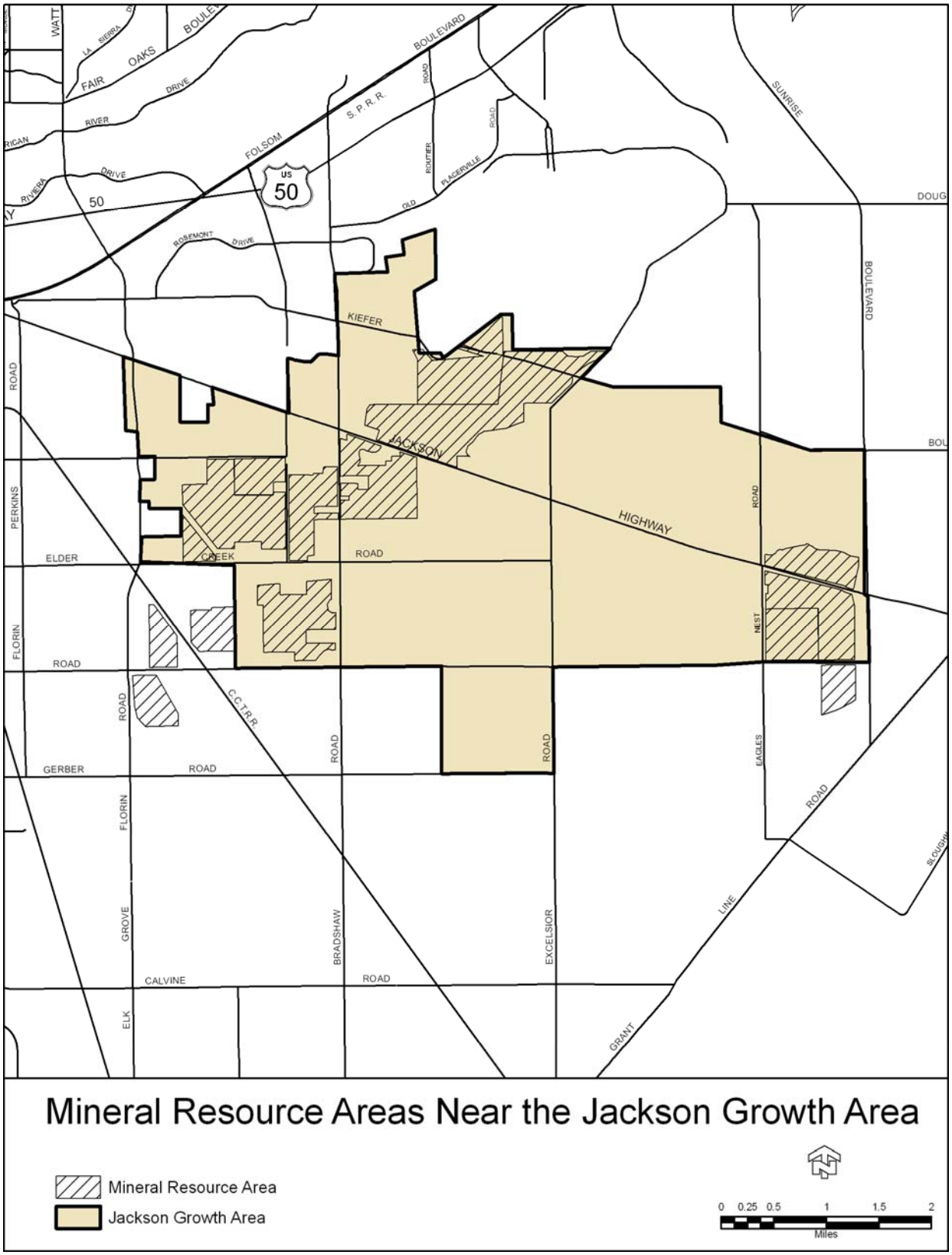
Mineral resource issues were addressed in the Easton Project. No mining activities or aggregate resources or Resource Conservation Areas, as identified on the General Plan Land Use Diagram, were found to be located within the project area. Impacts to Mineral resources were found to be less than significant.

The Jackson Highway Corridor growth area is located over the County MRA's and, although policies and regulations that are existing and proposed in the General Plan Update are designed to encourage the protection of mineral resources, there is no guarantee that mineral resources will not be lost through project related development. The existing regulatory framework is intended to ensure that mineral resources are considered when development or other uses are proposed within known mineral resource areas but don't require that only mining operations occur in these areas or that the resources be extracted prior to the introduction of preclusive development or uses. Therefore, it is easily foreseeable that development related to the Jackson Highway Corridor growth area will have the potential to preclude or inhibit the extraction of known, available, high quality mineral resources in the area. As such, project related development is likely to result in obstruction of access to, mineral resources within the County. Impacts to mineral resources are considered *significant and unavoidable.*

MITIGATION MEASURES:

None recommended.

Plate GS-8 Mineral Resource Areas (MRAs) Near the Jackson Highway Corridor



IMPACT: GEOLOGICAL HAZARDS

SEISMICITY AND GROUNDSHAKING

Ground shaking occurs as a result of significant amounts of energy released due to earthquake events. Sacramento County is less affected by seismic events than other portions of the State of California. Sacramento County does not lie within or adjacent to an Alquist-Priolo Earthquake Fault Zone nor are there any mapped seismic hazard zones within the County. Active faulting has not been mapped as occurring across or immediately adjacent to the County, and surface rupture due to faulting is not expected to occur unless some unknown fault is to rupture.

As discussed in detail below the majority of Sacramento County and all of the growth areas have some of the lowest seismic potential in California. Nevertheless, some property damage has occurred in the past due to seismic activity along faults in nearby counties. The damage that was experienced has largely been the result of major seismic events occurring in adjacent areas, especially the San Francisco Bay area and, to a lesser extent, the foothills of the Sierra.

Tectonically, the growth areas noted in the General Plan Update are situated in between faults in Northern California and Nevada. Although the Willows fault is the nearest fault to the project growth areas, this fault is not considered active, capable of rupturing to the ground surface, nor is it considered in current ground motion estimates. Therefore, the nearest known active fault that has been mapped on the C.W Jennings Fault Activity Map (see simplified version in Plate GS-9) to the growth areas is the Dunnigan Hills Fault located approximately 12 miles northwest of Sacramento County, although according to the CGS staff, evidence of Holocene displacement is questionable. The nearest branches of the active San Andreas fault system are the, Green Valley and Concord faults, which are approximately 6 miles southwest of the southwestern most point of Sacramento County in the delta area. Other major active faults are the San Andreas and Hayward faults to the southwest; the Rogers Creek fault to the west; and the Calaveras and Greenville faults to the south.

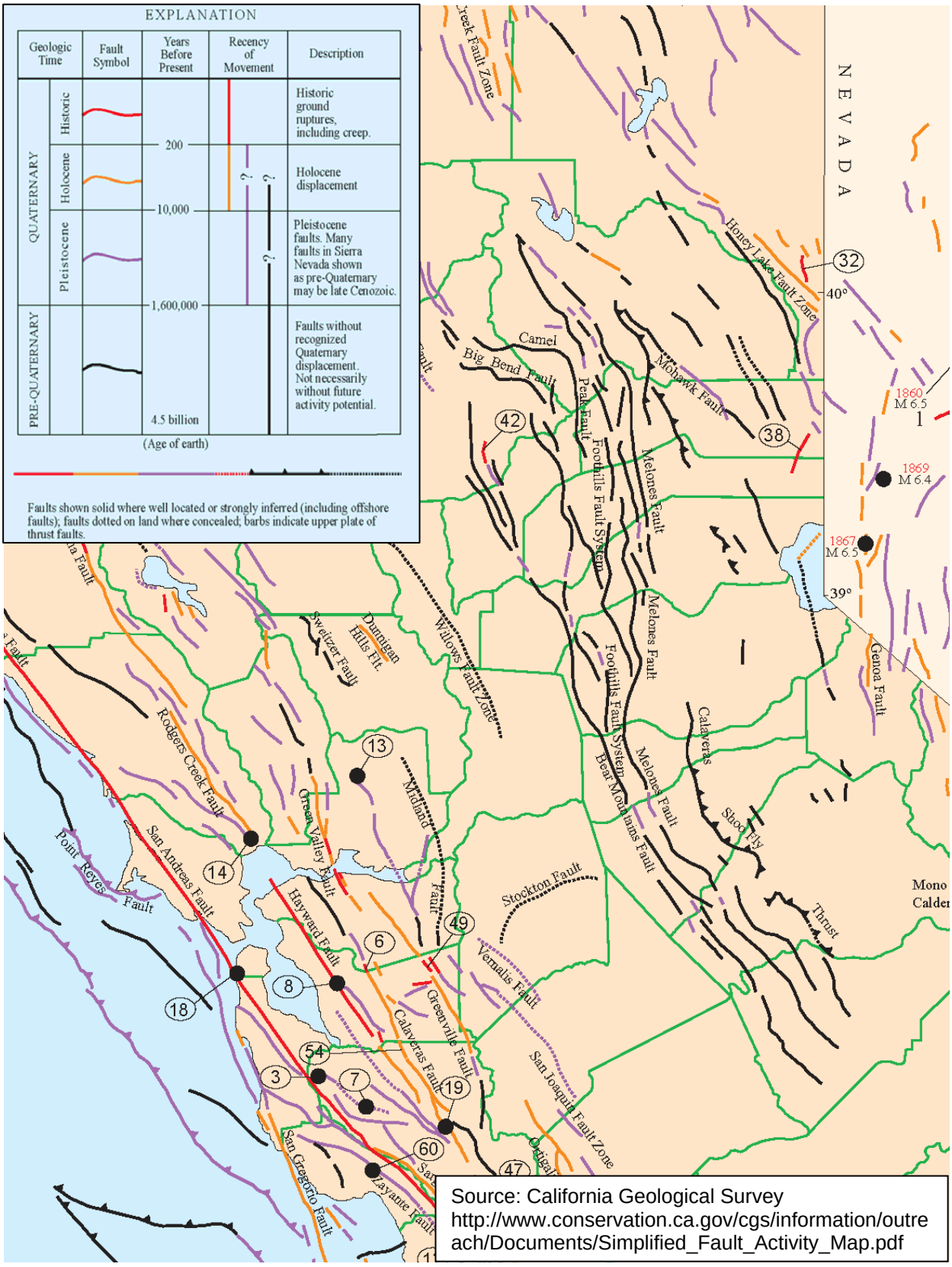
CGS staff provided distances from various faults within the Sacramento Valley and surrounding areas to downtown Sacramento. Table GS-2 includes faults in close proximity to Sacramento County, their distances from Downtown Sacramento, and the approximate time of their last displacement.

Table GS-2 Faults Near Sacramento County

FAULT	DISTANCE FROM CENTER OF DOWNTOWN SACAMENTO (miles)	AGE OF LATEST DISPLACEMENT
Midland Fault	18	Quaternary (may be Holocene)
Dunnigan Hills Fault	24	Late Pleistocene
Great Valley Fault System (blind) (Gordon Valley Section)	28	Quaternary
Vaca Fault Zone	30	Late Pleistocene
Bear Mountain Fault Zone (Dewitt fault)	30	Latest Pleistocene, possible Holocene
Green Valley/Concord Fault Zone	41	Historic (creep active)
Greenville Fault	55	Historic
Rodgers Creek Fault	59	Holocene
Hayward Fault	62	Historic
Maacama Fault	65	Holocene (creep active on northern strands)
San Andreas Fault	80	Historic

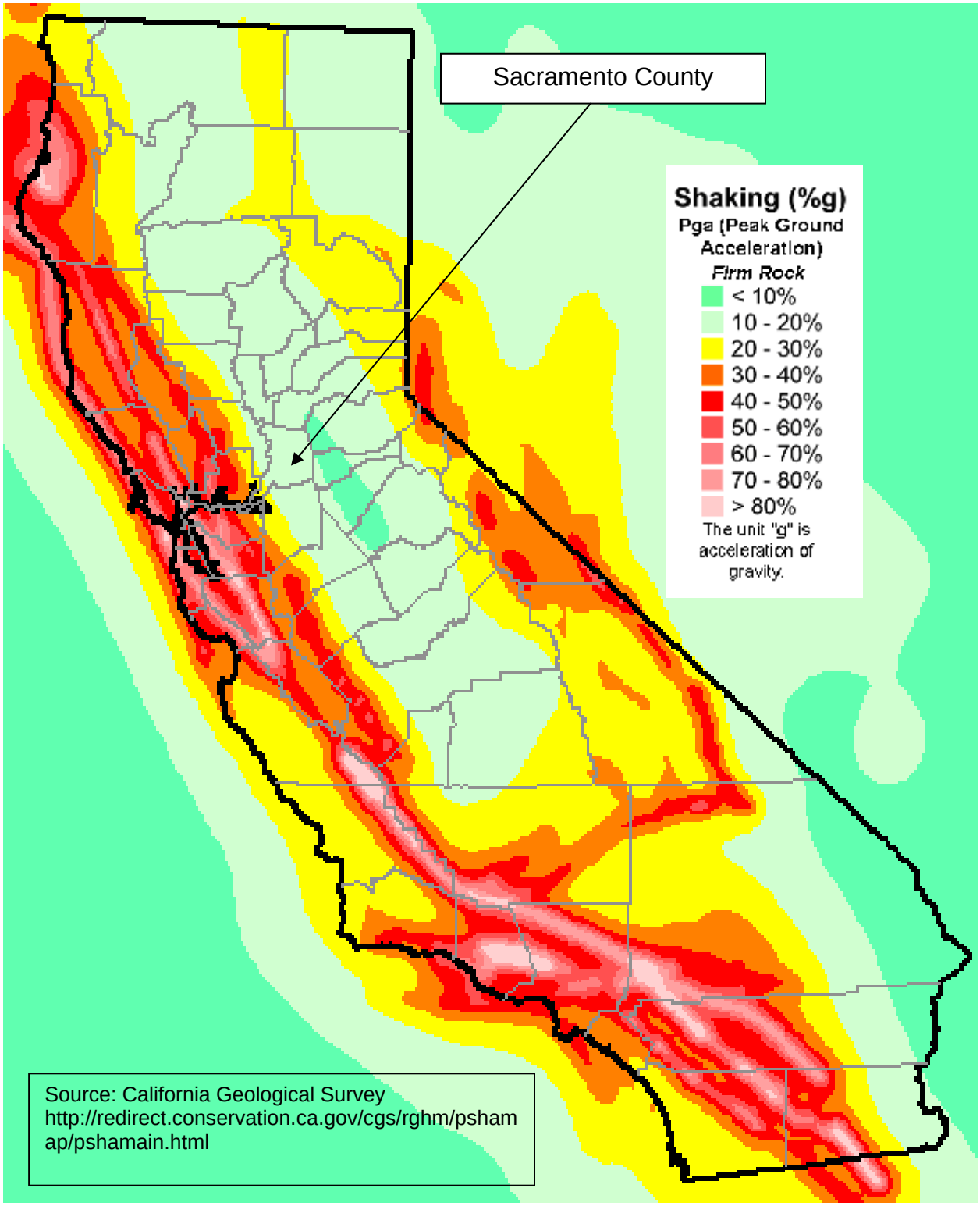
Although no active faults are known within Sacramento County the region has undergone numerous instances of ground shaking caused by the surrounding faults. Peak horizontal ground acceleration values associated with characteristic earthquake events on faults can be used to assess probabilistic ground-shaking characteristics of a given region. The amount of shaking is often expressed in terms of "Peak Ground Acceleration," measured in percent of "g," the acceleration of gravity (approximately 9.80 meters per second per second). Although groundshaking may occur, a review of current information provided on the Department of Conservation website indicates that the peak horizontal ground acceleration within the County of Sacramento, except for the southwestern portion of the Delta area, is estimated to be 10 to 20 percent of g or 0.10g to 0.20g, making the seismic ground-shaking hazard relatively low within the majority of the county and the proposed growth areas (see Plate GS-10).

Plate GS-9 Simplified Fault Activity Map



Source: California Geological Survey
http://www.conservation.ca.gov/cgs/information/outreach/Documents/Simplified_Fault_Activity_Map.pdf

Plate GS-10 Seismic Shaking Hazards in California



Although seismic ground-shaking hazard are considered relatively low, ground shaking from earthquakes in the Sacramento region, contributed by the relatively close faults located primarily in the bay area, could cause light to moderate damage to structures depending on construction methods.

In Sacramento County commercial, institutional and large residential buildings as well as all related infrastructure are required, in conformance with Chapter 16, *Structural Design Requirements*, Division IV, *Earthquake Design*, of the CBC, to lessen the exposure to potentially damaging vibrations through seismic resistant design. In compliance with Sacramento County General Plan Safety Element policies and the UBC and CBC, all structures in the project area would be well-built to withstand ground shaking from possible earthquakes in the region. Structures built to the requirements of these codes readily withstand the levels of ground shaking that could occur in the project region.

Ground shaking hazard issues were addressed in the Easton project. It was found that groundshaking form earthquakes in the Sacramento Region, possibly from the relatively close Dunnigan Hills fault, could cause light to moderate damage to structures depending on construction methods. However, due to standard engineering and constructions techniques and the regulations of the UBC development would be protected from damage associated with groundshaking and no mitigation measures were recommended. Impacts related to groundshaking were found to be less than significant.

Based on the existing regulatory framework that governs new development within Sacramento County which addresses safety issues and requires that development adhere to the CBC and other relevant policies, regulations and design standards related to seismic activity, seismically induced groundshaking effects are not expected to be substantial hazards. Therefore, development related to the proposed project and the new growth areas are not expected to expose people or structures to substantial new adverse effects related to a rupture of a known fault or strong seismic groundshaking. Earthquake impacts on project structures are considered to be *less than significant.*

LIQUEFACTION

Issues related to liquefaction were addressed in the Easton project. It was found that areas subject to liquefaction in Sacramento County are located within the delta and downtown areas and that the project area is not in the vicinity of an area subject to liquefaction. Impacts related to liquefaction were found to be less than significant.

As noted above ground shaking can result in liquefaction. Liquefaction occurs when groundshaking causes a sediment layer saturated with groundwater to lose strength and take on characteristics of fluids, therefore reducing the soils ability to support the load of structures. As a result structures could be shifted off balance or even destroyed under sufficient liquefaction conditions. Two possible liquefaction areas exist within Sacramento County: Sacramento City's Downtown area and the Delta area. Because the known liquefaction areas are not located within the vicinity of the growth areas of the

General Plan Update, the proposed project is not expected to expose people or structures to substantial adverse effects related to liquefaction. Project impacts related to liquefaction are expected to *be less than significant.*

MITIGATION MEASURES:

None recommended.

NO PROJECT ALTERNATIVE

The impacts of the existing General Plan would be largely the same as those described for the Project because of the existing regulatory framework that guides development within Sacramento County. The existing framework currently regulates development and ensures that development is constructed to standards to account for possible soil and geologic hazards as well as soil resources. In addition, the retention of the existing General Plan land use designations (industrial, general agriculture, and low density residential) within the Jackson Highway Corridor growth area would result in a lower likelihood that mineral resources would be lost due to the introduction of preclusive or incompatible uses. The impacts of retaining the existing General Plan Land Use designations are *less than significant.*

MITIGATION MEASURES

None recommended.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

The impacts of the Remove Grant Line East Alternative would be largely the same as those described for the Project because of the existing regulatory framework that guides development within Sacramento County except that fewer people would be exposed to potential NOA hazards in the east county area. Impacts related to soils, soil hazards, and geological hazards would remain *less than significant* and impacts to mineral resources would remain *significant and unavoidable*.

MITIGATION MEASURES:

None recommended.

ALTERNATIVE 2: FOCUSED GROWTH

The impacts of the Focused Growth Alternative would be largely the same as those described for the Project because of the existing regulatory framework that guides development within Sacramento County except that fewer people would be exposed to potential NOA hazards in the east county area due to the removal of the Grant Line East area, and the number of MRA's located within the Jackson Highway Corridor area would be reduced.

A reduction of the Jackson Highway Corridor growth area by approximately 4,000 acres would limit the eastern extent of the Jackson Highway Corridor area to Excelsior Road which, in turn, would locate the Jackson Highway Corridor area outside of the MRA's located east of Eagles Nest Road. With this alternative approximately 570 acres of MRA would be removed from the Jackson Highway Corridor area. However, the Focused Growth Alternative would still be located over approximately 2,290 acres of MRA and would continue to result in obstruction of access to, and removal of, mineral resources. Impacts related to soils, soil hazards, and geological hazards would remain *less than significant* and impacts to mineral resources would remain *significant and unavoidable*.

MITIGATION MEASURES:

None recommended.

ALTERNATIVE 3: MIXED USE

Mixed Use Alternative impacts related to the Easton and West of Watt New Growth Areas as well as the Commercial Corridors would be largely the same as those described for the Project because of the existing regulatory framework that guides development within Sacramento County. The existing framework currently regulates development and ensures that development is constructed to standards to account for possible hazards. The impacts of Alternative 3 are *less than significant.*

MITIGATION MEASURES:

None recommended.

14 HAZARDOUS MATERIALS

INTRODUCTION

This chapter addresses the effects of development consistent with the proposed General Plan Update and the Alternatives related to hazardous substances in Sacramento County and the effectiveness of proposed policies to mitigate identified impacts.

The term "hazardous substances" refers to both hazardous materials and hazardous wastes. A material is defined as hazardous if it appears on a list of hazardous materials prepared by a federal, state or local regulatory agency, or if it has characteristics defined as hazardous by such an agency.

Sacramento County uses the definition of "hazardous materials" in the California Health and Safety Code, Division 20, Chapter 6.95, Section 23301, which states:

> (a) "Hazardous material" means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous wastes, and any material which a handler or the administering agency has a reasonable basis for believing that is would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

This definition is not limited to just those chemicals with long-term detrimental effects. It also includes materials that present a hazard because of their physical nature (explosive, corrosive, flammable).

This chapter will discuss hazardous materials and handlers of hazardous materials. Handlers consist of individuals or firms that manufacture, store, use, ship, recycle, or dispose of hazardous materials. Also, the health impacts that can result from exposure or long-term contact with hazardous materials will be assessed. Policies and mitigation measures to protect from exposure and reduce exposure levels in long-term contact conditions will be identified.

The following acronyms listed and described in Table HM-1 are used in this chapter.

Table HM-1 Acronyms

Acronym	Description
AST	Aboveground Storage Tank
CAC	Certified Asbestos Consultant
CalEPA	California Environmental Protection Agency
CARB	California Air Resources Board
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CVRWQCB	Central Valley Regional Water Quality Control Board
DOD	Department of Defense
DPR	State Department of Pesticide Regulation
DTSC	Department of Toxic Substances Control
EMD	Sacramento County Environmental Management Department
LEA	Local Enforcement Agency
LUFT/LUST	Leaking Underground Fuel Tank/Leaking Underground Storage Tank
PCBs	Polychlorinated biphenyls
PCO	Pesticide Control Operator
RCRA	Resource Conservation and Recovery Act
SLIC	Spills, Leaks, Investigation and Cleanups
SMAQMD	Sacramento Metropolitan Air Quality Management District
SRWQCB	State Resources Water Quality Control Board
SWRCB	State Water Resources Control Board
UFT	Underground Fuel Tank
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank

ENVIRONMENTAL SETTING

Sacramento County has a variety of hazardous substances associated with many uses. These include known contaminated properties, businesses that handle (use and/or collect) contaminants, household contaminants, landfills, lead-based paint, and asbestos (both in buildings predating 1970 and naturally occurring in rock outcroppings).

The types of hazardous materials found in Sacramento County include known and undiscovered contamination of soil; surface water; groundwater; structures constructed before 1979 (asbestos and lead-based paint); industrial, business, and household waste considered a hazardous material according to the definition in the California Health and Safety Code (see the Introduction section in this chapter); and naturally-occurring

asbestos (serpentine rock). Naturally occurring asbestos is discussed in Chapter 13 Geology and Soils.

A search of federal, state, and local databases resulted in numerous known sites with hazardous materials. Table HM-2 below lists the databases, a description of the information they contain, and the authority charged with maintenance of these databases.

The results from each database are included in the Hazardous Materials appendix, available for review at the Sacramento County Department of Environmental Review and Assessment, 827 7th Street, Room 220, Sacramento.

Agricultural practices are known to include the use of hazardous materials, such as pesticides, fertilizers, and petrochemicals, as part of agricultural production. Soil, groundwater, and surface water contamination from these products could persist from their continued use. The land in the new growth areas of Grant Line East and Jackson Highway Corridor has historically been used for agricultural production and thus, could have been contaminated. Refer to Chapter 1 Project Description for more information on the new growth areas.

KNOWN LARGE HAZARDOUS MATERIAL ISSUES IN THE COUNTY

AEROJET CORPORATION

Aerojet was founded in 1942 with the development of the Jet Assist Take Off (JATO) rocket motor that provided extra boosting power for United States military planes during World War II. Aerojet developed, tested and produced rocket engines and ordnances in the propulsion industry.

The Sacramento facility is listed on the Sacramento County Environmental Management Department (County EMD) Toxic Site Clean Up list with 21 buildings. Of those buildings, 18 cases have been closed and of those, five received remedial action. Two of the three open cases are under the jurisdiction of the State Department of Toxic Substances Control (DTSC) and the third open case is under the jurisdiction of County EMD. The types of contaminants at these sites are petrochemicals (gasoline and diesel). The types of receiving body contaminated (case types) are listed as other aquifers (such as non-potable perched groundwater), soil only, and undetermined (which are areas where contamination has not be determined in soil or groundwater). Aerojet is listed as having sites on the Leaking Underground Fuel Tank (LUFT) list and sites listed in the Spills, Leaks, Investigation, and Cleanups (SLIC) list. Two wells (one inactive, the second with an unknown status) and a landfill (land disposal list) are noted on the Geo Tracker database as an open case. Aerojet is also listed on the Envirostor database as an open Federal Superfund site.

Contamination remaining at Aerojet today from past uses includes petrochemical contamination of aquifers and soil from leaking underground storage tanks, spills (non-

permitted discharges), the contamination of wells and contamination from landfills on site. These cases remain open, as does the Federal Superfund listing.

Table HM-2 Federal, State, and Local Databases & Lists for Hazardous Materials

Database	Description
Federal	
National Priorities List (NPL)	This list is maintained by the Environmental Protection Agency (EPA) and includes the most severe hazardous waste sites as identified by Superfund. Sites are put on the NPL after they have been scored using the Hazard Ranking System, as well as having been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money. The NPL is primarily an informational resource that identifies sites that may warrant cleanup.
State	
Geo Tracker	This database is maintained by the State Water Resources Control Board and tracks regulatory information about leaking underground fuel tanks (LUFTs), fuel pipelines, and public drinking water supplies.
Envirostor	This database is maintained by the State Department of Toxic Substances Control (DTSC) and holds information on investigation, cleanup, permitting, and corrective actions that are planned, are being conducted, or have been completed under the DTSCs oversight.
Local	
Master List of Facilities within Sacramento County with Potentially Hazardous Materials (Master List)	This list is maintained by the Sacramento County Environmental Management Department
Toxic Site Clean-Up Site Specific Report	This list is maintained by the Sacramento County Environmental Management Department and lists where unauthorized releases of potentially hazardous materials have occurred.

McClellan Park

McClellan Park was known as the McClellan Air Force Base prior to the Sacramento County Board of Supervisor's approval of the Reuse Plan in 2002. McClellan Air Force Base began as a military installation in 1936. The base was a pivotal supply depot on the west coast during World War II (1941 – 1945) and during post war times, providing repair and maintenance services for military aircraft. McClellan also supported activities such as electronics manufacturing, software development, scientific research, and supply logistics. The 1995 Defense Base Realignment and Closure Commission designated McClellan for closure, effective on July 13, 2001 when the base transitioned from military to civilian jurisdiction.

The Base operated as an active industrial facility from the mid-1930s until base closure. Industrial solvents, caustic cleaners, electroplating chemicals, heavy metals, fuels oils and lubricants, and pesticides were used and associated with base operations. Also some base activities involved the use and analysis of radioactive substances such as radium, uranium, and plutonium. Contamination has been identified in groundwater, soil and subsoil, and buildings. As of late 2007, there are 319 sites/hazards listed on the Geo Tracker DOD Non-Underground Storage Tank list. There are five areas within the McClellan base listed on the Envirostor database. Four areas are listed as active Federal Superfund sites, and one area is a state response site listed as certified for operation and maintenance.

Contamination remaining at McClellan Park today from past uses includes industrial solvents, cleaners, fuel oils, etc., and radioactive substances contamination of groundwater, soils, and buildings. These sites remain open as does the Federal Superfund listing of four sites.

Mather Airport

Mather Airport, previously known as Mather Field, was established in 1918 as a military and pilot training school. Mather was closed after World War I, but reopened in 1941 as a training field. In 1988, the Department of Defense announced the decision to close Mather and it was officially closed in September 1993. In May 1995, Mather was reopened as a civilian airport. Following its reopening, the majority of all-cargo carriers operating at Sacramento International Airport relocated to Mather Airport. Private jet operations are also based at Mather Airport.

Past uses of hazardous materials at Mather, including acids, corrosives, compressed gasses, hydraulic fluids, solvents, paints, paint thinners, and lubricants have contaminated groundwater and soils on site.

There are 54 sites/hazards listed on the Geo Tracker DOD Non-Underground Storage Tank list. As of late 2007, Mather is listed as an active Federal Superfund site with land use restrictions on the Envirostor database.

Contamination remaining at Mather Airport today from past uses includes flammable and combustible liquids, pesticides, herbicides, polychlorinated biphenyls (PCBs), radon, and medical/biohazard waste contamination of groundwater and soils. Asbestos containing materials in buildings also remain. Mather Airport is listed as an active Federal Superfund site.

Asbestos

Asbestos is a naturally occurring, fibrous silicate mineral mined for its useful properties, such as thermal insulation, chemical and thermal stability, and high tensile strength (greater resistance to longitudinal stress before rupturing). The most common type of asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Serpentinite may contain chrysotile asbestos, especially near fault zones.

Ultramafic rock, a rock closely related to serpentinite, may also contain asbestos minerals. Asbestos can also be associated with other rock types in California, though much less frequently than serpentinite and/or ultramafic rock. However, the information available at this time is insufficient to allow such occurrences to be mapped on a regional or statewide basis.

Asbestos is classified as a known human carcinogen by state, federal, and international agencies and was identified as a toxic air contaminant by the California Air Resources Board (CARB) in 1986. Asbestos poses a health risk only when it becomes friable, such as through disturbance or damage. Once airborne, asbestos fibers may be inhaled into the lungs where they can cause serious health problems (US EPA, 2008). All types of asbestos are hazardous and may cause lung disease and cancer.

Asbestos is commonly used as an acoustic insulator and in thermal insulation (fire proofing and other building materials).

US EPA issued a final rule banning most asbestos-containing products in July 1989; however, this regulation was overturned in 1991, by the Fifth Circuit Court of Appeals in New Orleans. The Courts ruled that the US EPA ban shall remain for specific asbestos-containing products. These banned products are flooring felt; rollboard; and corrugated, commercial, or specialty paper. The regulation continues to ban the use of asbestos in products that have not historically contained asbestos, otherwise referred to as "new uses" of asbestos.

In CARB's Final Regulation Order for Asbestos Airborne Toxic Control Measure For Construction, Grading, Quarrying and Surface Mining Operations (Section 93105), specific mitigation measures were developed for asbestos. CARB staff has the data and expertise necessary to determine appropriate control measures, and is the regulatory agency responsible for establishing controls.

Hazardous Waste Generators, Storage Sites, and Disposal Sites

The Master List of Facilities within Sacramento County with Potentially Hazardous Materials (Master List) maintained by Sacramento County EMD lists 8,671 facilities as of late 2007. This list includes facilities classified as BP, WG, UST, AST, TIER, and CalARP that are explained below.

- BP is for facilities have "reportable quantities" of hazardous materials and/or hazardous waste used, stored or generated at the facility. A reportable quantity is defined as equal to or greater than 55 gallons of a liquid; 200 cubic feet of a gas; and/or, 500 pounds of a solid. These facilities are required to file a business plan and obtain a hazardous materials permit from EMD.

- WG is for facilities are hazardous waste generators that generate equal to or greater than 27 gallons per month.

- AST and UST are facilities that have underground and above ground tanks.

- TIER is a process that is used by facilities that generate hazardous waste but are able to recycle/reuse and/or incorporate some of their initial waste into their final or finished product.

- CalARP-classified facilities are those that use or store "extremely hazardous substances or waste." These facilities are required to submit a "Risk Management Plan" to County EMD.

LEAD

Lead is commonly found in paint, dust and soil. In 1978 the Federal government banned the use of lead-based paint in housing. Many homes built before 1978 have lead-based paint. If the paint is in good condition it is usually not a hazard. However, if lead-based paint is dry scrapped, dry sanded, or heated, lead dust can form. This lead dust can get on surfaces and objects that people touch and settled lead dust can re-enter the air when people vacuum, sweep, or walk through it. Also lead can settle in soil from flaking or chipped exterior lead-based paint. This can be tracked into a house by children playing in bare soil, causing a possible hazard. Lead poisoning, especially in children, can cause damage to the brain and nervous system, behavior and learning problems, hearing problems and headaches. Adults are also susceptible and can have difficulties during pregnancy, high blood pressure, nerve disorders, muscle and joint pain, and memory and concentration problems, to name a few (US EPA, 2007).

LANDFILLS

Potential hazards to public health and safety can be associated with landfill operations. These hazards include spread of disease, risk of fire or explosion, exposure of humans to air-borne toxics, degradation of water quality, and human exposure to locally-confined hazardous or infectious wastes. Kiefer Landfill and other landfill sites within Sacramento County are fully permitted through the State Integrated Waste Management Board and have plans in place to mitigate these dangers. Modern landfill design, like the design for the Kiefer Landfill, includes the placement of a several liners separating waste lifts (layers where any waste material having seeped through is pumped to the surface to treatment tanks). Also a flexible membrane liner is laid out beyond a drainage layer below the series of waste lifts (CIWMB, 2001).

There are ten landfills in Sacramento County. Plate HM-1 presents a map of the landfills in Sacramento County. Table HM-3 presents a status list of the landfills. In February 2008, County EMD staff (L. Todd) commented that the Aerojet Lagoon site on the map is gone and the Aerojet Plant 2 sites are part of the larger Aerojet site already mentioned.

Plate HM-1 Solid Waste Landfill Sites in Sacramento County

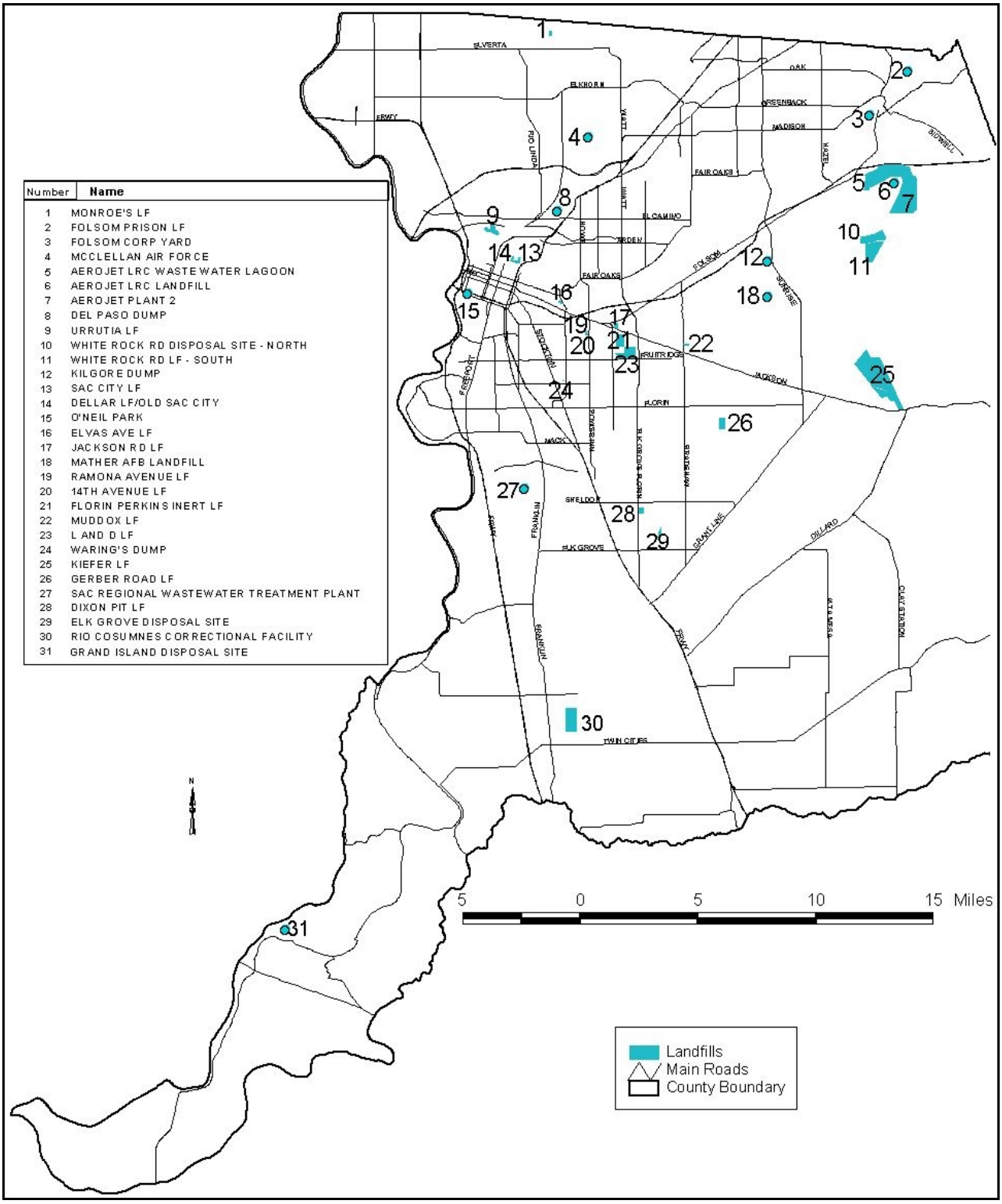


Table HM-3 Sacramento County Landfills

Landfill	Status	Notes
L and D Landfill	Open	
Kiefer Landfill	Open	
Mather AFB	DOD/DTSC site	
McClellan AFB	DOD/DTSC site	
Aerojet Landfill	Inspected closed site	The Notice of Determination for the Mitigated Negative Declaration was recorded on September 7, 2007. This CEQA Initial Study documented the “clean closure” of the site.
Dixon Pit Landfill	Inspected closed site	
Elvas Ave. Landfill	Inspected closed site	
Elk Grove Landfill	Inspected closed site	
Florin-Perkins Road Landfill	Inspected closed site	
Folsom Corp Yard	Inspected closed site	The Notice of Determination for the Mitigated Negative Declaration was recorded on March 12, 2008. This CEQA Initial Study documented the “clean closure” of the site where all waste will be removed in order to develop the site; owned by the City of Folsom.
Gerber Road Landfill	Inspected closed site	
Grand Island Landfill	Inspected closed site	
Jackson Road Landfill	Inspected closed site	
Monroe Landfill	Inspected closed site	
Muddox Landfill	Inspected closed site	
Obies Dump	Inspected closed	DTSC is the lead for the clean

Landfill	Status	Notes
	site	closure which is in progress
Rio Consumnes Correctional Facility	Inspected closed site	
Sacramento City Landfill	Inspected closed site	
Waring's Dump	Inspected closed site	
White Rock – North	Inspected closed site	
White Rock – South	Inspected closed site	
14th Avenue Landfill	Inspected closed site	
Del Paso Dump	Archived site	
Dellar Landfill / Old Sac City	Archived site	
Folsom Prison Landfill	Archived site	
Kilgore Dump	Archived site	
O'Neil Park	Archived site	
Ramona Ave. Landfill	Archived site	
Sacramento Regional Waste Water Treatment Plant	Archived site	
Urrutia Landfill	Archived site	

The sites listed as "inspected closed site" have been inspected by County EMD, the two sited listed as Department of Defense (DOD)/DTSC are under the jurisdiction of the DTSC and are DOD sites, and the sites listed as archived are "legacy sites".

Spills and Leaks

Spills and leaks can originate from aboveground and underground sources. Aboveground sources include aboveground storage tanks (ASTs) and pipelines, such as those carrying chemicals used at dry cleaning businesses. Aboveground spills and leaks are listed on the State Regional Water Quality Control Board's (SRWQCBs) Geo Tracker as a SLIC site. As of late 2007, there are 172 SLIC sites listed within Sacramento County. This includes sites in the unincorporated county and cities.

Spills and leaks originating from underground sources are from underground tanks, such as underground storage tanks (USTs) and underground fuel tanks (UFTs). USTs and UFTs are essentially the same since it is rare that underground tanks store something other than fuel. Geo Tracker groups leaking underground tanks with leaking underground fuel tanks in the Leaking Underground Fuel Tank category. As of late 2007, there are 1,389 LUFT sites listed within Sacramento County.

REGULATORY SETTING

Throughout the United States including California, hazardous materials are regulated by a number of federal and state laws, most of which are promulgated by the United States Environmental Protection Agency (US EPA) and the California Environmental Protection Agency (Cal EPA). On the federal level, these regulations include the Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Clean Air and Clean Water acts, Safe Drinking Water Act, Hazardous Materials Transportation Act, and the Emergency Planning and Community Right-to-Know Act. Together, these regulations serve as guiding principles governing the storage, use, and transportation of hazardous and other regulated materials from their time of origin to their ultimate disposal. The cleanup and remediation of environmental contamination resulting from the accidental or unlawful release of these materials and substances are also governed by these regulations. Solid wastes that are not classifiable as hazardous are regulated under RCRA and pollution prevention is also regulated under the Clean Air, Clean Water, and Safe Drinking Water acts.

On the state level, Cal EPA's DTSC is responsible statewide for matters concerning the use, storage, transport, and disposal of hazardous materials. Cal EPA's Office of Environmental Health Hazard Assessment (OEHHA) is involved in the evaluation of risks to public health and the environment posed by hazardous materials and environmental contamination. Cal EPA delegates much of the permitting, inspection, and enforcement responsibility for hazardous materials, hazardous waste, ASTs, USTs, and other related state programs to local governments under the Certified Unified Program Agency program.

County EMD is both the local Environmental Health regulatory agency and the County-wide Certified Unified Program Agency. County EMD is also the Local Oversight Program for UST site investigation, cleanup, and closure, and the Local Enforcement Agency (LEA) for landfills. The Central Valley Regional Water Quality Control Board (CVRWQCB) also has jurisdiction over the management of surface and groundwater contamination such as the cleanup of spill sites. Finally, the Sacramento Metropolitan Air Quality Management District (SMAQMD) is involved in the assessment of health and environmental hazards associated with both "criteria" and toxic (or hazardous) air pollutants.

EXISTING SACRAMENTO COUNTY GENERAL PLAN POLICIES

The 1993 Sacramento County General Plan contains fifteen policies related to hazardous materials. None of the policies have been changed and no new policies have been added in the General Plan Update.

SIGNIFICANCE CRITERIA

The County of Sacramento considers impacts to hazards and hazardous materials to be significant if a project would:

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

2. 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. Specific conditions include:

    a. Located within 1,000 feet of a known contamination site

    b. Located within 2,000 feet of a known "border zone property" (i.e., "Superfund" site) or a hazardous waste property subject to corrective action pursuant to applicable health and safety codes

    c. Involve excavation at a Department of Toxic Substances Control closed site that could disturb contaminated soils

    d. Located on or near an active or former landfill

    e. Properties historically developed with industrial or commercial uses that involve dewatering in association with major excavation in an area of high groundwater

    f. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school

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

Significance criteria 1, 2c, and 2f are least applicable to the Project, because it does not involve the generation, transport, or emission of hazardous substances. The analyses to follow focus on the proximity of proposed development areas to known hazardous sites or conditions.

METHODOLOGY

A review of two databases and two lists was conducted to assemble a list of hazardous materials storage and use, and known contaminated sites within Sacramento County. The results are included in the Hazardous Materials Appendix which is available either in hard copy or as an Excel file for review at the Sacramento County Department of Environmental Review and Assessment, 827 7th Street, Room 220, Sacramento. Envirostor is a database maintained by the State DTSC and holds information on investigation, cleanup, permitting, and corrective actions that are planned, are being conducted, or have been completed under the DTSCs oversight. Envirostor was reviewed and a list of sites was generated. Geo Tracker is a second database that is maintained by the State Water Resources Control Board (SWRCB) and tracks regulatory data about underground fuel tanks, fuel pipes, and public drinking water supplies. Toxic Site is a County-generated and maintained list that shows a list of known contaminated sites. Finally, the County's Master List of Business Facilities identifies business in Sacramento County that store and use hazardous materials. Each of these databases lists sites with active, inactive, certified, de-listed, no further action, and refer to other agency statuses. A site that is listed as closed is one at which remediation and cleanup activities are complete.

IMPACTS AND ANALYSIS

IMPACT: HAZARDOUS MATERIALS WITHIN DEVELOPMENT AREAS

INFILL AND COMMERCIAL CORRIDORS

The land identified as infill in the proposed General Plan are residential lands that are either vacant or underutilized. A review of the Geotracker database clearly shows that contaminated sites in urbanized areas are associated with commercial properties, and that residential properties are typically only listed when they are in rural areas associated with agricultural use. It does not appear that any of the residential infill sites are currently listed as cleanup sites, or are likely to be listed in the future. The issue facing infill properties, if it arises over the life of the Project, is likely to be associated with proximity to a cleanup site. These cleanup sites, which are associated predominantly with underground storage tanks (though there are also some dry cleaners listed), do not have substantial above-ground influence. The primary concern with the cleanup sites is the potential for groundwater to be affected by leaking fluids, or chemicals like perchloroethylene in the case of dry cleaners. Nearby residential properties would only be affected if the property relied on an on-site well, which will not be permissible within any of the infill parcels. All will be required by existing regulations to use public water supply, a supply source that is monitored and treated. Therefore, development of these residential infill properties will not expose people to a significant hazard associated with proximity to a contaminated site.

Among the Commercial Corridors, there are six open cleanup sites within Watt Avenue North, nine within Auburn Boulevard North, three within Auburn Boulevard Central, eight within Watt Avenue Central, three within Fulton Avenue, four within Fair Oaks Boulevard West, eight within Fair Oaks Boulevard Central, six within Fair Oaks Boulevard East, four within Greenback Lane, five within Folsom Boulevard, fourteen within Franklin Boulevard, seven within Stockton Boulevard South, three within the Florin Road area, and three within Stockton Boulevard Central. The majority of these cleanup sites are older gas stations, which is the most prevalent kind of cleanup site within older urbanized areas. The underground storage tanks common to these older gas stations were not constructed to the more rigorous, modern standards for tanks – which includes mechanisms to detect leaks so that problems are caught quickly. Site remediation for leaking fuel tanks may involve removal of contaminated soil, replacement with a modern storage tank, and possibly the installation of monitoring wells to ensure groundwater is unaffected.

Existing regulations preclude development of any known cleanup site until the hazardous condition has been abated to the point that the proposed use will neither aggravate the hazard condition nor be adversely affected by the hazard condition. Therefore, should any property within the Commercial Corridors be listed as an open and active cleanup site, it will be restricted from developing. Further environmental review of the effect of these cleanup sites will be conducted as part of the master planning proposal for each of the Commercial Corridors, when specific land uses are proposed. Existing regulations and programs will ensure that development in the Commercial Corridors does not expose people to a significant hazard associated with proximity to a contaminated site. Impacts are *less than significant*.

Buildout of Planned Communities

Each of the master planning areas that the Project assumes will reach buildout by 2030, including Elverta, East Antelope, Vineyard Springs, North Vineyard Station, and Florin Vineyard 'Gap', included an analysis of hazardous materials as part of the EIRs prepared for the projects. Mitigation was included, as appropriate, and will ensure that development in these areas is not exposed to a significant hazard associated with proximity to a contaminated site. Impacts are *less than significant*.

New Growth Areas

West of Watt

The West of Watt New Growth Area is adjacent to the McClellan Airpark, a former air force base that is closed and in the process of being cleaned up and converted into civilian use. A search of the DTSC Geotracker database shows that there are no cleanup sites within the boundaries of the West of Watt New Growth Area, though there are some along Watt Avenue, just to the east. The same discussion provided for the Infill and Commercial Corridors section, above, applies to this analysis. Existing regulations preclude development of any known cleanup site until the hazardous

condition has been abated to the point that the proposed use will neither aggravate the hazard condition nor be adversely affected by the hazardous condition. Given that existing regulations and programs will ensure that development in the West of Watt area does not expose people to a significant hazard associated with proximity to a contaminated site, impacts are *less than significant*.

EASTON

The impacts of development within the Easton area were analyzed in detail as part of a separate Environmental Impact Report. To summarize, the Easton area is on a former Superfund site, and is adjacent to an existing Superfund site, which is associated with the Aerojet facility. The Easton lands were deleted from, or carved out from, the existing Superfund site because they were considered not to need any further remediation in order to allow development.

Gold mining is also a historic use of the site, which has left trace amounts of mercury and arsenic in the soil. Though development of the area would not expose new residents to unsafe levels of these materials, measures were included to ensure that excavated soil is properly transported and disposed of, and to ensure that construction workers are aware of arsenic in the soil so that proper safety measures can be taken. It was determined that impacts on the public and the environment associated with hazardous materials and waste would be *less than significant*.

JACKSON HIGHWAY CORRIDOR

The Jackson Highway Corridor New Growth Area is made up of agricultural fields and grazing lands, wetlands and other waterways, and homes on agricultural-residential lots (1 – 5 acres) and mining properties. A search of the DTSC Geotracker database shows that there are two open cleanup cases (one site assessment, and one remediation) within the Jackson Highway Corridor. Cleanup will be required by existing regulations before development on either of these properties can take place.

Development of urban uses on land that has been historically held in agricultural production introduces a potential risk from soil contamination and groundwater contamination. Where old homesteads have historically been or currently are on-site, septic systems (tanks, leach fields), private water supply wells, and petrochemical or fuel storage tanks could be encountered. Land within the Jackson Highway Corridor New Growth Area has historically been used for agricultural production and therefore has the potential for undiscovered toxic contamination from past agricultural practices. As master plans for development in this growth area are proposed, further site-specific reconnaissance will be necessary and will occur as part of the environmental review process.

The application of current laws and regulations will ensure that any contaminated sites are identified, contained, and remediated prior to development. Existing regulations and programs will ensure that development in the Jackson Highway Corridor area does

not expose people to a significant hazard associated with proximity to a contaminated site. Impacts are *less than significant*.

GRANT LINE EAST

The Grant Line East New Growth Area is made up of grazing land and extensive wetlands, and has not undergone any significant development. A search of the DTSC Geo Tracker database shows that there are no listed toxic sites either within or immediately adjacent to the growth area.

Though the Grant Line East New Growth Area has been used for agricultural purposes, it has been used as grazing land, not for crops. Unlike croplands, pesticides and fertilizers are not typically used on grazing lands, nor storage of petrochemicals or other toxic materials. Therefore, the potential for the growth area to contain undiscovered toxic materials either in the form of buried tanks or soil contamination is low.

As with the Jackson Highway Corridor, the potential for the site to contain hazardous materials will be further analyzed at the time that more specific master planning of the growth area is proposed. The application of current laws and regulations will ensure that any contaminated sites are identified, contained, and remediated prior to development. Existing regulations and programs will ensure that development in the Grant Line East area does not expose people to a significant hazard associated with proximity to a contaminated site. Impacts are *less than significant*.

MITIGATION MEASURES:

None recommended.

IMPACT: ASBESTOS EXPOSURE THROUGH RENOVATION OR DEMOLITION OF EXISTING STRUCTURES THAT CONTAIN ASBESTOS

The renovation or demolition of existing structures constructed prior to 1989 can pose an exposure risk to workers from asbestos-containing material if the material is chipped away and then accidentally ingested, or if it becomes airborne and is inhaled. This impact is most likely to occur as a result of redevelopment activities within the Commercial Corridors and demolition of existing structures within the New Growth Areas. When an individual applies for a demolition or renovation permit through the County Building Department, the applicant will be required to get a permit from the Sacramento Municipal Air Quality Management District. As part of the permit process, the applicant will need to show compliance with Federal regulations and Air District Rule 902, which require a survey for asbestos prior to demolition. Any asbestos found would require abatement. Given that there is already a process requiring the applicant to survey for and abate any asbestos, impacts related to asbestos exposure are *less than significant*.

MITIGATION MEASURES:

None recommended.

IMPACT: EXPOSURE TO LEAD THROUGH RENOVATION OR DEMOLITION OF EXISTING STRUCTURES THAT CONTAIN LEAD-BASED PAINT

The renovation or demolition of existing structures constructed prior to 1978 can pose an exposure risk of workers to lead-based paint if the paint were chipped away and then accidentally ingested, or if the paint became an airborne dust and was inhaled. Also, lead can deposit on exposed soil, which can then be tracked into the home, ingested by children and adults. As with asbestos in older homes, there are existing rules and regulations to ensure that workers are apprised of the risk of lead exposure before renovation or demolition can begin, and are given protocols to avoid exposure. Environmental impacts resulting from lead exposure are *less than significant* with the adherence to existing regulations and laws.

MITIGATION MEASURES:

None recommended.

NO PROJECT ALTERNATIVE

IMPACT: HAZARDOUS MATERIALS WITHIN DEVELOPMENT AREAS

The No Project Alternative would include the least amount of intense development within areas known to contain active cleanup sites. It would include Easton, a discussion for which is provided in the Project analysis section, and it would include the Cordova Hills project within Grant Line East, where there is no known contamination. The No Project Alternative does not include the Commercial Corridors, which are the areas within the Project that contain the largest number of active cleanup sites. Despite the fact that the No Project would include less development within the vicinity of cleanup sites, the conclusion for the Project and for the No Project is the same: existing regulations and programs will ensure that development in the New Growth Areas does not expose people to a significant hazard associated with proximity to a contaminated site. Impacts are *less than significant*.

IMPACT: ASBESTOS EXPOSURE THROUGH RENOVATION OR DEMOLITION OF EXISTING STRUCTURES THAT CONTAIN ASBESTOS

The same discussion provided for the Project analysis applies to all of the CEQA Alternatives. Environmental impacts resulting from asbestos exposure are *less than significant* with the adherence to existing regulations and laws.

MITIGATION MEASURE:

None recommended.

IMPACT: EXPOSURE TO LEAD THROUGH RENOVATION OR DEMOLITION OF EXISTING STRUCTURES THAT CONTAIN LEAD-BASED PAINT

The same discussion provided for the Project analysis applies to all of the CEQA Alternatives. Environmental impacts resulting from lead exposure are *less than significant* with the adherence to existing regulations and laws.

MITIGATION MEASURE:

None recommended.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

IMPACT: HAZARDOUS MATERIALS WITHIN DEVELOPMENT AREAS

The same discussion provided for the Project applies to this Alternative, with respect to all but the Grant Line East area. Though this Alternative removes the Grant Line East New Growth Area, that area does not contain any cleanup sites, and has a low potential for contamination associated with agricultural activities. Existing regulations and programs will ensure that development in the New Growth Areas does not expose people to a significant hazard associated with proximity to a contaminated site. Impacts are *less than significant*.

MITIGATION MEASURE:

None recommended.

IMPACT: ASBESTOS EXPOSURE THROUGH RENOVATION OR DEMOLITION OF EXISTING STRUCTURES THAT CONTAIN ASBESTOS

The same discussion provided for the Project analysis applies to all of the CEQA Alternatives. Environmental impacts resulting from asbestos exposure are *less than significant* with the adherence to existing regulations and laws.

MITIGATION MEASURE:

None recommended.

IMPACT: EXPOSURE TO LEAD THROUGH RENOVATION OR DEMOLITION OF EXISTING STRUCTURES THAT CONTAIN LEAD-BASED PAINT

The same discussion provided for the Project analysis applies to all of the CEQA Alternatives. Environmental impacts resulting from lead exposure are *less than significant* with the adherence to existing regulations and laws.

MITIGATION MEASURE:

None recommended.

ALTERNATIVE 2: FOCUSED GROWTH

IMPACT: HAZARDOUS MATERIALS WITHIN DEVELOPMENT AREAS

The same discussion provided for the Project applies to this Alternative with respect to all but the Jackson Highway Corridor and the Grant Line East Area. Though the Jackson Highway Corridor is reduced in size, the two open cleanup sites are in the northwestern portion, which is still included in the reduced footprint. Existing regulations and programs will ensure that development in the New Growth Areas does not expose people to a significant hazard associated with proximity to a contaminated site. Impacts are *less than significant*.

IMPACT: ASBESTOS EXPOSURE THROUGH RENOVATION OR DEMOLITION OF EXISTING STRUCTURES THAT CONTAIN ASBESTOS

The same discussion provided for the Project analysis applies to all of the CEQA Alternatives. Environmental impacts resulting from asbestos exposure are *less than significant* with the adherence to existing regulations and laws.

MITIGATION MEASURE:

None recommended.

IMPACT: EXPOSURE TO LEAD THROUGH RENOVATION OR DEMOLITION OF EXISTING STRUCTURES THAT CONTAIN LEAD-BASED PAINT

The same discussion provided for the Project analysis applies to all of the CEQA Alternatives. Environmental impacts resulting from lead exposure are *less than significant* with the adherence to existing regulations and laws.

MITIGATION MEASURE:

None recommended.

ALTERNATIVE 3: MIXED USE

IMPACT: HAZARDOUS MATERIALS WITHIN DEVELOPMENT AREAS

This Alternative does not substantially reduce the number of cleanup sites that are within proposed development areas, because it eliminates the two growth areas with the least amount of active cleanup sites. The same discussion provided for the Project applies to this Alternative, with respect to all but the Jackson Highway Corridor and Grant Line East areas. Existing regulations and programs will ensure that development in the New Growth Areas does not expose people to a significant hazard associated with proximity to a contaminated site. Impacts are *less than significant*.

IMPACT: ASBESTOS EXPOSURE THROUGH RENOVATION OR DEMOLITION OF EXISTING STRUCTURES THAT CONTAIN ASBESTOS

The same discussion provided for the Project analysis applies to all of the CEQA Alternatives. Environmental impacts resulting from asbestos exposure are *less than significant* with the adherence to existing regulations and laws.

MITIGATION MEASURE:

None recommended.

IMPACT: EXPOSURE TO LEAD THROUGH RENOVATION OR DEMOLITION OF EXISTING STRUCTURES THAT CONTAIN LEAD-BASED PAINT

The same discussion provided for the Project analysis applies to all of the CEQA Alternatives. Environmental impacts resulting from lead exposure are *less than significant* with the adherence to existing regulations and laws.

MITIGATION MEASURE:

None recommended.

15 CULTURAL AND PALEONTOLOGICAL RESOURCES

INTRODUCTION

This section describes the potential impacts of the proposed project on cultural and paleontological resources that could occur as a result of implementation of the proposed Update to the General Plan. Cultural resources include historic buildings and structures, historic districts, historic sites, culturally sacred sites, prehistoric and historic archaeological sites, and other prehistoric and historic objects and artifacts. Paleontological resources (fossils) include the remains of plant and animal life and, unlike cultural resources, are exclusive of human remains and artifacts.

Cultural resources that might be present in the General Plan Area could include the categories described in Table CR-1, identified pursuant to *California Code of Regulations, Title 14, Section 4852*.

Table CR-1
Categories of Cultural Resources

Category	Description	Example
Building	Structures created principally to shelter or assist in carrying out any form of human activity. May also refer to a historically and functionally related unit (e.g., courthouse and jail).	Houses, barns, churches, factories, and hotels
Site	A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historical, cultural, or archeological value regardless of the value of any existing building, structure, or object. A site need not be marked by physical remains if it is the location of a prehistoric event, and if no buildings, structures, or objects marked it at that time.	Trails, designed landscapes, battlefields, habitation sites, Native American ceremonial areas, petroglyphs, and pictographs
Structure	The term "structure" is used to describe a construction made for a functional purpose rather than creating human shelter.	Mines, bridges, and tunnels
Object	The term "object" is used to describe those constructions that are primarily artistic in nature or are relatively small in scale and simply constructed, as opposed to a building or a structure. Although it may be moveable by nature	Fountains, monuments, maritime resources, sculptures, and boundary markers

Category	Description	Example
	or design, an object is associated with a specific setting or environment. Objects should be in a setting appropriate to their significant historic use, role, or character. Objects that are relocated to a museum are not eligible for listing in the California Register.	
Historic District	Unified geographic entities which contain a concentration of historic buildings, structures, objects, or sites united historically, culturally, or architecturally. Historic districts are defined by precise geographic boundaries. Therefore, districts with unusual boundaries require a description of what lies immediately outside the area, in order to define the edge of the district and to explain the exclusion of adjoining areas.	---

Paleontological resources that might be present in the General Plan Area could include the categories described in Table CR-2.

Table CR-2
Categories of Paleontological Resources

Category	Description	Example Fossils
Vertebrate	A fossil of an animal having a spinal column or traces of the animal such as a footprint.	Mammoth, dire wolf, ground sloths, dinosaurs, saber-toothed tiger
Invertebrate	A fossil of an animal lacking a spinal column or traces of the animal such as impressions of a shell or tracks.	soft-bodied examples are jelly fish, and worms (not fossilized but may leave trace fossils) Hard-bodied examples are clams, snails, mussels and oysters
Plants	Any fossilized preserved part of a plant that has long since died. Many plant fossils consist of compressions of once living plants.	Compression fossils of paleobotany, spores, pollen and petrified wood
Microorganisms	Fossils of organisms that are microscopic. They are typically single-celled and are too small to see with the naked-eye.	Bacteria, foraminifera protists, plankton, fungi, amoeba, planarian

CULTURAL RESOURCES SETTING

PREHISTORIC BACKGROUND

The Sacramento Valley region was populated by indigenous people for thousands of years prior to the influx of Euro-American settlers in the mid-1800s. In fact, occupation in the Sacramento Valley during the Prehistoric Period is estimated to have occurred as early as 12,000 years ago, but only a few archaeological sites have been identified that predate 5,000 years ago. Essentially this is based on the possibility that Holocene alluvial deposits buried many prehistoric sites in Sacramento County. For example, Moratto (1984) has estimated that as much as 10 meters of sediment accumulated along the lower stretch of the Sacramento drainage system during the last 5,000 -6,000 years.

Prehistoric material culture in central California (including the Sacramento Valley) subsequent to the Paleoindian Period has been categorized according to “horizons” or “patterns” that define broad technological, economic, social, and ideological elements over long periods of time and large areas. A three-part cultural chronological sequence, the Central California Taxonomic System (CCTS) was developed by researchers to explain local and regional cultural change in prehistoric central California from about 4,500 years ago to the time of European contact (Lillard, Heizer, and Fenenga, 1939; and Beardsley, 1948 and 1954), and was further developed after the advent of radiocarbon dating (Fredrickson 1973, 1974; Ragir 1972).

Today, a series of generalized periods associated with regionally based “patterns” are typically used as part of the CCTS for the Sacramento Delta area, San Francisco Bay area, and North Coast ranges (Bennyhoff and Fredrickson 1969; Fredrickson 1973, 1974). Smaller units of patterns are referred to as “aspects” and “phases.” Revisions of the widely accepted CCTS (Bennyhoff 1994; Fredrickson 1994a, 1994b) are found in a recent volume edited by Hughes (1994).

Fredrickson (1973, 1974) defined several regionally based patterns, of which three are specific to Central Valley prehistory and the current project area, namely the Windmiller Pattern, Berkeley Pattern, and Augustine Pattern. Each of these patterns represents a general pattern of resource exploitation, as identified between 2500 B.C. and the beginning of Euro-American contact (A.D. 1769). These patterns are present within the following horizon sequences: Early Horizon/Windmiller Pattern, Middle Horizon/Berkeley Pattern, and Late Horizon/Augustine Pattern. These patterns are illustrated below in Table CR-3 and are discussed in more detail below (based on the CCTS classification scheme and Fredrickson (1994a)).

Table CR-3
General Archaeological Patterns Documented in Sacramento County

Period	Archaeological ~~Unit~~ **Pattern**	Patterns
• Archaic **(Lower, Middle, and Upper)** 6,000 B.C.–A.D. ~~1,000~~ **500**	Windmiller 2,500 B.C.–500 B.C.	Social stratification inferred from burials; distant trade; flaked stone, bone, ground stone, baked clay, and shell items.
	Berkeley 500 B.C.– A.D. 500	Reliance on acorns; groundstone; mortar and pestle; extensive bone tool kit; unique knapping techniques; shell beads and pendants
• **Emergent** **500 A.D. – 1800 A.D.**	Augustine A.D. 500–A.D. 1800	Increased reliance on hunting, gathering, and fishing. Bow and arrow; extensive trade.

Windmiller Pattern (2500–500 B.C.)

Clearly documented evidence for human occupation in the general area is found at sites characteristic of the Windmiller Pattern, or Early Horizon. These sites date to as early as 4,500 years ago and as late as 2,500 years ago (2500–500 B.C.). . The Windmiller Pattern (Early Horizon), as defined by Fredrickson (1973), was first identified at Windmiller site (CA-SAC-107). Sites in this pattern are characterized by extended burials oriented toward the west and often contain grave goods, including baked clay balls, charmstones, and exotic minerals. Fishing and gathering of acorns are apparently emphasized. Elk, deer, pronghorn antelope, rabbits, and waterfowl were hunted in quantity. Villages appear to have been occupied year round and were situated along drainages. Radiocarbon dating of Windmiller Pattern deposits points to an occupation beginning around 4,350 years ago (prior to 2,400 B.C.) and continuing until around 500 B.C. (Heizer 1949, Johnson 1982, Moratto 1984, Ragir 1972).

Most of what is known about the Early Horizon in the Central Valley comes from cemetery and habitation sites along the Cosumnes and Mokelumne Rivers. The typical site is stratified with later period components located above the basal Windmiller Pattern deposits. Johnson (1982) notes that virtually all Early Horizon sites have some detectable midden, and every Windmiller Pattern site in the lower Sacramento Valley and the Sacramento-San Joaquin Delta (Delta) known to date contains human remains. Meighan argues that the evidence for residential occupation or the presence of midden at the classic Early Horizon sites is very limited and that the sites actually represent specialized mortuary mounds (Meighan 1987).

Berkeley Pattern (500 B.C.–A.D. 500)

Over a 1,000-year period, the Windmiller Pattern began to shift to the more specialized, adaptive Berkeley Pattern, or Middle Horizon (500 B.C.–A.D. 500). A refinement in subsistence strategies and eastward population movement related to Miwok occupation is suggested by this pattern (Moratto 1984). A distinct focus on acorns as a dietary staple is evident in the archaeological record of this period. Technologically, the Berkeley Pattern is distinguished from the Windmiller Pattern by evidence of more frequent use of mortars and pestles; a well-developed bone industry; distinctive

diagonal flaking of large, concave-based projectile points; and certain forms of Olivella and Haliotis shell beads and ornaments (Fredrickson 1973, Moratto 1984).

Augustine Pattern (A.D. 500–1800)

The third pattern defined by Fredrickson is the Augustine (Late Horizon), which appears to represent large, dense populations, each with a major tribelet center surrounded by smaller villages. Subsistence practices within this pattern include the development of an intensive fishing industry, along with the hunting of game and the continued use of acorns (Fredrickson 1973); all these practices are seen in the archaeological record after about A.D. 500 (Moratto 1984). Native American populations appear to have been highly socialized and hierarchically stratified during this time. Both cremations and flexed burials were used. Cook (1955a) estimates that at least 50,000 individuals lived in the Sacramento Valley at one time, with dense population concentrations in the region. Complex exchange systems and elaborate ritual ceremonies became integral components of the Native American culture in the Central Valley during this time (Fredrickson 1973). Radiocarbon analysis has dated sites in the valley, such as the Blodgett site (CA-SAC-267) and CA-YOL-13 at Knights Landing, from A.D. 580 to A.D. 1605 (Elsasser 1978, Johnson 1982, Johnson et al. 1976, Kielusiak 1982, Moratto 1984).

Moratto (1984) postulates that the Augustine Pattern represents the southward incursion of Wintu populations and the introduction of many of the cultural materials found in archaeological contexts, including shaped mortars and pestles, bone awls, the bow and arrow, and shell and steatite beads. Pottery-making technology is also found in some parts of the Central Valley during the last prehistoric period (Moratto 1984).

Ethnography

Ethnography is the written record of a culture. Archaeology can be combined with ethnography to identify groups more specifically. Ethnographic records (from missions and other documents) show that the groups that inhabited Sacramento County are the Nisenan, or Southern Maidu, and the Plains Miwok, a subgroup of the Eastern Miwok. Thus, the proposed project is located within the territory commonly attributed to the ethnographic Nisenan and the Plains Miwok. The Plains Miwok traditional territory included the lower reaches of the Cosumnes and Mokelumne Rivers and extended west to the Sacramento River from Rio Vista north to Freeport (Levy 1978). Ethnographers generally agree that Nisenan territory included the drainages of the Bear, American, Yuba, and southern Feather Rivers and extended from the Sacramento River east to the crest of the Sierra Nevada (Beals 1933, Faye 1923, Gifford 1927, Kroeber 1925, Powers 1976, Wilson and Towne 1978).

Plains Miwok

Several divisions or tribelets of the Plains Miwok occupied the region south of the traditional Nisenan territory. These included both the Bualacomne and Chapumne tribelets. In spite of references to this distinctive culture by the earliest Spanish explorers and recognition of Plains Miwok as a separate language by the mid-1840s

(Bennyhoff 1977), subsequent historic-era documents are rare. Knowledge of the pre-contact culture of the Plains Miwok is limited because of the devastating effects of Spanish missionization efforts and an 1830-1833 malaria epidemic in the area (Cook 1955b). By the time intensive ethnographic studies were conducted in California, the Plains Miwok culture had been largely forgotten. As a result, few ethnographic references remain from the late 1800s and early 1900s.

In 1961, James A. Bennyhoff conducted an extensive review of historical, archaeological, and ethnographic information on the Plains Miwok. The results of this investigation (Bennyhoff 1977), although of recent origin, provide an excellent database on this poorly understood group. Much of the following background discussion is presented there in more detail.

Each Plains Miwok tribelet was an independent political entity and functioned primarily within recognized tribelet boundaries. Large, multilineal villages were concentrated on rises along watercourses, and all but the smallest villages were occupied permanently, except during the fall acorn harvest (Bennyhoff 1977).

The economy of the Plains Miwok was based primarily on the collection of plant foods and augmented by fishing and hunting. As with many California native populations, the acorn served as the staple food item. A wide variety of seeds, nuts, roots, berries, and greens supplemented the diet. Birds, rodents, and small mammals were apparently of greater year-round dietary significance than elk, deer, or antelope (Bennyhoff 1977). Archaeological investigations at sites on South Stone Lake (CA-SAC-65 and CA-SAC-145) indicate a considerable reliance on fishing for subsistence among the prehistoric populations (Schulz and Simons 1973, Schulz et al. 1979).

The first contacts between the Plains Miwok and Euro-Americans came during Spanish military and religious expeditions. The Franciscan order of the Roman Catholic Church in Spain established Mission San Jose, the fourteenth in the Alta California system, on June 11, 1797 (Bennyhoff 1977, Hoover et al. 1990). Alferez Gabriel Moraga led an overland expedition from this San Francisco Bay area mission to the Sacramento region in 1808. On May 13, 1817, Father Narciso Duran and Luis Arguello left the beach at the Presidio of San Francisco and sailed up the Sacramento River. They reached a point midway between Clarksburg and Freeport before they turned back and went around Brannan Island (Beck and Haase 1974).

These encounters soon led to the missionization of the local Native Americans. Because of the combined deadly effects of massacres and introduced diseases, an irreversible disruption of the traditional Plains Miwok way of life was inevitable (Cook 1955a). By 1828, the names of the Plains Miwok tribelets were no longer mentioned in the records of Mission San Jose (Bennyhoff 1977).

NISENAN

The Nisenan built their villages on low, natural rises along streams and rivers or on gentle slopes with a southern exposure, usually in places protected from flooding. Village populations ranged from 15 to 500 people, with one village usually playing a dominant role in the sociopolitical organization of a particular area. The ethnographic

village of Pusune or Pushuni (CA-SAC-26), located at the confluence of the American and Sacramento Rivers, served as the head village for the area (Wilson and Towne 1978).

Nisenan settlements varied from three to as many as 50 houses. Structures were dome-shaped; 10-15 feet in diameter; and covered with earth, tule mats, or grass. A variety of other structures, including sweat houses, dance houses, and acorn granaries, were also constructed (Kroeber 1925, Wilson and Towne 1978). Ethnographic village sites located along the American River area in Nisenan territory include Ekwo (on Sunrise Boulevard), Shiba (on Hazel Avenue), and Yodok (at Folsom) (Wilson and Towne 1978).

The Sacramento Valley and lower foothills were rich in natural resources, and the Nisenan took advantage of the wide variety of food sources. Waterfowl, fish, and freshwater mussels and clams were readily available in the rivers. Acorns were important to their diet and were supplemented with seeds, nuts, berries, herbs, and fruit. Except for lizards, snakes, and grizzly bears, virtually every animal was a food source, including tule elk, deer, and antelope. The Nisenan moved with the seasons, following game and collecting plants. Manzanita berries, pine nuts, block oak acorns, skins, bows and bow wood were traded to the valley people in exchange for fish, roots, grasses, shells, beads, salt, and feathers (Kroeber 1925, Wilson and Towne 1978).

Because early contact with the Spaniards was limited to the southern edge of their territory, the Nisenan were not affected by Spanish soldiers searching for mission converts in the late 1700s, although they often sheltered Plains Miwok who had escaped from the missions (Wilson and Towne 1978). In 1808, Gabriel Moraga crossed Nisenan territory, but it was not until the Hudson's Bay Company trappers journeyed through the region in the 1820s and 1830s that the first impacts on the native residents were felt. The fur trappers introduced malaria into the Central Valley, leading to an epidemic that decimated the local population in 1833. The Valley Nisenan were particularly affected by the disease, with entire villages wiped out (Wilson and Towne 1978). Cook (1955a) estimates that 75% of the Valley Nisenan population died during this epidemic.

John Sutter initiated further disruption when he introduced Plains Miwok into the region in the early 1840s and persuaded or forced the local Nisenan village people to either work for him or live peaceably with him. The Nisenan that had survived the epidemic and Sutter's working conditions had little chance against the gold miners that poured into the valley and foothills in the later 1840s. Most of the Nisenan population was completely eliminated by the mid-1850s (Wilson and Towne 1978). The survivors eked out a living working in agricultural activities, ranching activities, logging and/or in the domestic sphere (Wilson and Towne 1978).

HISTORY

Early Spanish explorers and the Franciscan and Jesuit missionaries who followed them were the first Europeans to reach northern California. The interior of the Sacramento Valley, away from the easily defended and more accessible chain of coastal missions

and pueblos, was left largely untouched by the Spanish and "Californios" (Hoover et al. 1990). Established settlement of the Sacramento area did not begin until the late 1830s and early 1840s, when resourceful and independent individuals such as Sutter and Jared Sheldon obtained land grants from the Mexican government, usually in exchange for an agreement to protect Mexican interest in these remote interior regions (Beck and Haase 1974, Thompson and West 1880).

With the initial Euro-American settlement of Sacramento County by John Sutter in 1839 at what would become Sutter's Fort, the established outpost brought with it an increase in Euro-American trappers, hunters and settlers to the area. After the arrival of Sutter, several individuals obtained large Mexican Land Grants in the area. As a result of the Mexican War (1847-1848), California became part of the territory of the United States. In 1848, gold was discovered at Sutter's Mill in Coloma. With the discovery of gold in 1848, a torrent of settlers from the east flooded into the Sacramento region. As the population increased and easily found gold decreased, newcomers who decided to stay turned to alternative vocations, particularly agriculture. Many found land comparatively plentiful and cheap. Raising grain, livestock, and produce to sell to the thousands of miners heading to the gold fields proved a profitable venture. These combined events hastened the settlement of the area and the development of Sacramento as an economic and transportation center. The designation of Sacramento as the state capital, in 1854, also resulted in the area's increase in socio-political importance.

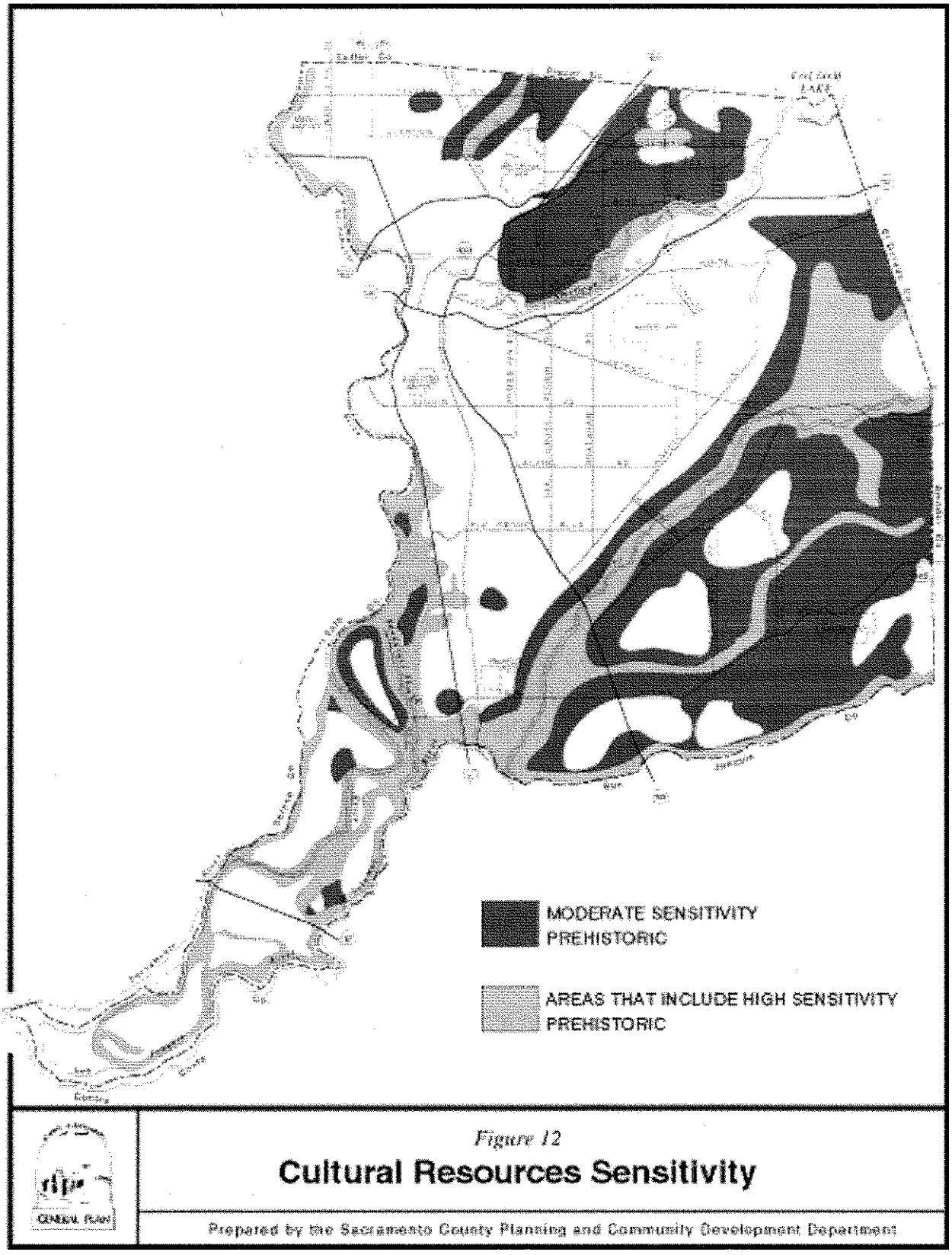
CULTURALLY SENSITIVE AREAS

Sacramento County is home to numerous culturally sensitive areas which function as a testament of the substantial, as well as persistent, events and lifeways that have occurred in the County's long history of human habitation. In general, prehistoric, ethnohistoric, and historic period sites were established throughout the County; however, both prehistoric and historic sites are found in greater concentration along waterways which supplied year-around resources to prehistoric and historic period inhabitants. According to the General Plan, areas that are likely or extremely likely to contain prehistoric sites include the Cosumnes River area, the American River area, and the Delta and Sacramento River areas (Plate CR-1).

Historic sites tend to be concentrated in areas still inhabited such as the City of Sacramento, City of Folsom, the Delta, along old travel routes like the Jackson Highway, Central California Traction Railroad, and Southern Pacific Railroad routes and along river and stream beds.

It should be noted that although the areas mentioned above and denoted on Plate CR-1 are areas of potential sensitivity for prehistoric, ethnohistoric and historic period resources, it has been demonstrated through past archival and pedestrian surveys

Plate CR-1 Cultural Resources Sensitivity Exhibit



within the County that there are documented resources outside these sensitivity areas. However, the sensitivity areas provide a generalized basis to direct further review of cultural resources within the County.

KNOWN CULTURAL RESOURCES IN THE COUNTY

In order to establish a baseline of existing known resources within Sacramento County, the DERA conducted a record search through the North Central Information Center (NCIC). This archival research identified 607 previously recorded historical sites and 627 previously recorded prehistoric sites within the County. It should be noted that due to the archiving structure at the NCIC and given the fact that some cultural resources locations are uncertain due to old mapping techniques or recoding errors, some of the noted resources may be located within incorporated cities within the County; however, every effort was taken to only include resources located within the unincorporated County. Ultimately, the baseline numbers provide context to the overall sensitivity of the County as a whole, and because many resources were not necessarily distributed based on modern layouts of incorporated cities, the numbers below provide a good estimate and context, although possibly a conservative estimate, of the kinds of resources present within the unincorporated County.

As previously noted above, Sacramento County is generally related to the Windmiller, Berkeley, and Augustine Patterns, thus prehistoric sites within the County are comprised of sites that are associated with these general patterns. Historic sites are primarily associated with the early Euroamerican settlement of Sacramento County. Historic sites include agricultural complexes, ranch complexes that consist of a variety of buildings/structures and features such as rural residences, barns, corrals, and rock walls. Historic sites in Sacramento are also commonly associated with remnants of the extensive mining activities that occurred as a result of the gold rush.

Out of the 607 previously recorded historical resources in the County, sixteen are listed on the National Register of Historic Places (NRHP) and/or the California Register of Historical Resources (CRHR). Although there are only sixteen historical resources currently listed on the Register, there is a significant amount that has been determined eligible for listing but have never gone through the formal process of officially listing the resource in the NRHP and/or the CRHR. The sixteen resources that are currently listed consist of historical structures, such as the Slocum House in Fair Oaks, historic ranches, the Old Fair Oaks Bridge, and large multi-component historic districts, such as the Walnut Grove Chinese-American Historical District.

Out of the 627 previously recorded prehistoric resources in the County, seven are currently listed on the NRHP and/or the CRHR. As discussed above, although there are only seven prehistoric resources currently listed on the Register, there is a significant amount that has been determined eligible for listing but have never gone through the formal process of officially listing the resource in the NRHP and/or the CRHR.

In addition to the National and California Register listings, other inventories and list have been prepared for cultural resources within the State of California. These consist of the following:

1. California State Historical Landmarks. These resources are defined as the following (California State Parks, Office of Historic Preservation, 2008):

   California Historical Landmarks (CHLs) are buildings, structures, sites, or places that have been determined to have statewide historical significance by meeting at least one of the criteria listed below.

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

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

   The resource also must be approved for designation by the County Board of Supervisors or the City/Town Council in whose jurisdiction it is located; be recommended by the State Historical Resources Commission; and be officially designated by the Director of California State Parks. CHLs #770 and above are automatically listed in the California Register of Historical Resources.

2. California Points of Historical Interest. These resources are defined as the following (California State Parks, Office of Historic Preservation, 2008):

   California Points of Historical Interest are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value.

   Points of Historical Interest designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the California Register.

   No historical resource may be designated as both a Landmark and a Point. If a Point is subsequently granted status as a Landmark, the Point designation will be retired.

3. California Inventory of Historic Resources. This inventory was prepared in response to the National Historic Preservation Act, which directed all states to identify a list of historical properties. The inventory includes resources that were surveyed before September 1, 1975. It includes the following:

- Resources designated as National Historic Landmarks, properties on or nominated for the National Register of Historic Places.
- Properties that were surveyed and inventoried by the State Historic Preservation Officer and Office of Historic Preservation.
- Resources designated as California Historical Landmarks, which have statewide significance.
- Points of Historical Interest
- Resources that were inventoried as part of federal programs such as the Historic American Buildings Survey (HABS).
- Resources maintained by the State of California Department of Parks and Recreation.

The inventory organizes resources into the following themes:

- Aboriginal
- Architectural
- Arts/Leisure
- Economic/Industrial
- Exploration/Settlement
- Government
- Military
- Religion
- Social/Education

4. Caltrans Bridge Inventory. These resources represent California State agency and local agency bridges that were inventoried for historical significance in 1986. This inventory was updated in 2007.

Table CR-4, below, notes the total amount of resources listed on the above stated inventories located within the unincorporated Sacramento County.

Table CR-4
Total Resources Listed on other Inventories Located Within Sacramento County

Inventory/List	Quantity of Resources Listed within Sacramento County
California State Historical Landmarks	5
California Points of Historical Interest	7
California Inventory of Historic Resources	11
Caltrans Bridge Inventory	7 (eligible for listing on the National Register)

PALEONTOLOGICAL RESOURCES BACKGROUND

EXISTING CONDITIONS

Paleontology is the scientific study of life forms in the geologic past, which involves detailed analysis of plant and animal fossils. Paleontological resources are the remains and/or traces of prehistoric plant and animal life exclusive of human remains or artifacts and the geologic units that house them. Paleontological resources are useful in education in that they promote the understanding of the history of life and the diversity of the Earth's biota. Additionally, these resources document evolutionary history of now extinct biota while helping to reconstruct environmental changes that have impacted life on Earth. Of particular importance, paleontological resources have helped to reconstruct paleoclimatology and the changes in the earth's climate which have occurred throughout history. Paleoclimatic information is useful today to understand how climate has constrained or allowed the diversification of species on Earth. As these resources are nonrenewable once destroyed, paleontological resources have been afforded protections under CEQA.

A search of the University of California Museum of Paleontology (UCMP) collections database identified five localities in Sacramento County where paleontological resources have been identified. These fossil remains were encountered during excavation activities in Sacramento County within Pleistocene aged formations (see Plate CR-2 for a Geologic Time Scale). Fossil vertebrates have been recovered from the Riverbank formation at Arco Arena, along Chicken Ranch Slough near Howe Avenue and Arden Way, at the Teichert Gravel Pit, the Davis Gravel Pit, and on Ehrhardt Avenue, near the Sacramento Regional Wastewater Treatment Plant. The vertebrate fossils recovered from these sites are all considered to be Rancholabrean (late Pleistocene) in age. Radiometric dates on vertebrate fossils from the Teichert and Davis sites are 103,000 $\pm$ 6,000 years old.

Fossils found at all five locations, which are housed at the UCMP, consist of 45 specimens that are entirely made up of vertebrates. The vertebrate fossils recovered are made up of a wide range of mammal species including mammoths, bison, dire wolf, ground sloths, camels, pack rats and smooth toothed gophers. Other vertebrate fossils recovered come from the bird, fish and reptile taxonomic classes. It should be noted that the 45 specimens referred to represent the published fossil finds within the County and it is likely that numerous fossil finds have occurred that have never been published or recorded, thus are essentially unknown for research purposes.

Based on the fact that all prior published paleontological resources discovered within Sacramento County have been found within Pleistocene formations, as discussed above, these formations are considered sensitive for paleontological resources.

Plate CR-2 Geologic Time Scale

RELATIVE GEOLOGIC TIME			TIME In Millions of Years Before Present
Era	Period	Epoc	
CENOZOIC	*Quaternary*	Holocene	0.011
		Pleistocene	1.6
	Tertiary	Pliocene	5.3
		Miocene	24
		Oligocene	37
		Eocene	58
		Paleocene	65
MESOZOIC	*Cretaceous*		144
	Jurassic		208
	Triassic		245
PALEOZOIC	*Permain*		286
	Carbon-ferous *Pennsylvanian*		320
	Carbon-ferous *Mississippian*		360
	Devonian		408
	Silurian		438
	Ordovician		505
	Cambrian		570
PRECAMBRIAN			

Map compilation and text by David L. Wagner. Graphics by Dinah D. Maldonado. California Geological Survey.

However, other formations, of different epochs and periods, found in Sacramento County have been known to contain paleontological resources in other jurisdictions outside the County. For example, the Mehrten Formation, a Miocene-Pliocene aged formation, is known to produce significant fossil vertebrates at locations outside the County. Similarly, the Laguna Formation (Pliocene aged formation) has produced significant fossil remains at many localities within the Central Valley (e.g., Hay 1927; Piper et al. 1939) and is considered to have high sensitivity under criteria established by the Society of Vertebrate Paleontology (SVP) (1995).

As noted above, although it appears that Pleistocene formations, and specifically, the Riverbank formation, is the only fossil bearing formation located in the County, this could be the result of amateur paleontological finds that have never been recorded or

published. Thus, the absence of paleontological resources within other formations outside the Riverbank formation cannot be assumed.

CULTURAL REGULATORY SETTING

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA requires a lead agency to determine whether a project may have a significant effect on historical resources. If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (Section 21083.2 (a), (b), and (c)). Section 21083.2(g) describes a *unique archaeological resource* as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

A *historical resource* is a resource listed, or determined to be eligible for listing, in the California Register of Historical Resources (CRHR) (Section 21084.1); a resource included in a local register of historical resources (Section 15064.5(a)(2)); or any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant (Section 15064.5 (a)(3)). Sacramento County does not currently have a local register.

PRC Section 5024.1, Section 15064.5 of the Guidelines, and Sections 21083.2 and 21084.1 of the Statutes of CEQA were used as the basic guidelines for the cultural resources study. PRC Section 5024.1 requires evaluation of historical resources to determine their eligibility for listing on the CRHR. The purpose of the register is to maintain listings of the state's historical resources and to indicate which properties are to be protected from substantial adverse change. The criteria for listing resources on the California Register were expressly developed to be in accordance with previously established criteria developed for listing on the National Register of Historic Places (NRHP).

FEDERAL

Cultural resources are considered during federal undertakings chiefly under Section 106 of the NHPA of 1966 (as amended) through one of its implementing regulations, 36 CFR 800 (Protection of Historic Properties), as well as the National Environmental Policy Act (NEPA). Properties of traditional religious and cultural importance to Native Americans are considered under Section 101(d)(6)(A) of NHPA. Other federal laws include the Archaeological Data Preservation Act of 1974, the American Indian Religious Freedom Act (AIRFA) of 1978, the Archaeological Resources Protection Act (ARPA) of 1979, the Native American Graves Protection and Repatriation Act (NAGPRA) of 1989, among others.

Section 106 of NHPA (16 USC 470f) requires federal agencies to take into account the effects of their undertakings on any district, site, building, structure or object that is included in or eligible for inclusion in the NRHP and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings (36 CFR 800.1). Under Section 106, the significance of any adversely affected cultural resource is assessed and mitigation measures are proposed to reduce any impacts to an acceptable level. Significant cultural resources are those resources that are listed, or are eligible for listing, on the NRHP per the criteria listed at 36 CFR 60.4 (Advisory Council on Historic Preservation 2000) below.

The quality of *significance* in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and that:

(a) Are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) Are associated with the lives of persons significant in our past; or

(c) Embody the distinctive characteristics of a type, period, or method of installation, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) Have yielded, or may be likely to yield, information important in prehistory or history.

CONSULTATION/ SENATE BILL 18

Senate Bill 18 (Cal. Gov. Code Sections 65352.3, 65352.4) requires that, prior to the adoption or amendment of a general plan proposed on or after March 1, 2005, a city or county must consult with Native American tribes with respect to the possible preservation of, or the mitigation of impacts to, specified Native American places, features, and objects located within that jurisdiction. As part of the planning process, the County Department of Planning and Community Development initiated the consultation process as required under these provisions of the Government Code. To date no

consultation has been requested by Native American tribes. Further consultation, conducted by the Planning and Community Development Department is anticipated concurrent with public review of the General Plan's Draft EIR consistent with the requirements of Senate Bill 18.

Advice on procedures to identify cultural resources, evaluate their importance and estimate potential effects, and consult with Native Americans is given in several agency publications such as the Technical Assistance Series produced by the Office of Historic Preservation (OHP) and the Tribal Consultation Guidelines produce by the Office of Planning and Research (OPR). The technical assistance series and the consultation guidelines strongly recommend that Native American concerns and the concerns of other interested persons and corporate entities, including but not limited to, museums, historical commissions, associations and societies, be solicited as part of the process of cultural resources inventory.

NATIVE AMERICAN BURIALS AND ACCIDENTAL DISCOVERIES

California law protects Native American burials, skeletal remains and associated grave goods regardless of their antiquity and provides for the sensitive treatment and disposition of those remains (Section 7050.5 of the Health and Safety Code and Public Resources Code 5097.9).

When human remains are discovered, the protocol to be followed is specified in California Health and Safety Code, which states:

> *In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.*

State CEQA Guidelines Section 15064.5, subdivision (e), requires that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the Native American Heritage Commission (NAHC) must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native Americans, if any, as timely identified by the NAHC. Section 15064.5 directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

In addition to the mitigation provisions pertaining to accidental discovery of human remains, the State CEQA Guidelines also require that a lead agency make provisions for the accidental discovery of historical or archaeological resources, generally. Pursuant to Section 15064.5, subdivision (f), these provisions should include "an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be an historical or unique archaeological resource, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation should be available. Work could continue on other parts of the building site while historical or unique archaeological resource mitigation takes place."

ASSEMBLY BILL 2641

Assembly Bill 2641 (which amends Sections 5097.91 and 5097.98 of the Public Resources Code) amends the portion of the Public Resources Code that details the process that must occur when Native American human remains are discovered. The bill amends specific procedures for consulting with the Most Likely Descendents (MLDs), of the interred individual. The law, as amended, explicitly states the expectations and requirements, of the Native American Heritage Commission (NAHC), the most likely descendent, and the property owner in order to be in compliance with the law.

Under existing law, the NAHC has been charged as the agency that shall bring action to prevent damage to Native American burial grounds and/or places of worship. Additionally, the NAHC is required to identify and notify the most likely descendent of discovered Native American remains and recommend a treatment method. Under AB 2641, the time frame to conduct this investigation is increased from 24 hours to 48 hours. Additionally, the landowner is required to ensure that the burial is not disturbed after discovery and to consult with the MLD regarding treatment of the remains. In the instance that a MLD is not identified, or the MLD fails to make a recommendation regarding treatment of the remains, than the landowner is required to reinter the human remains as specified by the NAHC. The bill also states that under any circumstance, the landowner is required to ensure that the site where remains are reinterred is protected from further and future disturbances. To protect these sites, the landowner is required to do one or more of the following:

1. Record the site with the commission or the appropriate Information Center.
2. Utilize an open-space or conservation zoning designation or easement.
3. Record a document with the county in which the property is located.

DISCLOSURE OF CULTURAL RESOURCES INFORMATION

Public disclosure of site specific cultural resources information is expressly exempt from the California Public Records Act, Government Code Sections 6250-6270. Furthermore, information obtained during Native American consultation or through consultation with the local and state agencies, including the North Central Information Center (NCIC), should remain confidential and is exempt from public disclosure under Senate Bill 922. Additionally Sacramento County staff has signed an "Agreement to Confidentiality" with the NCIC that states that site specific information will not be

distributed or released to the public or unauthorized individuals. An authorized individual is a professional archaeologist or historian that qualifies under the Secretary of Interior's standards to view confidential cultural resources materials.

PALEONTOLOGY REGULATORY SETTING

Paleontological resources are classified as non-renewable scientific resources and are protected by state statute (e.g., Public Resources Code Section 5097.5 (a), Removal or Destruction; Prohibition), and Appendix G to the CEQA Guidelines. No state or local agencies have specific jurisdiction over paleontological resources. No state or local agency requires a paleontological collecting permit to allow for the recovery of fossil remains discovered as a result of construction-related earth moving on state or private land in a project site in a limited fashion.

PROPOSED AND EXISTING POLICY FOR MANAGEMENT OF CULTURAL RESOURCES WITHIN THE SACRAMENTO COUNTY GENERAL PLAN

The General Plan update contains proposed and existing policy that is directly related to management or preservation of cultural resources within Sacramento County. Additionally, some policies that were within the 1993 General Plan have been removed in the updated General Plan. The policies that were removed in the updated plan were removed because proposed policies replaced them and made them obsolete. Due to the fact that the updated General Plan provides restructured and updated policies that generally cover the removed policies, the result of removing of the specific cultural resources policies has a neutral impact on cultural resources.

In general, the cultural resources policies presented in updated General Plan provide a framework to protect sensitive cultural resources within the County. For reference, a list of new, existing and removed cultural resources policies can be found in Appendix A. Impacts are discussed in the "Impacts and Analysis" discussion below.

PROPOSED AND EXISTING POLICY FOR MANAGEMENT OF PALEONTOLOGICAL RESOURCES WITHIN THE SACRAMENTO COUNTY GENERAL PLAN

There are no existing or proposed policies for management or protection of paleontological resources within the Sacramento County General Plan.

SIGNIFICANCE CRITERIA: CULTURAL RESOURCES

In order for a cultural resource to be considered a “historic property” under NRHP criteria (i.e., eligible for inclusion on the NRHP), it must be demonstrated that the resource possesses *integrity* of location, design, setting, materials, workmanship, feeling and association, and must meet at least one of the following four criteria delineated by Section 106 (Advisory Council on Historic Preservation 2000), as listed in 36 CFR 60.4:

> (a) That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) That are associated with the lives of persons significant in our past; or
>
> (c) That embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (d) That have yielded, or may be likely to yield, information important in prehistory or history.

The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing on the NRHP, enumerated above, and require similar protection to what NHPA Section 106 mandates for historic properties. According to PRC Section 5024.1(c)(1-4), a resource is considered *historically significant* if it meets at least one of the following criteria:

> (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
>
> (2) Is associated with the lives of persons important in our past;
>
> (3) Embodies the distinctive characteristics of a type, period, region or method of installation, or represents the work of an important creative individual, or possesses high artistic values; or
>
> (4) Has yielded, or may be likely to yield, information important in prehistory or history.

Under CEQA, if an archeological site is not a significant “historical resource” but meets the definition of a “unique archeological resource” as defined in PRC Section 21083.2, then it should be treated in accordance with the provisions of that section. A unique archaeological resource is defined as follows:

> An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Resources that neither meet any of these criteria for listing on the NRHP or CRHR nor qualify as a "unique archaeological resource" under CEQA PRC Section 21083.2 are viewed as not significant. Under CEQA, "A nonunique archaeological resource need be given no further consideration, other than the simple recording of its existence by the lead agency if it so elects" (PRC Section 21083.2(h)).

Impacts to *significant* cultural resources ("historic properties" under NHPA and "historical resources" under CEQA) that affect the characteristics of any resource that qualify it for the NRHP or adversely alter the significance of a resource listed on or eligible for listing on the CRHR are considered a significant effect on the environment. Impacts to *significant* cultural resources from the proposed project are thus considered significant if the project physically destroys or damages all or part of a resource, changes the character of the use of the resource or physical feature within the setting of the resource which contribute to its significance or introduces visual, atmospheric, or audible elements that diminish the integrity of significant features of the resource.

SIGNIFICANCE CRITERIA: PALEONTOLOGICAL RESOURCES

Thresholds for determining the significance of impacts related to paleontological resources are established from the State CEQA Guidelines and professional standards. Professional standards were complied from the Society of Vertebrate Paleontology (SVP).

According to the State CEQA Guidelines, a project is considered to have a significant impact on paleontological resources if it will:

- Directly result in the destruction of a unique paleontological resource;

OR

- Indirectly result in the destruction of a unique paleontological resource

In its standard guidelines for assessment and mitigation of adverse impacts on paleontological resources, the SVP (1995) established three categories of sensitivity for paleontological resources—high, low, and undetermined:

- High sensitivity: Areas where fossils have been previously found are considered to have a high sensitivity and a high potential to produce fossils. In areas of high sensitivity that are likely to yield unique paleontological resources, full-time monitoring is typically recommended during any project ground disturbance.

- Low sensitivity: Areas that are not sedimentary in origin and that have not been known to produce fossils in the past typically are considered to have low sensitivity and monitoring is usually not needed during project construction.

- Undetermined sensitivity: Areas or rock formations that have not had any previous paleontological resource surveys or fossil finds are considered undetermined until surveys and mapping are performed to determine their sensitivity. After reconnaissance surveys, observation of exposed cuts, and possibly subsurface testing, a qualified paleontologist can determine whether the area should be categorized as having a high or low sensitivity.

In keeping with the significance criteria of the SVP (1995), all vertebrate fossils are generally categorized as having potential significance based on their scientific value.

METHODOLOGY

A record search was conducted at the North Central Information Center (NCIC) to identify a generalized baseline of known cultural resources within Sacramento County. Specific record searches of the new growth areas were also conducted at the NCIC to determine sensitivity of the growth areas for cultural resources.

IMPACTS AND ANALYSIS: CULTURAL RESOURCES

The following impact analysis will discuss potential cultural resources impacts, archaeological and historical/structural respectively, associated with the implementation of the updated General Plan including: impacts associated with new/revised/deleted General Plan policy, General Plan growth strategy impacts, and CEQA Alternatives.

IMPACT: DEVELOPMENT IMPACTS TO IMPORTANT ARCHAEOLOGICAL RESOURCES

Both the proposed and existing policies that are associated with archaeological resources are designed to protect and preserve sensitive archaeological resources that are located within the unincorporated Sacramento County. Proposed General Plan policies protect archaeological resources by promoting consultation with local, state, and national resources that may assist in determining site specific cultural sensitivity and through consultation with Native American tribes. Policies associated with consultation with Native American tribes and individuals are directed to be conducted in a sensitive and confidential manner in order to work collectively to preserve important

cultural resources within the County. Additionally, proposed policies call for the preservation and protection of prehistoric, ethnohistoric and historic period archaeological sites within open space easements to ensure that resources are maintained in situ.

Proposed and existing Implementation Measures are designed as procedural components of the General Plan that structure how the proposed and existing policies will be carried out and accomplished. Proposed implementation measures include but are not limited to measures related to notification and consultation with the California Native American Heritage Commission and appropriate Native American tribes, and conducting periodic training for Municipal Services Agency and Sacramento County Airport System construction staff for awareness of archaeological site indicators.

Of particular importance, is implementation Measure D, which notes that Sacramento County shall pursue becoming a certified local government, or CLG, and establish a registry of cultural resources sites located within the unincorporated Sacramento County. The State of California Office of Historic Preservation provides the following description of the CLG program:

> The 1980 amendments to the National Historic Preservation Act of 1966, as amended, provided for the establishment of a CLG program to encourage the direct participation of local governments in the identification, evaluation, registration, and preservation of historic properties within their jurisdictions and promote the integration of local preservation interests and concerns into local planning and decision-making processes. The CLG program is a partnership among local governments, the State of California-OHP, and the National Park Service (NPS) which is responsible for administering the National Historic Preservation Program.

Currently there are 55 counties and cities within the State of California that are CLGs, and several other local governments that are in the process of becoming a CLG. To become a CLG and maintain CLG status, there are five requirements that the County must comply with, as follows:

- Enforce appropriate state and local laws and regulations for the designation and protection of historic properties;
- Establish an historic preservation review commission by local ordinance;
- Maintain a system for the survey and inventory of historic properties;
- Provide for public participation in the local preservation program; and
- Satisfactorily perform responsibilities delegated to it by the state.

The benefits sited for becoming a CLG include access to technical assistance related to cultural resources, access to potential funding opportunities through CLG grants, a more streamlined and efficient environmental review process, local credibility in the decision making process in regard to historic properties, indirect economic benefits, and

more local government autonomy. As noted above, implementation of Measure D, would allow for a streamlined environmental review process due to the fact that by having an established local inventory of known resources within the County the ambiguity of what resources are considered significant would be greatly reduced, thus reducing time and money spent determining significance of local resources. This is a benefit to a variety of people including: local landowners, developers, County staff and citizens, local, state and federal agencies and the hearing body.

Overall the existing and proposed policies and implementation measures directed towards archaeological resources are intended to be beneficial, and with implementation, these policies and measures would result in an overall reduction of impacts to archaeological resources within the County.

Although General Plan policies and measures are intended to protect archaeological resources, direct and indirect impacts to archaeological resources can still occur. Ground-disturbing activities can directly damage resources such that the significance of that resource is undermined completely. Due to the nature of archaeological resources, specifically the fact that they are often subsurface and completely obscured from view, impacts can occur inadvertently on project sites that have been completely surveyed for archaeological resources with negative findings. These types of impacts, such as trenching or grading an archaeological site, usually result in the integrity and significance of the site being lost, thereby resulting in a significant impact. Indirect impacts, such as adding a recreational uses in a previously isolated area (i.e. pedestrian trails, parks, etc), in close proximity to cultural resources, could result in significant damage to resources due to intentional vandalism or inadvertent recreational activities on resources that were previously remote.

Most of the future projects associated with the General Plan would be considered discretionary projects that would be subject to environmental review consistent with CEQA. As part of the CEQA review process, a determination will be made as to whether a project-level cultural resource analysis is warranted (which could include, for example, a cultural records and literature search, pedestrian surveys, architectural analysis, extended phase one evaluations including subsurface testing programs, and/or data recovery operations). During future CEQA review of projects, any potential site-specific impacts on cultural resources would be identified, and any necessary avoidance or mitigation measures to reduce potential impacts would be recommended, as appropriate. However, as noted above, impacts can be inadvertent and significant. This impact is considered potentially significant. Due to the uncertainty of future development and associated cultural resource impacts at the project-specific level and that no feasible mitigation is available, the impact is *significant and unavoidable*.

MITIGATION MEASURE

None available.

IMPACT: DEVELOPMENT IMPACTS TO IMPORTANT HISTORICAL/STRUCTURAL RESOURCE

Both the proposed and existing policies that are associated with historical/architectural resources are designed to protect and preserve historical resources that are located within the unincorporated Sacramento County. One new policy pertaining to historical structures is proposed in the General Plan update, as follows:

> CO-176: Structures having historical and architectural importance shall be preserved and protected.

The preservation and protection of historical resources would reduce impacts associated with development proposals within Sacramento County. As noted above, implementation measures are the procedural components of the General Plan that structure how the proposed and existing policies will be carried out and accomplished. The single implementation measure in the "Historic Structure Preservation" section is made up of prior and new measures that are deigned to "help protect historic resources".

Although the proposed and existing policies provide the foundation for preservation of historical resources, some of the supporting polices that would specifically guide development are lacking in the current update. For example, the General Plan does not provide policy that would guide County Planning staff to take historical resources into consideration when conducting planning studies for special planning areas, community plans, and etc. A policy such as this should encourage adaptive reuse of historical resources within planning areas. Additionally, the current General Plan update and existing policies are silent on treatment of County-owned cultural resources and the potential for cultural resources tourism within the County. In order to address these deficiencies, mitigation is included, requiring the addition of policies that would address potential shortcomings of County Policies related to cultural resources.

As noted previously, most of the future projects associated with the General Plan would be considered discretionary projects that would be subject to environmental review consistent with CEQA. As part of the CEQA review process, a determination will be made as to whether a project-level cultural resource analysis is warranted (which could include, for example, a cultural records and literature search, pedestrian surveys, architectural analysis, extended phase one evaluations including subsurface testing programs, and/or data recovery operations). During future CEQA review of projects, any potential site-specific impacts on historical resources would be identified, and any necessary avoidance or mitigation measures to reduce potential impacts would be recommended, as appropriate. However, as noted above, impacts can be inadvertent and significant.

While the majority of future projects associated with the General Plan will undergo discretionary environmental review consistent with CEQA, under current County policy there is no regulatory language that requires discretionary review of demolition permits for structures within the County. Thus, under current conditions, there is no nexus to review and mitigate for demolition of potentially historical structures that are 50 years or over.

Even projects that do undergo future environmental review may still impact historical resources. For example, some historical resources, such as a foundation or well, may be overlooked or obscured from view and thus impacted because they are not obviously historical or even visible. Thus due to the uncertainty of future development and associated historical resources impacts at the project-specific level, impacts to historical/architectural resources are considered *significant and unavoidable*.

MITIGATION MEASURES:

CR-1. The following policies shall be added to the Cultural Resources chapter of the Conservation Element:

A. County Planning staff shall take historical and cultural resources into consideration when conducting planning studies and documents in preparation of, including but not limited to, area plans, corridor plans, community plans, and specific plans.

B. When conducting planning studies, County Planning staff, shall encourage the adaptive reuse of historic resources when the original use is no longer feasible or allowed under proposed area planning efforts.

C. County-owned historic and cultural resources shall be preserved and maintained, such that modifications, alterations, and rehabilitations are conducted in a manner that is consistent with the U.S. Secretary of the Interiors Standards for the Treatment of Historic Properties.

D. The County shall facilitate and promote the development of a Cultural Resources Tourism program within the County as a tool to preserve important cultural resources and in order to encourage economic development of resources within the County.

Although the above mitigation measure will reduce impacts associated with implementation of the General Plan, there are potential unforeseeable impacts that may still occur to historical and architectural resources. As a result, impacts to historical/architectural resources are considered *significant and unavoidable*.

IMPACT: DEVELOPMENT IMPACTS TO IMPORTANT CULTURAL RESOURCES

NEW GROWTH AREAS

One of the proposed General Plan growth strategies proposed is to build-out within "New Growth Areas". The General Plan identifies four potential New Growth Areas: the West of Watt area, the Jackson Highway Corridor, the Easton Planning area, and the Grant Line East area. A detailed record search of each of the potential new growth areas was conducted at the North Central Information Center to determine cultural resources sensitivity and to determine potential future impacts related to cultural resources due to urban growth within these areas. The results and analysis of impacts are discussed below for each of the new growth areas.

WEST OF WATT AREA

The "West of Watt" potential growth area is located in an area of the County that historically remained sparsely populated and rural well into the 1940s. The inception of the McClellan Air Force Base on September 8, 1936 became the major catalyst for modern development of the area and the surrounding North Highlands community. With the development of the air force base, this area of the County began emerging into a rapidly developing community.

According to the record search conducted at the North Central Information Center, there are three recorded resources within the "West of Watt" growth area. Two of the resources are residential buildings and one resource is a bridge. None of the resources are listed on the National Register of Historic Places or the California Register of Historical Resources; however, only the bridge appears to have been formally evaluated. One of the resources, a Queen Anne Victorian may date to between 1885-1905, and if evaluated may be considered an important historical resource.

Ultimately, the West of Watt area has sparse known resources; however this may be due to lack of comprehensive archaeological/architectural surveys, obscured cultural resources sites due to natural reburial processes, or alternatively, their non-presence within the potential growth area. In comparison to other proposed growth areas, the "West of Watt" area appears to be the least dense in terms of known cultural resources sites, thus, growth within this area may result in less impacts to important cultural resources. As noted earlier, the abundance of cultural resources sites is unknown within this area, therefore, impacts related to build-out of this area on an important cultural resource are considered *potentially significant*.

JACKSON HIGHWAY CORRIDOR

The Jackson Highway Corridor potential New Growth Area is historically associated with mining and ranching/farming activities. Mining along virtually every stream within this part of California was underway by 1850, and immediately following the Gold Rush this area saw numerous homesteads claimed and ranches created. Due to these historic uses, much of the cultural resources discovered in the growth area are associated with mining or ranching activities.

According to the record search conducted at the North Central Information Center, there are thirty recorded resources within the Jackson Highway Corridor potential growth area. Seventeen of the recorded resources are residential in nature, most of which have been evaluated for significance, with the majority not considered eligible for listing, thus de facto they are not considered significant cultural resources. Eleven of the resources are miscellaneous historic resources such as historic scatters, historic isolates, earthen dams, and one historic era farm sign. One of the resources is a commercial building, and the final recorded resource is the remains of the old highway 16 route. Although a large number of the above mentioned resources have been evaluated for significance, an equal amount has not been evaluated formally for significance.

The above resources are generally located along Jackson Road, Elder Creek Road, and Florin Road, while the outlying areas are generally devoid of known/recorded resources. This could because of several reasons; possibly because past surveys were conducted solely along the roadways and outlying areas have not been subjected to intensive surveys, or historic development typically occurred along the roadways where a major transportation route was easily accessible. Likely, the distribution of known resources within the potential growth area is a result of a mixture of both of the aforementioned reasons.

At this time, future development patterns within this area are unknown; however, significant impacts to important resources are feasible. Due to the nebulous nature of future growth, impacts are considered *significant and unavoidable*.

EASTON PLANNING AREA

As noted in the Project Description chapter, the Easton Planning Area is not driven by the General Plan but instead was a private application submitted to the County in 2004, and the Final EIR was certified in December 2008. A cultural resources assessment was conducted as part of the environmental review conducted for the proposed project.

According to the cultural resources assessment the following cultural resources were identified within the Easton Planning Area:

- Alder Creek Corridor Mining District, containing 22 loci and 16 features (plus 7 newly identified isolates)
- Natomas-Aerojet Dredge Fields, containing seven newly identified features and 20 new isolates
- 12 structures
- 1 prehistoric isolate

Thus a total of thirteen recorded resources occur within the Easton Planning area. As noted above, some of the resources recorded within the plan area were considered isolates. Isolates (usually three or less resources found together), by definition, lack immediate cultural context and therefore lack the data potential that would be required to be considered eligible for NRHP or CRHR inclusion. As a result, project effects to isolates would not be considered significant impacts under CEQA, nor would they be considered adverse impacts under NHPA.

None of the recorded isolates are considered significant resources and all other resources with the exception of the Alder Creek Corridor Mining District were not considered significant cultural resources sites. The EIR prepared for the Easton project determined that impacts to the Alder Creek Corridor Mining District were significant; however with the recommended mitigation, impacts would be reduced to *less than significant* levels.

GRANT LINE EAST NEW GROWTH AREA

As with the Jackson Highway Corridor and Easton Planning Area, the Grant Line East potential growth area was historically utilized for intensive mining and, later, ranching and farming activities. The intensive use of the this growth area for placer mining purposes, resulted in substantial topographic changes that are very prevalent today, which act as artificial monuments of the historic land use in this area. Such activities have resulted in massive changes to stratigraphy, which likely obliterated many prehistoric cultural resources sites within the area.

According to the record search conducted at the North Central Information Center, there are thirteen recorded resources within the Grant Line East potential growth area. Out of the thirteen recorded resources eight were historic isolates, consisting of pieces of dredge cable, glass, a car chassis, and miscellaneous farming equipment. As noted above, isolates lack historical context and data potential, thus are not considered significant resources. The other recorded resources are historic era sites of which some are minor less than significant sites consisting of remnants of a historic homestead and remnants of placer mining. Other recorded sites consist of potentially eligible buildings on the Aerojet property and a "super" site known as the American River Placer Mining District, which consists of a wide array of contributing resources, all associated with placer mining activities. None of the above resources are currently listed on the National Register of Historic Places or the California Register of Historical Resources; however, one of the buildings on Aerojet is listed as potentially eligible, and the large American River Placer Mining District is recommended eligible for listing. Under CEQA, to determine impacts to cultural resources, those properties that are potentially eligible or recommended eligible for listing are treated as though they are listed on the Register.

The above resources are scattered throughout the Grant Line East area, with the exception of the Mining District, which is generally located within the entire northeastern portion of the potential new growth area. Ultimately, with growth in the area, impacts would likely occur to any number of the recorded resources, discussed above. Additionally, as is the case with all development, there is the potential to discover previously undocumented resources throughout the potential growth area. Although future projects within the growth area would be subject to discretionary review, including environmental review consistent with CEQA, which would provide all feasible mitigation, impacts associated with development on sensitive resources can be significant.

At this time, future development patterns within this area are unknown; however, given the extent of the large mining district within the growth area, significant impacts to important resources is feasible. Due to the nebulous nature of future growth, impacts are considered *significant and unavoidable*.

COMMERCIAL CORRIDORS

One of the growth strategies proposed for the General Plan is increased build-out of existing commercial corridors. The Commercial Corridors that have been identified are located along major transportation roadways in the County, such as Florin Road, Fair

Oaks Boulevard, Watt Avenue, and Greenback Lane. There are 14 commercial corridors that have been identified (see the Project Description chapter for locations).

Existing commercial corridors are not typically highly sensitive for prehistoric cultural resources; however, the unanticipated discovery of prehistoric sites or burials cannot be ruled out, as evidenced by recent discoveries of prehistoric burials and artifacts during construction of the new City Hall in downtown Sacramento. Thus, although, prehistoric sites are typically obscured from view in more urbanized environments, due to historic uses and natural reburial processes, the discovery of resources cannot be discounted.

Older commercial corridors within the unincorporated Sacramento County could include historic structures and/or historic districts. At present time, a specific historical evaluation of most of the commercial corridors within the unincorporated Sacramento County has not been completed. Based on the age of buildings within specific commercial corridors, generalized sensitivity could be gauged for impacts to historic structures when future proposals occur within commercial corridors. Any demolition, alteration, or significant remodel to structures deemed historical would constitute an impact under CEQA.

A best practice approach to historical structures within commercial corridors would include modifications only to the Secretary of Interior's Standards for Treatment of Historic Structures and the re-use or adaptive re-use of the structure, in order to retain the historic significance of the corridor/structure/district. Although new General Plan Policy calls for the preservation and protection of structures that have historical and architectural importance, the General Plan is silent on the encouragement of adaptive re-use of historical structures. Because adaptive re-use of historical structures to the Secretary of Interior's Standards would reduce impacts to less than significant levels, mitigation recommending the addition of a General Plan policy encouraging re-use of historical structures in commercial corridors has been added. This recommended mitigation measure is included, above, in order to reduce impacts to historical structures in the overall general plan area.

Impacts to cultural resources cannot be defined at this stage. Future discretionary projects would be subject to environmental review consistent with CEQA, and all necessary mitigation will be applied to reduce impacts associated with cultural resources. However, it is probable that some impacts could not feasibly be mitigated to less than significant levels. In particular, some build-out within commercial corridors may be allowed by right of zoning, thus potential impacts may not be reviewed and mitigation may not be applied. Additionally, as mentioned previously, there can be unanticipated discoveries of archaeological resources and human burials during construction related activities. Due to the uncertainties of potential impacts, impacts to cultural resources are considered *significant and unavoidable*.

BUILD-OUT OF PLANNED COMMUNITIES

As noted in the Project Description chapter, the planned communities referred to, including: Elverta, East Antelope, Vineyard Springs, North Vineyard Station, and Florin Vineyard 'Gap', have each gone through a public hearing process, during which time an

EIR was prepared, published, and certified. As part of that process impacts to cultural resources were analyzed. Mitigation was applied to each plan in order to reduce overall impacts. No additional impacts over what was previously analyzed would be expected as a result of build-out of planned communities.

INFILL

Infill development, like any development, has the potential to impact sensitive cultural resources. Infill that is discretionary will be reviewed for environmental impacts consistent with CEQA. All feasible mitigation will be added to reduce impacts associated with cultural resources to less than significant levels. However, the nature of infill typically requires substantial changes to properties in order to add more density to the site. This type of development usually results in the demolition of structures on the site to accommodate infill growth. Demolition of historic structures would constitute a significant environmental impact. Thus, it may not always be feasible to retain cultural resources on infill sites.

As is the case with build-out of commercial corridors, not all infill would be subject to discretionary review and may be allowed outright. Without review for potential impacts to cultural resources, substantial impacts could occur inadvertently.

At this point it is impossible to determine that extent and precise location of infill development within the plan period, thus impacts related to infill development are considered *significant and unavoidable*.

MITIGATION MEASURES:

One mitigation measure is recommended requiring the addition of a policy to encourage adaptive reuse of historic structures (CR-1); however this measure is listed above in the "Potential Impact to an Important Historical/Structural Resource due to Implementation of the General Plan Update Policy" section because it would benefit all historical resources. No other mitigation measures are recommended or feasible.

NO PROJECT ALTERNATIVE: CULTURAL RESOURCES

The No Project Alternative has the potential to impact cultural resources with build-out of the 1993 General Plan and all reasonably foreseeable projects, including Easton and Cordova Hills. Although most projects associated with the 1993 General Plan would undergo environmental review consistent with CEQA, there are potential impacts that could occur under the No Project Alternative. Additionally, under the No Project Alternative, beneficial policies proposed in the General Plan update would not be adopted.

Impacts to cultural resources as a result of the No Project alternative are *significant and unavoidable*.

REMOVE GRANT LINE EAST ALTERNATIVE: CULTURAL RESOURCES

Under Alternative 1, the Grant Line East area would be removed as a growth area. A substantial portion of the Grant Line East area is covered with a large and important historic resource: the American River Placer Mining District. Additionally, the Grant Line East area has abundant natural resources that were utilized by prehistoric, ethnohistoric and historic populations for subsistence. These natural resources paired with the historic mining use of the area, make this area particularly sensitive for cultural resources. Removal of the Grant Line East area would result in reduced impacts to cultural resources; however due to the nebulous nature of future build-out and the fact that inadvertent impacts can occur to cultural resources, the overall impact of the remaining General Plan would remain *significant and unavoidable*.

MITIGATION MEASURES:

See CR-1.

FOCUSED GROWTH ALTERNATIVE: CULTURAL RESOURCES

Under Alternative 2, the Grant Line East area would be removed as well as approximately 4,000 acres of the Jackson Highway Corridor area. See Alternative 1 for impacts associated with removing the Grant Line East area as a growth area. Removal of 4,000 acres of land from the Jackson Highway Corridor would likely result in an even larger reduction of impacts to cultural resources within the County over Alternative 1; however, as stated above the overall impact of the General Plan, due to the nature of impacts to cultural resources, would remain *significant and unavoidable*.

MITIGATION MEASURES:

See CR-1.

MIXED USE ALTERNATIVE: CULTURAL RESOURCES

Under Alternative 3, the Grant Line East and Jackson Highway Corridor areas are no longer considered as new growth areas and the existing urban area would be targeted for dense mixed use projects to accommodate growth needs. Alternative 3 would likely result in a substantial reduction of impacts to the number of cultural resources sites impacted in the planning period over the other proposed alternatives. As noted previously, although development would be focused in an already urban to semi-urban area, cultural resources do occur within these areas. With increased densification additional historic structures and archaeological sites would likely be demolished and destroyed. Ultimately, this alternative would reduce cumulative impacts by reducing the

total count of resources that could likely be impacted but the alternative could still result in *significant and unavoidable* impacts to cultural resources.

MITIGATION MEASURES:

See CR-1.

IMPACTS AND ANALYSIS: PALEONTOLOGICAL RESOURCES

IMPACT: DIRECT OR INDIRECT IMPACT RESULTING IN THE DESTRUCTION OF A UNIQUE PALEONTOLOGICAL RESOURCE

Neither the current General Plan nor the proposed General Plan Update specifically addresses paleontological resources. As a result, paleontological resources are currently at risk for unintentional destruction during future development of residential, commercial and industrial land uses, the expansion of mining operations or new mining facilities and through the installation of public infrastructure such as sewer and water pipelines, roadways and other utility lines. Additionally, impacts could occur through unauthorized collection of fossils by amateur paleontologists.

It is reasonably foreseeable that implementation of the General Plan Update, including the proposed growth strategies, could result in impacts to paleontological resources. The potential for impacts is due, in part, to the absence of protective measures within the General Plan. In order to address the shortcomings of the current General Plan, in respect to paleontological resources, mitigation is recommended below to add specific paleontological resources policies to the General Plan Update. With the inclusion and implementation of the recommended policies for protection of paleontological resources, impacts as a result of future development would be reduced. However, as is the case with subsurface cultural resources, impacts to subsurface resources can be inadvertent and significant even with discretionary environmental review consistent with CEQA. At this point it would be infeasible to apply specific mitigation measures to every discretionary project that would reduce impacts to paleontological resources to a less than significant level, since development specific details are not known at this time. Therefore, impacts to paleontological resources as a result of the General Plan update are considered *significant and unavoidable*.

MITIGATION MEASURES:

CR-2. The General Plan shall add an additional section under the “Cultural Resources” chapter of the Conservation Element entitled “Paleontological Resources” that provides background on Paleontological Resources in general and specifically within the County. The following policies shall be added to the Paleontological Resources section of the Cultural Resources chapter of the Conservation Element:

A. As a condition of approval for discretionary projects, require appropriate mitigation to reduce potential impacts where development could adversely affect paleontological resources.

B. Projects located within areas known to be sensitive for paleontological resources, should be monitored to ensure proper treatment of resources and to ensure crews follow proper reporting, safeguards and procedures.

C. Require that a certified geologist or paleoresources consultant determine appropriate protection measures when resources are discovered during the course of development and land altering activities.

Although the above mitigation measures will reduce impacts associated with implementation of the General Plan, there are still unforeseeable impacts that may still occur to paleontological resources. As a result, impacts to paleontological resources are *significant and unavoidable*.

NO PROJECT ALTERNATIVE: PALEONTOLOGICAL RESOURCES

Under the No Project alternative paleontological resources could be impacted with build-out of the 1993 General Plan and all reasonably foreseeable projects, including Easton and Cordova Hills. Although most projects associated with the 1993 General Plan would undergo environmental review consistent with CEQA, there are potential impacts that could occur under the no project alternative, especially given the fact that the current General Plan does not address paleontological resources. Additionally, under the no project alternative, the addition of beneficial policies proposed in the General Plan update that address paleontological resources would not be adopted.

Impacts to paleontological resources as a result of the No Project alternative are *significant and unavoidable*.

REMOVE GRANT LINE EAST: PALEONTOLOGICAL RESOURCES

Under Alternative 1, the Grant Line East area would be removed as a growth area. Though not abundant, the Grant Line East area does contain the Riverbank formation, which has yielded paleontological resources within the County. Removal of the Grant Line East area could potentially result in reduced impacts to paleontological resources; however due to the nebulous nature of future build-out and the fact that inadvertent impacts can occur to paleontological resources, the overall impact of the remaining General Plan would remain *significant and unavoidable*.

MITIGATION MEASURES:

See CR-2.

FOCUSED GROWTH: PALEONTOLOGICAL RESOURCES

Under Alternative 2, the Grant Line East area would be removed as well as approximately 4,000 acres of the Jackson Highway Corridor area. See Alternative 1 for impacts associated with removing the Grant Line East area as a growth area. Removal of 4,000 acres of land from the Jackson Highway Corridor would likely result in an even larger reduction of impacts to paleontological resources within the County over Alternative 1 due to the fact that much of the Jackson Highway Corridor is made up of the Pleistocene aged Riverbank formation, which is known to produce vertebrate fossils within the County. Ultimately, the overall impact of the General Plan, due to the nature of impacts to paleontological resources, would remain *significant and unavoidable*.

MITIGATION MEASURES:

See CR-2.

MIXED USE ALTERNATIVE: PALEONTOLOGICAL RESOURCES

Under Alternative 3, the Grant Line East and Jackson Highway Corridor areas are no longer considered as new growth areas and the existing urban area would be targeted for dense mixed use projects to accommodate growth needs. Alternative 3 would likely result in a substantial reduction of impacts to the number of paleontological resources sites impacted in the planning period over the other proposed alternatives. Alternative 3 would focus growth in areas of the County that have been subjected to greater disturbance of the underlying formations, and would not focus growth in a large expanse of the Riverbank formation, located within the Jackson Highway Corridor. Ultimately, this alternative would reduce cumulative impacts by reducing the total count of resources that would likely be impacted but the alternative could still result in *significant and unavoidable* impacts to paleontological resources.

MITIGATION MEASURES:

See CR-2.

16 AESTHETICS

INTRODUCTION

This chapter addresses aesthetics and visual quality issues related to the development of the proposed General Plan Update and its alternatives. Existing aesthetic and visual resources of Sacramento County are documented. Standards to judge visual sensitivity are presented and relevant scenic resource issues are addressed. The evaluation examines potential effects of the proposed General Plan Update on visual quality and aesthetics in the unincorporated area.

EXISTING SETTING

VISUAL CHARACTER OF REGION

Sacramento County lies near the center of California's Central Valley, at the southern end of the Sacramento Valley. Aesthetic views within the valley region are generally characterized by broad sweeping panoramas of flat agricultural lands and open space dotted with trees, divided by numerous rivers and creeks, and populated with scattered towns and cities. To the east, the Sierra Nevada and their foothills form a background, and the Coast Range provides a backdrop on the western horizon.

VISUAL CHARACTER OF SACRAMENTO COUNTY

In general, the dominant visual characteristics within the unincorporated area are the open sections of the valley floor, urbanized land uses, agricultural land uses, rivers and creeks, and trees. Because the unincorporated area consists of relatively flat terrain, views of these resources are available from roadways throughout the area including US 50, State Route 99 (SR 99), SR 16, SR 160/River Road, Grant Line Road, and Scott Road. Oak trees, vernal pools, streams, creeks, the Delta region and the historic structures and rural communities such as Locke and Sloughouse are among the County's visual heritage that many residents value as part of their quality of life. Distant views of the Sierra Nevada, the Coast Range, Mount Diablo, and the Sutter Buttes can be visible under clear conditions and are also considered part of the County's visual heritage.

SCENIC VIEWS AND RESOURCES

Visual resources are classified in two categories: scenic views and scenic resources. Scenic resources are described in the CEQA Environmental Checklist as specific features of a viewing area (or viewshed) such as trees, rock outcroppings, and historic

buildings. They are specific features that act as the focal point of a viewshed and are usually foreground elements. Scenic views are elements of the broader viewshed such as mountain ranges, valleys, and ridgelines. They are usually middle ground or background elements of a viewshed that can be seen from a range of viewpoints, often along a roadway or other corridor.

The numerous rivers, creeks, and waterways located within or adjacent to the unincorporated areas of Sacramento County serve as a visual transition from natural scenic corridors to the county's urban, suburban, and rural areas. The important scenic waterway corridors in the unincorporated area include the: Sacramento River and its Delta, American River, Cosumnes River, Dry Creek, Morrison Creek, Laguna Creek, Elder Creek, Deer Creek, and Dry Creek South. The riparian areas associated with these waterways are considered some of the most biologically rich regions in California's Central Valley and greatly enhance the aesthetic and visual character of the area. Visually based opportunities include bird watching, hiking, scenic tours, guided trips, and various seasonal outings.

County parks, parkways, and nature preserves such as the American River Parkway, Dry Creek Parkway, Cosumnes River Preserve, Beach-Stone Lakes, Mather Lake and the Mather Regional Park include both scenic views and scenic resources such as large mature oaks, oak and riparian woodlands, and vernal pools. It should also be noted that the Lower American River (from the Folsom Dam to its confluence with the Sacramento River) is classified as a "Recreation" river, as defined by the Federal and State Wild and Scenic Rivers System due to its aesthetic qualities and wealth of recreational opportunities that it provides.

The Scenic Highways Element of the existing General Plans designates scenic corridors within the County. These corridors include River Road, Isleton Road, Garden Highway, Scott Road (from White Rock Road south to Latrobe Road), Latrobe Road, Michigan Bar Road, and Twin Cities Road (from State Route 160 east to Highway 99). SR160/River Road from the Contra Costa County line to the southern city limit of Sacramento is a state designated scenic highway. River Road meanders through the historic Delta agricultural areas and small towns along the Sacramento River. Scenic views along this corridor include the river, agricultural fields, and orchards, patches of riparian forest, several historic homes, and buildings.

Light and Glare Sources

The unincorporated rural and agricultural areas of the county are sparsely developed and used for agriculture. These rural land uses typically do not generate substantial amounts of glare, lighting, or illumination, and the ambient nighttime lighting and illumination levels are very low. The unincorporated urban areas of the county include existing sources of daytime glare and nighttime lighting and illumination. Sources of daytime glare include direct beam sunlight and reflections from windows, architectural coatings, glass and other shiny reflective surfaces. Nighttime light illumination and associated glare can be divided into stationary and mobile sources. Stationary sources

of nighttime light include structure illumination, decorative landscape lighting, lighted parking lots.

IDENTIFIED NEW GROWTH AREAS

The County has identified four distinct new growth areas for planning and development during the 2005-2030 planning period. The growth areas are West of Watt, Easton, Jackson Highway Corridor, and Grant Line East (Plate AE-1). Visual attributes of these new growth areas are described below. Typical views within these areas are illustrated below.

WEST OF WATT

This new growth area is located north of the former McClellan Air Force Base and west of Watt Avenue. This area is characterized primarily by agricultural-residential land uses on large lots interspersed with gardens, dry pasture, and open fields. Scenic open space views of these rural gardens, pastures and grasslands and family farm animals (chickens, roosters, goats, horses, etc.) and attendant wildlife (birds, rabbits, pheasant, quail, etc.) are enjoyed by area residents. Views of the neighborhood fruit stands and their small fields of strawberries and corn add to the rural characteristic of views in the area.

Natural scenic resources and view points in this growth area include a small segment of Dry Creek, Goat Creek, and Rio Linda Creek and their adjacent riparian and wetland habitat. There is also a small pond and wetland area located on the remnant orchard and grasslands on the east side of the Antelope Greens Golf Course. These wetland and riparian corridors attract abundant wildlife which enhances the scenic views. Plate AE-2 and Plate AE-3 illustrate the typical scenic view in this area.

Plate AE-1 New Growth Areas

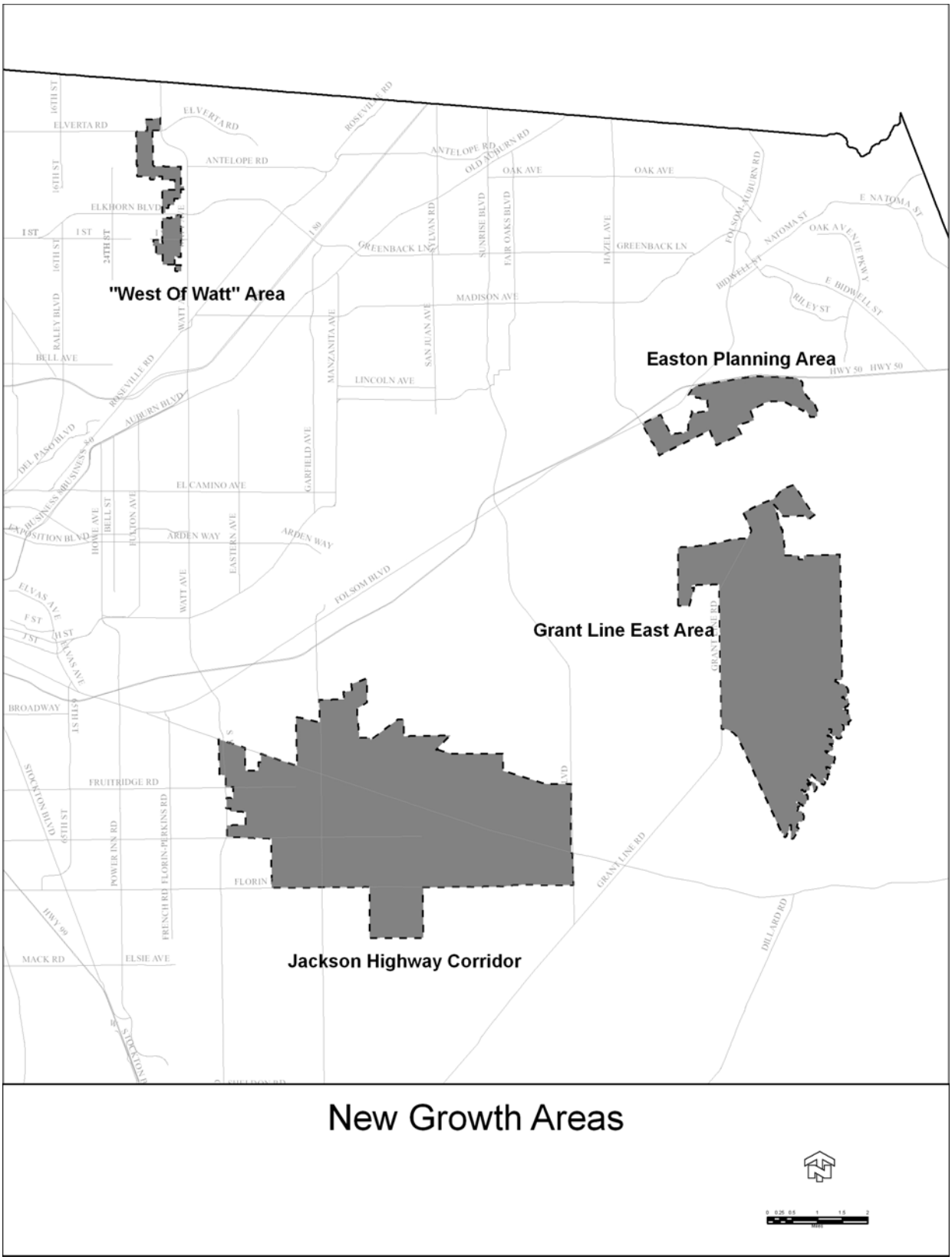


Plate AE-2 East View of Pond & Field from Antelope Greens Golf Course

Plate AE-3 East View of Gardens at 28th St.

EASTON

The Easton New Growth Area is located south of Folsom Boulevard/Highway 50 between Hazel Avenue and Prairie City Road. This area also lies north of the Aerojet Corporation research and operations campus. The topography is generally flat between Hazel Avenue and Alabama Avenue and becomes more hilly and vegetated toward Highway 50. The views in the area include the Aerojet entry and guard station, parking lots, industrial buildings, non-native grassland, oak woodland, and Alder Creek. Blue oaks, live oaks, and foothill pines appear throughout the Easton area, most notably in the northern and eastern portions of the property.

Scenic resources in the area include the oak woodlands, Alder Creek, undulating grasslands, wetlands, heritage oak trees, and historic mine tailings and cobbles. Many of the scenic views in the area are impaired due to the Aerojet facilities. Plate AE-4 and Plate AE-5 illustrate the typical scenic view in this growth area.

Plate AE-4 East View along Prairie City Road

Plate AE-5 View Looking Southwest from Folsom Boulevard and Aerojet Road

Jackson Highway Corridor

This new growth area encompasses over 12,500 acres in the Jackson Highway (State Route 16, SR16) corridor and is generally bound by South Watt Avenue to the west, Sunrise Boulevard to the east, Gerber and Florin Road to the south, and Mather Field to the north. Mining and industrial uses dominate areas along the south side of SR16 and are clearly visible from area roads. Mather Field and associated uses and open space areas lie on the north side of SR16. Site topography is generally level.

Due to the relatively level topography and dominance of agricultural uses in this area, views are mainly characterized by broad horizontal panoramas of rangeland and grassland occasionally dotted with trees, barns, and farmsteads. Grazing cattle, horses and sheep contribute to the rural nature of the area along Excelsior Road and east to Sunrise Boulevard. Natural scenic resources and view points include portions of Morrison Creek, Elder Creek and a small segment of Laguna Creek and the vernal pools and swales that lie in the adjacent grassland areas. Plate AE-6 and Plate AE-7 illustrate the typical scenic view in this growth area.

Plate AE-6 View Northwest of Excelsior & Gerber Roads

Plate AE-7 Southeast View SR16 East of Bradshaw Road

GRANT LINE EAST

This 8,000 acre growth area is located directly east of the City of Rancho Cordova and Grant Line Road, north of Keifer Landfill and south of Aerojet. Scott Road and the Deer Creek flood plain are located to the east of this area. Topography is gently undulating to hilly and includes several areas of old placer tailings.

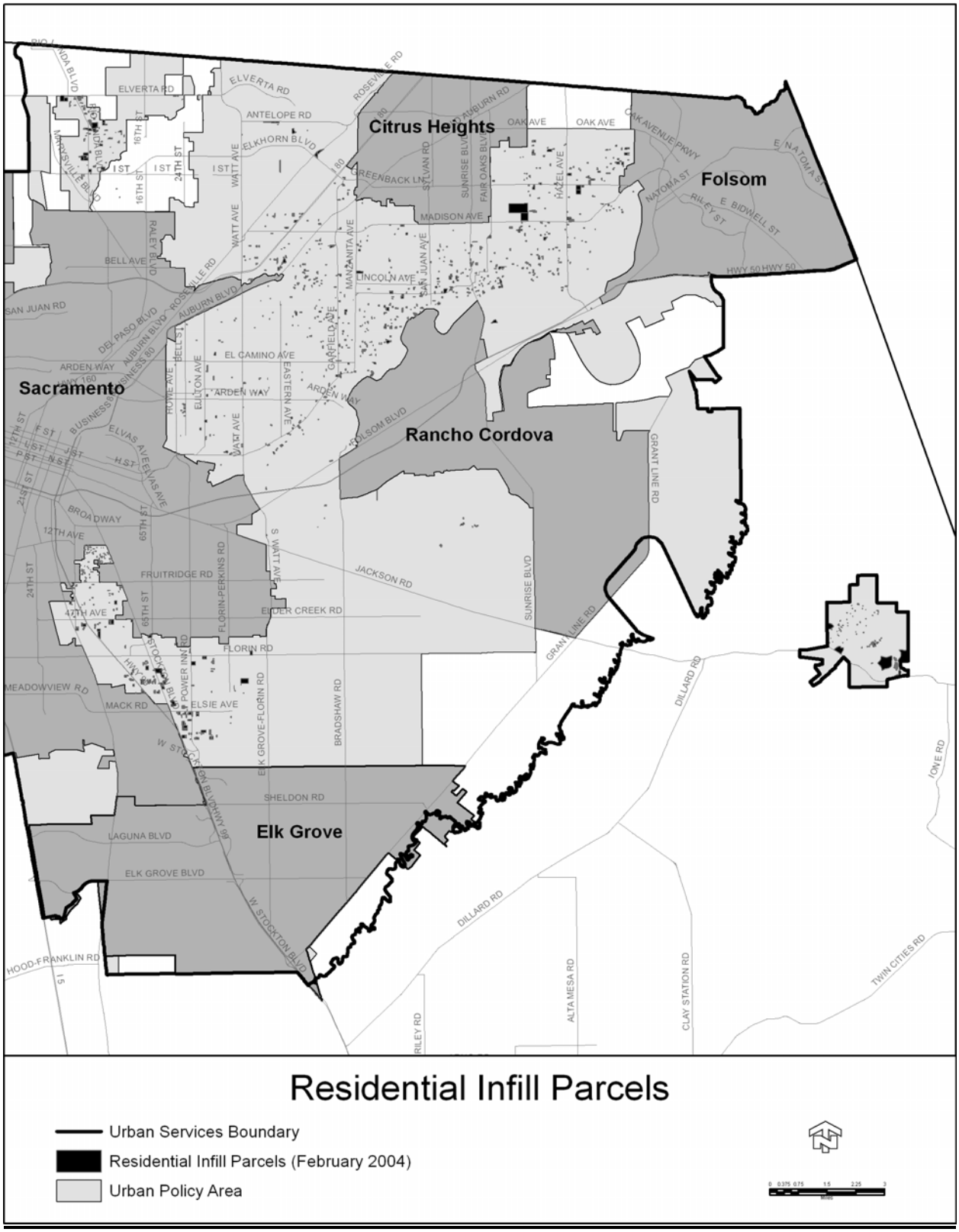
The scenic views consist of wide panoramas of fenced-in rangeland and grassland, interspersed with vernal pools, cattle, watering holes, barns sheds, and trees. From the hill tops the scenic views to the east are of open rangeland and grazing cattle with the backdrop of the Deer Creek riparian and oak woodland corridor. Area wildlife (ground squirrels, hawks, egrets, song birds) is abundant and enjoyed by the locals. Oaks, foothill pine and elderberry are also scattered among the area tailings. Plate AE-8 illustrates the typical scenic view in this growth area.

Plate AE-8 Northeast View on Glory Lane

INFILL DEVELOPMENT

The Infill Development strategy promotes development of vacant and underutilized lands to accommodate additional residential growth. The residential infill parcels identified in the General Plan Update Land Use Element (Plate AE-9) are scattered throughout the unincorporated County. Potential scenic resources on some of these properties may include landmark trees, native trees, heritage oak trees, urban streams, and/or historic structures of local interest.

Plate AE-9 Residential Infill



COMMERCIAL CORRIDORS

The General Plan Update Land Use Element identifies the following fourteen commercial corridors for redevelopment, reinvestment, and/or intensification (see Plate AE-10).

1. North Watt Area
2. Florin Road Area
3. Auburn Blvd. North
4. Fair Oaks Blvd. Central
5. Franklin Blvd.
6. Greenback Lane
7. Stockton Blvd South
8. Auburn Blvd. Central
9. Fair Oaks Blvd. East
10. Fair Oaks Blvd. West
11. Fulton Avenue
12. Stockton Blvd. Central
13. Watt Avenue Central
14. Folsom Blvd.

These corridors were identified as having substantial vacant and underutilized land, which could accommodate additional commercial and mixed use growth. Potential scenic resources on some of these properties may include landmark trees, native trees, heritage oak trees, urban streams, and/or historic structures of local interest.

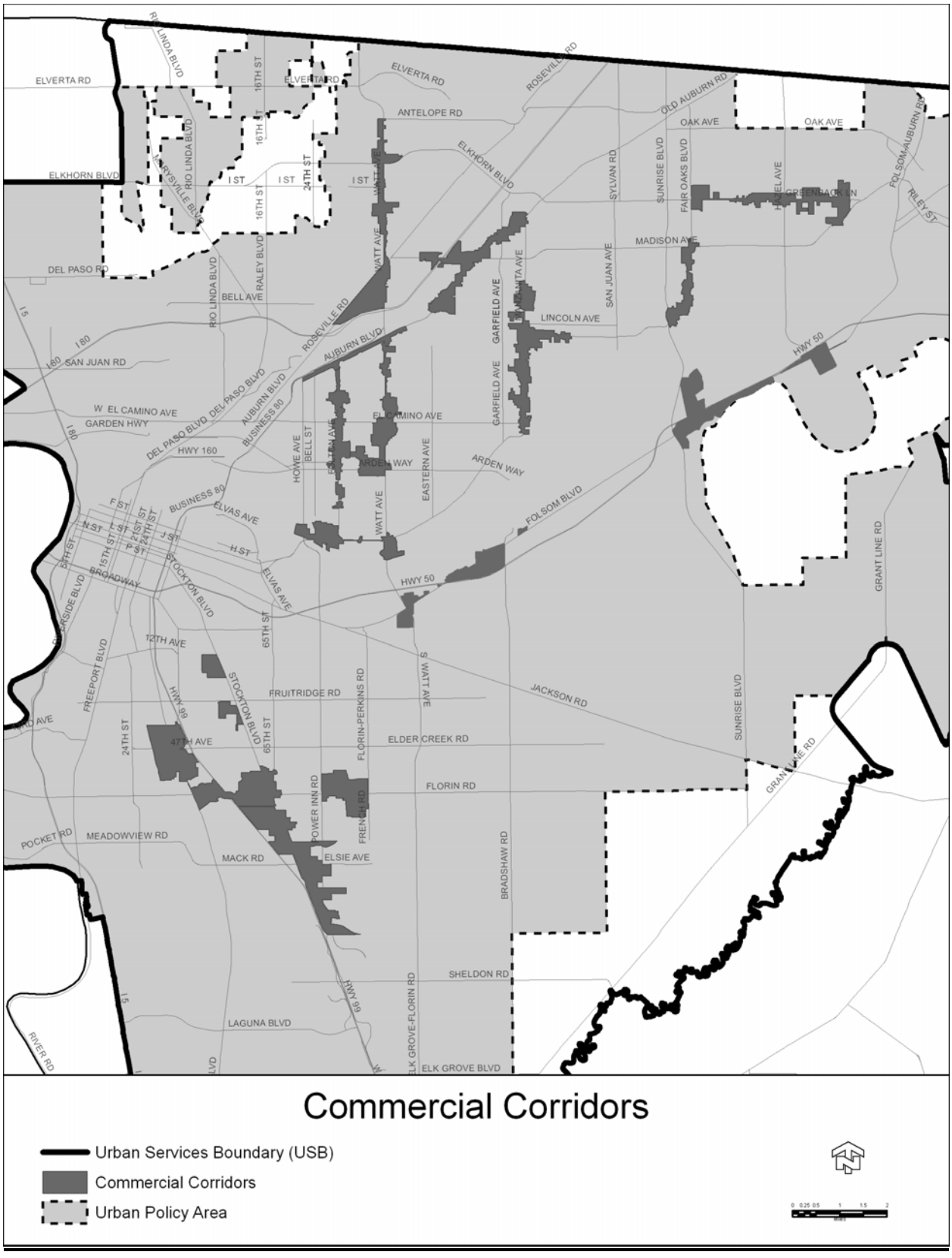
REGULATORY SETTING

FEDERAL

WILD AND SCENIC RIVERS ACT

One of the dominant natural features within the county is the lower American River. This portion of the river is designated as a “Recreational River” by the Secretary of Interior under the National Wild and Scenic Rivers Act and is given the same designation by the State under the State Wild and Scenic system. The American River and its associated parkway provide a public recreational resource of regional significance. The designated reach is from the Sacramento River to Nimbus Dam, a distance of 23 miles; the National Park Service designated this reach a Wild and Scenic River in 1981.

Plate AE-10 Commercial Corridors



The Wild and Scenic Rivers Act protects and enhances the values for which the river was designated, while providing for public recreation and resource uses, which do not adversely impact or degrade those values. Adverse impacts to the scenic attributes of the American River may be considered a violation of the Wild and Scenic Rivers Act. Recreational river areas may contain existing bridge crossings and development; however, the recreational classification does not imply that future development will be considered consistent with the Act. The Wild and Scenic Rivers Act does not generally halt development and use of a river; rather, the intent is to preserve the character of a river. Uses compatible with the management goals of a particular river are allowed.

STATE

CALIFORNIA WILD & SCENIC RIVERS ACT

The California Wild & Scenic Rivers Act (Public Resources Code Sec. 5093.50 et seq.) was passed in 1972 to preserve designated rivers possessing extraordinary scenic, recreation, fishery, or wildlife values. The Lower American River, from Nimbus Dam to its junction with the Sacramento River, is designated as recreational under the California Wild and Scenic Rivers Act.

CALIFORNIA SCENIC HIGHWAY PROGRAM

The California Department of Transportation (Caltrans) administers the California Scenic Highway Program. The goal of the program is to preserve and protect scenic highway corridors from change that would affect the aesthetic value of the land adjacent to highways.

State Route 160 (River Road) is a State-designated scenic highway that runs on top of levees along the Sacramento River from the Contra Costa County line to the southern city limit of Sacramento. River Road meanders through the historic Delta agricultural areas and small towns along the Sacramento River.

TITLE 24 OUTDOOR LIGHTING ZONES

The California Legislature passed a bill in 2001 requiring the California Energy Commission (CEC) to adopt energy efficiency standards for outdoor lighting for both the public and private sector. In November 2003, the CEC adopted changes to the Title 24, parts 1 and 6, Building Energy Efficiency Standards. These standards became effective on October 1, 2005, and included changes to the requirements for outdoor lighting for residential and nonresidential development. The new standards will likely improve the quality of outdoor lighting and help to reduce the impacts of light pollution, light trespass, and glare. The standards regulate lighting characteristics such as, maximum power and brightness, shielding, and sensor controls to turn lighting on and off. Different lighting standards are set by classifying areas by lighting zone. The classification is based on population figures of the 2000 Census. Areas can be designated as LZ1 (dark), LZ2 (rural), or LZ3 (urban). Lighting requirements for dark

and rural areas are stricter in order to protect the areas from new sources of light pollution and light trespass. Sacramento County contains all three light zones. The developed portions of the County are within LZ3 and the undeveloped portions, that include the proposed growth areas Jackson Highway Corridor and Grant Line East, are within LZ2. The LZ1 designation applies to government designated parks, recreation areas, and wildlife preserves.

SACRAMENTO COUNTY GENERAL PLAN LAND USE ELEMENT

The Sacramento County General Plan guides future development in the unincorporated portions of the County. The General Plan Land Use Element includes several visual resource policies that address glare via restricting use of polished surfaces in exterior building materials and requiring exterior lighting to be shaded and directed away from residential areas. The following General Plan Land use policies are applicable to visual resources: LU 22, LU 23, LU 24, and LU 25.

PROPOSED GENERAL PLAN POLICIES

The proposed General Plan Update includes one new policy (LU-18) that addresses the visual quality of development through Community Design Guidelines and design review: "Apply the 'Community Design Guidelines' and design review authority to all long-range planning efforts, including but not limited to Specific Plans, Comprehensive Plans, Community Plans, and Commercial Corridor Plans" The policy is intended to result, at least in part, in aesthetically pleasing development projects.

The previously mentioned policies in the existing General Plan (LU-22, 23, 24, and 25) have been deleted from the proposed General Plan. The Project proposes to address the ideas that are currently contained within LU-24 and LU-25 through proposed policy LU-33, which is intended to reduce light pollution: "Strive to achieve a natural nighttime environment and an uncompromised public view of the night sky by reducing light pollution." Policies LU-22 and LU-23 are addressed via the zoning code.

GENERAL PLAN SCENIC HIGHWAY ELEMENT

The 1993 General Plan Scenic Highway Element was designed to meet the 1972 legislative requirement that counties and cities adopt a Scenic Highway Element as part of their General Plans (Section 65302 (h) of the Government Code). Plate AE-11 shows the existing Scenic Highways and Scenic Corridors as illustrated in the 1993 General Plan. The Scenic Highway Element has been deleted from the Proposed General Plan and the portions that are still applicable have been incorporated into the Circulation Element. Plate AE-12 shows the Scenic Highway and Scenic Corridor system as shown in the proposed General Plan. The proposed plan includes the addition of the northern portion of SR-99 and the southern portion of I-5, and deletes the Greenback Lane Extension Freeway and the Watt Avenue Freeway. Though still designated as a Scenic Corridor, the American River Parkway is not illustrated on the updated map.

Plate AE-11 Existing Scenic Highways and Scenic Corridors

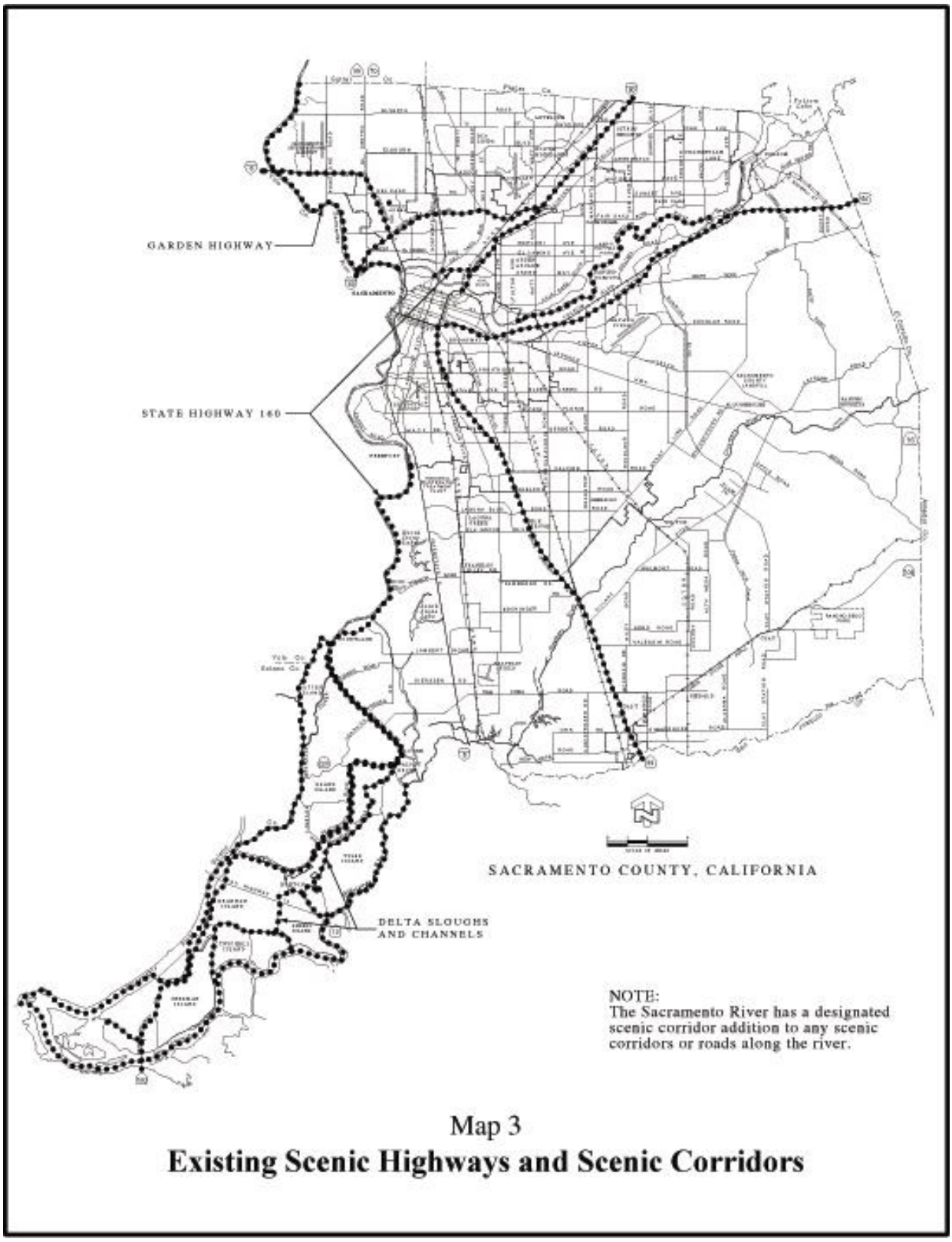
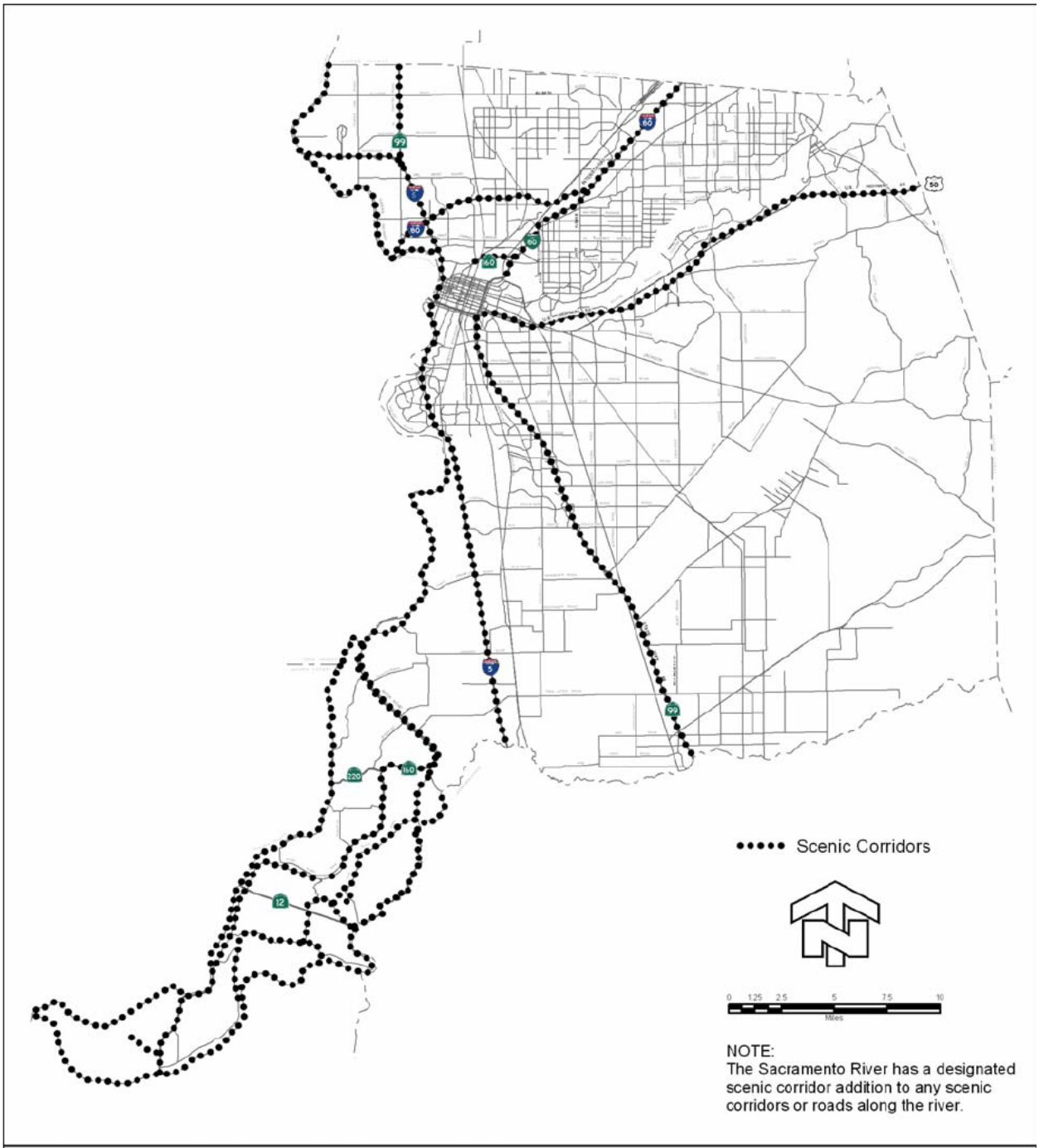


Plate AE-12 Scenic Highways and Scenic Corridors (as shown in the Proposed General Plan)



Existing Scenic Highways and Scenic Corridors

General Plan Conservation Element

The Conservation Element's primary goal is to ensure that the County's natural resources are managed and protected for the use and "enjoyment" of present and future generations while maintaining the long-term ecological health and balance of the environment. Natural resource protection also involves scenic views and scenic resource protection of the County's rivers, creeks, wetlands, woodlands, vernal pools, landmark and heritage trees, as well as historical and archeological scenic resources.

Tree Ordinance

Sacramento County has identified the value of its native and landmark trees and has adopted measures in its General Plan to provide for their preservation. The Tree Ordinance (Chapter 19.04 of the County Code Section 19.04.030 (6)) provides the following definition: "Landmark tree means an especially prominent or stately tree on any land in Sacramento County, including privately owned land." Heritage trees are native oak trees that are at or over 19" diameter at breast height (dbh). All native oak trees are protected under the Conservation Element of the County of Sacramento General Plan. Preservation of these trees enhances the general beauty of the County.

Zoning Code

Lighting Standards

Title 1 (General Provisions) of the Zoning Code contains standards requiring that illumination of buildings, landscaping, signs, and parking and loading areas be shielded and directed so that no light trespasses onto adjacent properties. Title III (Use Regulations and Development Standards) requires that lighting shall be directed away from residential areas and public streets so that glare is not produced that could impact the general safety of vehicular traffic and the privacy and well-being of residents.

Special Sign Corridors and Special Sign Districts

The County has designated Special Sign Corridors along several state highways, County roads, and rivers and Special Sign Districts in the communities of Arden-Arcade, Antelope and Laguna-Franklin, and the Sunrise/Greenback/Madison. The Special Sign Corridors have traditionally attracted large, bright signs in an effort to attract the attention of the traveler to a business or a product. Signage along these corridors is now required to be designed in an aesthetic manner that compliments the views and architecture, while serving the needs of the traveling public. The Special Sign Districts are intended to regulate directory and non-directory advertising structures and create a more attractive appearance in major shopping and business centers.

SIGNIFICANCE CRITERIA

The degree of impact of a project, either negative or beneficial, to the visual character of the area is largely subjective. Few objective or quantitative standards are available to analyze visual quality, and individual viewers respond differently to changes in the physical environment. Based on the CEQA Guidelines Appendix G, a project would have a significant impact on aesthetics if it would:

1. have a substantial adverse effect on a scenic vista;

2. substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway;

3. substantially degrade the existing visual character or quality of the site and its surroundings; and/or

4. create a new substantial source of light and glare, which would adversely affect day or nighttime views in the area.

It should be noted that an assessment of visual quality is a subjective matter, and reasonable people can disagree as to whether alteration of visual character would be adverse or beneficial. For this analysis, a conservative approach was taken, and the potential for substantial change to the visual character of the project site is generally considered a significant impact.

METHODOLOGY

Visual impacts were evaluated by comparing the expected visual changes that the project would generate against the existing visual character of the County. Visual character is defined narrowly to include only analysis of viewsheds, physical site characteristics, and lighting. This analysis does not include a subjective evaluation of design characteristics such as colors, architectural styles, building materials, or other matters of personal preference. The analysis assumes that open space and rural areas are typically of higher visual quality than urban areas, because the open character preserves visual continuity (the blending of visual elements) and a farther horizon of sight.

IMPACTS AND ANALYSIS

IMPACT: DAMAGE TO SCENIC RESOURCES AND ALTERATION OF EXISTING VIEWS AND VISUAL QUALITY

INFILL

Infill development would occur on vacant or underutilized lots within existing developed areas. The development of these areas would be consistent with surrounding uses. Infill would not substantially degrade visual character or quality, given that the visual character of infill development would be similar to that of surrounding development. Impacts are considered *less than significant*.

COMMERCIAL CORRIDORS

The Commercial Corridors are located within existing urban areas where commercial development exists and is anticipated. The development of these corridors would be consistent with surrounding development and uses, and may even improve existing visual quality by updating an aging corridor with modern, cohesive, and new buildings. Given that the visual character of these areas would be similar to that of surrounding development; their development would not substantially degrade the visual character or quality of those areas. Impacts are considered *less than significant*.

BUILDOUT OF PLANNED COMMUNITIES

Buildout of the approved planned communities will substantially alter the existing visual character of Sacramento County, limit visual access to large areas of current open space, and could damage scenic resources in the area such as trees, creeks, and vernal pools. Future development of these areas is expected to damage scenic resources and substantially degrade the visual character and quality of the area. Impacts are considered *significant and unavoidable*.

NEW GROWTH AREAS

WEST OF WATT

The West of Watt New Growth Area is located within an existing urban area. The development of this area would be consistent with surrounding uses. Given that the visual character of this area would be similar to that of surrounding development, the development of this area would not damage scenic resources or substantially degrade the visual character or quality of the area. Impacts are considered *less than significant*.

EASTON

As noted in the Project Description chapter, the Easton Planning Area is not driven by the General Plan but instead was a private application approved by the Board on December 17, 2008. An assessment of aesthetic impacts was conducted as part of the environmental review for the project. The analysis indicated that Easton would not have a substantial adverse effect on scenic vistas because the viewshed is already impaired by existing commercial and industrial buildings and structures. Further, the visual character of the project area would be consistent with the visual character of surrounding areas. Therefore the project would not substantially degrade the existing character of the project area. Impacts are considered *less than significant*.

JACKSON HIGHWAY CORRIDOR

Development of the proposed new growth area would substantially alter the existing visual character of Sacramento County, limit visual access to large areas of current open space, and could damage scenic resources in the area such as trees, creeks, and vernal pools.

The General Plan states that the Jackson Highway Corridor area is intended to create cohesive and complete communities while protecting environmental resources. Proposed Policy LU-16 states that the new growth areas shall be consistent with the South Sacramento Habitat Preservation Plan (SSHCP). A portion of the SSHCP lies within the Jackson Highway Corridor New Growth Area. Adoption of the SSHCP, which results in the preservation of this area, will preserve the visual quality the area within its boundaries. Though the preservation of this are will support the retention of some of the visual resources and visual quality of the area, the adoption of the SSHCP is not enough to reduce impacts to less than significant. Future development of the Jackson Highway Corridor is expected to damage scenic resources and substantially degrade the visual character and quality of the area. Impacts are considered *significant and unavoidable*.

GRANT LINE EAST

Development of the proposed new growth area would substantially alter the existing visual character of Sacramento County, limit visual access to large areas of current open space, and could damage scenic resources in the area such as trees, creeks, vernal pools, and topography.

Proposed Policy LU-16 states that the new growth areas shall be consistent with the South Sacramento Habitat Preservation Plan (SSHCP). A portion of the SSHCP lies within the Grant Line East New Growth Area. Adoption of the SSHCP, which could result in the preservation of parts of this area, will preserve the visual quality the area within its boundaries. Though preservation will support the retention of some of the visual resources and visual quality of the area, the adoption of the SSHCP is not enough to reduce impacts to less than significant. Future development of the Grant Line East New Growth Area is expected to damage scenic resources and substantially

degrade the visual character and quality of the area. Impacts are considered *significant and unavoidable*.

MITIGATION MEASURES:

No feasible measures available.

IMPACT: NEW SOURCES OF GLARE AND EFFECTS TO NIGHTTIME VIEWS

Implementation of the Project would promote development of urban uses in existing rural areas such as the Jackson Highway Corridor and Grant Line East, which would result in an increase in light and glare. Given the limited development that exists in these areas, the increase in light and glare would be considered substantial. The glare, caused by reflections from pavement, vehicles, and reflective building materials, would be visible from the rural and suburban areas and roadways surrounding these new growth areas. This increase would conflict with the rural nature of these areas and with the existing views from adjacent rural areas, which are characterized by large expanses of undeveloped open space with few sources of light and glare.

The proposed General Plan Update policy LU-33 is intended to reduce the incidence of light pollution through zoning code updates, community and specific plans, corridor plans, district plans, transit station plans and other planning programs. Implementation of this policy, and subsequent zoning code amendments and plans, may help to reduce the effects of light pollution however; complete elimination would not be possible. Impacts are *significant and unavoidable*.

MITIGATION MEASURES:

No feasible measures available.

NO PROJECT ALTERNATIVE

IMPACT: DAMAGE TO SCENIC RESOURCES AND ALTERATION OF EXISTING VIEWS AND VISUAL QUALITY

The No Project Alternative includes the build-out of the 1993 General Plan and the Easton and Cordova Hills projects. General buildout of the 1993 General Plan is not expected to substantially damage scenic resources or alter existing views and visual quality; however the Easton and Cordova Hills projects warrant further discussion. As stated above, the impacts to scenic resources due to the Easton project were analyzed in the EIR released in March 2008. The EIR concluded that impacts to scenic resources were less than significant given the project's consistency with the existing visual character in the vicinity.

The Cordova Hills project is located within the Grant Line East New Growth Area in an area that is at present rural in character. The scenic resources, views, and visual quality of this area are discussed in the setting section of this chapter. Given the rural nature and the minimal development in this area, development of the Cordova Hills project is expected to damage scenic resources and substantially degrade the visual character and quality of the area. This Alternative will substantially degrade visual quality; impacts are *significant and unavoidable*.

MITIGATION MEASURES:

No feasible measures available.

IMPACT: NEW SOURCES OF GLARE AND EFFECTS TO NIGHTTIME VIEWS

The No Project Alternative includes the build-out of the 1993 General Plan and the Easton and Cordova Hills projects. General buildout of the 1993 General Plan is not expected to result in new sources of glare that would substantially damage affect nighttime view, however the Easton and Cordova Hills projects warrant further discussion. As stated above, the Easton EIR analyzed impacts related to light and glare. The analysis concluded that due to project design guidelines related to scale, shielding, and location of light fixtures to avoid spillover and glare into surrounding areas, and to reduce skyglow only indirect lighting would be visible from surrounding properties and roadways. Therefore due to the design guidelines and that the nighttime lighting would be consistent with that of nearby urbanized areas impacts related to glare and nighttime views were considered less than significant.

The Cordova Hills project is located within the Grant Line East New Growth Area in an area that is at present rural in character. Given the limited development that exists in this area the increase in light and glare would be considered substantial. The glare, caused by reflections from pavement, vehicles, and reflective building materials, would be visible from the rural and suburban areas and roadways surrounding the project area. This increase would conflict with the rural nature of the area and with the existing views from adjacent rural areas, which are characterized by large expanses of undeveloped open space with few sources of light and glare.

The existing General Plan includes policies intended to minimize the light and glare from new development. Land Use Element policies LU-22 and LU-23 require exterior building materials on nonresidential structures to be composed of a minimum of 50 percent low-reflectance, non-polished finishes, and encourages bare metallic surfaces such as pipes, flashing, vents, and light standards on new construction to be painted so as to minimize reflectance. Implementation of these policies may help to reduce the effects of light pollution however; complete elimination would not be possible. This Alternative will introduce substantial new sources of glare or nighttime lighting; impacts are considered *less than significant*.

MITIGATION MEASURES:

No feasible measures available.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

IMPACT: DAMAGE TO SCENIC RESOURCES AND ALTERATION OF EXISTING VIEWS AND VISUAL QUALITY

The impact analyses for the Remove Grant Line East Alternative are essentially the same as those discussed for the Proposed General Plan in the impacts and analysis section of this chapter. The Remove Grant Line East Alternative reflects the Proposed Project; however, it excludes the Grant Line East New Growth Area (refer to the impacts and analysis section for the impact statement for the West of Watt, Easton, and Jackson Highway Corridor New Growth Areas, as well as the Commercial Corridor and Infill discussions).

The project impact section determined that the Grant Line East New Growth Area would result in significant and unavoidable impacts (refer to "Impacts and Analysis" discussion). No mitigation measures were available to reduce this impact to less than significant. The removal of this growth area from the project eliminates this impact; however, this alternative still includes the Jackson Highway Corridor New Growth Area. Development of the Jackson Highway Corridor would substantially alter its rural nature resulting in a significant and unavoidable impact. Though this alternative reduces impacts by eliminating a new growth area that is presently rural in character, overall impacts remain *significant and unavoidable*; this Alternative will substantially degrade visual quality.

MITIGATION MEASURES:

No feasible measures available.

IMPACT: NEW SOURCES OF GLARE AND EFFECTS TO NIGHTTIME VIEWS

The project impact section determined that development of urban uses in existing rural areas would be considered substantial and would result in significant and unavoidable impacts (refer to "Impacts and Analysis" discussion). No mitigation measures were available to reduce this impact to less than significant. As discussed above, the removal of Grant Line East from the proposed project would eliminate impacts associated with development in that area, however, development of the Jackson Highway Corridor would still occur. As discussed in the "Impacts and Analysis" section the development of the Jackson Highway Corridor will result in a significant impact. Though this alternative reduces impacts by eliminating a growth area, overall impacts

remain *significant and unavoidable*; this Alternative will introduce substantial new sources of glare or nighttime lighting.

MITIGATION MEASURES:

No feasible measures available.

ALTERNATIVE 2: FOCUSED GROWTH

IMPACT: DAMAGE TO SCENIC RESOURCES AND ALTERATION OF EXISTING VIEWS AND VISUAL QUALITY

The impact analyses for alternative 2 are essentially the same as those discussed for the proposed general plan update in the impacts and analysis section of this chapter. The Focused Growth alternative reflects the proposed project however it excludes the Grant Line East New Growth Area and condenses the Jackson Highway Corridor footprint by excluding its eastern portion. The project impact section determined that the Grant Line East New Growth Area and the Jackson Highway Corridor would result in significant and unavoidable impacts (refer to "Impacts and Analysis" discussion). No mitigation measures were available to reduce these impacts to less than significant.

The removal of Grant Line East and the removal of the eastern portion of the Jackson Highway Corridor from the project eliminates impacts that would occur within these areas. The condensed version of the Jackson Highway Corridor would reduce the area that would be affected however; development would still occur on a large area that currently has limited development. Development of the Jackson Highway Corridor, in its condensed version, would alter its rural nature resulting in a significant and unavoidable impact. Though, it should be noted that this alternative substantially reduces impacts by eliminating a growth area and reducing the footprint of the Jackson Highway Corridor. This Alternative will substantially degrade visual quality; impacts are *significant and unavoidable*.

MITIGATION MEASURES:

No feasible measures available.

IMPACT: NEW SOURCES OF GLARE AND EFFECTS TO NIGHTTIME VIEWS

The removal of Grant Line East and the removal of the eastern portion of the Jackson Highway Corridor from the project eliminates impacts that would occur within these areas. The condensed version of the Jackson Highway Corridor would reduce the area that would be affected however; development would still occur on a large area that

currently has limited development. Development of the Jackson Highway Corridor, in its condensed version, would alter its rural nature resulting in a significant and unavoidable impact. Though, it should be noted that this alternative substantially reduces impacts by eliminating a growth area and reducing the footprint of the Jackson Highway Corridor. This Alternative will introduce substantial new sources of glare or nighttime lighting; impacts are considered *less than significant*.

MITIGATION MEASURES:

No feasible measures available.

ALTERNATIVE 3: MIXED USE

IMPACT: DAMAGE TO SCENIC RESOURCES AND ALTERATION OF EXISTING VIEWS AND VISUAL QUALITY

The Mixed Use Alternative eliminates the Grant Line East and Jackson Highway Corridor New Growth Areas and assumes that growth will be accommodated within the urban core. The Impact Analysis for the project, under all scenarios identified these growth areas as the source of the significant impact determination. Under this alternative the impacts analysis is essentially the same as the analysis for West of Watt, Easton, Commercial Corridors, and Infill. The development anticipated in these areas would be consistent with surrounding uses and within existing urban areas. This Alternative will not substantially degrade visual quality; impacts are considered *less than significant*.

MITIGATION MEASURES:

None recommended.

IMPACT: NEW SOURCES OF GLARE AND EFFECTS TO NIGHTTIME VIEWS

The Mixed Use Alternative eliminates the Grant Line East and Jackson Highway Corridor New Growth Areas and assumes that growth will be accommodated within the urban core. The Impact Analysis for the project, under all scenarios identified these growth areas as the source of the significant impact determination. Under this alternative the impacts analysis is essentially the same as the analysis for West of Watt, Easton, Commercial Corridors, and Infill. The development anticipated in these areas would be consistent with surrounding uses and within existing urban areas. The Alternative will not introduce substantial new sources of glare or nighttime lighting; impacts are considered *less than significant*.

MITIGATION MEASURES:

None recommended.

17 SUMMARY OF IMPACTS AND THEIR DISPOSITION

SIGNIFICANT EFFECTS WHICH CANNOT BE AVOIDED

LAND USE PLAN CONFLICT WITH SMART GROWTH PRINCIPLES

Of the identified growth strategies and areas, the Commercial Corridors and development of vacant and underutilized land strategies, and the West of Watt and Easton New Growth Areas are consistent with smart growth principles. The Jackson Highway Corridor and the Grant Line East areas are inconsistent with principles that direct development toward existing urbanized environments and away from open space. Mitigation requiring logical phasing can reduce the significant impact associated with the Jackson Highway Corridor to less than significant levels. This mitigation would not be sufficient for Grant Line East, so this impact remains significant.

CONVERSION OF OR CONFLICT WITH FARMLAND

Considering the Jackson Highway Corridor, the Grant Line East area, and the Commercial Corridors together, the Project has the potential to impact 217 acres of Prime Farmland, 1,800 acres of Farmland of Statewide Importance, 231 acres of Unique Farmland, and 6,619 acres of Farmland of Local Importance, for a total of 8,867 acres of designated farmlands. Though mitigation is required through General Plan policy, mitigation will not be sufficient to reduce the impacts of such substantial loss of protected farmlands to less-than-significant levels.

SEWER SERVICE

Combined, the various growth strategies will result in a minimum of 76 mgd (average dry weather flow) that must be accommodated by conveyance facilities and 52.9 mgd that must be accommodated by the treatment plant. The existing flows at the treatment plant are ~~140~~ **141** mgd and permitted flows are 181 mgd. The proposed Project will increase existing flows to ~~192.9~~ **193.9** mgd, which exceeds the existing permitted capacity. If the lawsuit related to permit expansion for the Sacramento Regional Wastewater Treatment Plant is resolved and the permitted capacity is expanded to 218 mgd (ADWF), there will be enough capacity to serve the Project. However, there will not be enough capacity to serve the Project plus all of the other development in the cities of Elk Grove, Sacramento, and Rancho Cordova. This combined growth will result in up to ~~291.5~~ **292.5** mgd of flows to the treatment plant. A facility expansion would be required.

WATER SUPPLY – INCREASED WATER DEMAND

Of the 28 water purveyors that supply water to customers within Sacramento County, 17 would be affected by corridor enhancement, residential infill, or New Growth Areas proposed in the General Plan Update. All affected water purveyors are likely to need additional conveyance infrastructure to serve new development, and the impacts of construction of these pipelines, wells, and other structures are potentially significant. While in most cases there is sufficient available supply to meet the additional demand, the following purveyors will need to obtain additional supply: CalAm, Florin County Water District, and Sacramento County Water Agency Zone 40.

WATER SUPPLY – GROUNDWATER RECHARGE

Easton and Grant Line East are located over substantial areas identified as being of high, medium, and low groundwater recharge potential. Development within these areas has the potential to eliminate or impact these areas. General Plan policy requires that moderate to very high groundwater recharge capability areas be maintained as open space or agriculture. General Plan policy will help offset impacts, but low groundwater recharge capability areas may still be lost.

WATER QUALITY

There are multiple creeks within the County that are listed by the state as impaired, primarily for pollutants such as diazinon and chlorpyrifos (both common components of pesticides and insecticides). The Project will introduce development in areas that contribute runoff to these impaired waterways, thereby resulting in a net increase in urban runoff pollution. Although the County has standards that apply to larger new developments that will offset these impacts to some extent, it is infeasible to expect that there will be zero net increase in pollution as a result of the Project. Any net increase to an impaired waterway is a significant impact.

WETLANDS AND RIPARIAN AREAS

The New Growth Areas contain at least 576 acres of wetlands and streams and 256 acres of riparian habitat – figures that only includes habitat within the Jackson Highway Corridor, Grant Line East, and Easton. A substantial amount of these wetlands and riparian areas, plus additional acreage within the infill areas, West of Watt, and the planned communities, will be lost. Overall, wetland and riparian impacts in the new growth areas are considered significant and unavoidable. This determination is based on the density and distribution of vernal pools and other wetland and riparian habitats and the existing biological health and landscape integrity.

SPECIAL STATUS SPECIES

The new growth areas have a considerable amount of contiguous undeveloped land that provides habitat for listed species to persist within an area. These vast tracts of

land are more likely to provide adequate food, water, and shelter and less likely to suffer from urban impacts (deterioration of water quality, competition from non-native species, disruption of migrating corridors, direct mortality from vehicular collisions, etc.). The reduction in size of habitat reduces a species' ability to persist in an area, and will eventually lead to the area being uninhabitable or detrimental to those that remain. Plants or animals attempting to survive in these substandard habitats are not able produce offspring, and eventually die without contributing to the overall population. The development of the new growth areas will contribute toward the cumulative impact associated with the decline of listed species by removing large areas of listed species habitat and create smaller isolated pieces of substandard habitat. Existing regulations and General Plan policy will offset these impacts to the extent possible, but not to less than significant levels.

NATIVE TREES

The Project area includes many native riparian trees, oak trees, black walnuts, and other native trees. Buildout of the Project will result in a substantial loss of these native trees. Proposed policies require compensation for loss of riparian habitat (which includes riparian trees), oak trees, and other native trees. With replacement plantings occurring through draft policy CO-158, the significant impacts could be reduced, though not to a less-than-significant level. There will still be temporal losses (meaning that it will be many years before a seedling planted replaces a mature tree). There will also be losses within particular areas of the County, because lack of space will require that replacement plantings for an impact in one area of the County may need to be accommodated in a very different part of the County.

TREE CANOPY

Though consideration of urban tree canopy is promoted by CO-162, there is no requirement to preserve or replace canopy. Mitigation is recommended to include urban tree canopy policies that require equivalent compensation for canopy loss. Though the proposed mitigation may ultimately prevent a County-wide loss of tree canopy, there will still be temporal losses (meaning that new plantings will take time to mature and replace lost canopy). It is also probable that there will be net canopy losses within specific areas of the County. As infill lots develop, there will be less land available to support trees within the urban core. Some proportion of mitigation planting will need to take place outside of the particular urban area where the impact occurred.

ROADWAY LEVELS OF SERVICE

The volume increases associated with the project result in multiple roadways degrading from acceptable to unacceptable levels of service. In addition, multiple roadways that would already operate at an unacceptable level of service under the No Project Alternative would experience an increase of volume-to-capacity ratio of greater than 0.05. Despite the improvements in mobility that could be accomplished through the application of mitigation, it is considered infeasible to fully mitigate the Project's impacts

on roadways for an array of reasons. There are physical constraints that make widening some roadways infeasible, such as the presence of biological resources or existing buildings that would need to be removed to accommodate the expansion. There are also financial constraints; many funds exist to build roadways, but the sheer number of areas that may be affected by the Project makes it unreasonable to assume that all of these improvements can be funded in a timely manner.

TRANSIT SERVICES

The increases in households and employment associated with the General Plan Update will increase the demand for transit services. To accommodate new development, RT will need to increase frequency on current transit (bus and light rail) routes, extend transit routes, and add new transit routes. New development will require additional buses and light rail vehicles. The increased transit fleet will require additional maintenance facilities and equipment. Additional transit stations, stops, and park-and-ride lots will be needed on existing and future transit routes.

Although it is the intent of the General Plan Update to provide new transit services to new growth areas once the level of development and densities reach levels that justify services, it may not be possible to provide adequate transit services due to future funding uncertainties. The transit system associated with the MTP assumes future funding sources that are not guaranteed. This may result in less transit service than appropriate to support the General Plan Update, and/or delays in the implementation of appropriate transit service.

VEHICLE NOISE

The Project will not cause long-term exposure to noise volumes with the potential to cause significant physiological effects. The Project will increase noise volumes in areas already inconsistent with General Plan policy, and will cause additional areas to become exposed to noise inconsistent with General Plan policy. There is no reasonable or feasible mitigation that will reduce this impact in all areas with existing development.

AIR QUALITY – FUGITIVE DUST

Construction allowed in the Project area would result in the temporary generation of ozone precursor (ROG, NO_X), CO, and particulate matter exhaust emissions that would result in short-term impacts on ambient air quality in the Project area. Construction within the Project area will cause significance thresholds to be exceeded. The SMAQMD requires the implementation of measures to reduce construction-related emissions. In the case of emissions from equipment, this is sufficient to offset impacts. In the case of particulate matter arising from dust, even the application of feasible mitigation will not reduce all impacts to below significance.

AIR QUALITY – OPERATIONAL EMISSIONS

Pollution from mobile, off-road, stationary, and area sources caused by the Project will result in emissions that exceed SMAQMD significance thresholds. Even with the preparation of Air Quality Management Plans on a project-level basis, and the County's General Plan policies aimed at promoting smart growth, reducing vehicle trips and trip lengths, and improving air quality, it is anticipated that emissions from development anticipated under the Project would still exceed SMAQMD threshold levels.

AIR QUALITY – EXPOSURE OF SENSITIVE RECEPTORS

Diesel exhaust from the Roseville Rail Yards could result in adverse health risks to nearby sensitive receptors. The Placer County Air Pollution Control District, Union Pacific Railroad, and SMAQMD are working together to reduce these emissions from the source. Meanwhile, proposed General Plan Policy AQ-3 requires that buffers be set to provide for separation between sensitive land uses and sources of pollution or odor. This policy will help to reduce this impact, but not to a less-than-significant level.

Based on modeling, potential cancer risks from roadway emissions would vary between 13 and 121 in one million, well in excess of the threshold of 10 in one million. General Plan Policy AQ-3 will help to reduce this impact, but not to a less-than-significant level.

Sensitive land uses located in closer proximity to types of Toxic Air Contaminants sources, such as roadways and refineries, could experience elevated health risks. General Plan Policy AQ-3 will help to reduce this impact, but not to a less-than-significant level.

IMPACTS OF CLIMATE CHANGE ON THE PROJECT

The effects of climatic changes on the Sacramento region are potentially significant, and can only be mitigated through both adaptation and reduction strategies. Sacramento County is requiring that this project, as well as other projects in the County, mitigate for their emissions. Adaptation strategies related to climate change may involve new water supply reservoirs or other storage options, changes to dam release schedules, reductions in water usage, changes to medical and social service programs, and other broad-level actions. Many of these strategies are within the auspices of the State of California, not local government. This is recognized within the AB 32 Scoping Plan that has been adopted by the State, as well as publications by agencies such as the California Department of Water Resources. This EIR requires the County to adopt a Climate Action Plan containing both adaptation and reduction strategies and programs to require mitigation of projects that may result in significant greenhouse gas emissions. The County is also implementing changes in government operations (as described in the Sacramento County Emission Reduction Efforts section). Therefore, the County is implementing all feasible strategies to reduce the effects of climate change on the region.

It will be challenging for the State to implement appropriate adaptation strategies given that the ultimate severity and type of climate change effects are difficult to model. Furthermore, though the State and many local governments are taking steps to address emissions, the entire world must do likewise in order for serious climate effects to be avoided. Impacts to the County from climate change remain significant and unavoidable, due to the uncertain nature of the impact.

IMPACTS OF THE PROJECT ON CLIMATE CHANGE

The Project will result in 13.2 million metric tons of ghg emissions, which is a 6.7 million metric ton increase in emissions above 2005 baseline levels and a 7.7 million metric ton increase above the 1990 levels required by AB 32. Mitigation requires County adoption of the AB 32 goal as a General Plan policy, a Climate Action Plan, and development thresholds. In concert with state and federal activities, this mitigation is intended to offset the Project climate change impact, which has been determined to be significant. Ideally, this mitigation would reduce the Project emissions and climate change impacts to levels that are not cumulatively significant, but there are many unknown variables and implementation challenges. Research is constantly generating new and better data, and modeling software for local emissions continues to be refined. It is possible that the 15% emissions reduction estimated by the state will be revised upward, or future modeling refinements will require the County to reexamine and revise the baseline emissions inventory. Even if the baseline analysis and target were unchanged, the County contribution to this global phenomenon can only be called cumulatively inconsiderable if all other parts of the world contribute to the needed reduction as well. If the County, or the State, or even the United States were the only entities to reach the necessary targets, the worst effects of climate change would not be averted. Therefore, though the County is taking all reasonable and feasible steps to reduce the Project effects on climate change, the impact is still significant and unavoidable, due to the uncertain nature of the impact.

LOSS OF IMPORTANT MINERAL RESOURCES

There are aggregate resource areas within the Jackson Highway Corridor. Growth within this area has the potential to result in obstruction of access to and removal of mineral resources. The resource areas in this location are extensive, and the resource itself is not renewable, so the potential loss of this resource is significant and unavoidable.

DEVELOPMENT IMPACTS TO IMPORTANT ARCHAEOLOGICAL RESOURCES

Both the proposed and existing policies that are associated with archaeological resources are designed to protect and preserve sensitive archaeological resources that are located within the unincorporated Sacramento County. Implementation of these policies would result in an overall reduction of impacts to archaeological resources within the County. Although General Plan policies and measures are intended to protect archaeological resources, direct and indirect impacts to archaeological

resources can still occur. Ground-disturbing activities can directly damage resources such that the significance of that resource is undermined completely. Due to the nature of archaeological resources, specifically the fact that they are often subsurface and completely obscured from view, impacts can occur inadvertently on project sites that have been completely surveyed for archaeological resources with negative findings. These types of impacts, such as trenching or grading an archaeological site, usually result in the integrity and significance of the site being lost, thereby resulting in a significant impact. Due to the uncertainty of future development and associated cultural resource impacts at the project-specific level and that no feasible mitigation is available, the impact is significant and unavoidable.

DEVELOPMENT IMPACTS TO IMPORTANT HISTORICAL/STRUCTURAL RESOURCE

Both the proposed and existing policies that are associated with historical/architectural resources are designed to protect and preserve historical resources that are located within the unincorporated Sacramento County. The preservation and protection of historical resources would reduce impacts associated with development proposals within Sacramento County. Although the proposed and existing policies provide the foundation for preservation of historical resources, some of the supporting polices that would specifically guide development are lacking in the current update. Furthermore, even with implementation of these policies and with best efforts made to discover and protect important resources, impacts can be inadvertent and significant. While the majority of future projects associated with the General Plan will undergo discretionary environmental review consistent with CEQA, under current County policy there is no regulatory language that requires discretionary review of demolition permits for structures within the County. Thus, under current conditions, there is no nexus to review and mitigate for demolition of potentially historical structures that are 50 years or over. Due to the uncertainty of future development and associated historical resources impacts at the project-specific level, impacts to historical/architectural resources are considered significant and unavoidable.

DEVELOPMENT IMPACTS TO IMPORTANT CULTURAL RESOURCES

According to the record search conducted at the North Central Information Center, there are three recorded resources within the “West of Watt” growth area, thirty within the Jackson Highway Corridor, thirteen within the Easton area, and thirteen within the Grant Line East area. Impacts related to Easton were determined to be less than significant with the application of mitigation, but impacts in all the other growth areas are potentially significant or significant and unavoidable. For the Easton Area, the separate EIR for the project concluded that only one of the recorded sites was culturally significant, and with mitigation that one resource could be adequately protected. The sparseness of known sites within West of Watt leads to the conclusion that development of the area may result in fewer impacts to cultural resources. However, the impact is still potentially significant, because there may be unknown sites within the area that could be inadvertently damaged. The relative abundance and extent of cultural resources within

the Jackson Highway Corridor and Grant Line East areas makes it likely that some impacts will occur, especially when considering that unknown resources may also exist in the areas. Future development patterns in these areas are unknown, but significant impacts to important resources are likely for the aforementioned reasons. Due to the nebulous nature of future growth, impacts are considered significant and unavoidable.

Both the Commercial Corridors growth strategy and the infill strategy may result in significant impacts to cultural resources. Existing commercial corridors are not typically highly sensitive for prehistoric cultural resources; however, the unanticipated discovery of prehistoric sites or burials cannot be ruled out, as evidenced by recent discoveries of prehistoric burials and artifacts during construction of the new City Hall in downtown Sacramento. Thus, although, prehistoric sites are typically obscured from view in more urbanized environments, due to historic uses and natural reburial processes, the discovery of resources cannot be discounted. Due to the uncertainties of potential impacts, impacts to cultural resources as a result of both of these strategies are considered significant and unavoidable.

DIRECT OR INDIRECT IMPACT RESULTING IN THE DESTRUCTION OF A UNIQUE PALEONTOLOGICAL RESOURCE

Neither the current General Plan nor the proposed General Plan Update specifically addresses paleontological resources. As a result, paleontological resources are currently at risk for unintentional destruction during future development of residential, commercial and industrial land uses, the expansion of mining operations or new mining facilities and through the installation of public infrastructure such as sewer and water pipelines, roadways and other utility lines. Additionally, impacts could occur through unauthorized collection of fossils by amateur paleontologists. It is reasonably foreseeable that implementation of the General Plan Update, including the proposed growth strategies, could result in impacts to paleontological resources. Therefore, impacts to paleontological resources as a result of the General Plan update are considered significant and unavoidable.

DEGRADATION OF VISUAL QUALITY

The development of infill areas, Commercial Corridors, West of Watt, and Easton will not substantially degrade visual character or quality. The visual characteristics of infill will be generally consistent with the existing viewshed, and the Commercial Corridors may improve visual quality by replacing older buildings with newer, cohesive designs. The West of Watt impacts would be similar to Commercial Corridor and infill impacts. The Easton viewshed is already impaired by existing industrial facilities, and development will be consistent with adjacent land uses. For the Grant Line East, Jackson Highway Corridor, and some of the planned communities, impacts are substantial. The existing viewsheds are rural and open space, and urban development is generally accepted to be less visually pleasing than open space. There is no mitigation that can offset the loss of these open and rural areas, so impacts are significant and unavoidable.

GLARE AND NIGHTTIME VIEWS

Implementation of the Project would promote development of urban uses in existing rural areas such as the Jackson Highway Corridor and Grant Line East, which would result in an increase in light and glare. Given the limited development that exists in these areas, the increase in light and glare would be considered substantial. This increase would conflict with the rural nature of these areas and with the existing views from adjacent rural areas, which are characterized by large expanses of undeveloped open space with few sources of light and glare. Though current design standards (street lights that direct light downward, windows with coatings that reduce reflection) will offset these impacts, the cumulative effect of all of the new sources will result in significant and unavoidable impacts.

SIGNIFICANT EFFECTS WHICH COULD BE AVOIDED WITH IMPLEMENTATION OF MITIGATION MEASURES

LAND USE POLICY CONFLICT WITH SMART GROWTH PRINCIPLES

Proposed new policies LU-17, LU-120, and LU-121 conflict with smart growth principles. Proposed policies LU-87 and LU-123, which are identical to two existing General Plan policies, also conflict with smart growth principles. The policy conflicts with smart growth principles identified are of great import, because the policies deal with expansion of the Urban Policy Area and amendment of land uses outside the Urban Policy Area. The physical effects of the policy conflicts could result in substantial impacts related to loss of open space and development outside of the urban environment. Mitigation recommends revisions to these policies.

PUBLIC SERVICES – PARK SERVICES

As required by the Quimby Act and General Plan policies, park land dedication and/or in lieu fees are required in order to develop and maintain parks. General Plan policy PF-124 requires new subdivisions to provide sufficient acreage of parks to meet the long-range needs of the community. Though the existing policies support park services, the park districts are concerned that existing policies do not support operation and maintenance of parks adequately, only local park land acquisition. As a consequence, it is possible that new development consistent with the Project will result in potentially significant issues with providing adequate ongoing park services. To ensure that this impact is avoided, it is recommended as mitigation that the park districts' proposed alternative general plan policy language (or a similar updated version) is adopted as part of the General Plan.

The construction of new facilities will result in environmental impacts, but these impacts will occur within areas that have already been analyzed throughout the EIR.

WATER SUPPLY – GROUNDWATER PUMPING IN THE CENTRAL GROUNDWATER BASIN

Impacts of the General Plan Update related to exceeding the 273,000 AFA sustainable yield of the Central Basin can be reduced to less than significant with implementation of a new water supply master plan to serve the new growth proposed in the Jackson and Grant Line East New Growth Areas that commits to not exceeding current groundwater allocations which support the sustainable groundwater yield.

FLOODPLAIN EFFECTS ON THE PROJECT – LEVEES

There are numerous levees within Sacramento County. Most of the proposed Project development areas are either within areas that are not levee-protected or are in areas with certified and adequate levees. In the case of the Jackson Highway Corridor) there are existing uncertified levees, so the levee-protected area is treated as existing floodplain until improvements are made. In all these cases, existing regulations and policies are sufficient to avoid impacts. The exception is a few development areas along the American River. The American River has certified 100-year levees in the affected areas, but recent legislation and General Plan policy indicates that this should ultimately be to the 200-year standard. Mitigation recommends precluding development in those affected areas until the levees are improved to the 200-year level. This will be sufficient to offset any potential impacts.

NOISE POLICIES

There are two proposed policies that have a potential for significant health-related noise impacts: NO-9 and NO-15. Neither includes a maximum allowable noise threshold, which could result in noise levels that exceed safe levels. Mitigation recommends that both policies be revised to include language establishing an upper noise ceiling of 75 dB in any area where it is reasonable to expect long-term noise exposure (except in industrial areas, where higher noise levels are expected and planned for by use of proper hearing protection).

EFFECTS FOUND NOT TO BE SIGNIFICANT

LAND USE PLAN COMPATIBILITY

The proposed General Plan Land Use Diagram does not result in substantial conflicts with adjacent land use plans or programs that are intended to avoid environmental effects.

AGRICULTURAL POLICIES

All of the proposed changes to agricultural policies, and all of the existing policies being carried forward into the proposed General Plan, are beneficial.

DIVISION OR DISRUPTION OF AN ESTABLISHED COMMUNITY

The Project does not include any elements that would result in significant division or disruption of an established community, as the only new roadways and other project aspects that could divide communities are located in relatively undeveloped areas.

DISPLACEMENT OF HOUSING

The amount of housing that may be displaced by new or expanded roadways associated with the Transportation Plan is far outweighed by the amount of housing projected to be accommodated by implementation of the Project. The Project will not require the construction of unplanned replacement housing elsewhere as a result of the displacement of existing housing.

AIRPORT SAFETY ZONE COMPATIBILITY

Some of the safety zones of the Sacramento Executive, Mather Field, and McClellan Airpark airports extend into proposed growth areas. Allowable uses within the safety zones described above will be restricted, based on the CLUPS in effect at the time a project is proposed. These restrictions prevent significant safety impacts.

PUBLIC SERVICES

With the exception of park services, existing General Plan policies, local regulations, and State regulations are sufficient to ensure that adequate public services can be provided to the Project. The construction of new facilities will result in environmental impacts, but these impacts will occur within areas that have already been analyzed throughout the EIR.

WATER SUPPLY – POLICIES

The proposed and existing policies and implementation measures associated with Water Supply are intended to ensure that development does not exceed the capacity of dependable water supplies and that the sustainable yield groundwater and surface water rights are used to meet projected growth in the unincorporated Sacramento County. These policies are all beneficial in nature. This includes the Alternative version of these policies that is proposed by Sacramento County Department of Water Resources.

WATER SUPPLY – GROUNDWATER PUMPING IN NORTH GROUNDWATER BASIN

Using the conservative estimate of 101,096 acre-feet annually (AFA) as the existing pumping demand and predicting a conservative 3606 AFA demand resulting from the proposed General Plan growth, the total regional demand on the basin would be 104,702 AFA. This is 80% of the sustainable yield of 131,000 AFA; therefore, the project is not expected to contribute to groundwater pumping in excess of 131,000 AFA for the North Area Groundwater basin.

PROJECT EFFECTS ON FLOODPLAINS

Development within the areas identified for growth as part of this General Plan will contribute additional runoff to existing stormwater systems and floodway environments. Any future master planning proposal within the growth area will require preparation of a Drainage Master Plan, pursuant to General Plan Policy SA-5. All smaller-scale development, such as infill, will be required to comply with the provisions of the Floodplain Management Ordinance and County Improvement Standards. Compliance with County Ordinances, Improvement Standards, and General Plan Policy will ensure that the Project will not substantially increase the rate or amount of surface runoff in a manner that causes flooding or that exceeds stormwater system capacity.

FLOODPLAIN EFFECTS ON THE PROJECT

Some of the areas identified for development as part of buildout of this General Plan are within floodplain areas. Compliance with the Sacramento County Floodplain Management Ordinance will ensure that no residence is placed within a flood hazard area, and that people or structures will not be exposed to a significant risk involving flooding.

CIRCULATION POLICY COMPATIBILITY

The Circulation Element of the General Plan Update includes 37 policies intended to facilitate the implementation of the goals of the General Plan. The proposed policies are a complete re-write of the existing policies, reflecting changes in political, social, environmental, and fiscal conditions since the creation of the earlier plan. However, the general goals of the policies are the same: integration of transportation with land use; continued emphasis on alternative travel modes; and adequate funding for transportation infrastructure, operation, and maintenance. The new policies will not result in any adverse physical effects as measured by the standards of significance.

BICYCLE AND PEDESTRIAN FACILITIES

The proposed General Plan Update incorporates the Bikeway Master Plan and Pedestrian Master Plan, and includes policies for the planning, funding, and implementation of bicycle and pedestrian facilities to address mobility needs.

Development in new growth areas consistent with the smart growth principles will ensure bicycle and pedestrian mobility within these areas, and the County's plans to improve bicycle and pedestrian facilities on existing and planned roadways will provide important connectivity.

TRAFFIC AND CIRCULATION SAFETY

The proposed General Plan Update incorporates policies related to transportation facility planning, design, and implementation in accordance with accepted design standards and guidelines.

AIRPORT NOISE COMPATIBILITY

Future planning of the Jackson Highway Corridor, the West of Watt new growth area, and the Watt Avenue North Commercial Corridor will be influenced by the presence of the 60 CNEL noise contour of Mather Airport and McClellan Air Park. Proposed residential uses in these growth areas must be outside the contour line, making it more appropriate to site certain kinds of business and industrial uses, passive open space uses, or mining uses (in the case of aggregate resource areas). Compliance with the existing CLUP in effect at the time development is proposed will ensure that people are not exposed to excessive airport noise levels.

AIR QUALITY – CONSTRUCTION EMISSIONS FROM EQUIPMENT

Construction allowed in the Project area would result in the temporary generation of ozone precursor (ROG, NO_X), CO, and particulate matter exhaust emissions that would result in short-term impacts on ambient air quality in the Project area. Construction within the Project area will cause significance thresholds to be exceeded. The SMAQMD requires the implementation of measures to reduce construction-related emissions. In the case of emissions from equipment, this is sufficient to offset impacts. It is anticipated that construction activities that emit diesel particulates associated with the individual Project elements will be short-term and will occur over a period of several months to several years in duration, and will not result in long-term emissions of diesel exhaust in any given locale of the Project area.

AIR QUALITY – CONSTRUCTION EMISSIONS OF ASBESTOS

Project elements resulting in grading and ground-disturbing activities in areas with a moderate likelihood of containing naturally occurring asbestos, such as eastern Sacramento County, may disturb asbestiform-containing soils and generate asbestos dust. As also discussed in the Geology and Soils chapter, the only change proposed by the Project that appears to be affected by NOA is some small portion of the Grant Line East New Growth Area. Air Resources has adopted an ATCM to control exposure to asbestos from construction, grading, quarrying, and surface mining operations (17 CCR §93105, 7/26/01). Compliance with the requirements of the ATCM would offset any potential impacts associated with NOA.

AIR QUALITY – CARBON MONOXIDE HOTSPOTS

No violations of the state or federal 1- or 8-hour CO standards are anticipated in the Project area under cumulative-year conditions. Due to continuing improvements in engine technology due to relatively stricter emission control standards and the retirement of older, higher-emitting vehicles, it is anticipated that vehicle emissions in future years will be lower than current years. As a result, although roadway volumes increase in future years, intersection congestion and volumes are not sufficient to result in elevated CO levels.

GEOLOGY AND SOILS

The project does not include significant changes to existing policies related to geology and soils, and all policies are beneficial. A combination of existing County Ordinances and State laws (such as the Uniform Building Code) will ensure that future development will not cause substantial erosion, be subject to substantial hazards associated with seismicity, be subject to substantial hazards associated with unstable or expansive soils, or result in obstruction of access to and removal of mineral resources.

HAZARDOUS MATERIALS

There are existing cleanup sites associated primarily with leaking underground storage tanks within all of the Commercial Corridors and within the Jackson Highway Corridor. Cleanup of these sites would be required before development on the affected properties can take place. There is also some potential for undiscovered toxics to be found as development proceeds, but application of current laws and regulations will ensure that any contaminated sites are identified and contained or remediated prior to development.

Existing older structures may contain asbestos or lead. The emission of these hazardous materials during demolition activities will be prevented through adherence to existing regulations and laws.

IRREVERSIBLE ENVIRONMENTAL CHANGES

Section 15126.2(c) of the CEQA Guidelines provides the following section pertinent to irreversible environmental 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 improvement which provides 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 assure that such current consumption is justified.

As described in the CEQA Guidelines section above, the Project impacts would be considered significant if:

1. Uses implemented as a result of the Project will result in future generations perpetuating those or similar uses.

2. Environmental accidents that would cause irreversible damage may occur as a result of the Project.

3. The project would consume limited or non-renewable resources in unjustified amounts.

The growth strategies of the General Plan envision developing significant amounts of undeveloped or minimally-developed land with urban uses. Once these areas are urbanized, it is highly unlikely that they will be reverted back to rural or open space uses. It will require a significant amount of financial investments by the County and by private individuals to develop these areas, which is a disincentive to returning the areas to pre-project conditions. Further, these restoration activities would themselves require significant funding sources and time to accomplish successfully. In particular, the Grant Line East area has no existing public roads, so implementation of the Project will allow general access to this previously inaccessible area. Therefore, any resources within those areas that will be impacted by the Project (as described in the chapters of this EIR) will be irretrievably lost.

The Project will result in the transport and use of hazardous materials as part of construction activities. The Project may also result in the introduction of additional commercial and industrial businesses to the County that use or transport hazardous materials. There are existing state and federal regulations which ensure that the transport, storage, and use of the materials is done safely. This substantially reduces the likelihood of severe accidents, but does not entirely prevent an environmental accident from occurring.

The Project would result in the consumption of limited resources and non-renewable resources, which for this discussion includes resources that renew so slowly that they can be considered non-renewable. The consumption would begin with Project construction, and continue throughout the operational lifetime of the General Plan. Development would require building materials, fuel and operational materials, and the transportation of products and people to and from the Project area. Most construction materials are either non-renewable, in limited supply, or renew so slowly that they can be considered non-renewable. These include: most commonly-used types of lumber and other forest products, aggregate materials, metals, petrochemicals (plastics), fossil fuels, and water.

Though operation of the development included in the General Plan will consume the same resources described above, consumption is weighted toward energy resources

and water, as opposed to raw materials. The Project will result in an increase in the amount of vehicle trips in the County, which can be expected to result in substantial increases in fossil fuel consumption. All of the buildings will also require supplies of electricity and natural gas to operate lights and other equipment. Some of this energy will be derived from renewable resources – new state laws require energy suppliers to derive 33% of the energy from renewable sources such as wind and solar. The majority will be from gas turbines, nuclear plants, and some coal-fired plants. The new development will also need to be supplied with water. Though water is in many senses a renewable resource, it has been included in this discussion because it is a limited resource which may become even more limited due to droughts and a changing climate.

As discussed in other sections of this EIR, the Project includes more land for growth than current population forecasts necessitate. This is compounded by the fact that a changing climate and dwindling supplies of petroleum have the potential to fundamentally alter the definition of "sustainable" consumption of resources. Therefore, the consumption of the resources described above can be considered unjustified.

The Project will result in *significant and unavoidable* irreversible environmental changes.

GROWTH INDUCING IMPACTS

CEQA Guidelines Section 15126.2(d) requires consideration of potential growth inducing impacts:

> Discuss the ways in which the proposed project could 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 (a major expansion of a waste water treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristics of some projects that may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

As described in the CEQA Guidelines section above, the Project impacts would be considered significant if:

1. It would foster economic, population, or construction growth in the incorporated cities or adjacent counties that would result in environmental impacts.

2. It would require the construction of new facilities or the extension of infrastructure that could cause significant environmental impacts.

3. The construction of new facilities or infrastructure would allow more growth than planned for in the Project, which would then result in significant environmental impacts.

The proposed General Plan is intended to induce a substantial amount of growth, which will result in the significant impacts that have been described throughout this EIR. This growth will require the construction of new facilities (schools, parks, fire stations, etc) and of infrastructure (roads, sewer lines, water lines, etc) that will also result in the significant impacts described throughout this EIR. None of this infrastructure will accommodate more growth within the County than is planned for and analyzed as part of the General Plan Update Project. The Project identifies enough land to accommodate far more than the 100,000 homes SACOG projects will be needed within the unincorporated County by 2030. If all of this land is fully developed, this will result in less demand for development land within surrounding areas, not more. Implementation of the Project is not expected to foster growth within the incorporated cities or adjacent counties.

18 SUMMARY OF CEQA ALTERNATIVES

LAND USE

NO PROJECT

The existing General Plan has been in effect since 1994 and is consistent with other land use planning documents, the existing agricultural policies are all beneficial, there are no aspects of the existing General Plan that would disrupt or divide an established community, the No Project would result in a net gain of housing, and the No Project Alternative would not expose people residing or working in the area to a safety hazard related to airports. Therefore, impacts related to land use compatibility, land use impacts of agricultural policies, division or disruption of an established community, displacement of housing, and airport safety are *less than significant*.

The No Project Alternative is contrary to the Blueprint, because it does not plan for sufficient growth within the 2030 period. The result will be that the demand for development will be shifted into some of the more outlying counties and cities, rather than being clustered near the main urban area. Approval of the No Project Alternative would result in *significant* impacts related to land use conflict with smart growth principles.

Existing General Plan policies LU-67.B, LU-75, LU-76, and LU-78 conflict with the smart growth principles. Even though many other existing policies support smart growth, the conflicts identified in these principles may have far-reaching effects. The physical effects of the policy conflicts could result in substantial impacts related to loss of open space and development outside of the urban environment; impacts are *significant*.

The No Project Alternative could result in the loss of up to 53 acres of Prime Farmland, 499 acres of Farmland of Statewide Importance, and 188 acres of Unique Farmland. This exceeds the 50-acre threshold set forth in the General Plan, and is a *significant* impact.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

The proposed General Plan Land Use Diagram as amended by the Alternative does not result in substantial conflicts with adjacent land use plans or programs that are intended to avoid environmental effects, and impacts are *less than significant*. The Alternative also does not include any elements that would result in significant division or disruption of an established community, the proposed General Plan and Transportation Plan do will not result in substantial displacement of housing, and though there are areas proposed for new growth within identified airport safety contours there are also existing plans in effect to ensure that incompatible development is prohibited. Remove Grant

Line East impacts related to division or disruption of an established community, displacement of housing, and airport safety are *less than significant*.

Of the identified growth strategies and areas, the Commercial Corridors and development of vacant and underutilized land strategies, and the West of Watt and Easton New Growth Areas are consistent with smart growth principles. The Jackson Highway Corridor is inconsistent with principles that direct development toward existing urbanized environments and away from open space. Mitigation requiring logical phasing can reduce the significant impact associated with the Jackson Highway Corridor to less-than-significant levels. The discussion of the Project noted that there are no mitigation measures available to reduce the impact of including Grant Line East – the only way to reduce the impact is to eliminate the growth area. The Remove Grant Line East Alternative eliminates that unmitigable impact, leaving the rest of the Project intact. With Mitigation Measure LU-1, the Remove Grant Line East Alternative land uses result in *less than significant* impacts related to smart growth principles.

Although as part of this Alternative all references to Grant Line East would be removed from General Plan policies, no other policy differences exist between the proposed Project and the Remove Grant Line East Alternative. The same discussions provided in the analysis of Project land use policy compatibility applies to this Alternative. Proposed new policies LU-17, LU-120, and LU-121 conflict with smart growth principles. Proposed policies LU-87 and LU-123, which are identical to two existing General Plan policies, also conflict with smart growth principles. With Mitigation Measures LU-3 through LU-6, the Remove Grant Line East Alternative land use policies result in *less than significant* impacts related to smart growth principles.

Even without the Grant Line East new growth area, cumulative impacts to protected farmlands amount to 190 acres of Prime Farmland, 1,605 acres of Farmland of Statewide Importance, 222 acres of Unique Farmland, and 5,902 acres of Farmland of Local Importance, for a total of 3,824 acres of designated farmlands, and this impact is *significant*. The same mitigation applied to the Project would apply to this Alternative, but the amount of loss is so substantial that the impact would remain significant.

ALTERNATIVE 2: FOCUSED GROWTH

The impacts of the Focused Growth Alternative are identical to those described above for the Remove Grant Line East Alternative, except for the impacts related to loss of farmlands and land use plan consistency with smart growth principles.

The Project impact discussion of smart growth principles determined that the Grant Line East new growth area would result in significant impacts, and that the inclusion of it could divert infill development and Commercial Corridor development interest (refer to the “Land Use Plan Compatibility”, “Smart Growth Principles” section of the Project discussion). The section also notes that there are no mitigation measures available to reduce the impact of including Grant Line East – the only way to reduce the impact is to eliminate the growth area. The Project discussion also concludes that the Jackson Highway Corridor includes far more land than necessary to serve forecasted demand

levels. The analysis concludes that because the growth area is in a more logical location, including mitigation that requires logical phasing could reduce this impact to less-than-significant levels. The Focused Growth Alternative eliminates the Grant Line East area, and reduces the size of the Jackson Highway Corridor. This Alternative reduces the New Growth Areas to a size that is sufficient to accommodate demand without providing significant excess acreage. The effect is to eliminate a significant, unmitigable impact, and to eliminate the need for mitigation related to the remaining area. Impacts are *less than significant*, without the need for mitigation.

The Focused Growth Alternative would result in the loss of 214 acres of Prime Farmland, 1,733 acres of Farmland of Statewide Importance, 180 acres of Unique Farmland, and 5,612 acres of Farmland of Local Importance. The Focused Growth Alternative would result in *significant* impacts related to loss of farmlands. The same mitigation applied to the Project would apply to this Alternative, but the amount of loss is so substantial that the impact would remain significant.

ALTERNATIVE 3: MIXED USE

The proposed General Plan Land Use Diagram as amended by the Alternative does not result in substantial conflicts with adjacent land use plans or programs that are intended to avoid environmental effects, and impacts are *less than significant*. The Alternative also does not include any elements that would result in substantial division or disruption of an established community, or that would result in substantial displacement of housing; impacts are *less than significant*.

The Mixed Use Alternative is highly consistent with smart growth principles. The project directs all development toward the urban core, which will increase densities and support alternative transportation (principle 1); includes the Commercial Corridors strategy, which involves the mixing of land uses (principle 2); directs most growth into areas that are already built up, resulting in more compact growth (principle 3); promotes growth through development of multiple-family housing, granny unit housing, and single-family housing, which provides a range of housing opportunities and choices (principle 4); directs all growth toward existing urban areas (principle 5); and avoids any development within the large open space, farmland, and critical environmental areas of the county (principle 7). Principle 6 is not listed, because determining consistency with this principle would require detailed design plans that are not available at this stage. Impacts are *less than significant*. All of the Land Use Element policies of the Mixed Use Alternative are also consistent with smart growth principles, and impacts are *less than significant*.

Approximately 195 acres of Farmland of Local Importance, 27 acres of Prime Farmland, and 58 acres of Unique Farmland would be lost as a result of this Alternative. This impact is significant because it exceeds the 50-acre threshold, but given the small loss of lands and the fact that those lands are located in areas already compromised by urban development, mitigation for the loss of those farmlands will reduce impacts to levels that are *less than significant*.

PUBLIC SERVICES

Under the No Project Alternative, solid waste facilities and services would not drastically change, and would not be substantially impacted by increased development within the proposed new growth areas. Kiefer Landfill has enough capacity to meet demand until 2037. There are recycling programs already in place and the County is required to meet the requirements of AB 939. Impacts would be *less than significant*.

Under the No Project Alternative, there would be increases in student populations to existing public schools. These increases would not significantly impact existing schools. Additionally, as stated in the proposed project impact analysis section, school facilities mitigation is covered under Government Codes. Impacts would be *less than significant*.

Under the No Project Alternative, there would be increases in the demand for library services. However, this demand has been forecasted and analyzed in the Sacramento Public Library Authority Facility Master Plan. The Master Plan identifies renovation of existing libraries in order to meet projected needs of the community and construction of new libraries to accommodate new growth. As it has been identified through the Facility Master Plan that the County will need new libraries and renovations to existing libraries, impacts of the No Project Alternative are considered *less than significant*.

Under the No Project Alternative, there would be increases in the demand for law enforcement personnel and facilities. The No Project Alternative is estimated to accommodate 55,000 new residential units. Using the estimate of 2.7 persons per household, an additional 148 staff would be needed to meet the patrol goal of one officer per 1,000 persons for the Sheriff's Department. Impacts associated with construction of new facilities would be reduced under the No Project Alternative because new development would be minimal in comparison to the proposed project. Impacts under this alternative are considered *less than significant*.

Under the No Project Alternative, there would be increases in the demand for fire protection and emergency services. The master planning of the growth areas from the 1993 General Plan included adoption of financing plans with allocations for new fire stations. The No Project Alternative will not adversely impact fire protection services. Impacts associated with fire protection and emergency services are considered *less than significant*.

The No Project Alternative would result in increased energy demand above existing levels, but less energy consumption as compared to the proposed Project because less development would occur. There would be sufficient energy to supply the Alternative. Impacts are *less than significant*.

Under the No Project Alternative, there would be increases in the demand for parks and recreation services. There are policies in the existing General Plan requiring development projects to set aside land for park facilities for new residential development. Additionally, there are policies that address funding for the maintenance of these parks as well. Sacramento County Regional Parks Department, in cooperation

with other Park Districts, indicated that these existing policies may not be sufficient to provide park services and recommended changes to existing policies. If the No Project Alternative is adopted, these changes cannot be included. Impacts are considered *potentially significant*.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

Under Alternative 1, there would be less generation of solid waste as compared to the proposed project. With recycling programs in effect, and compliance with AB 939, Kiefer Landfill has capacity to meet demands until 2037. Impacts to solid waste services are considered *less than significant*.

Under Alternative 1, increases in student populations would still occur in the commercial corridors and under the residential infill strategy. New schools would be required in the other New Growth Areas; however, with the elimination of the Grant Line East New Growth Area, the construction of new schools in this portion of the County would not be needed. Policies of the General Plan require facility financing plans for new development plans, which sets aside land for new schools. School facilities mitigation is covered under California Government Codes. Any new facilities would be constructed within one of the identified growth areas, and thus the general impacts of the construction of those facilities is disclosed in each topical section of the EIR. This is also true for all other new facilities required for other public services discussed below. Impacts to public schools are considered *less than significant*.

The demand for library services under Alternative 1 would be less than the demand required under the proposed project, but more than under existing conditions. No new libraries would be built within the Grant Line East New Growth Area, which would reduce impacts to resources in this area. The General Plan contains policies that require new libraries as part of development plans and policies that address the funding mechanisms of new libraries. Impacts to libraries under Alternative 1 would be *less than significant*.

The demand for law enforcement services from the Sheriff's Department would be less than the demand required under the proposed project. Alternative 1 is estimated to accommodate 113,000 residential units, which would require the Sheriff's Department to hire an additional 305 staff, to meet the goal of 1 patrol officer per 1,000 persons. Additional patrol officers would also require additional patrol cars and facilities to house the cars and staff. Impacts associated with construction of new facilities would be reduced under Alternative 1 because there would be less new development in comparison to the proposed Project. Impacts to law enforcement services under this alternative are considered *less than significant*.

The increases in demand for fire protection services and emergency services would be less under Alternative 1, as compared to the proposed project. New fire stations would not be needed in the Grant Line East New Growth Area, which would reduce impacts to natural resources located in this area, compared to the proposed project. Impacts

under Alternative 1 would be less than the proposed project and as such, impacts to fire protection and emergency services are considered *less than significant*.

Under this alternative, the need for energy facilities and services would be reduced because less development would occur. The impacts discussed for the proposed project would be reduced. Impacts of energy facilities and services would be *less than significant*.

Under Alternative 1, no new parks would be needed within the Grant Line East New Growth Area. The elimination of Grant Line East would not bring development close to the Prairie City SVRA. As such there would be less potential impacts as a result of increased development around the SVRA with the removal of Grant Line East New Growth Area. The same mitigation applicable to the Project is applicable to the Alternative: updated policies should be adopted that address ongoing funding for park services. Mitigation is recommended to ensure that impacts are *less than significant*.

ALTERNATIVE 2: FOCUSED GROWTH

Increases to solid waste services would be the same under this Alternative and Alternative 1. Impacts to solid waste services are *less than significant*.

Under Alternative 2, there would still be increases of student populations to existing schools throughout the County due to the commercial corridors redevelopment and the residential infill strategies. This Alternative would not require new school construction within the Grant Line East New Growth Area (same as Alternative 1), but would also eliminate new school construction within the eastern portion of Jackson Highway Corridor. Environmental impacts under this Alternative would be less, as compared to the Proposed Project and Alternative 1. General Plan policies require facility financing plans for new development plans, which sets aside land for new schools. School facilities mitigation is covered under California Government Codes. Impacts to public schools are considered *less than significant*.

No new libraries would be built within the Grant Line East New Growth Area or within the eastern portion of the Jackson Highway Corridor area, which would reduce impacts to resources. The General Plan contains policies that require new libraries as part of development plans and policies that address the funding mechanisms of new libraries. Impacts to libraries under Alternative 2 would be *less than significant*.

The demand for law enforcement services from the Sheriff's Department would be less than the demand required under the proposed project and similar to the demand under Alternative 1 (because Alternatives 1 and 2 include the same number of people, just in different areas). Alternative 2 is estimated to accommodate 113,000 residential units, which would require the Sheriff's Department to hire an additional 305 staff, to meet the goal of 1 patrol officer per 1,000 persons. Additional patrol officers would also require additional patrol cars and facilities to house the cars and staff. Impacts associated with construction of new facilities would be reduced under Alternative 2 because there would

be less new development in comparison to the proposed project. Impacts to law enforcement services under this alternative are considered *less than significant*.

Similar to Alternative 1, the increases in demand for fire protection services and emergency services would be less under Alternative 2, as compared to the proposed project. New fire stations would not be needed in the Grant Line East New Growth Area and within the 4,000 removed acres of the Jackson Highway Corridor, which would result in less construction-related impacts to natural resources located in these areas, as compared to the proposed project. The General Plan contains policies that provide for facilities and funding for larger master plan developments. Impacts to fire protection services under this Alternative are considered *less than significant*.

Alternative 2 would result in nearly the same energy demands as Alternative 1. However, the need for expansion and/or construction of facilities to serve outlying areas would be reduced. Impacts under this alternative are *less than significant*.

Under Alternative 2, no new parks would be constructed within the Grant Line East area or within the removed 4,000 acres of the Jackson Highway Corridor. Similar to Alternative 1, with the removal of Grant Line East, there would not be new development around the Prairie City SVRA, thus there would be less potential impacts as a result of increased development around the SVRA. The same mitigation applicable to the Project is applicable to the Alternative. Mitigation is recommended to ensure that impacts are *less than significant*.

ALTERNATIVE 3: MIXED USE

Under Alternative 3, there would be an increase in demand for solid waste services; however, this demand would be less than what is expected under the proposed project. Kiefer Landfill would not be significantly impacted and has the capacity to meet demands until 2037. Under this Alternative, impacts to solid waste services are *less than significant*.

Under Alternative 3, increases in development throughout the County would potentially impact all school districts in the County by causing increases in student populations to existing schools. The General Plan includes policies to accommodate for growth and increased service demands. Alternative 3 does not identify large new growth areas, and relies on revitalizing existing urbanized areas and infill development. With this type of growth, new school sites will not be identified and land dedications cannot be made, which will cause impacts to existing schools due to increased student populations. However, with established case law, Goleta Union School District v. The Regents of the University of California (36 Cal-App. 4th 1121, 1995), it was found that school overcrowding, standing alone, is not a change in the physical conditions, and cannot be treated as an impact on the environment. Additionally, developer fees under SB 50 and school facilities mitigation under California Government Code, would serve as complete CEQA mitigation for the impacts of increased development on school facilities. Impacts to public schools under Alternative 3 would be considered *less than significant*.

Since Alternative 3 does not contain any of the proposed new growth areas, specific plans and master plans for new development will not be completed, thus no new libraries will be identified to meet the demands of increased populations. Library services would rely on the Sacramento Public Library Authority Facility Master Plan, which identifies renovation of existing libraries in order to meet projected needs of the community and construction of new libraries to accommodate new growth. The General Plan contains policies for funding for renovations to existing libraries and funding for new libraries and recommends the siting of libraries within well traveled areas, which is consistent with the Facility Master Plan. Impacts under Alternative 3 are considered *less than significant*.

With an increase of 100,000 dwelling units, at an estimate of 2.7 persons per household, the Sheriff's Department would need approximately 270 more officers to meet the 1 officer to 1,000 population ratio. Additional patrol officers would also require additional patrol cars and facilities to house the cars and staff. Impacts associated with construction of new facilities would be reduced under Alternative 3 because there would be less new development in comparison to the proposed project. The new facilities would also be located in areas that are predominantly already developed, and impacts to resources would be minimal. Impacts to law enforcement services under this alternative are considered *less than significant*.

Under Alternative 3, there would be increases in densities within the existing urban areas and increases in the demand for fire protection and emergency services. New development under Alternative 3 would rely on existing fire stations to meet fire protection and emergency service needs. The General Plan contains policies that allow, under discretion of the Board of Supervisors, the requirement of mitigation fees to fund adequate fire protection and emergency medical response if existing methods of financing are inadequate. The General Plan contains policies and measures to ensure that there is funding to provide adequate fire protection and emergency services and that buildings and neighborhoods meet the requirements of the California Fire Code and access and fire hydrants are adequate. These policies will ensure that impacts associated with growth and funding for adequate fire protection will be *less than significant*.

This Alternative would eliminate the need to expand energy delivery facilities to outlying areas. Additional energy savings could be realized through higher density and mixed-use developments. Impacts of this alternative are *less than significant*.

Under Alternative 3, no new parks would be constructed within the Grant Line East or the Jackson Highway Corridor New Growth Areas. Similar to Alternatives 1 and 2, with the removal of Grant Line East, there would not be new development around the Prairie City SVRA, thus there would be less potential impacts as a result of increased development around the SVRA. The same mitigation applicable to the Project is applicable to the Alternative. Mitigation is recommended to ensure that impacts are *less than significant*.

SEWER SERVICES

NO PROJECT

Under this alternative, the proposed General Plan Update would not be adopted and the 1993 General Plan would continue to guide policy regarding sewer service. The adopted SRCSD, SASD, and SRWTP Master Plan would continue to guide design and construction of facilities. The No Project Alternative would result in a reduced population compared to the proposed General Plan, so wastewater generation to the treatment plant would be reduced. Generation would be increased above existing levels by 49.1 mgd. Individual development under this alternative would be required to construct necessary infrastructure needed to serve that development and would be required to fund its fair share of other system-wide improvements to infrastructure needed for cumulative demand on those facilities. Because the demand for sewer service under this Alternative would be less than that of the proposed General Plan Update, its impact would be less severe compared to the proposed Project. Because the No Project Alternative would involve development of land to current designations, it is anticipated that mitigation measure SE-1 required for the Project would not be required for this Alternative. Under the No Project Alternative, the cumulative or regional impacts on the treatment plant would remain *significant and unavoidable* due to the projected wastewater flows of the cities of Sacramento, Elk Grove, and Rancho Cordova. The construction impacts associated with the regional impact scenario would remain *significant and unavoidable*.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

Under this Alternative the Grantline East New Growth Area would be eliminated with no other changes to the project description. The adopted SRCSD, SASD, and SRWTP Master Plans would continue to guide design and construction of facilities. The impacts of the Remove Grant Line East Alternative would be the same as those described for the project, except the sections on Grant Line East would not apply – this would reduce total Project sewer demand by 14.9 mgd (conveyance) and 8.2 mgd (treatment). The total Project contribution would be ~~184.7~~ **185.7** mgd, which slightly exceeds permitted capacity, but not the proposed capacity. On a regional basis, total demand would be ~~283.3~~ **284.3** mgd, which exceeds both existing and proposed capacity. Sewer service related impacts on a regional basis would remain *significant and unavoidable* because of the combined wastewater flows of the Project and the cities of Sacramento, Elk Grove, and Rancho Cordova. Construction impacts associated with the regional impact scenario would remain *significant and unavoidable.*

ALTERNATIVE 2: FOCUSED GROWTH

Under this alternative the East Grantline Growth Area would be eliminated and the eastern portion of the Jackson Highway Corridor would be eliminated with no other changes to the project description. The adopted SRCSD, SASD, and SRWTP Master Plans would continue to guide design and construction of facilities. The impacts of the

Focused Growth Alternative would be the same as those described for the project, except the sections on Grant Line East Growth Area and the eastern portion of the Jackson Highway Corridor Growth Area would not apply. This would reduce total wastewater demand by 29.78 mgd (conveyance) and 8.2 mgd (treatment). The total treatment need is not reduced as compared to Alternative 1 because the same number of people will be accommodated in the Jackson Highway Corridor – only the acreage of land involved is reduced. The total Project contribution would be ~~184.7~~ **185.7** mgd, which slightly exceeds permitted capacity, but not the proposed capacity. On a regional basis, total demand would be ~~283.3~~ **284.3** mgd, which exceeds both existing and proposed capacity.

Sewer service related impacts on a regional basis would remain *significant and unavoidable* because of the combined wastewater flows of the Project and the cities of Sacramento, Elk Grove, and Rancho Cordova. Construction impacts associated with the cumulative impact scenario would remain *significant and unavoidable.*

ALTERNATIVE 3: MIXED USE

Mixed Use Alternative impacts related to the Easton and West of Watt New Growth Areas as well as the Commercial Corridors and infill are the same as those described in the Project analysis. This Alternative would reduce total wastewater demand by 37.2 mgd (conveyance) and 25.0 mgd (treatment). The total Project contribution would be ~~167.9~~ **168.9** mgd, which does not exceed either existing or proposed capacity. This is the only Alternative, aside from the No Project, which results in a Project impact of less than significant related to treatment capacity. On a regional basis, total demand would be 266.5 mgd, which exceeds both existing and proposed capacity.

The adopted SRCSD, SASD, and SRWTP Master Plans would continue to guide design and construction of facilities. Sewer service related impacts on a regional basis would remain *significant and unavoidable* because of the combined wastewater flows of the Project and the cities of Sacramento, Elk Grove, and Rancho Cordova. Construction impacts associated with the cumulative impact scenario would remain *significant and unavoidable.*

WATER SUPPLY

NO PROJECT

The No Project Alternative impact analyses for the City of Sacramento, Sacramento Suburban Water District, Carmichael Water District, City of Folsom, Fruitridge Vista Water Company, Golden States Water Company, Tokay Park Water Company, California American Water Company, Del Paso Manor, Rio Linda Water District, Citrus Heights Water District, Fair Oaks Water District, Orange Vale Water District, San Juan Water District, Sacramento County Water Agency Arden Park Vista, and Florin County

Water District are essentially the same as those discussed for the Proposed General Plan in the impacts and analysis section of this chapter. The project impact section determined that the City of Sacramento, Sacramento Suburban Water District, Carmichael Water District, City of Folsom, Del Paso Manor, Citrus Heights Water District, Fair Oaks Water District, Orange Vale Water District, San Juan Water District, and Rio Linda Water District have sufficient water supply and infrastructure to support the additional demand, though construction impacts related to infrastructure to supply new development may occur. The project impact section determined that Fruitridge Vista Water Company, Golden States Water Company, Sacramento County Water Agency Arden Park Vista, California American Water Company, Florin County Water District, and Tokay Park Water Company may not have sufficient water supply, infrastructure, or both to serve the projected growth. Impacts are *potentially significant*.

For Zone 40, the No Project Alternative is included throughout the Project discussions above, because the water districts have planned for water needs based on the existing General Plan – which is the same as the No Project scenario, except that the No Project includes Cordova Hills. The projected No Project demand is 37,667 AFA, and combined with the cities the total Zone 40 demand is 116,884 AFA. This is well within the Zone 40 yield of 130,383 AFA. No additional supplies would be needed to serve the No Project Alternative, and impacts would be *less than significant.*

The No Project Alternative includes Easton and Cordova Hills, which are both located in mapped groundwater recharge areas. As discussed in the section on Project impacts, groundwater recharge impacts of the No Project Alternative are *significant and unavoidable*.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

The Remove Grant Line East Alternative impact analyses for the City of Sacramento, Sacramento Suburban Water District, Carmichael Water District, City of Folsom, Fruitridge Vista Water Company, Golden States Water Company, Tokay Park Water Company, California American Water Company, Del Paso Manor, Rio Linda Water District, Citrus Heights Water District, Fair Oaks Water District, Orange Vale Water District, San Juan Water District, Sacramento County Water Agency Arden Park Vista, and Florin County Water District are essentially the same as those discussed for the Proposed General Plan in the impacts and analysis section of this chapter. The project impact section determined that the City of Sacramento, Sacramento Suburban Water District, Carmichael Water District, City of Folsom, Del Paso Manor, Citrus Heights Water District, Fair Oaks Water District, Orange Vale Water District, San Juan Water District, and Rio Linda Water District have sufficient water supply and infrastructure to support the additional demand, though construction impacts related to infrastructure to supply the new development may occur. The project impact section determined that Fruitridge Vista Water Company, Golden States Water Company, Sacramento County Water Agency Arden Park Vista, California American Water Company, Florin County Water District, and Tokay Park Water Company may not have sufficient water supply, infrastructure, or both to serve the projected growth. Impacts are *potentially significant*.

The technical report for Zone 40 includes a preferred water supply scenario specific to each of the Alternatives for the Project. The technical report indicates that the total additional water demand resulting from Alternative 1 will be 18,992 ac AFA, which is 14,763 acre-feet less than the Project demand. All of the Zone 40 discussion for the Project and for the potential secondary impacts related to obtaining additional supply is applicable to the Alternative, except that the Alternative results in less water demand. This reduction in water demand would also reduce the impacts that would result from obtaining the additional water supply. The impact of this Alternative, like the Project, is *significant and unavoidable*.

The Remove Grant Line East Alternative includes Easton, and therefore will still involve *significant and unavoidable* impacts to groundwater recharge. Though still significant Easton is an approved development that would occur even without approval of this Alternative, so this Alternative does reduce impacts as much as possible.

ALTERNATIVE 2: FOCUSED GROWTH

The Focused Growth Alternative impact analyses for the City of Sacramento, Sacramento Suburban Water District, Carmichael Water District, City of Folsom, Fruitridge Vista Water Company, Golden States Water Company, Tokay Park Water Company, Del Paso Manor, Rio Linda Water District, Citrus Heights Water District, Fair Oaks Water District, Orange Vale Water District, San Juan Water District, Sacramento County Water Agency Arden Park Vista, and Florin County Water District are essentially the same as those discussed for the Proposed General Plan in the impacts and analysis section of this chapter. The project impact section determined that the City of Sacramento, Sacramento Suburban Water District, Carmichael Water District, City of Folsom, Del Paso Manor, Citrus Heights Water District, Fair Oaks Water District, Orange Vale Water District, San Juan Water District, and Rio Linda Water District have sufficient water supply and infrastructure to support the additional demand, though construction impacts related to infrastructure to supply the new development may occur. The project impact section determined that Fruitridge Vista Water Company, Golden States Water Company, Sacramento County Water Agency Arden Park Vista, Florin County Water District, and Tokay Park Water Company may not have sufficient water supply, infrastructure, or both to serve the projected growth. Impacts are *potentially significant*.

The total additional water demand to the CalAm service area for the Focused Growth Alternative is 5,137 AFA, which is 1,053 AFA more than the Project demand. All of this increase is located within the Suburban/Rosemont service area and attributed to densification due to the reduction in the footprint of the Jackson New Growth Area. Though the Focused Growth Alternative results in an increase in demand, the impact analyses for CalAm are essentially the same as those discussed for the proposed General Plan Update in the impacts and analysis section of this chapter. The impact of this Alternative is *significant and unavoidable.*

The Zone 40 technical report indicates that the total additional water demand resulting from Alternative 2 will be 17,015 AFA, which is 16,740 acre-feet less than the Project

demand. All of the Zone 40 discussion for the Project and for the potential secondary impacts related to obtaining additional supply is applicable to the Alternative, except that the Alternative results in less water demand. This reduction in water demand would also reduce the impacts that would result from obtaining the additional water supply. The impact of this Alternative, like the Project, is *significant and unavoidable*.

The Focused Growth Alternative includes Easton, and therefore will still involve *significant and unavoidable* impacts to groundwater recharge. Though still significant Easton is an approved development that would occur even without approval of this Alternative, so this Alternative does reduce impacts as much as possible.

ALTERNATIVE 3: MIXED USE

The Mixed Use Alternative impact analyses for the City of Sacramento and the Tokay Park Water Company are essentially the same as those discussed for the proposed General Plan Update. The project impact section determined that the City of Sacramento has sufficient water supply and infrastructure to support the additional demand, though construction impacts related to infrastructure to supply the new development may occur. The project impact section for the Tokay Park Water Company determined that the company may not have sufficient water supply, infrastructure, or both to serve the projected growth. Impacts are *potentially significant*.

The Mixed Use Alternative would increase the water demand to the Florin County Water District service area by 431 acre-feet during a normal year. This represents 72 acre-feet per year more than would occur under the proposed project.

The Mixed Use Alternative would increase the water demand to the Fruitridge Vista Water Company service area by 509 acre-feet during a normal year. This represents 104 AFA more than would occur under the proposed project.

For the CalAm water district the total water demand for the Mixed Use Alternative is 2,799 AFA, which is 1,289 AFA less than the Project demand. Although overall the Mixed Use Alternative results in a reduction in water demand compared to the Project, within the Antelope, Arden, Lincoln Oaks, and Parkway service areas this Alternative results in an increase in demand.

The Mixed Use Alternative would increase the water demand to the Golden States Water Company service area by 185 acre-feet during a normal year. This represents 31 AFA more than would occur under the proposed project.

The Mixed Use Alternative would increase the water demand to the Del Paso Manor Water District service area by 158 acre-feet during a normal year. This represents 117 AFA more than would occur under the proposed project.

The Mixed Use Alternative would increase the water demand to the City of Folsom service area by 481 acre-feet during a normal year. This represents 442 AFA more than would occur under the proposed project.

The Mixed Use Alternative would increase the water demand to the Carmichael Water District service area by 1,494 acre-feet during a normal year. This represents 1,103 AFA more than would occur under the proposed project.

The Mixed Use Alternative would increase the water demand to the Citrus Heights Water District service area by 291 acre-feet during a normal year. This represents 263 AFA more than would occur under the proposed project.

The Mixed Use Alternative would increase the water demand to the Fair Oaks Water District service area by 1,365 acre-feet during a normal year. This represents 1,249 AFA more than would occur under the proposed project.

The Mixed Use Alternative would increase the water demand to the Orange Vale Water District service area by 722 acre-feet during a normal year. This represents 584 AFA more than would occur under the proposed project.

The Mixed Use Alternative would increase the water demand to the San Juan Water District service area by 109 acre-feet during a normal year. This represents 87 AFA more than would occur under the proposed project.

The Mixed Use Alternative would increase the water demand to the Rio Linda Water District service area by 631 acre-feet during a normal year. This represents 505 AFA more than would occur under the proposed project.

The Mixed Use Alternative would increase the water demand to the Sacramento Suburban Water District service area by 4,719 acre-feet during a normal year. This represents 2,285 AFA more than would occur under the proposed project.

The Zone 40 technical report indicates that the total additional water demand resulting from Alternative 3 will be 3,273 AFA, which is 16,740 acre-feet less than the Project demand. All of the Zone 40 discussion for the Project and for the potential impacts related to obtaining additional supply is applicable to the Alternative, except that the Alternative results in less water demand. This reduction in water demand would also reduce the impacts that would result from obtaining the additional water supply.

The mixed use alternative results in a greater demand for a number of water purveyors than the proposed project; however, the impact analyses for the Mixed Use Alternative are essentially the same as those discussed for the proposed General Plan Update in the impacts and analysis section of this chapter. The project impact section determined that the proposed General Plan Update would result in potentially significant impacts (refer to “Impacts and Analysis” discussion). Though this alternative results in a greater demand than the proposed General Plan Update overall, impacts remain *potentially significant*. The only exception is for CalAm, because impacts to the Parkway service area remain *significant and unavoidable.*

HYDROLOGY AND WATER QUALITY

NO PROJECT

Development of existing infill areas will increase the amount of impervious surfaces, and will correspondingly increase the amount of runoff from these areas. However, in most locations infill acreage amounts to less than 1% of the total watershed area. County DWR staff indicated that, in accordance with County policies and procedures, a drainage study would be required prior to the approval of any development plan for those lands. Compliance with the results of that study, and with the Sacramento County Floodplain Management Ordinance will ensure that the No Project alternative will not substantially increase the rate or amount of surface runoff in a manner that causes flooding or that exceeds stormwater system capacity; impacts are *less than significant*.

Infill areas contain approximately 78 acres of floodplain area, which is approximately 6% of the total infill acreage identified. The presence of these floodplain areas will effect how the infill areas can develop in the future. Compliance with the Sacramento County Floodplain Management Ordinance will ensure that no residence is placed within a flood hazard area, and that people or structures will not be exposed to a significant risk involving flooding. Impacts are *less than significant*.

Each of the master planning areas that the existing General Plan includes, which is Elverta, East Antelope, Vineyard Springs, North Vineyard Station, and Florin Vineyard 'Gap', included a Drainage Master Plan. Compliance with these existing Drainage Master Plans will ensure that the No Project alternative will not substantially increase the rate or amount of surface runoff in a manner that causes flooding or that exceeds stormwater system capacity, no residence is placed within a flood hazard area, and that people or structures will not be exposed to a significant risk involving flooding; impacts from floodplains are *less than significant*.

Though the total net increase of pollutants associated with the No Project Alternative would be less than the increase associated with the Project, the Alternative still involves a *significant and unavoidable* impact to water quality because of infill development in the vicinity of impaired waterways.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

Impacts related to the Planned Communities and infill areas will be as described for the No Project Alternative, above.

Development of the Commercial Corridors is not expected to increase runoff because there will be no net expansion of the impervious area in the corridors. In fact, many existing commercial properties in the corridors have very little landscaping and redeveloping these properties and areas will introduce additional landscaping elements.

Development within the New Growth Areas included as part of this Alternative will contribute additional runoff to existing stormwater systems and floodway environments. Any future master planning proposal within the Growth Areas will require preparation of a Drainage Master Plan, pursuant to General Plan Policy SA-5. All smaller-scale development, such as infill, will be required to comply with the provisions of the Floodplain Management Ordinance and County Improvement Standards. Compliance with County Ordinances, Improvement Standards, and General Plan Policy will ensure that the Remove Grant Line East Alternative will not substantially increase the rate or amount of surface runoff in a manner that causes flooding or that exceeds stormwater system capacity; impacts are *less than significant*.

In total, the commercial corridors contain approximately 495 acres of floodplain, which is approximately 3% of the commercial corridor acreage identified. Approximately 5% of the total West of Watt New Growth Area is constrained by floodplain. Approximately 29% of the Jackson Highway Corridor is constrained by 100-year floodplain or by mining areas protected by uncertified levees. None of the development areas within the Easton New Growth Area are constrained by 100-year floodplain. The presence of these floodplain areas will effect how the areas can develop in the future. Compliance with the Sacramento County Floodplain Management Ordinance will ensure that no residence is placed within a flood hazard area, and that people or structures will not be exposed to a significant risk involving flooding. Impacts are *less than significant*.

There are numerous levees within Sacramento County. Most of the proposed Project development areas are either within areas that are not levee-protected or are in areas with certified and adequate levees. In the case of the Jackson Highway Corridor) there are existing uncertified levees, so the levee-protected area is treated as existing floodplain until improvements are made. In all these cases, existing regulations and policies are sufficient to avoid impacts. The exception is a few development areas (a Commercial Corridor) along the American River. The American River has certified 100-year levees in the affected areas, but recent legislation and General Plan policy indicates that this should ultimately be to the 200-year standard. Mitigation recommends precluding development in those affected areas until the levees are improved to the 200-year level. This will be sufficient to offset any potential impacts; with mitigation, impacts are *less than significant*.

Water quality effects of the Remove Grant Line East Alternative are identical to those described for the Project, except that the discussions for the Grant Line East area do not apply. The analyses conclude that compliance with the Sacramento County Floodplain Management Ordinance will reduce impacts, but that the there will nonetheless be a net increase of polluted runoff into impaired waterways; impacts are *significant and unavoidable*.

ALTERNATIVE 2: FOCUSED GROWTH

Impacts related to the Planned Communities and infill areas will be as described for the No Project Alternative and impacts for West of Watt, Easton, and the Commercial Corridors will be as described for the Remove Grant Line East Alternative.

Development within the Focused Growth Jackson Highway Corridor will contribute additional runoff to existing stormwater systems and floodway environments. Any future master planning proposal within the Growth Areas will require preparation of a Drainage Master Plan, pursuant to General Plan Policy SA-5. Compliance with County Ordinances, Improvement Standards, and General Plan Policy will ensure that the Remove Grant Line East Alternative will not substantially increase the rate or amount of surface runoff in a manner that causes flooding or that exceeds stormwater system capacity; impacts are *less than significant*.

The approximately 4,000-acre area of the Jackson Highway Corridor New Growth Area that would be removed under this Alternative only includes 27 acres that is constrained. Most of the land constrained by floodplains and mining are west of Excelsior Road. The effect of removing such a large amount of unconstrained land is that while the Project Jackson Highway Corridor includes an average of 29% of constrained land, the Focused Growth Jackson Highway Corridor includes an average of 43% constrained land. As with the Project, the Drainage Master Plan that will be required for development in this area could identify modifications to the flood system in the area that would reduce the floodplain extent, and increase the developable area. Even so, the likely effect of this Alternative will be a heightened need for compact development and increased average densities when compared with the Project and Remove Grant Line East Alternative. Compliance with the Sacramento County Floodplain Management Ordinance will ensure that no residence is placed within a flood hazard area, and that people or structures will not be exposed to a significant risk involving flooding. Impacts are *less than significant*.

Therefore, though on a site-specific level denser development will increase pollutant loads, on a regional level the prevention of sprawl and conservation of open space that results from dense development results in fewer impaired or affected waterways. Concentration of development also decreases the area that must be controlled for nonpoint source pollution, which makes control technologies more cost-effective to install and maintain. Therefore, although both the Focused Growth Alternative and the Project will result in a *significant and unavoidable* net increase in pollution to an impaired waterway, the Focused Growth Alternative reduces the severity of the impact on a regional level.

ALTERNATIVE 3: MIXED USE

The impacts associated with the commercial corridors, the Easton New Growth Area, and the West of Watt New Growth Area would be as described for the other Alternatives. The effect of the remaining Mixed Use Alternative strategies would be to increase densities within the existing urbanized areas, which will generally increase impervious surfaces and runoff. Rezoning RD-20 lands to RD-30 would not contribute to this increase, because multiple-family development typically takes up the same basic footprint regardless of whether it is RD-20 or RD-30. An increase in zoning density will result in smaller units and/or additional stories, not additional developed lot area. An increase in the number of granny units and rezoning RD-1 to RD-3 lands to a minimum of RD-5 would increase impervious surfaces. Compliance with County Ordinances,

Improvement Standards, and General Plan Policy will ensure that the Alternative will not substantially increase the rate or amount of surface runoff in a manner that causes flooding or that exceeds stormwater system capacity; impacts are *less than significant*.

The additional strategies of rezoning very low density properties and increased granny units may be difficult to develop in some areas specifically because there are site constraints that must be addressed, but little room on the site to use in dealing with the issue. The existence of these floodplains may make it infeasible to develop some parcels that would otherwise be good candidates for additional lots or granny units. Existing ordinances require that any new residence be placed above the 100-year floodplain. Compliance with the Sacramento County Floodplain Management Ordinance will ensure that no residence is placed within a flood hazard area, and that people or structures will not be exposed to a significant risk involving flooding. Impacts are *less than significant*.

The Mixed Use Alternative has the same impacts as the Project as it relates to development of the planned communities, Commercial Corridors, Easton, and West of Watt, the impacts of all of which are less than significant. The Mixed Use Alternative avoids the significant and unavoidable impact associated with development of the Jackson Highway Corridor. However, the Mixed Use Alternative relies even more heavily on infill, which was found in the Project analysis to result in a *significant and unavoidable* impact. However, under the Mixed Use Alternative, approximately 20,000 acres (Jackson Highway Corridor and Grant Line East) of land that would be developed by the Project would be conserved in its existing condition – and the blueprint housing needs would still be accommodated. Even though this impact is still significant, this substantially reduces the number of waterways that will be affected by development of the General Plan.

BIOLOGICAL RESOURCES

NO PROJECT

Selection of the No Project alternative would lessen wetland and riparian impacts compared to the proposed project primarily because much of the Grant Line East and all of the Jackson Highway Corridor New Growth Areas would not be slated for development. However, this impact reduction does not change the significance finding, since there remains substantial wetland and riparian loss. Thus, the level of impact of the No Project alternative would be *significant*. Likewise, given the habitats that would be impacted under this Alternative, impacts to special status species would be *significant*.

Native trees occur throughout the County and impacts to native trees associated with urban development would be variable from project to project. Given the extent of native tree resources in the existing growth areas, impacts to native trees would be *significant*.

Though the southern end of Grant Line East does not contain trees, and the planned communities contain fewer urban trees than are likely to be planted as part of development, development within the Easton area and the residential infill areas will remove substantial tree canopy. Existing General Plan policies do not recognize impacts to urban tree canopy unless the trees are native species. In addition, proposed Policy CO-165 would not be applied, and trees planted in parking lots would not benefit from additional root growth media. This would lead to shorter life spans of these trees. Therefore, the overall canopy impacts would be greater if development occurred under the existing General Plan policies. Although some new trees would be planted in commercial developments to comply with current parking lot shade policies, the overall impact to tree canopy would be *significant and unavoidable*.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

Selection of Alternative 1 would eliminate the Grant Line East New Growth Area and reduce the General Plan Update's overall impacts to wetland and riparian habitat by as much 426 acres. This alternative would be less detrimental to wetland and riparian habitat resources than the proposed project. However, this impact reduction does not change the significance finding, since there is substantial wetland and riparian loss elsewhere within the proposed project area. Thus, the level of impact would remain *significant and unavoidable*.

The elimination of the Grant Line East New Growth Area would avoid the significant impacts to listed species in this area. However, the remaining proposed growth areas (Jackson Highway Corridor, Easton Planning Area, and West of Watt) would still have a *significant and unavoidable* impact on special status species.

The elimination of the Grant Line East New Growth Area would have little effect on native tree impacts. The majority of this area's native trees (primarily cottonwoods) are located in the northern portion in old mine tailings. The impact associated with development of this area was not considered significant, and eliminating this area would not change this conclusion. The remaining proposed new growth areas (Jackson Highway Corridor, Easton Planning Area, and West of Watt) would still have a *significant and unavoidable* impact on native trees.

The Grant Line East New Growth Area does not contain a substantial amount of tree canopy, though the removal of this new growth area would eliminate the minimal tree canopy impacts that would likely occur with development in this area. However, the impacts to tree canopy in the remaining new growth areas and in the infill areas as are *significant and unavoidable*.

ALTERNATIVE 2: FOCUSED GROWTH

The Focused Jackson Highway Corridor contains 117 acres of vernal pools and swales. The pattern of development for the focused growth area is not defined; however, urbanization would likely convert much of the existing habitat to urban uses, which would potentially impact not only vernal pools but also a maximum of 43 acre of riparian

woodland and 32 acres of stream/creek habitat. The Focused Growth Alternative could substantially reduce wetland and riparian impacts from potential urban conversion by eliminating Grant Line East and a portion of the Jackson Highway Corridor (east of Excelsior Road) new growth areas. Selection of Alternative 2 could reduce the project's overall impacts to wetland and riparian habitat by 623 acres (368 acres of vernal pool/swales, 205 acres of riparian, and 50 acres of stream/creeks). This Alternative would be less detrimental to wetland and riparian habitat resources than the proposed project and Alternative 1. However, this impact reduction does not change the significance finding, since there is substantial wetland and riparian loss elsewhere within the proposed project. Thus, the level of impact would remain *significant and unavoidable*.

There is special status species habitat throughout the Jackson Highway Corridor New Growth Area. The reduction of land to be developed would decrease the number of listed species (especially vernal pool related) impacted. However, because there is habitat for listed species within the area that remains to be developed, impacts to special status species would remain *significant and unavoidable*.

There are native trees scattered throughout the Jackson Highway Corridor New Growth Area and there are riparian oak woodlands concentrated along the creeks. While the reduction of land to be developed would decrease the number of native trees removed, the vast majority of the creeks are still located in the proposed development area. With increased land use densities to meet the housing units needed, the ability to preserve these natural corridors may decrease. Impacts to native trees in the Jackson Highway Corridor New Growth Area were considered potentially significant. This impact would remain *significant and unavoidable*.

The tree canopy impacts of this alternative are less than that of the proposed project and of Alternative 1 because of the removal of the Grant Line East New Growth Area and the reduction in size of the Jackson Highway Corridor New Growth Area. However, the impacts to tree canopy in the remaining new growth areas and infill areas are *significant and unavoidable*.

ALTERNATIVE 3: MIXED USE

Removing the Grant Line East and Jackson Highway Corridor areas from the potential of urbanization substantially lessens impacts to wetland and riparian resources. Selection of Alternative 3 could reduce the General Plan Update's overall impacts to wetland and riparian habitat by approximately 815 acres, including 485 acres of vernal pools/swales, 248 acre of riparian and 82 acres of stream/creek habitat. This Alternative would be less detrimental to wetland and riparian habitat resources than the proposed project or either Alternative 1 or 2. However, this impact reduction does not change the significance finding, since wetland and riparian loss occurs elsewhere within the proposed project area. Thus the level of impact would remain *significant and unavoidable*.

This alternative would preserve a substantial amount of habitat occupied by special status species, thus reducing impacts to listed species to a greater amount than either Alternative 1 or 2. However, this impact reduction does not change the significance finding, since special status species occur elsewhere within the County. Thus the level of impact would remain *significant and unavoidable*.

Under this alternative no native trees would be impacted within the Grant Line East and Jackson Highway Corridor New Growth Areas; however, there would still be removal of a considerable number of native trees within the currently urbanized areas of the County and in the Easton Planning Area. This impact remains *significant and unavoidable*.

This alternative would eliminate the tree canopy impacts of the Jackson Highway Corridor and Grant Line East New Growth Areas, but would retain the tree canopy impacts in the West of Watt and Easton areas. In addition, infill development would be even more dense than under the Project, which will increase the amount of canopy lost and decrease the amount of land available within the urban areas to support replacement plantings. Such development would result in *significant and unavoidable* impacts to the existing tree canopy.

TRAFFIC

NO PROJECT

The No Project cumulative condition will increase traffic volumes on many roadways throughout unincorporated Sacramento County and other jurisdictions compared to the existing conditions. The No Project Alternative will result in changes in roadway operating conditions that exceed the applicable standards of significance. Mitigation for these impacts is not possible, as this is the cumulative baseline condition. This Alternative would be realized as a result of the Project being denied, and the denial of a project does not allow for the imposition of mitigation. This is a *significant and unavoidable* impact.

The No Project Alternative incorporates the Bikeway Master Plan and Pedestrian Master Plan, and includes existing General Plan policies for the planning, funding, and implementation of bicycle and pedestrian facilities to address mobility needs. As outlined in the discussion of Project impacts, the aggressive implementation of an effective bicycle and pedestrian infrastructure is also necessary to reduce projects effects on roadway level of service, congestion, delay, mobility, and air quality. When evaluated in accordance with the standards of significance, the impact of the Alternative is *less than significant.*

The No Project Alternative includes existing policies related to transportation facility planning, design, and implementation in accordance with accepted design standards

and guidelines. When evaluated in accordance with the standards of significance, the impact of the Alternative is *less than significant.*

The increases in households and employment associated with the No Project Alternative will increase the demand for transit services. However, the transit system associated with the MTP assumes future funding sources that are not guaranteed. This may result in less transit service than appropriate to support the Alternative, and/or delays in the implementation of appropriate transit service. It may not be possible to provide adequate transit services in a timely fashion due to future funding uncertainties. The impact of the Alternative is *significant and unavoidable.*

ALTERNATIVE 1: REMOVE GRANT LINE EAST

The proposed policy impacts of this Alternative are identical to those of the Project. The policies support integration of transportation with land use; continued emphasis on alternative travel modes; and adequate funding for transportation infrastructure, operation, and maintenance. Impacts are *less than significant*.

The Project and the Remove Grant Line East Alternative result in significant level of service impacts on many of the same facilities throughout unincorporated Sacramento County. Compared to the proposed General Plan Update, this alternative has fewer impacts on several roadways, including Florin Road, Grant Line Road, Stockton Boulevard, White Rock Road, Prairie City Road, Douglas Road, International Boulevard, Mather Field Road, and Zinfandel Drive. This Alternative has greater impacts on Sunrise Boulevard. The Without Grant Line East Alternative would increase traffic volumes on many roadways throughout unincorporated Sacramento County and other jurisdictions. The Alternative would result in changes in roadway operating conditions that exceed the applicable standards of significance. Despite the improvements in mobility that could be accomplished through the application of mitigation, it is considered infeasible to fully mitigate the impacts of the Alternative on roadways. This is a *significant and unavoidable* impact.

The Without Grant Line East Alternative incorporates the Bikeway Master Plan and Pedestrian Master Plan, and includes General Plan policies for the planning, funding, and implementation of bicycle and pedestrian facilities to address mobility needs. However, as outlined in the discussion of Project impacts, the aggressive implementation of an effective bicycle and pedestrian infrastructure is also necessary to reduce projects effects on roadway level of service, congestion, delay, mobility, and air quality. When evaluated in accordance with the standards of significance, the bicycle and pedestrian facilities impact of the Alternative is *less than significant.*

The Without Grant Line East Alternative incorporates policies related to transportation facility planning, design, and implementation in accordance with accepted design standards and guidelines. When evaluated in accordance with the standards of significance, the safety impact of the Alternative is *less than significant.*

The increases in households and employment associated with the Without Grant Line East Alternative will increase the demand for transit services. Although it is the intent of the Alternative to provide such services, it may not be possible to provide adequate transit services due to future funding uncertainties. The transit system associated with the MTP assumes future funding sources that are not guaranteed. This may result in less transit service than appropriate to support the Alternative, and/or delays in the implementation of appropriate transit service. The location of new growth also affects transit availability, as areas farther removed from the existing urban core will require higher levels of capital and operating funding. This Alternative removes the growth area that is farthest from the existing urban core. Nonetheless, the transit impact of the Alternative is *significant and unavoidable.*

The smart growth analysis indicates that the Grant Line East area will have the lowest non-automotive travel use and the highest vehicle miles traveled per household (49.4 VMT). The removal of this New Growth Area will have beneficial effects on the potential increases in VMT and overall trips when compared with the Project.

ALTERNATIVE 2: FOCUSED GROWTH

Impacts of this Alternative related to policies, safety, bicycle/pedestrian facilities, and transit services are identical to the impacts described above. Compared to the proposed General Plan Update, this Alternative has fewer level of service impacts on several roadways, including Florin Road, Grant Line Road, Hazel Avenue, White Rock Road, Excelsior Road, Grant Line Road, Prairie City Road, Douglas Road, Mather Field Road, and Zinfandel Drive. This Alternative has greater impacts on several roadways, including Bradshaw Road, Elk Grove-Florin Road, Waterman Road, and International Boulevard. The Focused Growth Alternative would increase traffic volumes on many roadways throughout unincorporated Sacramento County and other jurisdictions. The Alternative would result in changes in roadway operating conditions that exceed the applicable standards of significance. Despite the improvements in mobility that could be accomplished through the application of mitigation, it is considered infeasible to fully mitigate the impacts of the Alternative on roadways. This is a *significant and unavoidable* impact.

As stated, the removal of the Grant Line East area will reduce potential vehicle miles traveled and the number of new trips overall. The Jackson Highway Corridor area will have higher non-automotive travel and lower vehicle miles traveled than the existing Planned Communities (e.g. Vineyard Springs), but the increases in densities included in this Alternative will further increase these beneficial effects. The smart growth analysis indicates that increased densities and a greater mix of uses lowers vehicle miles traveled per household and the overall number of trips.

ALTERNATIVE 3: MIXED USE

Impacts of this Alternative related to policies, safety and bicycle/pedestrian facilities are identical to the impacts described for the Remove Grant Line East Alternative. Compared to the proposed General Plan Update, this Alternative has fewer impacts on

several roadways, including Bradshaw Road, Excelsior Road, Fruitridge Road, Grant Line Road, Jackson Road, Kiefer Boulevard, Waterman Road, White Rock Road, Elder Creek Road, Florin Road, Folsom Boulevard, Stockton Boulevard, Excelsior Road, Grant Line Road, Prairie City Road, Douglas Road, International Boulevard, Mather Field Road, and Zinfandel Drive. This Alternative has greater impacts on several roadways, including Antelope Road, Easton Valley Parkway, Elk Grove-Florin Road, Elkhorn Boulevard, Fair Oaks Boulevard, Greenback Lane, Hazel Avenue, Hillsdale Boulevard, Madison Avenue, Stockton Boulevard, Walerga Road, Florin Perkins Road and Riley Street. The Mixed Use Alternative would increase traffic volumes on many roadways throughout unincorporated Sacramento County and other jurisdictions. The Alternative would result in changes in roadway operating conditions that exceed the applicable standards of significance. Despite the improvements in mobility that could be accomplished through the application of mitigation, it is considered infeasible to fully mitigate the impacts of the Alternative on roadways. This is a *significant and unavoidable* impact.

The increases in households and employment associated with the Mixed Use Alternative will increase the demand for transit services. Although it is the intent of the Alternative to provide such services, it may not be possible to provide adequate transit services due to future funding uncertainties. The transit system associated with the MTP assumes future funding sources that are not guaranteed. This may result in less transit service than appropriate to support the Alternative, and/or delays in the implementation of appropriate transit service. While the Remove Grant Line East and Focused Growth Alternatives involve substantial new growth outside of the urban core, all of the Mixed Use Alternative growth will be within the urbanized area. This will result in lower levels of capital and operating funding needs than the other Alternatives. It will also concentrate development within areas that already have transit services, which will result in improvements to existing transit services and increases in transit mobility for both proposed and existing development areas. Nonetheless, it may not be possible to provide adequate transit services in a timely fashion due to future funding uncertainties. The impact of the Alternative on transit is *significant and unavoidable.*

The Mixed Use Alternative mainly concentrates growth into the areas that the smart growth analysis determined would have the lowest per-household vehicle miles traveled and the highest non-automotive trips. Although the traditional traffic modeling concludes that this Alternative will have the most substantial impacts to area roadways, the smart growth analysis results indicate that the traditional model probably does not accurately reflect the traffic reductions that will result from shorter trip lengths and increased non-automotive travel use.

NOISE

NO PROJECT

The existing Noise Element does not use a consistent noise measurement type (e.g. Ldn), contains some thresholds that are ranges rather than specific numbers, and does not provide guidance for all of the common land use types. The No Project Alternative would retain these existing problems. There would continue to be no noise standards for new non-transportation development affecting non-residential uses, and no interior noise standards for new residential development exposed to non-transportation noise. Though the identified issues would be removed by the adoption of the proposed Project policies, retaining them as part of the No Project Alternative would not cause significant impacts; impacts are *less than significant*.

Under the No Project Alternative, the only new growth would consist of buildout of existing areas designated for urban uses that are undeveloped or underdeveloped**, or buildout of Cordova Hills, which is not within any airport noise contour**. Existing General Plan land use designations around Mather Field are compatible. Existing designations in the vicinity of McClellan Airpark do include incompatible uses, and as a consequence development in these areas has been restricted. That would continue to be the case in the No Project Alternative. The No Project Alternative includes less development within the vicinity of airports than does the Project. Even so, in either the No Project or the No Project condition, compliance with the existing CLUP in effect at the time development is proposed will ensure *less than significant* impacts.

In the No Project condition, many of the areas that will experience lower vehicle noise volumes when compared to the Project are in undeveloped areas or are developed with more rural residential uses. Therefore, the No Project Alternative does not substantially reduce the number of people and environments that will be exposed to vehicle noise levels that exceed General Plan policy, when compared to the Project. The areas most affected by vehicle noise in the No Project condition will be the already urbanized portions of the County where it is infeasible to offset many impacts. The increases in noise caused by the No Project Alternative will expose existing sensitive receptors to noise levels that exceed both existing and proposed General Plan policy. As there is no reasonable or feasible mitigation to offset this impact, No Project impacts are *significant and unavoidable*.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

There are no policy differences between the Project and the Remove Grant Line East Alternative. Therefore, the policy impacts of this Alternative are identical to those discussed in the Project impacts and analysis section. Mitigation is required to reduce impacts to *less-than-significant* levels (see Mitigation Measure NO-1).

The Grant Line East New Growth Area, which is removed as part of the Remove Grant Line East Alternative, is not within any identified airport noise contours. Therefore, the

impacts of this Alternative are identical to those discussed in the Project impacts and analysis section. No mitigation is required, and impacts are *less than significant*.

The same conclusion reached for the Project and for the No Project Alternative applies to the Remove Grant Line East Alternative related to vehicle noise. New development will be required to include noise attenuation features to achieve compliance with noise standards. However, the increases in noise caused by the Alternative will expose existing sensitive receptors to noise levels that exceed both existing and proposed General Plan policy. As there is no reasonable or feasible mitigation to offset this impact, Remove Grant Line East impacts are *significant and unavoidable*.

ALTERNATIVE 2: FOCUSED GROWTH

There are no policy differences between the Project and the Focused Growth Alternative. Therefore, the policy impacts of this Alternative are identical to those discussed in the Project impacts and analysis section. Mitigation is required to reduce impacts to *less-than-significant* levels (see Mitigation Measure NO-1).

The Grant Line East New Growth Area and the portion of the Jackson Highway Corridor New Growth Area which are removed as part of the Focused Growth Alternative are not within any identified airport noise contours. Therefore, the impacts of this Alternative are identical to those discussed in the Project impacts and analysis section. No mitigation is required, and impacts are *less than significant*.

Except in the vicinity of the Grant Line East and Jackson Highway Corridor New Growth Areas, the vehicle noise impacts of the Focused Growth Alternative are similar to the proposed Project. The noise volumes resulting from the No Project, Remove Grant Line East Alternative, and the Focused Growth Alternative along Grant Line Road are very similar because all involve less or no growth in the Grant Line East New Growth Area. For the Focused Growth Alternative, the most substantially different area is along Jackson Highway. The Focused Growth Alternative will result in slightly higher noise volumes along some segments of Jackson Highway than the Project. The reason for this is that the Alternative makes the Jackson Highway Corridor New Growth Area smaller, but keeps the same number of units – which increases density. This increased density results in more trips traveling along this particular segment of roadway.

The same conclusion related to vehicle noise reached for the Project and for the No Project Alternative applies to the Focused Growth Alternative. New development will be required to include noise attenuation features to achieve compliance with noise standards. However, the increases in noise caused by the Alternative will expose existing sensitive receptors to noise levels that exceed both existing and proposed General Plan policy. As there is no reasonable or feasible mitigation to offset this impact, Focused Growth Alternative impacts are *significant and unavoidable*.

ALTERNATIVE 3: MIXED USE

IMPACT: PROPOSED POLICIES

There are no policy differences between the Project and the Mixed Use Alternative. Therefore, the policy impacts of this Alternative are identical to those discussed in the Project impacts and analysis section. Mitigation is required to reduce impacts to *less-than-significant* levels (see Mitigation Measure NO-1).

There are no identified airport noise contours within the Grant Line East New Growth Area, so the removal of this area has no affect. The Jackson Highway Corridor New Growth Area includes 1,475 acres within the Master Plan noise contour of Mather Field and 2,250 acres within the theoretic capacity contours. With the removal of the Jackson Highway Corridor New Growth Area, these noise contours would no longer affect the Alternative. In other respects the impacts of this Alternative are identical to those discussed in the Project impacts and analysis section. No mitigation is required, and impacts are *less than significant*.

The overall pattern of vehicle noise resulting from the analysis indicates that the Project and Mixed Use Alternative noise contours will remain very similar in the urbanized areas north of the American River, but the Mixed Use Alternative noise contours will be much smaller in less urbanized areas south of the American River. The same conclusion reached for the Project and for the No Project Alternative applies to the Mixed Use Alternative. New development will be required to include noise attenuation features to achieve compliance with noise standards. However, the increases in noise caused by the Alternative will expose existing sensitive receptors to noise levels that exceed both existing and proposed General Plan policy. As there is no reasonable or feasible mitigation to offset this impact, Mixed Use Alternative impacts are *significant and unavoidable*.

AIR QUALITY

NO PROJECT

Under the No Project Alternative, impacts would be similar to those evaluated for the Project. The SMAQMD requires the implementation of measures to reduce construction-related emissions. These include measures to reduce NO_X and visible emissions from off-road diesel powered equipment, the preparation and submission of an off-road construction inventory, and payment of offsite mitigation offset fees if construction emissions are in excess of SMAQMD construction-threshold levels. Compliance with these required measures would reduce construction-related ozone precursor emissions and diesel particulate emissions to a *less-than-significant* level, but for larger projects the fugitive dust emissions will remain *significant and unavoidable*.

Compliance with the requirements of the Air Resources' Air Toxics Control Measures (ATCM) to control exposure to asbestos from construction, grading, quarrying, and surface mining operations would offset any potential impacts resulting associated with NOA. Consequently, this impact is considered *less than significant*.

Implementation the No Project Alternative would result in operational emissions in excess of SMAQMD threshold levels. As with the Project, even with the preparation of Air Quality Management Plan on a project-level basis and the County's General Plan policies aimed at promoting smart growth, reducing vehicle trips and trip lengths, and improving air quality, it is anticipated that emissions from development anticipated under the No Project would still exceed SMAQMD threshold levels. Consequently, this impact is considered *significant and unavoidable*.

No violations of the state or federal 1- or 8-hour CO standards are anticipated in the project area under cumulative-year conditions. Due to continuing improvements in engine technology due to relatively stricter emission control standards and the retirement of older, higher-emitting vehicles, it is anticipated that vehicle emissions in future years will be lower than current years. As a result, although roadway volumes increase in future years, intersection congestion and volumes are not sufficient to result in elevated CO levels. Therefore, the impact of No Project Alternative traffic conditions on ambient CO levels in the project area is considered *less than significant*

The Final Environmental Impact Report for the Sacramento International Airport found that health risks ranged from 0 to 0.64 in 1 million for the maximum exposed individual receptors analyzed (i.e., residence, school, and offsite worker). These values are below the threshold of 10 in 1 million. Consequently, this impact is considered *less than significant*.

Diesel exhaust from the Roseville Rail Yards, emissions from roadways, and emissions from other toxic air contaminant sources could result in adverse health risks to nearby sensitive receptors. General Plan Policy AQ-3 would help to reduce this impact, but not to a less-than-significant level. Consequently, this impact is considered *significant and unavoidable*.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

The impacts of this Alternative are the same as described above for the No Project. Refer to the Air Quality Chapter for tables that include detailed emissions.

ALTERNATIVE 2: FOCUSED GROWTH

The impacts of this Alternative are the same as described above for the No Project. Refer to the Air Quality Chapter for tables that include detailed emissions.

ALTERNATIVE 3: MIXED USE

The impacts of this Alternative are the same as described above for the No Project. Refer to the Air Quality Chapter for tables that include detailed emissions.

CLIMATE CHANGE

NO PROJECT

The No Project Alternative will emit 12.4 MMT each year, once full buildout is reached. This is a 5.9 MMT increase in emissions above baseline levels and is 6.9 MMT above the 1990 levels required by AB 32. The No Project Alternative would result in the least emissions of all the Alternatives.

Though this Alternative would result in the least emissions originating in the County, it is also inconsistent with the Blueprint. The Blueprint assumes, reasonably, that population growth will continue in California and the region over the long term, and lays out a more optimal growth pattern for that growth. The unincorporated Sacramento County area was allocated approximately 100,000 new dwelling units by 2030. If the No Project Alternative is chosen, the County will only be able to accommodate approximately half of this amount. The remaining growth will need to be accommodated within other areas of the County, perhaps leading to greater sprawl effects and increases in vehicle miles traveled when compared with the Blueprint scenario. Therefore, even though this Alternative results in the least County emissions, it is likely that it would result in higher regional emissions.

The Project discussion of climate change impacts also applies to this Alternative. Though the mitigation recommended for the Project should apply to the No Project Alternative, adoption of the No Project Alternative is accomplished via denial of the Project – mitigation cannot be applied to the No Project Alternative. Impacts would be *significant and unavoidable* both because of the uncertainties inherent in the analysis and because the County would not be taking local action on climate change.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

The Remove Grant Line East Alternative will emit 12.9 MMT each year, once full buildout is reached. This is a 6.4 MMT increase in emissions above baseline levels and is 7.4 MMT above the 1990 levels required by AB 32. The Remove Grant Line East Alternative would result in the most emissions of all the Alternatives, but 0.4 MMT less than the Project.

This Alternative results in less emissions than the Project, and is also more consistent with the Blueprint. Though the Blueprint does show eventual growth within the Grant Line East area, it is not shown **within the 2035 Metropolitan Transportation Plan. From this it can be concluded that the Blueprint does not anticipate development**

within Grant Line East until between 2035 and ~~until~~ the year 2050. As discussed in the Land Use chapter discussion of smart growth, retaining the Grant Line East New Growth Area makes the Project susceptible to leapfrog and sprawl development. Allocating more land than is necessary may also result in lower housing densities (which is associated with higher vehicle miles traveled) and/or in growth that the Blueprint allocated to other areas occurring in the east County instead. Removing the Grant Line East New Growth Area reduces these potential effects, and makes the project more consistent with the Blueprint. Therefore, this Alternative both results in fewer County emissions than the Project, and also may result in lower regional emissions than the Project.

The Project discussion of climate change impacts also applies to this Alternative. The mitigation recommended for the Project should apply to the Remove Grant Line East Alternative. Impacts would remain *significant and unavoidable* because of the uncertainties inherent in the analysis.

ALTERNATIVE 2: FOCUSED GROWTH

The Focused Growth Alternative will emit 12.9 MMT each year, once full buildout is reached. This is a 6.3 MMT increase in emissions above baseline levels and is 7.3 MMT above the 1990 levels required by AB 32. The Focused Growth Alternative results in 0.4 MMT fewer emissions than the Project.

This Alternative results in less emissions than the Project and is also consistent with the Blueprint. The Alternative accommodates the approximate amount of housing allocated to Sacramento County, and shows 2030 growth in approximately the same areas as the Blueprint. Therefore, this Alternative results in fewer County emissions than the Project, and also will result in lower regional emissions than the Project.

The Project discussion of climate change impacts also applies to this Alternative. The mitigation recommended for the Project should apply to the Focused Growth Alternative. Impacts would remain *significant and unavoidable* because of the uncertainties inherent in the analysis.

ALTERNATIVE 3: MIXED USE

The Mixed Use Alternative will emit 12.7 MMT each year, once full buildout is reached. This is a 6.1 MMT increase in emissions above baseline levels and is 7.1 MMT above the 1990 levels required by AB 32. Aside from the No Project Alternative the Mixed Use Alternative results in the least emissions, and emits 0.6 MMT less than the Project.

This Alternative results in less emissions than the Project and is consistent with the Blueprint housing allocation, though not with the areas designated for growth. The Blueprint shows a portion of the Jackson Highway Corridor developing in the 2030 time horizon, and this Alternative eliminates all of that growth area. Even so, this inconsistency is not likely to result in higher regional emissions, because the appropriate housing allocation is still accommodated. According to the smart growth analysis in the

traffic study, the Mixed Use Alternative would also result in the lowest vehicle miles traveled because it would have the highest densities, access to non-vehicular travel modes, and highest mix of uses. Based on that analysis, the Alternative would result in approximately 230,000 fewer vehicle miles traveled *every day*, just as a result of allocating growth into the urban core instead of into greenfield areas. Since traditional traffic modeling does not capture such reductions, the estimated 12.7 MMT of emissions for this Alternative is likely to be far lower.

The Project discussion of climate change impacts also applies to this Alternative. The mitigation recommended for the Project should apply to the Mixed Use Alternative. Impacts would remain *significant and unavoidable* because of the uncertainties inherent in the analysis.

GEOLOGY AND SOILS

NO PROJECT

The impacts of the existing General Plan would be largely the same as those described for the Project because of the existing regulatory framework that guides development within Sacramento County. The existing framework currently regulates development and ensures that development is constructed to standards to account for possible soil and geologic hazards as well as soil resources. The No Project Alternative would result in less potential for a loss of mineral resources, because it does not include the Jackson Highway Corridor New Growth Area. No Project impacts related to geology and soils are *less than significant* with respect to seismicity, erosion, unstable soils, expansive soils, and mineral resources.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

The impacts of the existing General Plan would be largely the same as those described for the Project because of the existing regulatory framework that guides development within Sacramento County. The existing framework currently regulates development and ensures that development is constructed to standards to account for possible soil and geologic hazards as well as soil resources. Remove Grant Line East impacts related to geology and soils are *less than significant* with respect to seismicity, erosion, unstable soils, and expansive soils. Like the Project, impacts related to the loss of mineral resources are *significant and unavoidable*.

ALTERNATIVE 2: FOCUSED GROWTH

The impacts of the existing General Plan would be largely the same as those described for the Project because of the existing regulatory framework that guides development within Sacramento County. The existing framework currently regulates development and ensures that development is constructed to standards to account for possible soil

and geologic hazards as well as soil resources. Focused Growth impacts related to geology and soils are *less than significant* with respect to seismicity, erosion, unstable soils, and expansive soils.

The Alternative would involve less potential for loss of mineral resources than the Project, because fewer designated Mineral Resource Areas are within the smaller Jackson Highway Corridor, it would still result in more potential for loss than the No Project Alternative. Like the Project, impacts related to the loss of mineral resources are *significant and unavoidable*.

ALTERNATIVE 3: MIXED USE

The impacts of the existing General Plan would be largely the same as those described for the Project because of the existing regulatory framework that guides development within Sacramento County. The existing framework currently regulates development and ensures that development is constructed to standards to account for possible soil and geologic hazards as well as soil resources. Like the No Project Alternative, the Mixed Use Alternative results in less potential for loss of mineral resources, because it does not include the Jackson Highway Corridor. Mixed Use Alternative impacts related to geology and soils are *less than significant* with respect to seismicity, erosion, unstable soils, expansive soils, and mineral resources.

HAZARDOUS MATERIALS

NO PROJECT

The No Project Alternative would include the least amount of intense development within areas known to contain active cleanup sites. It would include the Cordova Hills project within Grant Line East, where there is no known contamination. It would also include Easton, which was removed from a Superfund site and requires mitigation to advise construction workers of the presence of arsenic in the soil. The No Project Alternative does not include the Commercial Corridors, which are the areas within the Project that contain the largest number of active cleanup sites. Despite the fact that the No Project would include less development within the vicinity of cleanup sites, the conclusion for the Project and for the No Project is the same: existing regulations and programs will ensure that development in the New Growth Areas does not expose people to a significant hazard associated with proximity to a contaminated site. Impacts are *less than significant*.

Demolition or renovation of existing older structures has the potential to expose people to asbestos and lead. Existing environmental regulations and procedures exist to prevent significant health hazards. Environmental impacts resulting from asbestos and lead exposure are *less than significant* with the adherence to existing regulations and laws.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

The same discussion provided for the Project applies to this Alternative, with respect to all but the Grant Line East area. Easton was removed from a Superfund site and requires mitigation to advise construction workers of the presence of arsenic in the soil, the Jackson Highway Corridor contains two known cleanup sites and may also include contamination associated with past agricultural use, and there are many cleanup sites within the Commercial Corridors. The West of Watt area does not contain any known contaminated sites. The residential infill parcels do not contain any cleanup sites, but some may be near such sites. Since all of these parcels will rely on public water, rather than private wells, the cleanup sites will not adversely affect the infill parcels. Though this Alternative removes the Grant Line East New Growth Area, that area does not contain any cleanup sites, and has a low potential for contamination associated with agricultural activities. Existing regulations and programs will ensure that development in the New Growth Areas does not expose people to a significant hazard associated with proximity to a contaminated site. Impacts are *less than significant*.

Demolition or renovation of existing older structures has the potential to expose people to asbestos and lead. Existing environmental regulations and procedures exist to prevent significant health hazards. Environmental impacts resulting from asbestos and lead exposure are *less than significant* with the adherence to existing regulations and laws.

ALTERNATIVE 2: FOCUSED GROWTH

The same discussion noted above in the Remove Grant Line East Alternative applies here. Though the Jackson Highway Corridor is reduced in size, the two open cleanup sites are in the northwestern portion, which is still included in the reduced footprint. Existing regulations and programs will ensure that development in the New Growth Areas does not expose people to a significant hazard associated with proximity to a contaminated site. Impacts are *less than significant*.

Demolition or renovation of existing older structures has the potential to expose people to asbestos and lead. Existing environmental regulations and procedures exist to prevent significant health hazards. Environmental impacts resulting from asbestos and lead exposure are *less than significant* with the adherence to existing regulations and laws.

ALTERNATIVE 3: MIXED USE

The discussions above related to the West of Watt, Easton, and the Commercial Corridors apply to this Alternative. Existing regulations and programs will ensure that development in the New Growth Areas does not expose people to a significant hazard associated with proximity to a contaminated site. Impacts are *less than significant*.

Demolition or renovation of existing older structures has the potential to expose people to asbestos and lead. Existing environmental regulations and procedures exist to

prevent significant health hazards. Environmental impacts resulting from asbestos and lead exposure are *less than significant* with the adherence to existing regulations and laws.

CULTURAL RESOURCES

NO PROJECT

The No Project Alternative has the potential to impact cultural resources and paleontological resources with build-out of the 1993 General Plan and all reasonably foreseeable projects, including Easton and Cordova Hills. Although most projects associated with the 1993 General Plan would undergo environmental review consistent with CEQA, there are potential impacts that could occur under the No Project Alternative. Additionally, under the No Project Alternative, beneficial cultural resources policies proposed in the General Plan update would not be adopted. The current General Plan does not address paleontological resources at all. Impacts to cultural and paleontological resources as a result of the No Project Alternative are *significant and unavoidable*.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

Under Alternative 1, the Grant Line East area would be removed as a growth area. A substantial portion of the Grant Line East area is covered with a large and important historic resource: the American River Placer Mining District. Additionally, the Grant Line East area has abundant natural resources that were utilized by prehistoric, ethnohistoric and historic populations for subsistence. These natural resources paired with the historic mining use of the area, make this area particularly sensitive for cultural resources. Removal of the Grant Line East area would result in reduced impacts to cultural resources; however due to the nebulous nature of future build-out and the fact that inadvertent impacts can occur to cultural resources, the overall impact of the remaining General Plan would remain *significant and unavoidable*.

Though not abundant, the Grant Line East area does contain the Riverbank formation, which has yielded paleontological resources within the County. Removal of the Grant Line East area could potentially result in reduced impacts to paleontological resources; however due to the nebulous nature of future build-out and the fact that inadvertent impacts can occur to paleontological resources, the overall impact of the remaining General Plan would remain *significant and unavoidable*.

ALTERNATIVE 2: FOCUSED GROWTH

Under Alternative 2, the Grant Line East area would be removed as well as approximately 4,000 acres of the Jackson Highway Corridor area. See Alternative 1 for impacts associated with removing the Grant Line East area as a growth area. Removal

of 4,000 acres of land from the Jackson Highway Corridor would likely result in an even larger reduction of impacts to cultural resources within the County over Alternative 1; however, as stated above the overall impact of the General Plan, due to the nature of impacts to cultural resources, would remain *significant and unavoidable*.

Removal of 4,000 acres of land from the Jackson Highway Corridor would likely result in an even larger reduction of impacts to paleontological resources within the County over Alternative 1 due to the fact that much of the Jackson Highway Corridor is made up of the Pleistocene aged Riverbank formation, which is known to produce vertebrate fossils within the County. Ultimately, the overall impact of the General Plan, due to the nature of impacts to paleontological resources, would remain *significant and unavoidable*.

ALTERNATIVE 3: MIXED USE

Under Alternative 3, the Grant Line East and Jackson Corridor areas are no longer considered as new growth areas and the existing urban area would be targeted for dense mixed use projects to accommodate growth needs. Alternative 3 would likely result in a substantial reduction of impacts to the number of cultural resources sites impacted in the planning period over the other proposed alternatives. As noted previously, although development would be focused in an already urban to semi-urban area, cultural resources do occur within these areas. With increased densification additional historic structures and archaeological sites would likely be demolished and destroyed. Ultimately, this alternative would reduce cumulative impacts by reducing the total count of resources that could likely be impacted but the alternative could still result in *significant and unavoidable* impacts to cultural resources.

Alternative 3 would likely result in a substantial reduction of impacts to the number of paleontological resources sites impacted in the planning period over the other proposed alternatives. Alternative 3 would focus growth in areas of the County that have been subjected to greater disturbance of the underlying formations, and would not focus growth in a large expanse of the Riverbank formation, located within the Jackson Highway Corridor. Ultimately, this alternative would reduce cumulative impacts by reducing the total count of resources that would likely be impacted but the alternative could still result in *significant and unavoidable* impacts to paleontological resources.

AESTHETICS

NO PROJECT

The No Project Alternative includes the buildout of the 1993 General Plan and the Easton and Cordova Hills projects. Buildout of the 1993 General Plan will result in development within existing urbanized environments, and will be consistent with those environments. Buildout of the 1993 General Plan is not expected to substantially damage scenic resources, alter existing views and visual quality, substantially damage

nighttime views, or introduce substantial new sources of glare. The Easton project was determined to be consistent with adjacent development patterns and design guidelines for glare and lighting, and the site visual quality is already impaired by existing industrial development. The impacts of Easton were determined to be less than significant given the project's consistency with the existing character in the vicinity. The Cordova Hills project is located within the Grant Line East New Growth Area in an area that is at present rural in character. For Cordova Hills, the visual character and quality of this undeveloped open space will be substantially degraded, and an area that is currently very dark at night and without any sources of glare will have substantial sources of nighttime lighting and glare introduced. Impacts are considered *significant and unavoidable*.

ALTERNATIVE 1: REMOVE GRANT LINE EAST

Development within the existing urbanized areas of the County will not result in substantial impacts related to visual quality, or glare and nighttime lighting. The impacts of infill, the West of Watt area, and the Commercial Corridors are less than significant. Easton impacts are less than significant, as described in the No Project section above. The Grant Line East New Growth Area would result in significant and unavoidable impacts related to visual quality, and sources of glare and nighttime lighting for the same reasons described for the reasonably foreseeable Cordova Hills project. The removal of this growth area from the Project eliminates this impact; however, this alternative still includes the Jackson Highway Corridor New Growth Area. Development of the Jackson Highway Corridor would substantially alter its rural nature resulting in a significant and unavoidable impact. Though this Alternative reduces impacts by eliminating a new growth area that is presently rural in character, overall impacts remain *significant and unavoidable*.

ALTERNATIVE 2: FOCUSED GROWTH

As stated, the impacts of infill, the West of Watt area, and the Commercial Corridors are less than significant. Easton impacts are less than significant, as described in the No Project section above. Though this Alternative removed Grant Line East and a portion of the Jackson Highway Corridor, the Alternative will still substantially alter the rural character of the smaller Jackson Highway Corridor. This Alternative will reduce the amount of area and people affected by this *significant and unavoidable* impact.

ALTERNATIVE 3: MIXED USE

The Mixed Use Alternative eliminates all of the areas in which a significant and unavoidable impact would occur: the Grant Line East and Jackson Highway Corridor New Growth Areas. As stated, the impacts of infill, the West of Watt area, and the Commercial Corridors are less than significant. Easton impacts are less than significant, as described in the No Project section above. This Alternative will not substantially degrade visual quality, or introduce substantial new sources of glare or nighttime lighting; impacts are *less than significant*.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The No Project Alternative involves the least amount of development, and as a result is the environmentally superior Alternative. The No Project Alternative has less than significant impacts for the following topical areas in which the Project has significant and unavoidable impacts: land use, sewer service, water supply, geology and soils. The only topical area in which the No Project impacts are greater than the Project impacts is climate change, because in the No Project scenario there would be no Climate Action Plan. CEQA Guidelines section 15126.6(e)(2) indicates that when the environmentally superior Alternative is the No Project, another superior Alternative must be identified. Excluding the No Project, the environmentally superior Alternative is the Mixed Use Alternative.

Although the Mixed Use Alternative results in many of the same significant and unavoidable impact determinations as the Project, the severity of the impact is still reduced. For instance, in the water supply analysis the Mixed Use Alternative requires approximately 3,200 acre-feet per year of additional water, the Project requires 33,700 acre-feet per year of additional water. Similarly, the Mixed Use Alternative will increase existing wastewater flows to 167.9 million gallons per day (for treatment), while the Project will increase flows to 192.9 million gallons per day (for treatment). In other cases, the differences in impacts cannot be as clearly quantified, such as with biological resources impacts. The Mixed Use Alternative will still result in the loss of protected habitats, impacts to protected species, and the loss of tree resources, but these losses will be limited to the more urbanized environment where the quality and quantity of resources is much lower. In the case of transportation impacts, the Mixed Use Alternative results in a substantial number of roadway impacts, but the geographical area where these impacts will occur is much smaller. This Alternative also uses a growth strategy that will reduce the average vehicle miles traveled in the County, and increase the success of non-automotive travel. These topical areas above serve as examples to show that even where the Mixed Use Alternative still results in significant and unavoidable impacts, those impacts are more restricted in scope and severity than under the Project.

From least impacts to most, the order of scenarios analyzed in this EIR is No Project, Mixed Use, Focused Growth, Remove Grant Line East, and Project/Arterial Downgrade/Thoroughfare Downgrade. The differences between the other Alternatives and the Project follow the same pattern as the Mixed Use versus Project analysis: while the Alternatives still result in significant and unavoidable impacts, those impacts are more restricted in scope and severity.

Table ALT-1 provides a ranking list showing where each Alternative is ranked (1 – 4 from best to worst) for each topical chapter.

Table ALT-1 Rank from Most (1) to Least (4) Environmentally Superior

	Rank 1	Rank 2	Rank 3	Rank 4
Land Use				
No Project	X			
Remove Grant Line East				X
Focused Growth			X	
Mixed Use		X		
Public Services				
No Project	X			
Remove Grant Line East				X
Focused Growth			X	
Mixed Use		X		
Sewer Service				
No Project	X			
Remove Grant Line East				X
Focused Growth			X	
Mixed Use		X		
Water Supply				
No Project	X			
Remove Grant Line East				X
Focused Growth			X	
Mixed Use		X		
Hydrology				
No Project	X			
Remove Grant Line East				X
Focused Growth			X	
Mixed Use		X		
Biological Resources				
No Project	X			
Remove Grant Line East				X
Focused Growth			X	
Mixed Use		X		

	Rank 1	Rank 2	Rank 3	Rank 4
Noise				
No Project	X			
Remove Grant Line East				X
Focused Growth			X	
Mixed Use		X		
Air Quality				
No Project	X			
Remove Grant Line East				X
Focused Growth			X	
Mixed Use		X		
Climate Change				
No Project				X
Remove Grant Line East			X	
Focused Growth		X		
Mixed Use	X			
Geology and Soils				
No Project	X			
Remove Grant Line East				X
Focused Growth			X	
Mixed Use		X		
Hazardous Materials				
No Project	X			
Remove Grant Line East				X
Focused Growth			X	
Mixed Use		X		
Cultural Resources				
No Project	X			
Remove Grant Line East				X
Focused Growth			X	
Mixed Use		X		
Aesthetics				
No Project	X			

	Rank 1	Rank 2	Rank 3	Rank 4
Remove Grant Line East				X
Focused Growth			X	
Mixed Use		X		

19 GLOSSARY OF ACRONYMS / ABBREVIATIONS

ADT	average daily trips
8-Hour Ozone Plan	Sacramento Regional Nonattainment Area 8-Hour Ozone Rate-of-Progress Plan
AB	Assembly Bill
Air Resources	California Air Resources Board
ANSI	American National Standards Institute
APCO	Air Pollution Control Officer
AQAP	1991 Air Quality Attainment Plan
AQMP	Air Quality Mitigation Plan
ARA	Aggregate Resource Area
Army Corps	United States Army Corps of Engineers
AST	Aboveground Storage Tank
AT	Averaging time
ATCM	Asbestos Airborne Toxic Control Measure
ATCMs	Airborne Toxic Control Measures
BACT	Best Available Control Technology
BMP	Best Management Practices
Bureau of Reclamation	United States Bureau of Reclamation
C6H6	benzene
CAA	federal Clean Air Act
CAAA	Clean Air Act Amendments of 1990
CAAQS	California Ambient Air Quality Standards
Cal EPA	California Environmental Protection Agency
California ESA	California Endangered Species Act
Caltrans	California Department of Transportation
CAP	1994 Sacramento Regional Clean Air Plan for the 1-Hour National Ozone Standard
CBC	California Building Code
CCAA	California Clean Air Act
CCAs	community choice aggregators
CEC	California Energy Commission

CEQA	California Environmental Quality Act
cfs	Cubic feet per second
CGS	California Geological Survey
CH4	methane
CHP	Combined Heat and Power
CLUP	Comprehensive Land Use Plan
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
CPUC	California Public Utilities Commission
dB	Decibel(s)
dbh	Diameter at breast height
DBR	Daily breathing rate
DERA	Department of Environmental Review and Assessment
Diversity Database	California Natural Diversity Database
DOD	Department of Defense
Draft EIR	Draft Environmental Impact Report
DTSC	Department of Toxic Substances Control
ED	Exposure duration
EF	Exposure frequency
EIR	Environmental Impact Report
EMD	Sacramento County Environmental Management Department
EPA	U.S. Environmental Protection Agency
ESPs	energy service providers
Federal ESA	Federal Endangered Species Act
FEMA	Federal Emergency Management Agency
Final EIR	Final Environmental Impact Report
Fish and Game	California Department of Fish and Game
Fish and Wildlife	United States Fish and Wildlife Service
Flood Control Agency	Sacramento Area Flood Control Agency
GHGs	greenhouse gases
HCFCs	halogenated fluorocarbons

HFCs	hydrofluorocarbons
IOUs	investor-owned utilities
IPCC	Intergovernmental Panel on Climate Change
LCFS	Low Carbon Fuel Standard
L_{dn}	Day-night noise level
L_{eq}	Equivalent sound level
L_{max}	A-weighted maximum sound level
LOS	Level of service
LUST	Leaking Underground Storage Tank
mgd	Million gallons per day
MMI Scale	Modified Mercalli Intensity Scale
MMT	million metric tons
$MMTCO_2e$	million metric tons of carbon dioxide equivalents
MOU	memorandum of understanding
mpg	miles per gallon
mph	miles per hour
MRA	Mineral Resource Area
MRZ	Mineral Resource Zone
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO_2	nitrogen dioxide
NOA	Naturally Occurring Asbestos
NOAA Fisheries	National Oceanic and Atmospheric Administration, Fisheries
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural resource Conservation District
O_3	ozone
OPR	Office of Planning and Research
Pb	lead
PCAPCD	Placer County Air Pollution Control District
PCBs	polychlorinated biphenyls
PFCs	perfluorinated carbons
PG&E	Pacific Gas and Electric Company

PM_{10}	Particulate matter of ≤10 microns in diameter
$PM_{2.5}$	particulate matter ≤ 2.5 microns in diameter
RCD	Resource Conservation District
Regional Sanitation	Sacramento County Regional Sanitation District
Regional Water Board	Central Valley Regional Water Quality Control Board
Register	California Register of Historic Places
Resource Conservation Service	National Resource Conservation Service
RFP	Reasonable Further Progress
ROG	reactive organic gases
RPS	Renewable Portfolio Standard
SacMetro	Sacramento Metropolitan Fire District
SACOG	Sacramento Area Council of Governments
Sacramento Regional WTP	Sacramento Regional Wastewater Treatment Plant
Sewer District	Sacramento Area Sewer District
SHRA	Sacramento Housing and Redevelopment Agency
SIPs	State Implementation Plans
SLIC	Spills, leaks, investigation, and cleanup sites
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMARA	Surface Mining and Reclamation Act
SMUD	Sacramento Municipal Utilities District
SO_2	sulfur dioxide
SPA	Special Planning Area
State Water Resources	State Water Resources Control Board
SVAB	Sacramento Valley Air Basin
SWPPP	Stormwater Pollution Prevention Plan
TAC	toxic air contaminant
TCMs	traffic control measures
TMDL	total maximum daily load
TOG	total organic gases
TRUs	transport refrigeration units

UBC	Uniform Building Code
UPA	Urban Policy Area
URBEMIS	Urban Emissions Model
US EPA	United States Environmental Protection Agency
USB	Urban Services Boundary
USDA	United States Department of Agriculture
USGS	United States Geological Survey
UST	Underground Storage Tank
v/c	volume-to-capacity
VELB	Valley Elderberry Longhorn Beetle
VMT	vehicle miles traveled
Water Agency	Sacramento County Water Agency

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