4.6 – Noise

INTRODUCTION

This section discusses and analyzes the ambient noise characteristics of the Redevelopment Project Area and the surrounding area. The information provided in this section is based on the Sacramento County General Plan (1993), the City of Rancho Cordova Draft General Plan (2006), and a technical assessment by Bollard Acoustical Consultants, Inc.

4.6.1 SETTING

BACKGROUND AND TERMINOLOGY

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and hence are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure), as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers is a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in levels (dB) correspond closely to human perception of relative loudness. **Table 4.6-1** shows examples of noise levels for several common noise sources and environments.

TABLE 4.6-1
TYPICAL A-WEIGHTED SOUND LEVELS OF COMMON NOISE SOURCES

Decibels	Description
130	Threshold of pain
120	Jet aircraft take-off at 100 feet
110	Riveting machine at operators position
100	Shotgun at 200 feet
90	Bulldozer at 50 feet
80	Diesel locomotive at 300 feet
70	Commercial jet aircraft interior during flight
60	Normal conversation speech at 5 - 10 feet
50	Open office background level
40	Background level within a residence
30	Soft whisper at 2 feet
20	Interior of recording studio

EFFECTS OF NOISE ON PEOPLE

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels,

perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels in decibels.

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}) over a given time period (usually one hour). The L_{eq} is the foundation of the Day-Night Average Level noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The Day-night Average Level (L_{dn}) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Noise is sometimes cited as being a health problem, not in terms of actual physiological damages such as hearing impairment, but in terms of inhibiting general well being and contributing to undue stress and annoyance. The health effects of noise in a community arise from interference with human activities such as sleep, speech, recreation and tasks demanding concentration or coordination. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases, and the acceptability of the environment for people decreases. This decrease in acceptability and the threat to public well-being are the bases for policies preventing exposures to excessive community noise levels.

To control noise from fixed sources, which have developed from processes other than zoning or land use planning, many jurisdictions have adopted community noise control ordinances. Such ordinances are intended to abate noise nuisances and to control noise from existing sources. They may also be used as performance standards to judge the creation of a potential nuisance, or potential encroachment of sensitive uses upon noise-producing facilities. Community noise control ordinances are generally designed to resolve noise problems on a short-term basis (usually by means of hourly noise level criteria), rather than on the basis of 24-hour or annual cumulative noise exposures.

In addition to the A-weighted noise level, other factors are considered in establishing criteria for noise sensitive land uses. For example, sounds with noticeable tonal content such as whistles, horns, droning or high-pitched sounds may be more annoying than the A-weighted sound level alone suggests. Many noise standards apply a penalty, or correction, or 5 dBA to such sounds. The effects of unusual tonal content are generally more of a concern at nighttime, when residents may notice the sound in contrast to low levels of background noise.

In very quiet environments, the introduction of virtually any change in local activities will cause an increase in noise levels. A change in noise level and the loss of "peace and quiet" is the inevitable result of land use or activity changes in such areas. However, audibility of a new noise source and/or increases in noise levels within recognized acceptable limits are not usually considered to be significant noise impacts.

EXISTING AND FUTURE NOISE CONDITIONS IN THE REDEVELOPMENT PROJECT AREA

The major noise sources in the City of Rancho Cordova and Project Area consist of US Highway 50 and local traffic on streets (such as Folsom Boulevard), commercial and industrial uses, active recreation of parks, outdoor play areas of schools, and railroad operations. Each of these noise sources is discussed individually below.

Transportation Noise Sources

Roadway Traffic Noise Levels

Major roadways within and adjacent to the Project Area include US 50, Folsom Boulevard, Zinfandel Drive, Bradshaw Road, Sunrise Boulevard and others. The Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) with the Calveno vehicle noise emission curves was used to predict existing and cumulative traffic noise levels for these roadways and others within the Redevelopment Project Area.

Tables 4.6-2 through **4.6-3** show existing and future (under the proposed City of Rancho Cordova General Plan) traffic volumes, noise levels and distances to traffic noise contours for the major roadways located within the Project Area and immediate vicinity. The future scenarios represent cumulative traffic conditions under the land uses proposed in the General Plan. It is recognized that vehicle speeds vary considerably on roadways in the Project Area, particularly due to the fact that the reductions in speed are frequently necessary because of traffic signals and stop signs at roadway intersections. In order to provide a generally worst-case estimate of existing traffic noise along the roadways within the Project Area, a normalized speed of 65 mph was applied to highways and a speed of 45 mph was applied to all other roadways in the modeling effort. The contour distances should also be considered conservative in that they do not account for local topographic or structural shielding which can reduce noise levels at receptors near roadways.

TABLE 4.6-2
FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL DATA INPUTS AND DISTANCES FROM CENTERLINE TO 60 AND 65 DB L_{DN} CONTOURS REDEVELOPMENT PROJECT AREA - EXISTING CONDITIONS

Roadway	From	To	Existing ADT	Ldn @ 100 ft.	Distance (ft) to 70 dB Ldn	Distance (ft) to 65 dB Ldn	Distance (ft) to 60 dB Ldn
Folsom Blvd	Bradshaw	Mather	22,700	66	57	122	262
Folsom Blvd	Mather	Coloma	33,500	68	73	158	340
Folsom Blvd	Coloma	Zinfandel	26,100	67	62	134	288
Folsom Blvd	Zinfandel	Sunrise	17,000	65	47	100	216
Mather Field Rd	Folsom Blvd	US-50 WB ramps	26,400	67	63	135	290
Mather Field Rd	US-50 EB Ramps	International	33,700	68	74	159	342
Zinfandel Dr	Folsom Blvd	US-50 WB Ramps	22,700	66	57	122	262
Zinfandel Dr	US-50 EB Ramps	White Rock	41,900	69	85	183	395
Zinfandel Dr	Folsom Blvd	Sunrise	10,600	63	34	73	158
Sunrise Blvd	Gold Country Blvd	Coloma	75,800	72	126	272	586
Sunrise Blvd	Coloma Rd	US-50 WB Ramps	82,400	72	134	288	620
Sunrise Blvd	US-50 EB Ramps	Folsom Blvd	52,100	70	98	212	457
Sunrise Blvd	Folsom Blvd	White Rock	37,200	68	79	169	365
Coloma Rd	Sunrise Blvd	Folsom	20,400	66	53	113	244
Bradshaw Rd	Old Placerville Rd	Kiefer	33,900	68	74	159	343
International	White Rock	Bradshaw	NA	NA	NA	NA	NA
US-50	Bradshaw Rd	Mather Field Rd	184,000	80	497	1071	2307
US-50	Mather Field Rd	Zinfandel	168,000	80	468	1008	2171
US-50	Zinfandel Blvd	Sunrise	149,000	80	432	930	2004

Source: Bollard Acoustical Consultants, 2006

TABLE 4.6-3
FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODELED NOISE LEVELS AND DISTANCES FROM CENTERLINE TO 60, 65, AND 70 DB LDN CONTOURS REDEVELOPMENT PROJECT AREA - YEAR 2030 CONDITIONS

Roadway	From	To	Post 2030 Roadway Network Build Out	Ldn @ 100 ft.	Distance (ft) to 70 dB Ldn	Distance (ft) to 65 dB Ldn	Distance (ft) to 60 dB Ldn
Folsom Blvd	Bradshaw	Mather	26,900	67	63	136	294
Folsom Blvd	Mather	Coloma	39,900	69	82	177	382
Folsom Blvd	Coloma	Zinfandel	30,000	67	68	147	316
Folsom Blvd	Zinfandel	Sunrise	24,800	67	60	129	278
Mather Field Rd	Folsom Blvd	US-50 WB ramps	39,300	69	82	176	378
Mather Field Rd	US-50 EB Ramps	International	64,600	71	114	245	527
Zinfandel Dr	Folsom Blvd	US-50 WB Ramps	31,500	68	70	152	326
Zinfandel Dr	US-50 EB Ramps	White Rock	80,100	72	131	282	608
Zinfandel Dr	Folsom Blvd	Sunrise	12,400	64	38	81	175
Sunrise Blvd	Gold Country Blvd	Coloma	95,700	73	148	318	685
Sunrise Blvd	Coloma Rd	US-50 WB Ramps	109,100	73	161	347	747
Sunrise Blvd	US-50 EB Ramps	Folsom Blvd	65,300	71	114	246	531
Sunrise Blvd	Folsom Blvd	White Rock	43,700	69	87	188	406
Coloma Rd	Sunrise Blvd	Folsom	25,800	67	62	133	286
Bradshaw Rd	Old Placerville Rd	Kiefer	75,100	71	126	270	583
International	White Rock	Bradshaw	62,000	71	110	238	513
US-50	Bradshaw Rd	Mather Field Rd	213,500	81	549	1182	2547
US-50	Mather Field Rd	Zinfandel	189,300	81	506	1091	2351
US-50	Zinfandel Blvd	Sunrise	168,600	80	469	1010	2176

Source: Bollard Acoustical Consultants, 2006

Railroads

There is no current freight train activity in the City of Rancho Cordova, but the City is served by Regional Transit Light Rail along the Folsom Boulevard / Highway 50 corridor through the heart of the Project Area.

In order to quantify train activity and the associated noise levels along the light-rail tracks, a short-term noise monitoring survey of light-rail train activity was conducted along the tracks between the Hazel Avenue and Iron Point Stations on January 5-6, 2006. The results were compared to similar data previously collected adjacent to light rail tracks. Even though the noise monitoring did not occur on a segment of track within the Project Area, the results are typical of transit noise levels within the Project Area, and are used as the basis for this analysis.

Based on the Sacramento Regional Transit Gold Line Light Rail Schedule, it was determined that approximately 137 train pass-bys occur per day along the double tracks west of Hazel Avenue and approximately 59 train pass-bys occur per day along the single tracks east of Hazel Avenue. The Sound Exposure Level (SEL) of individual trains was recorded along with the duration and maximum noise level during the monitoring survey. The aggregate of the data collected indicates that at a distance of 100 feet, the average train operating on these tracks will produce an SEL of approximately 90 dB with usage of the warning horn, and approximately 86 dB without the usage of the horn. Trains are generally required to sound warning horns as they approach at-grade crossings located within the Project Area.

Table 4.6-4 shows the computed light rail train noise levels in terms of Ldn at a distance of 100 feet from the tracks. **Table 4.6-5** shows the predicted distances to the light rail noise contours in feet. These tables are broken into three categories corresponding to locations where no warning horns are applied (approximately 500+ feet from at grade crossings), locations where warning horns are applied but sufficiently removed from warning bells (approximately 100 to 500 feet from the intersection), and locations affected by both warning horns and warning bells (within 100 feet from the at-grade intersection).

TABLE 4.6-4
COMPUTED LIGHT-RAIL L_{DN} (RANCHO CORDOVA, CA)

Light Rail Operations	Ldn @ 100′ from Center Line of Tracks - within various proximities to grade crossing (G/C)		
	0-100′ from G/C	100′-500′ from G/C	500′+ from G/C
Hazel Ave. to Watt Ave.	67	65	63

Source: Bollard Acoustical Consultants, Inc., 2006.

TABLE 4.6-5
DISTANCES TO 60 dB L_{DN} LIGHT RAIL NOISE LEVEL CONTOUR (RANCHO CORDOVA, CA)

Light-Rail Operations	Distance from Center Line of Tracks to 60 dB L_{dn} Noise Level Contour in Feet – within various proximities to grade crossing (G/C)		
	0-100′ from G/C	100′-500′ from G/C	500′+ from G/C
Hazel Ave. to Watt Ave.	270	200	150

Source: Bollard Acoustical Consultants, Inc., 2006.

Airports

Mather Airport (formerly Mather Air Force Base [AFB]) has been open as a public-use air cargo and general aviation airport since May 5, 1995. Managed by the County Department of Airports, the airport, which operates 24 hours per day, consists of two primary runways, one 11,300 feet long and the other 6,100 feet long, generally aligned in a northeast-to-southwest direction. Mather Airport is a joint-use facility, supporting both military and commercial operations, and is rapidly developing as an air cargo depot. The airport includes approximately 40 acres of exclusive air cargo ramp space.

Following the closure of Mather AFB in 1988, the County adopted a reuse plan for Mather Airport in fall 1991. The Airport Land Use Compatibility Plan (ALUCP) for Mather Airport was subsequently adopted in May 1997. As depicted in **Figure 4.6-1**, a very small portion of the Project Area is located within the currently adopted 60- and 65-dBA CNEL noise contours of the ALUCP for Mather Airport. Less than 12 residential parcels within the Countryside/Lincoln Village Planning Area are located within the 60-dBA contour within the missed-approach turnout. These noise contours, however, have been proposed for revision as part of the development of the *Mather Airport Master Plan and the new Mather CLUP*, which is currently being prepared by the Sacramento County Airport System. The noise contours were revised to account for existing and projected changes in aircraft operations that have occurred since development of the ALUCP for Mather Airport. The revised Mather Airport Master Plan will not include any portions of the Redevelopment Project Area within the 60- and 65-dBA CNEL noise contours.

Single-event noise associated with aircraft overflights is also of concern when evaluating aircraft noise effects in terms of land use compatibility. Single-event noise is the maximum sound level produced by an individual approach overflight at a specific location, often described in terms of Lmax, which is the maximum sound level recorded for each event. A different measurement of single-event noise, also commonly used when evaluating aircraft noise, is the SEL. The SEL describes the event's mean energy level over the duration of the noise event. There are no existing or proposed flight paths over the Redevelopment Project Area.

Non-transportation Noise Sources

The production of noise is a result of many processes and activities, even when best available noise control technology is applied. Noise exposures within industrial facilities are controlled by Federal and State employee health and safety regulations (OSHA), but exterior noise levels may exceed locally acceptable standards. Commercial, recreational and public service facility activities can also produce noise which affects adjacent sensitive land uses.

From a land use planning perspective, fixed-source noise control issues focus upon two goals: to prevent the introduction of new noise-producing uses in noise-sensitive areas, and to prevent encroachment of noise-sensitive land uses upon existing noise facilities. The first goal can be achieved by applying noise performance standards to proposed new noise-producing uses. The second goal can be met by requiring that new noise-sensitive uses in proximity to noise-producing facilities include mitigation measures to ensure compliance with those noise performance standards.

Descriptions of representative fixed noise sources in the Redevelopment Project Area are provided below. These uses are intended to be representative of the relative noise generation of such uses, and are intended to identify specific noise sources which should be considered in the review of subsequent development proposals. The following examples are not intended to be a comprehensive list of noise sources within the Project Area. Site-specific noise analyses for

future redevelopment activities will be performed where noise sensitive land uses are proposed in proximity to these (or similar) noise sources, or where similar sources are proposed to be located near noise-sensitive land uses.

General Service Commercial and Light Industrial Uses

Noise sources associated with service commercial uses such as automotive repair facilities, wrecking yards, tire installation centers, car washes, loading docks, etc., are found at various locations throughout the Project Area, however the majority of these uses are concentrated along the Folsom Boulevard corridor. The noise emissions of these types of uses are dependent on many factors, and are therefore, difficult to quantify precisely. Nonetheless, noise generated by these uses contribute to the ambient noise environment in the immediate vicinity of these uses, and should be considered where either new noise-sensitive uses are proposed nearby or where similar uses are proposed in existing residential areas.

Parks and School Playing Fields

There are multiple park and school uses within the Project Area. Noise generated by these uses depends on the age and number of people utilizing the respective facility at a given time, and the types of activities they are engaged in. School playing field activities tend to generate more noise than those of neighborhood parks, as the intensity of school playground usage tends to be higher. At a distance of 100 feet from an elementary school playground being used by 100 students, average and maximum noise levels of 60 and 75 dB, respectively, can be expected. At organized events such as high school football games with large crowds and public address systems, the noise generation is often significantly higher. As with service commercial uses, the noise generation of parks and school playing fields is variable.

Noise Associated with Construction Activities

During construction and demolition associated with projects within the Project Area, noise from construction activities would add to the noise environment in the immediate project vicinity. Activities involved in construction would generate maximum noise levels typically ranging from 85 to 90 dB at a distance of 50 feet. Impulsive construction activities such as pile driving would generate higher noise levels. Although construction activities can very in duration, they are nonetheless temporary in nature and typically occur during normal daytime working hours.

4.6.2 REGULATORY FRAMEWORK

LOCAL

Proposed Rancho Cordova General Plan

The Noise Element in the Proposed Rancho Cordova General Plan includes policies and action items to reduce the impacts associated with community noise generation and noise exposure. The proposed General Plan identifies noise level performance standards, including maximum allowable noise exposure, method of measuring noise, and enforcement procedures (see **Tables 4.6-6** and **4.6-7** below). Future activities within the Redevelopment Project Area shall be subject to the performance standards and review requirements identified in the proposed General Plan. The reader is referred to Section 4.1- Land Use for further information on the proposed Rancho Cordova General Plan.

TABLE 4.6-6
NOISE LEVEL PERFORMANCE STANDARDS FOR NEW PROJECTS OR REDEVELOPMENT PROJECTS AFFECTED BY OR INCLUDING NON-TRANSPORTATION NOISE SOURCES

Noise Level Descriptor	Daytime (7 am to 10 pm)	Nighttime (10 pm to 7 am)
Part 1: Performance Standards for Typical Stationary Noise Sources The types of uses which may typically produce the noise sources addressed below include, but are not limited to: industrial facilities including pump stations, trucking operations, fire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.		
Hourly Leq, dB	55	45
Part 2: Performance Standards for Stationary Noise Sources Which Are Tonal, Impulsive, Repetitive, or Consist Primarily of Speech of Music The standards above will apply generally to noise sources that are not tonal, impulsive, or repetitive in nature. Typical noise sources in this category would include HVAC systems, cooling towers, fans, blowers, etc.		
Hourly Leq, dB	50	40
The standards in Part 2 apply to noises which are tonal in nature, impulsive or repetitive, or which consist primarily of speech or music (e.g., humming sounds, outdoor speaker systems, etc.). Typical noise sources in this category include: pile drivers, drive-through speaker boxes, punch presses, steam valves, and transformer stations. These noise level standards in Parts 1 and 2 above do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings). The Agency or City may impose noise level standards which are more or less restrictive than those specified above based upon determination of existing low or high ambient noise levels.		

Source: City of Rancho Cordova proposed General Plan. 2006
** Hourly Leq, dB is measured from immediately within the property line of the receptor.*

TABLE 4.6-7
MAXIMUM ALLOWABLE NOISE EXPOSURE, TRANSPORTATION NOISE SOURCES

	Outdoor Activity Areas1, 2, 4	Interior Spaces	
Land Use	Ldn/CNEL, dB	Ldn/CNEL, dB	Leq, dB
Residential	60[3]	45	_
Residential subject to noise from railroad tracks, aircraft overflights, or similar noise sources which produce clearly identifiable, discrete noise events (the passing of a single train, as opposed to relatively steady noise sources such as roadways)	60[3]	40	_
Transient Lodging	60[5]	45	_
Hospitals, Nursing Homes	60[3]	45	_
Theaters, Auditoriums, Music Halls	_	_	35
Churches, Meeting Halls	60[3]	_	40
Office Buildings	_	_	45
Schools, Libraries, Museums	_	_	45
Playgrounds, Neighborhood Parks	70	_	_

Source: Bollard Acoustical Consultants, Inc., 2006.

Notes:

1) *Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.*
2) *Where it is not practical to mitigate exterior noise levels at patio or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.*
3) *As determined for a typical worst-case hour during periods of use.*
4) *Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.*
5) *In the case of hotel/motel facilities or other transient lodging, outdoor activity areas such as pool areas may not be included in the project design. In these cases, only the interior noise level criterion will apply.*

Mather Airport Land Use Compatibility Plan

The State of California has adopted airport noise and safety standards that are implemented through Comprehensive Land Use Plans (CLUPs) prepared for public-use airports. The CLUPs are prepared and maintained by the Airport Land Use Commissions (ALUCs). In Sacramento County, the Sacramento Area Council of Governments (SACOG) serves as the ALUC. The noise and safety standards identified in the CLUPs for local airports are implemented through the control of land use around airports with regard to the noise, safety, and height restrictions. SACOG also works with cities and counties to ensure consistency between local land use plans and CLUPs developed for local airports.

The ALUCP for Mather Airport, formerly called the Mather Airport CLUP, was adopted in May 1997 and includes regional policies for land use compatibility with respect to aircraft noise. The ALUCP for Mather Airport requires that as development occurs in the area near the airport, affected cities and counties should evaluate the impact of aircraft noise on proposed development. The ALUCP prohibits new residential development within the 65-dBA CNEL noise

contours. The ALUCP noise contours (in CNEL) for Mather Airport, in relation to the Project Area, are depicted in **Figure 4.6-1.** As shown in the figure, a small area in the portion of the Project Area is within the noise contour.

Sacramento County is currently in the process of developing the *Mather Airport Master Plan*. The Master Plan will be used to guide airport development over the next 20 years, while attempting to resolve aviation, environmental, and socioeconomic related issues existing in the community. One of the primary issues to be addressed in the plan relates to the exposure of citizens in nearby communities to noise generated by aircraft on approach and departure routes from Mather Airport.

City of Rancho Cordova Noise Ordinance

The City's noise ordinance, which is based on the County noise ordinance, establishes maximum allowable exterior and interior noise levels for affected land uses. The ordinance generally limits exterior noise levels (measured at residential land and agricultural land uses) to a maximum of 55 dBA during any cumulative 30-minute period during the daytime hours (7 a.m.–10 p.m.), and 50 dBA during any cumulative 30-minute period during the nighttime hours (10 p.m.–7 a.m.). The ordinance sets somewhat higher noise limits for noise of shorter duration; however, noise shall not exceed 75 dBA during the day and 70 dBA at night. Activities generally considered to be exempt from the noise standards include construction activities (provided that they occur between the daytime hours of 7 a.m.– 6 p.m., Monday through Saturday, and 9 a.m.–6 p.m. on Sunday), school athletic and entertainment events, activities conducted on public parks and playgrounds, and transportation noise.

4.6.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

Appendix G of the State CEQA Guidelines state that implementation of a project would result in significant noise impacts if the project would result in any of the following:

- Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies.
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels without the project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, where the project would expose people residing or working in the area to excessive noise levels.
- For a project within the vicinity of a private airstrip, where the project would expose people residing or working in the project area to excessive noise levels.

METHODOLOGY

A combination of use of existing literature, and application of accepted noise prediction and sound propagation algorithms, were used to predict changes in ambient noise levels resulting from implementation of the proposed Redevelopment Plan. Specific noise sources evaluated in this section include traffic, construction, aircraft, and common noise sources associated with the land use types of land use designations proposed within the Project Area. Potential noise impacts of each of these major noise sources are described below.

Traffic Noise Impact Assessment Methodology

Traffic noise impacts are assessed by comparing both the existing traffic noise levels and standards of significance to the predicted traffic noise levels within the Project Area under 2030 buildout conditions under the proposed General Plan.

Traffic Noise Prediction Model

To describe future noise levels due to traffic, the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used. The FHWA model is the analytical method currently favored for traffic noise prediction by most state and local agencies, including the California Department of Transportation (Caltrans).

The FHWA model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions (see **Tables 4.6-2** and **4.6-3**). As noted in **Table 4.6-2**, all of the roadway segments within the Project Area currently exceed 60 Ldn at 100-feet from the centerline. The significance of the noise increase of all traffic-related noise sources shall be determined based on noise increases according to the following criteria:

- Where existing traffic noise levels are less than 60 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +5 dB Ldn increase in noise levels will be considered significant; and

- Where existing traffic noise levels range between 60 and 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +3 dB Ldn increase in noise levels will be considered significant; and

- Where existing traffic noise levels are greater than 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +1.5 dB Ldn increase in noise levels will be considered significant.

Noise Impact Assessment Methodology for Noise-Producing Uses Within the Project Area

There are a variety of stationary noise sources associated with implementation of the proposed Redevelopment Plan which have the potential to create noise levels in excess of the proposed City of Rancho Cordova General Plan noise standards or result in annoyance at existing and future noise-sensitive developments in the Project Area. Such uses/noise sources include, but are not limited to, commercial loading docks associated with grocery stores and other stores/shops, and neighborhood parks.

At the Redevelopment Plan level, detailed site and grading plans associated with these types of noise sources have not yet been developed. As a result, it is not feasible to identify specific noise impacts associated with these sources. Subsequent development activities will be required to demonstrate compliance with the City's noise standards through the adopted Noise Ordinance, as may be amended from time to time.

Aircraft Noise Impact Assessment Methodology

Noise impacts associated with operations at Mather Airport could result if noise-sensitive land uses are proposed within the airport's noise impact boundaries (noise contours). Subsequent development proposals within the 60 dB CNEL contours of the airport will be required to demonstrate compliance with applicable noise standards.

Construction Noise Impact Assessment Methodology

Implementation of the proposed Redevelopment Plan would result in subsequent development projects with associated construction noise impacts. These noise impacts would add to the noise environment in the Project Area and could exceed normally acceptable sound levels at neighboring receptor locations.

Noise would be generated by increased truck traffic on area roadways and the operation of heavy equipment on a construction site. This noise increase would be short in duration, and would most likely occur during daytime hours.

Activities involved in construction would generate maximum noise levels, as indicated in **Table 4.6-8**, ranging from 85 to 90 dB at a distance of 50 feet.

TABLE 4.6-8
CONSTRUCTION EQUIPMENT NOISE

Type of Equipment	Maximum Level, dB at 50 feet
Bulldozers	87
Heavy Trucks	88
Backhoe	85
Pneumatic Tools	85

Source: Bollard Acoustical Consultants. 2006.

PROJECT IMPACTS AND MITIGATION MEASURES

Construction Noise Impacts

Impact 4.6.1 Implementation of the proposed Redevelopment Plan would result in subsequent development projects and cause an increase in construction noise levels that would exceed City of Rancho Cordova noise standards. This is considered a **potentially significant** impact.

Construction activities associated with the buildout of the Redevelopment Project Area consistent with the proposed Rancho Cordova General Plan would typically generate maximum noise levels ranging from 85 to 95 dB at a distance of 50 feet (see **Table 4.6-8**). Depending on

the timing of the buildout of the Project Area, existing and future residents may be exposed to these excessive noise levels.

Mitigation Measures

The following mitigation measures will be adopted by the City Council in connection with the adoption of the Redevelopment Plan as measures that will apply to all development in the Project Area until the General Plan is adopted:

MM 4.6.1a Construction activities within the Project Area shall be limited to the daytime hours of 7 a.m.– 6 p.m., Monday through Saturday, and 9 a.m.–6 p.m. on Sunday, as specified in the City of Rancho Cordova Noise Ordinance.

MM 4.6.1b The Agency shall require that stationary construction equipment and construction staging areas be set back from existing noise-sensitive land uses.

The implementation of the mitigation measures identified above would ensure that construction activities for subsequent development within the Project Area complies with the noise requirements established in the City of Rancho Cordova Noise Ordinance. This impact is temporary in nature and is considered **less than significant**.

Traffic Noise Impacts

Impact 4.6.2 Implementation of the proposed Redevelopment Plan would result in increases in traffic noise levels that would be in excess of City of Rancho Cordova noise standards. This is considered a **significant** impact.

Implementation of the proposed Redevelopment Plan would result in increased vehicular traffic on Project Area roadways, resulting in increased noise levels from vehicle traffic. **Table 4.6-9** compares existing traffic noise levels with noise levels after Redevelopment Plan implementation assuming proposed General Plan buildout conditions, and shows a maximum increase of 3 L_{dn} between existing L_{dn} and L_{dn} after implementation. Residential and other noise-sensitive uses adjacent to area roadways would be affected by increased traffic noise, especially those areas with no soundwalls adjacent to the roadway. Increased noise impacts to area roadways would also result in traffic noise impacts outside the Project Area, specifically the City of Rancho Cordova and the County of Sacramento. Additionally, any development adjacent to US 50 would be impacted by highway noise.

TABLE 4.6-9
COMPARISON OF EXISTING AND FUTURE (CUMULATIVE) TRAFFIC NOISE LEVELS WITHIN THE REDEVELOPMENT PROJECT AREA

Roadway	From	To	Post 2030 Roadway Network Build Out	Existing Ldn @ 100 ft.	Year 2030 Conditions Ldn @ 100 ft.	Change from Existing Conditions in Ldn @ 100 ft.
Folsom Blvd	Bradshaw	Mather	26,900	66	67	1
Folsom Blvd	Mather	Coloma	39,900	68	69	1
Folsom Blvd	Coloma	Zinfandel	30,000	67	67	0
Folsom Blvd	Zinfandel	Sunrise	24,800	65	67	2
Mather Field Rd	Folsom Blvd	US-50 WB ramps	39,300	67	69	2
Mather Field Rd	US-50 EB Ramps	International	64,600	68	71	3
Zinfandel Dr	Folsom Blvd	US-50 WB Ramps	31,500	66	68	2
Zinfandel Dr	US-50 EB Ramps	White Rock	80,100	69	72	3
Zinfandel Dr	Folsom Blvd	Sunrise	12,400	63	64	1
Sunrise Blvd	Gold Country Blvd	Coloma	95,700	72	73	1
Sunrise Blvd	Coloma Rd	US-50 WB Ramps	109,100	72	73	1
Sunrise Blvd	US-50 EB Ramps	Folsom Blvd	65,300	70	71	1
Sunrise Blvd	Folsom Blvd	White Rock	43,700	68	69	1
Coloma Rd	Sunrise Blvd	Folsom	25,800	66	67	1
Bradshaw Rd	Old Placerville Rd	Kiefer	75,100	68	71	3
International	White Rock	Bradshaw	62,000	NA	71	NA
US-50	Bradshaw Rd	Mather Field Rd	213,500	80	81	1
US-50	Mather Field Rd	Zinfandel	189,300	80	81	1
US-50	Zinfandel Blvd	Sunrise	168,600	80	80	0

Source: Bollard Acoustical Consultants, 2006

Mitigation Measures

The following mitigation measures will be adopted by the City Council in connection with the adoption of the Redevelopment Plan as measures that will apply to all development in the Project Area until the General Plan is adopted:

MM 4.6.2 For subsequent development activities with the Project Area where noise-sensitive land uses are proposed in areas exposed to existing or projected traffic noise levels exceeding the levels specified in **Table 4.6-7**, an acoustical analysis, consistent with the requirements identified in **Table 4.6-10**, shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

TABLE 4.6-10
REQUIREMENTS FOR ACOUSTICAL ANALYSIS

All acoustical analyses shall:	
A)	Be the financial responsibility of the applicant.
B)	Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.
C)	Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions and the predominant noise sources.
D)	Estimate existing and projected cumulative (20 years) noise levels in terms of L_{dn} or CNEL and/or the standards of Table NO-A, and compare those levels to the adopted policies of the Noise Element.
E)	Recommend appropriate mitigation to achieve compliance with adopted City policies and standards, giving preference to proper site planning and design over mitigation measures which require construction of noise barriers or structural modifications to buildings which contain noise-sensitive land uses.
F)	In cases where a sound wall is proposed, the potential impacts associated with noise reflecting off the wall and toward other properties or sensitive uses shall be evaluated.
G)	Estimate noise exposure after the prescribed mitigation measures have been implemented.
H)	Describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures.

Implementation of the above mitigation measure would reduce the impact of the development and redevelopment of noise-sensitive land uses within the Project Area that are adjacent to traffic noise levels in excess of the City of Rancho Cordova standards. However, much of the Project Area is already urbanized, and therefore, the opportunities for new development (rather than redevelopment) within the Project Area would be limited. Due to the proximity of many of the land uses within the Project Area to existing traffic noise sources (primarily US 50 and the Folsom Boulevard commercial corridor) mitigation to reduce existing noise levels may not be feasible. It is acknowledged that many existing land uses within the Project Area are currently exposed to noise levels beyond what is permitted in **Table 4.4-7** above. Future redevelopment activities within the Project Area would be subject to review on a project-by-project basis for compliance with applicable City noise standards, however it is anticipated that compliance with the noise standards identified above will not be possible in all cases. For example, existing development adjacent to major noise sources such as US 50 may not be able to incorporate

noise mitigation measures such as sound walls. This impact is considered **significant and unavoidable** even with the implementation of **MM 4.6.2**.

Future Stationary and Groundborne Noise Impacts

Impact 4.6.3 Implementation of the proposed Redevelopment Plan could result in the future development of land uses that generate noise levels in excess of applicable noise standards for non-transportation noise sources and from groundborne noise. This is considered a **potentially significant** impact.

Implementation of the proposed Redevelopment Plan could result in the future development of land uses that generate noise levels and in excess of applicable City of Rancho Cordova noise standards for non-transportation noise sources and groundborne noise. Groundborne noise can result from activities such as pile driving, jack-hammering or demolition blasting. Non-transportation noise sources include land uses such as commercial, office, and industrial uses as well as recreational uses. However, specific land use types that would locate in the Project Area are not known at this time.

Mitigation Measures

The following mitigation measures will be adopted by the City Council in connection with the adoption of the Redevelopment Plan as measures that will apply to all development in the Project Area until the General Plan is adopted:

MM 4.6.3 Noise created by non-transportation noise sources and groundborne noise from future redevelopment activities shall be mitigated so as not to exceed the noise level standards of **Table 4.6-6** as measured immediately within the property line of lands designated for noise-sensitive uses. Compliance with this mitigation measure shall be verified through an acoustical analysis, consistent with the requirements identified in **Table 4.6-10.**

While implementation of the above mitigation measure would reduce noise associated with new stationary and groundborne noise sources and the placement of new noise-sensitive land uses that the Agency has jurisdiction (e.g., commercial and industrial sites, residential uses). However, some stationary noise impacts cannot be mitigated to a less than significant level due to limitations of the Agency to control the exact placement of substantial noise-generating uses (e.g., school facilities) in proximity to noise-sensitive land uses (e.g., residential). Accordingly, stationary source noise levels from activities on uses for which the Agency has limited control could result in noise levels that exceed the City's maximum allowable noise standards. Thus, this impact is considered **significant and unavoidable.**

Airport Noise Conflicts

Impact 4.6.4 Implementation of the proposed Redevelopment Plan could expose future land uses to noise associated with the operation of the Mather Airport. This is considered a **less than significant** impact.

As shown in **Figure 4.6-1**, only a very small portion of the Project Area is located within the currently adopted 60- and 65-dBA CNEL noise contours of the ALUCP for Mather Airport. Less than 12 residential parcels within the Countryside/Lincoln Village Planning Area are located within the 60-dBA contour within the missed-approach aircraft turnout contour. These exiting noise contours, however, have been proposed for revision as part of the development of the

Mather Airport Master Plan and the new Mather CLUP, which is currently being prepared by the Sacramento County Airport System. The noise contours were revised to account for existing and projected changes in aircraft operations that have occurred since development of the ALUCP for Mather Airport. The revised Mather Airport Master Plan will not include any portions of the Redevelopment Project Area within the 60- and 65-dBA CNEL noise contours.

None of the residential parcels currently located within the adopted 60- and 65-dBA CNEL noise contours of the ALUCP for Mather Airport are vacant; therefore, there is no potential for the development of new residential land uses within the Project Area covered by the 60- and 65-dBA CNEL noise contours. This impact is considered **less than significant**.

Mitigation Measures

None required.

Light Rail Noise Impacts

Impact 4.6.5 Implementation of the proposed Redevelopment Plan could expose future land uses and residents to light rail-related noise. This is considered a **potentially significant** impact.

Table 4.6-5 shows the estimated distances to railroad noise contours for the light rail line that travels through the Project Area. According to the Table, the 60 dB L_{dn} noise standard would be met at distances from 150 to 270 feet from grade crossing. Subsequent development activities within the Project Area could occur within this distance from grade crossings.

Mitigation Measures

The following mitigation measures will be adopted by the City Council in connection with the adoption of the Redevelopment Plan as measures that will apply to all development in the Project Area until the General Plan is adopted:

MM 4.6.5 For subsequent development activities with the Project Area where noise-sensitive land uses are proposed in areas exposed to existing or projected light rail noise levels exceeding the levels specified in **Table 4.6-7** or the performance standards in **Table 4.6-6**, an acoustical analysis, consistent with the requirements identified in **Table 4.6-10**, shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

Implementation of the above mitigation measure would reduce impacts from light rail noise to a **less than significant** level.

4.6.4 CUMULATIVE SETTING, IMPACTS AND MITIGATION MEASURES

CUMULATIVE SETTING

The setting for this cumulative analysis includes existing, proposed, planned and approved projects in the City of Rancho Cordova General Planning Area and the southeastern portion of Sacramento County. The cumulative setting also assumes anticipated and planned development within the City of Sacramento's Sphere of Influence, the City of Folsom's Sphere of Influence, and City of Elk Grove's Sphere of Influence as well as growth planned for under the

general plans, community plans and specific plans for Sacramento, El Dorado and Placer counties, cities of Sacramento, Folsom, Elk Grove and Roseville. Development in the region would change the intensity of land uses in the region and increase housing, employment, shopping and recreational opportunities. This analysis also accounts for regional traffic volume conditions anticipated for year 2030 for US 50.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Traffic Noise Impacts

Impact 4.6.6 Implementation of the proposed Redevelopment Plan in combination with regional growth and traffic conditions (pass-through traffic) would increase transportation noise along Project Area and regional roadways. This contribution would be **cumulatively considerable**.

Implementation of the proposed Redevelopment Plan, along with regional growth and traffic conditions, would cause traffic noise level increases ranging from 0 to 3 dB Ldn over existing traffic noise levels within the Project Area. According to established Rancho Cordova noise standards, a 3 dB increase is considered significant when existing noise levels are between 60 and 65 dB Ldn, and a 1.5 dB increase is considered significant when existing noise levels are over 65 dB Ldn. As shown in **Table 4.6-9**, significant impacts related to traffic noise are expected on 6 roadways within the Project Area. Additionally, subsequent redevelopment activities within the Redevelopment Project Area will invariably result in increased traffic related noise on roadways located outside of the Project Area as well.

Mitigation Measures

Implement **MM 4.6.2** and **4.6.5**.

It is recognized that these mitigation measures, used individually or collectively, can result in a reduction of traffic noise levels at affected sensitive receptor locations. Nonetheless, despite the implementation of such a noise mitigation measures, it will be infeasible to ensure that some existing residential uses within the Project Area will not be exposed to future traffic noise levels in excess of the City's noise standards. As a result, this impact is considered **cumulatively considerable** and thus a **significant and unavoidable** impact**.** In addition, growth within the Redevelopment Project Area will contribute to **significant and unavoidable** noise impacts at noise-sensitive land uses located beyond the Project Area boundaries.

REFERENCES

Federal Highway Administration. 1977. *Highway Traffic Noise Prediction Model FHWA-RD-77-108*.

Sacramento County Planning Department. 1993. *County of Sacramento General Plan*. Sacramento, CA.

Bollard Acoustical Consultants. 2006. Rancho Cordova General Plan Noise Analysis. Rancho Cordova, CA.

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