Appendix G Noise Data

Appendices

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LOCAL REGULATIONS AND STANDARDS

Noise Element

The philosopher Arthur Schopenhauer once remarked: "Noise is the most impertinent of all forms of interruption. It is not only an interruption, but a disruption of thought."[1] While Schopenhauer is known largely for his pessimistic worldview, his comment reflects a common feeling among people accustomed to living in a relatively quiet environment. Noise affects how we think. It affects how we respond to and perceive the quality of the places in which we live, work and play. For these reasons, noise requires careful consideration in the community planning process.

The Noise Element examines noise sources in the City with a view toward identifying and appraising the potential for noise conflicts and problems and identifies ways to reduce existing and potential noise impacts. In particular, the Noise Element contains policies and programs to achieve and maintain noise levels compatible with various types of land uses. The element addresses noise which affects the community at large, rather than noise associated with site-specific conditions.[2] However, the program s in this element do address effective strategies to reduce and limit community exposure to loud noise sources. On the other hand, the City's Noise Control Code (Title 7) prohibits such noise generated within the City and attempts to minimize noise levels and mitigate the effects of noise to provide a safe and healthy living environment.

Scope and Content of the Noise Element

The State of California, in recognition of the relationship between noise and noise-sensitive uses and the public health concerns associated with noise, has adopted very specific guidelines for Noise Elements in both the Government Code (Section 65302[f]) and the Health and Safety Code (Section 56050.1). These guidelines include a requirement for defining projected future noise conditions in the form of noise exposure contours, which present information in a manner similar to topographic map contours. This noise information serves as the basis for developing guidelines for identifying compatible land uses, identifying the proper distribution of land uses on the General Plan Land Use Policy Map and establishing appropriate development standards.

[1] Arthur Schopenhauer. *Studies in Pessimism.* 1851.

[2] Workplace noise affecting individuals is regulated by State and Federal law and is not covered by the General Plan. Similarly, the Noise Element does not address isolated noise problems, such as barking dog s, leaf blowers or loud stereo s.

Toward these ends, this Noise Element includes the following sections:

- Understanding Noise and How It Affects Us
- Sources of Noise in Riverside
- Future Noise Conditions
- Minimizing Noise Impacts

As noted in the Introduction to this General Plan, several Federal, State and local agencies have adopted legislation and plans intended to minimize exposure of people to loud noise sources. These include:

See the Introduction for more information on these agencies and plans.

- Federal Transit Administration
- Federal Aviation Administration
- U.S. Department of Housing and Urban Development
- California Noise Insulation Standards (Title 24 of the Health and Safety Code)
- City of Riverside Noise Control Code (Title 7 of the Municipal Code)
- Riverside Municipal Airport Master Plan
- March Air Reserve Base AICUZ Study
- March Joint Powers Authority General Plan
- 2004 Riverside County Airport Land Use Compatibility Plan
- 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan

RELATIONSHIP TO OTHER PLAN ELEMENTS

As noted above, policies and plans in the Noise Element work in tandem with the other elements to protect existing and planned land uses from significant noise impacts. Most importantly, the Land Use and Urban Design Element establishes land use patterns that respond to noise conditions, particularly noise associated with industrial areas, the freeways, the many rail lines that traverse the community and Riverside Municipal Airport, Flabob Airport and March Air Reserve Base/March Inland Port. The noise contours for year 2025 will reflect planned roadway configurations and anticipated traffic volumes identified in the Circulation and Community Mobility Element, as traffic noise contributes significantly to high noise levels.

UNDERSTANDING NOISE AND HOW IT AFFECTS US

Noise often is defined as annoying or unwanted sound. Health studies have shown that excessive noise can cause adverse psychological or physiological effects on human beings. Defining noise problems and establishing a regulatory scheme to deal with noise that is both fair and effective requires an understanding of some of the basic characteristics of sound and how it affects people and their activities. Some of the most important characteristics are outlined in Table N–1 (Characteristics of Noise). The figure also provides general comments about how these characteristics affect people. Table N–2 (Noise Levels for Common Noise Sources) describes common noise sources for indoor and outdoor peak noise levels.

While sound levels can be easily measured, the variability in subjective and physical responses to sound complicates the analysis of its impact on people. Sound is created when an object vibrates and radiates part of its energy as acoustic pressure waves through a medium such as air, water or a solid. The ear, the hearing mechanism of humans and most animals, receives these sound pressure waves and converts them to neurological impulses which are transmitted to the brain for interpretation. The interpretation by the auditory system and the brain depends on the characteristics of the sound and on the characteristics of the person hearing it.

Scientists and engineers use two parameters to technically describe the sound environment at any instant in time: amplitude (or sound power) and frequency (or pitch). These two characteristics affect the way people respond to sound.

Amplitude of a sound is a measure of the pressure or force that a sound can exert. Subjectively, we say a sound is louder if it has a greater amplitude than another sound. Thus, the amplitude of sounds can be described either in measurable magnitude or in relative term s of loudness.

Physically, sound pressure is measured in units of decibels (dB). The sound pressure scale is based on the ratio of the sound energy to a reference pressure which is approximately the least sound pressure that people can perceive. Zero dB means the lowest level normally audible, but does not mean zero sound pressure.

TABLE N-1
CHARACTERISTICS OF NOISE

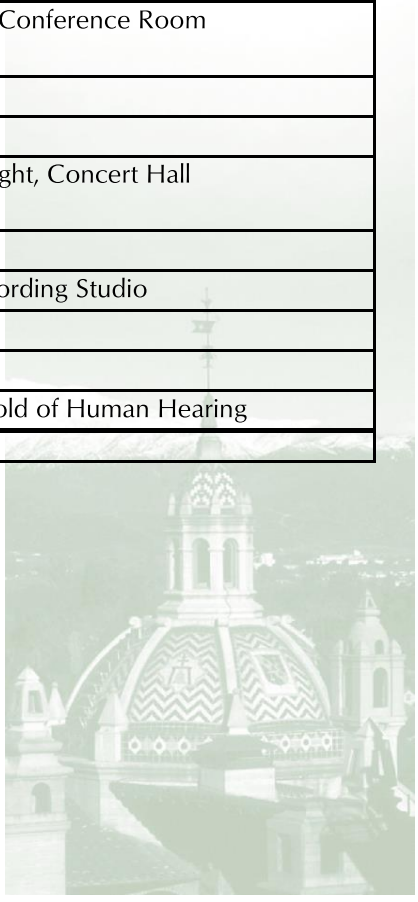
Noise Characteristic	What is Measured and Units of Measurements	Effects on People and Human Activities
Loudness or Sound Pressure	Energy content of sound waves in the air. Unweighted sound pressure level in decibels (dB).	Noise distracts attention from tasks, interferes with verbal communication and prevents or disturbs sleep. At high levels or for long periods, noise causes temporary or permanent hearing loss. At very high levels, noise causes pain. Louder sounds have greater effects, subject to the further considerations below.
Frequency of Pitch	Frequency (cycles per second, or Hertz (Hz) of pressure waves. Frequency distribution by octave or 1/3 octave band. Overall sound pressure level weighted by frequency, such as A-weighting (dB(A)).	The human ear is most sensitive to sounds in the range of human speech, less sensitive to high or low frequencies at the same sound energy.
Tonal content	Pure tones or energy distribution by octave or 1/3 octave frequency band. Special weightings such as Effective Perceived Noise Level in decibels (EPNDB), or simple penalty weightings for pure tones.	High tonal content means identifiable whines or hums, which can be particularly annoying compared to random noise of the same sound energy.
Information content (music, voice, sirens, etc.)	Judgment that sound includes voice, music, etc. No standard measurement scheme or weighting.	Information content draws attention to sounds compared to more random noise of the same sound energy.
Impact noise	Rapid increase in sound pressure or repetitive impacts. Fast response on sound meters used to measure impact noise.	Impact noise (helicopter rotor blade noise, jackhammers, etc.) can be more annoying than other noises of the same sound energy.
Duration of noise events as percentage of 24-hour or other period.	Hourly or other time-averaged energy level (L_{eq}) or statistical sound levels identifying the level exceeded a given percentage of the time (L_{10}, L_{50}).	A noise which lasts longer or is constant has more impact than one of the same sound energy that occurs only occasionally or for a short period of time.
Degree of intrusion of noise events over background noise levels	Difference between peak and ambient noise levels. Statistical sound levels, peak noise levels compared to average or ambient.	Individual distinct noise events such as aircraft overflights or loud vehicle pass-by events of a given noise level are more intrusive if they occur in a quiet environment.
Time of day	24-hour or annual average level with weightings for evening and night noise such as CNEL or L_{dn}.	People and their activities are generally more sensitive to noise during the nighttime hours because (1) background noise is generally lower, making noise of a given noise level more intrusive and (2) sleep is easily interrupted by noise.
Importance of noise source	Judgment of social value of noise source.	People are generally willing to accept more disturbance from noise they consider necessary, such as from trash collection, emergency vehicle sirens, police helicopters, etc.

Source: Noise Existing Conditions Report, Cotton/Bridges/Associates, 2004.

TABLE N–2
REPRESENTATIVE ENVIRONMEN TAL NOISE LEVELS

Common Outdoor Activities	*Noise Levels (dbA)*	*Common Indoor Activities*
	110	Rock Band
Jet Fly-over at 1000 feet	105	
	100	
Gas Lawnmower at 3 feet	95	
	90	
	85	Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	80	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime	75	
Gas Lawnmower at 100 feet	70	Vacuum Cleaner at 10 feet
Commercial Area	65	Normal Speech at 3 feet
Heavy Traffic at 300 feet	60	
	55	Large Business Office
Quiet Urban Area during Daytime	50	Dishwasher in Next Room
	45	
Quiet Urban Area during Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime	35	
	30	Library
Quiet Rural Area during Nighttime	25	Bedroom at Night, Concert Hall (background)
	20	
	15	Broadcast/Recording Studio
	10	
	5	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: California Department of Transportation, Technical Noise Supplement, 1998.



Frequency of a sound is expressed in units of cycles per second or Hertz (Hz), referring to the number of times per second the acoustic pressure wave peaks. Subjectively, a sound that has more cycles per second than another is higher pitched. The human hearing system is not equally sensitive to sound at all frequencies and is most sensitive to sounds in the frequency range of human speech, from four hundred to two thousand cycles per second. The most sensitive people can hear sounds ranging from a little below twenty Hz to somewhat above twenty thousand Hz. As people age, their sensitivity to high frequencies tends to fall. Acoustical energy at frequencies above the range of human hearing is referred to as ultrasonic, or ultrasound. At frequencies below the range of human hearing, acoustical energy is referred to as infrasonic, or infrasound and is experienced as vibration.

Noise-Sensitive Land Uses. The term "noise-sensitive land uses" refers to land uses that are particularly sensitive to noise at levels commonly found in the urban environment. This category includes residential uses, schools, hospitals, churches, outdoor speculative sports facilities, performing arts facilities and hotels and motels.

SOURCES OF NOISE IN RIVERSIDE

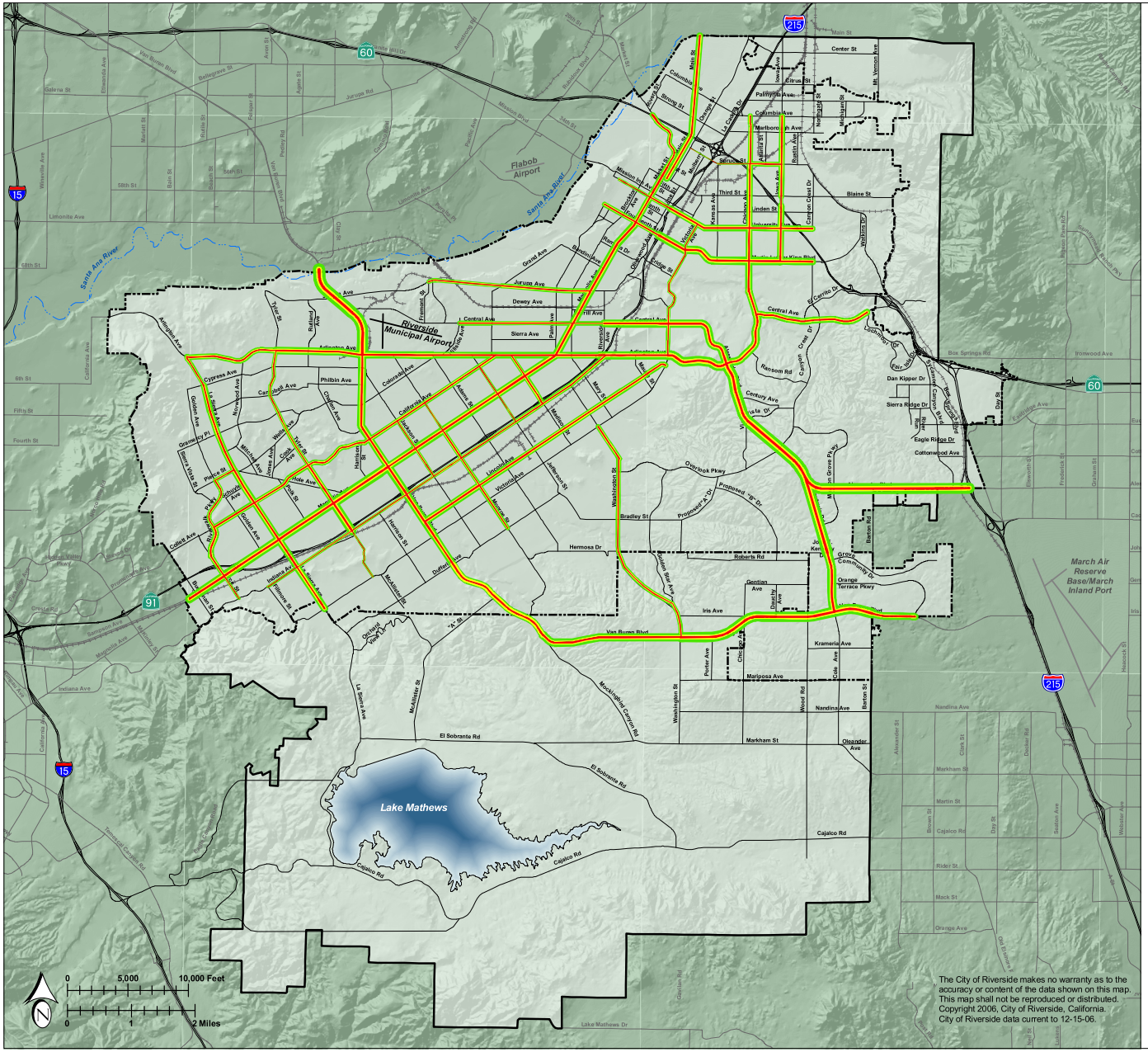
TRANSPORTATION-RELATED NOISE

Transportation activity represents the principal ambient noise source in Riverside. These sources include:

- Traffic on major arterial roadways within the City
- Traffic on the SR-91, SR-60 and I-215 freeways
- Train movement on the railroad lines
- Flight activity associated with Riverside Municipal Airport, Flabob Airport and March Air Reserve Base/March Inland Port

Local Roadway Traffic Noise

During peak travel hours, heavy traffic on Riverside's streets causes higher noise levels compared to noise levels during non-peak hours. The most heavily traveled roadways include Van Buren Boulevard, Alessandro Boulevard, Arlington Avenue, Tyler Street, La Sierra Avenue, Magnolia Avenue, University Avenue, and Martin Luther King Boulevard, among others. These roadways have been designed specifically to carry large volumes, although long-established land use patterns have placed residential uses along some portions of these streets. Other areas where residential neighborhoods are exposed to traffic noise include the Downtown and University of California, Riverside areas, as shown on Figure N–1 (2003 Roadway Noise).



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

EXISTING NOISE

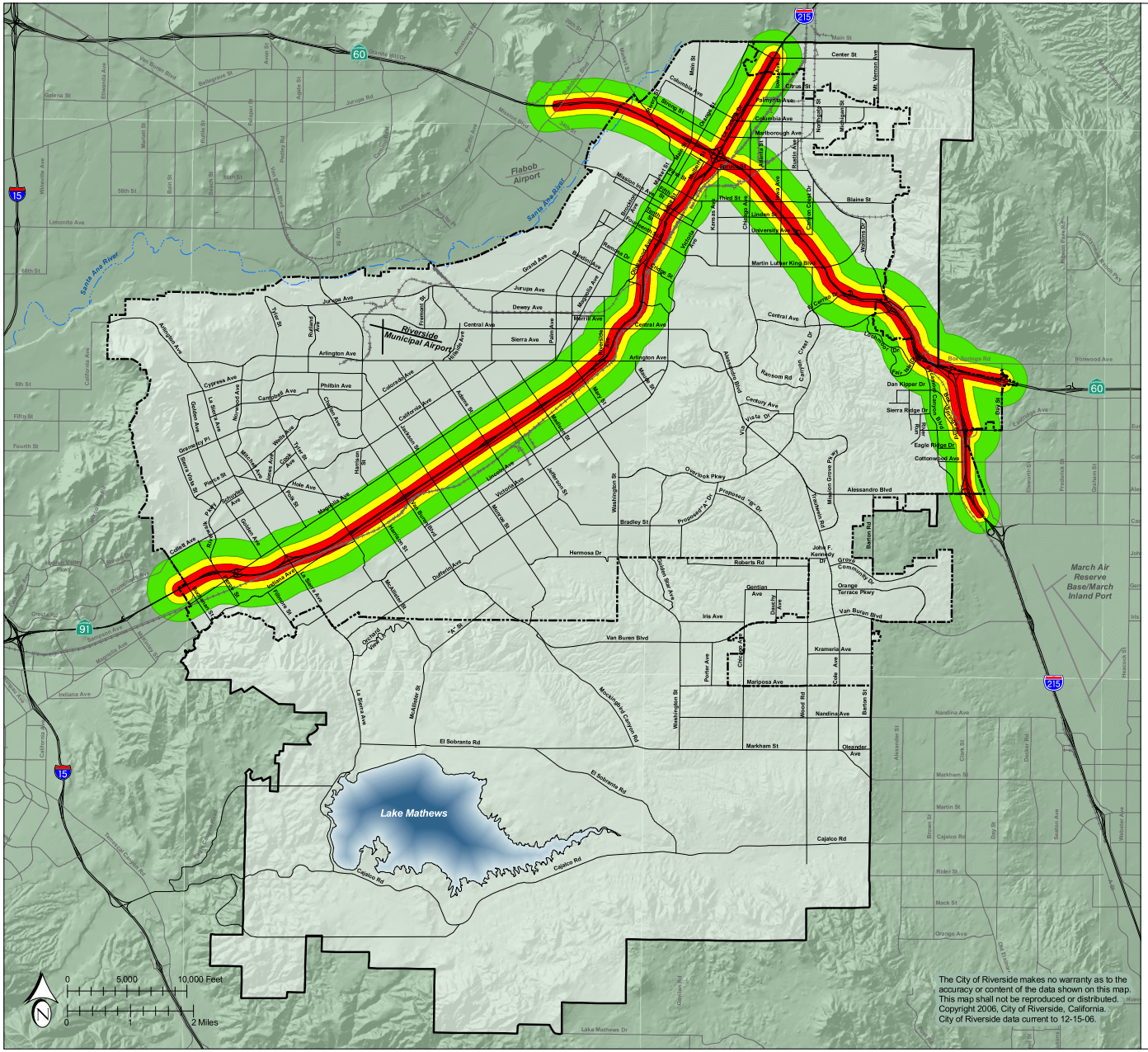
- 70 CNEL
- 65 CNEL
- 60 CNEL
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

NOTE: FOR AN EXPLANATION OF CNEL METHODOLOGY, PLEASE REFER TO THE NOISE ELEMENT TEXT.

SOURCE: CITY OF RIVERSIDE, AND P&D CONSULTANTS, 2005

Figure N-1

2003 ROADWAY NOISE



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

EXISTING NOISE

- 70 CNEL
- 65 CNEL
- 60 CNEL
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

NOTE: FOR AN EXPLANATION OF CNEL METHODOLOGY, PLEASE REFER TO THE NOISE ELEMENT TEXT.

SOURCE: CITY OF RIVERSIDE, AND P&D CONSULTANTS, 2005

Figure N-2

2003 FREEWAY NOISE

Freeway Noise

Freeways are a major noise source in many jurisdictions. As shown on Figure N–2 (2003 Freeway Noise), noise contours for the 60 CNEL can extend as far as 3,500 feet from the I-215 Freeway east of the SR-91 /I-215 interchange. More modern freeway design and construction projects integrate sound walls, such as the significant sound walls and depressed configuration of I-210 through eastern Los Angeles and western San Bernardino counties and the I-5 widening through Orange County. To address freeway noise along long-established routes, the California Department of Transportation (Caltrans) has a priority program and a policy to put sound walls adjacent to residential properties. If a jurisdiction wishes to mitigate freeway noise before scheduled and funded Caltrans improvements are planned, that jurisdiction can fund sound walls or other mitigating elements, with Caltrans later providing reimbursement in accordance with its priority plan.

Riverside is traversed by the SR-91, SR-60 and I-215 freeways. Improvements to SR-91 that began in 1998 resulted in significant new sound walls and some relief from the noise associated with increasing regional traffic volumes.

Although sound walls will reduce noise impacts, freeway noise will remain an issue for noise-sensitive land uses, particularly residential development.

Railroad Noise

Both the Union Pacific Railroad (UPRR) and the Burlington Northern Santa Fe Railroad (BNSF) operate rail lines that traverse Riverside, each carrying freight trains. These lines are also shared by Metrolink Commuter Rail and Amtrak Passenger Rail. Train noise, however intermittent, is a significant source of noise due to its magnitude and the associated vibration effects. Train noise incorporates the sounds of the locomotive engine, wheel-on-rail noise and train whistles near at-grade roadway crossings, as shown in Figure N–3, 2003 Railway Noise.

Riverside residents living near rail lines have cited the loud, long train whistles as particularly irksome. State law and the Federal Railroad Administration's code of operating rules and regulations require locomotive engines to sound the train's horn one-quarter mile in advance of the crossing and to continue to sound the horn until the train arrives at the crossing. If a train horn is to be an effective warning device for motorists, it must provide a sound level capable of initiating a response from the driver as the train approaches the crossing. Unfortunately, the sound level required to achieve that response and the location of the train relative to the crossing creates a significant bothersome noise.

An effective alternative to train horns has been developed. The automated horn system is a stationary horn activated by the railroad- highway grade crossing system. It is mounted at the crossing, rather than on the train, to deliver a longer, louder and more consistent audible warning to motorists and pedestrians while eliminating noise pollution in neighborhoods for more than a half a mile along the rail corridor. As of 2004, the City has installed this so-called "horn on a stick" device at six railroad crossings in the City. The streets of these railroad crossings include Streeter Avenue, Palm Avenue, Brockton Avenue, Magnolia Avenue, Riverside Avenue and Panorama Road.

The two noise diagrams in Figure N-4 (Train Horn Comparison) depict the area impacted by the sound of a train horn versus an automated horn system. The comparison shows a dramatic difference between the areas impacted at specific decibel levels. Figure N-4 illustrates that the area impacted by the automated horn system is a fraction of the size of the 80 decibel contour produced by the train horn.

Airport Noise

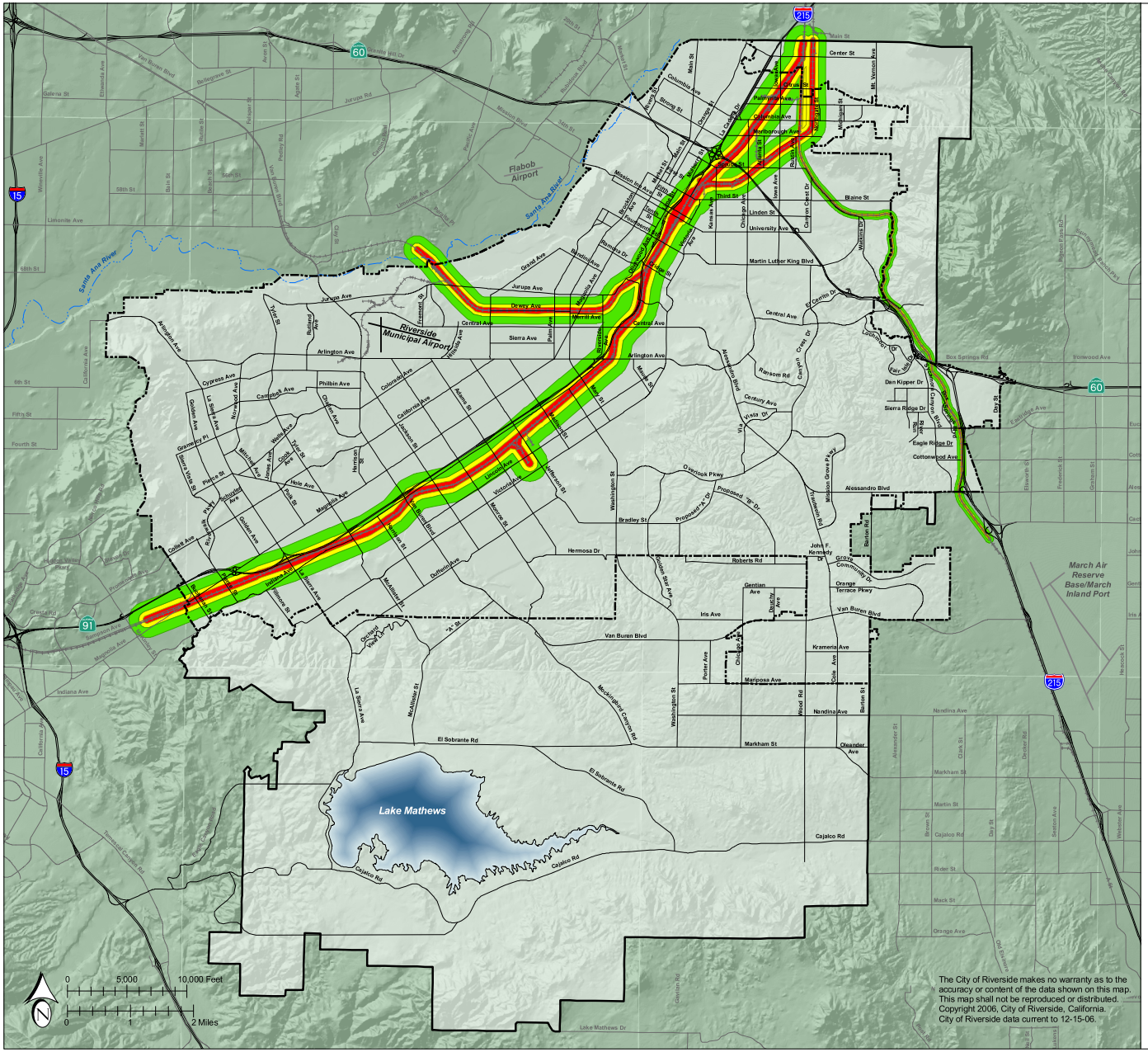
Refer to the Land Use and Urban Design Element for a policy that adds an Airport Protection Overlay Zone to the City's zoning map.

Only one air facility is located within the Planning Area, but operations at two other air facilities just outside City and Planning Area boundaries have local impacts.

Riverside Municipal Airport, a general aviation airport, supports one hundred thousand annual flight operations, including corporate jet activity. The airport covers a total of four hundred fifty-one acres and includes two runways. This is the only air facility located within the Planning Area.

Flabob Airport, a privately operated, primarily recreation-oriented airport, is located just north of the Planning Area across the Santa Ana River in the unincorporated community of Rubidoux.

March Air Reserve Base/March Inland Port, or MARB/MIP, is home to the 452nd Air Mobility Wing of the U.S. Air Force and will expand operations to include the March Inland Port during the early 21st century. Military and civilian aircraft utilizing MARB/MIP produce substantial levels of noise over the southeastern portion of the City and planning area. Plans call for 75,104 annual operations with military aircraft accounting for 54,104 72% of the operations as noted in the 2014 March Air Reserve Base / Inland Port Airport Land Use Compatibility Plan (March ARB/IPA ALUCP).



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

EXISTING NOISE

- 70 CNEL
- 65 CNEL
- 60 CNEL
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

NOTE: FOR AN EXPLANATION OF CNEL METHODOLOGY, PLEASE REFER TO THE NOISE ELEMENT TEXT.

SOURCE: CITY OF RIVERSIDE, AND P&D CONSULTANTS, 2005

Figure N-3

2003 RAILWAY NOISE

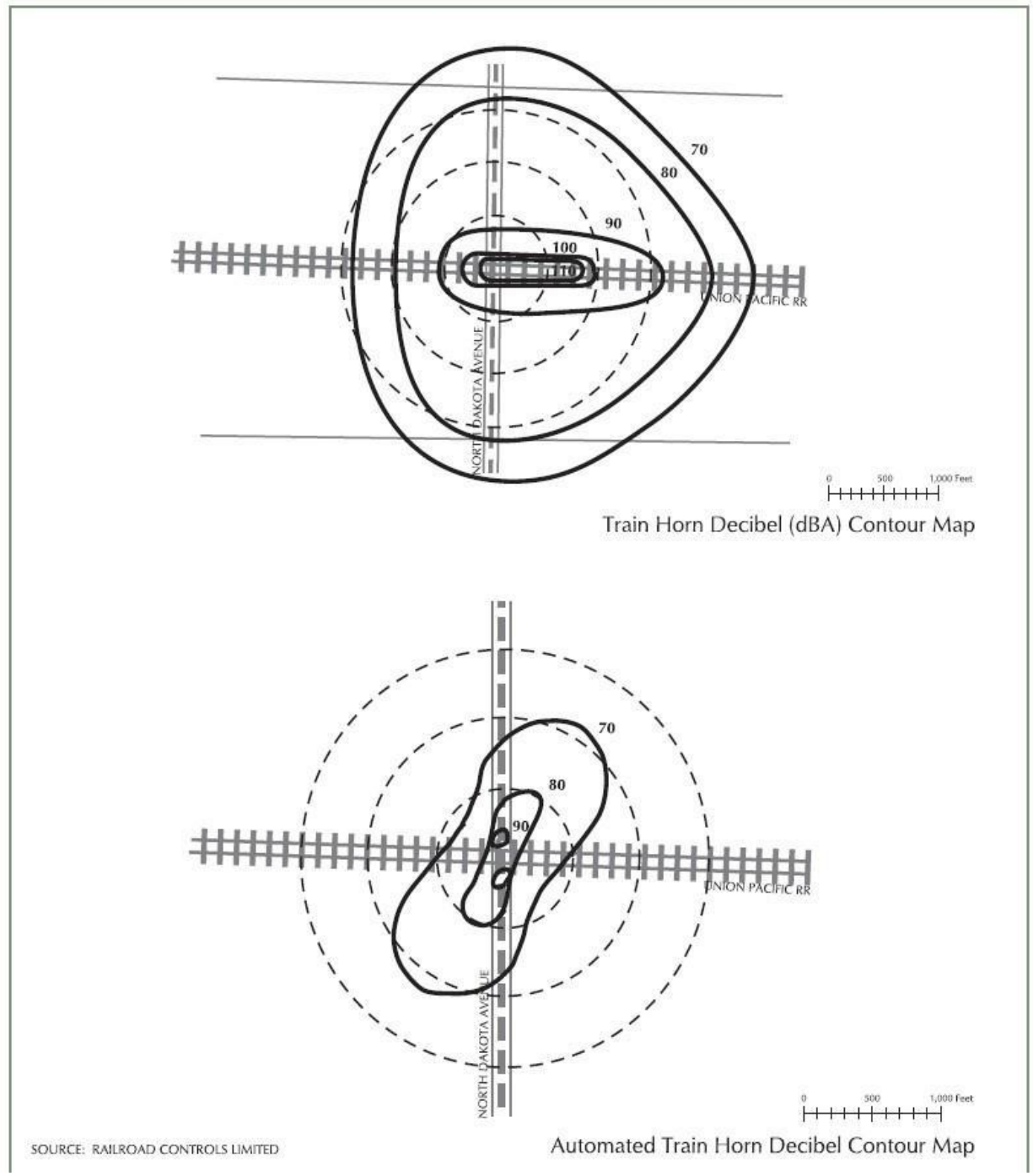


FIGURE N-4
TRAIN HORN COMPARISON

Although MARB/MIP is located outside of the City and its sphere of influence, noise from the facility affects both the City and the sphere.

The Public Safety and Land Use Elements contain additional information on airports in and adjacent to Riverside.

The City has worked with the March Joint Powers Authority to adjust air traffic patterns into and out of the MARB/MIP. Efforts to minimize exposure of sensitive land uses to excessive noise continue; although these must take into consideration topographic conditions surrounding MARB/MIP, which also constrain flight patterns. Established patterns associated with MARB/M IP are anticipated to continue into the future, resulting in ongoing noise levels.

STATIONARY SOURCE NOISE

Industrial Noise

Industrial businesses can have a varying degree of impact on adjacent uses. Industrial operations often involve use of mechanical equipment, generators and vehicles that contribute to noise levels at industrial sites, particularly for outdoor activities. Many of Riverside's neighborhoods have homes in close proximity to industrial uses.

Title 7 of the Riverside Municipal Code establishes noise performance criteria to guard against exposure of residential and other noise-sensitive uses to loud industrial-related noise. The noise/land use compatibility criteria in Table N–1 (Characteristics of Noise) will be used in assessing siting of new industrial uses.

Construction Noise

Construction noise typically involves the loudest common urban noise events associated with building demolition, grading, construction, large diesel engines and truck deliveries and hauling. Construction activity, although temporary at any given location, can be substantially disruptive to adjacent uses during the construction period. Riverside Municipal Code Section 7 .35.010(B)(5) regulates the allowable hours of construction activity to 7:00 A.M. to 7:00 P.M. on weekdays and 8:00 A.M. to 5:00 P.M. on Saturdays, with no construction activities allowed on Sunday or Federal holidays. In addition, the Municipal Code limits noise levels from construction activities to the maximum permitted exterior noise level for the affected land use.

Infrastructure improvements such as street widenings can also be a source of noise. Street improvement projects will incorporate the City's acoustical assessment procedure to minimize noise impacts.

Mechanical Equipment Noise

The motors, pumps and fans that cool and heat our buildings produce point-source noise that most directly affects adjacent land uses. Frequently, this equipment includes components of pure tone noise from the rotational frequency of motors. Although noise levels are generally low from these sources, the fact that such sources may operate continuously and may include pure tones that make them audible at a substantial distance creates potential for conflict. The City's Zoning Code and Municipal Code provisions generally address these conflicts.

Portable Power Equipment

Leaf blowers, lawn mowers, portable generators, electric saws and drills and other similar equipment that people use to maintain their properties create frequent noise during daylight hours. Such disruptions to the ambient sound environment are ubiquitous in the modern city and can produce very high noise levels at the location of the work.

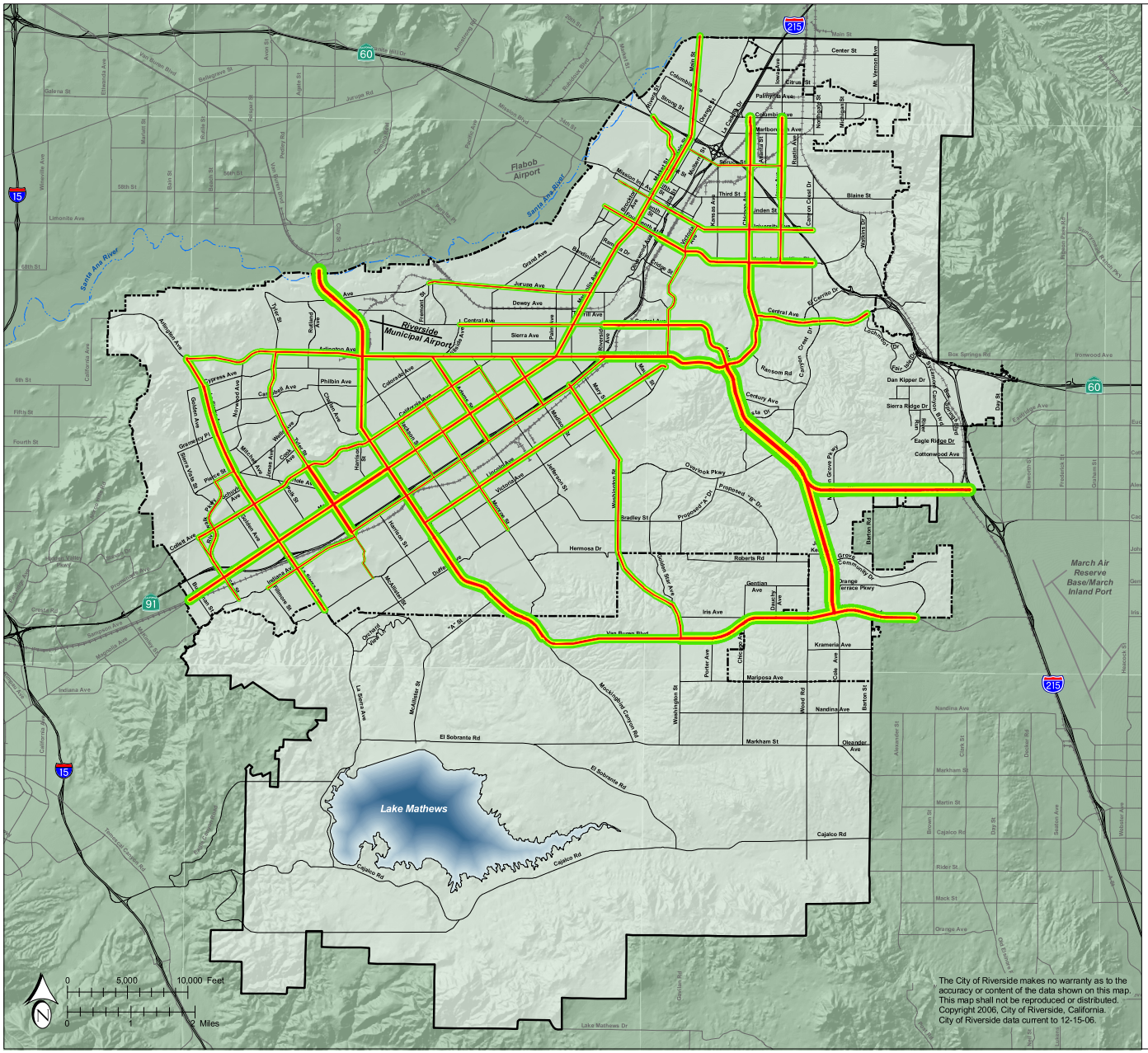
Amplified Sound

Amplified sound includes noise from personal or home audio equipment, automotive audio equipment, outdoor loudspeakers such as those used for paging and amplified sound at music or theatrical performances. Because this sound typically includes music or speech, it is potentially more detectable and more annoying than other sounds of the same noise level. Section 7.35.010 of the Municipal Code establishes limitations on time and magnitude of noise for these sources.

FUTURE NOISE CONDITIONS

Data, including a location map of measurement sites used to create the projected noise contours, can be found in the General Plan EIR.

The most significant noise sources in Riverside — roadways, freeways, railways and air facilities— will continue generating noise into the future. Figure N– 5 (2025 Roadway Noise) identifies the projected noise contours for year 2025 largely attributable to roadway traffic; Figure N–6 (2025 Freeway Noise) identifies noise projected from freeway traffic. Projected noise from railroad activity is shown in Figure N–7 (2025 Railway Noise). Noise levels from these surface sources are expected to increase with increased traffic levels anticipated in the Planning Area by 2025.



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

PROPOSED NOISE

- 70 CNEL
- 65 CNEL
- 60 CNEL

RIVERSIDE CITY BOUNDARY

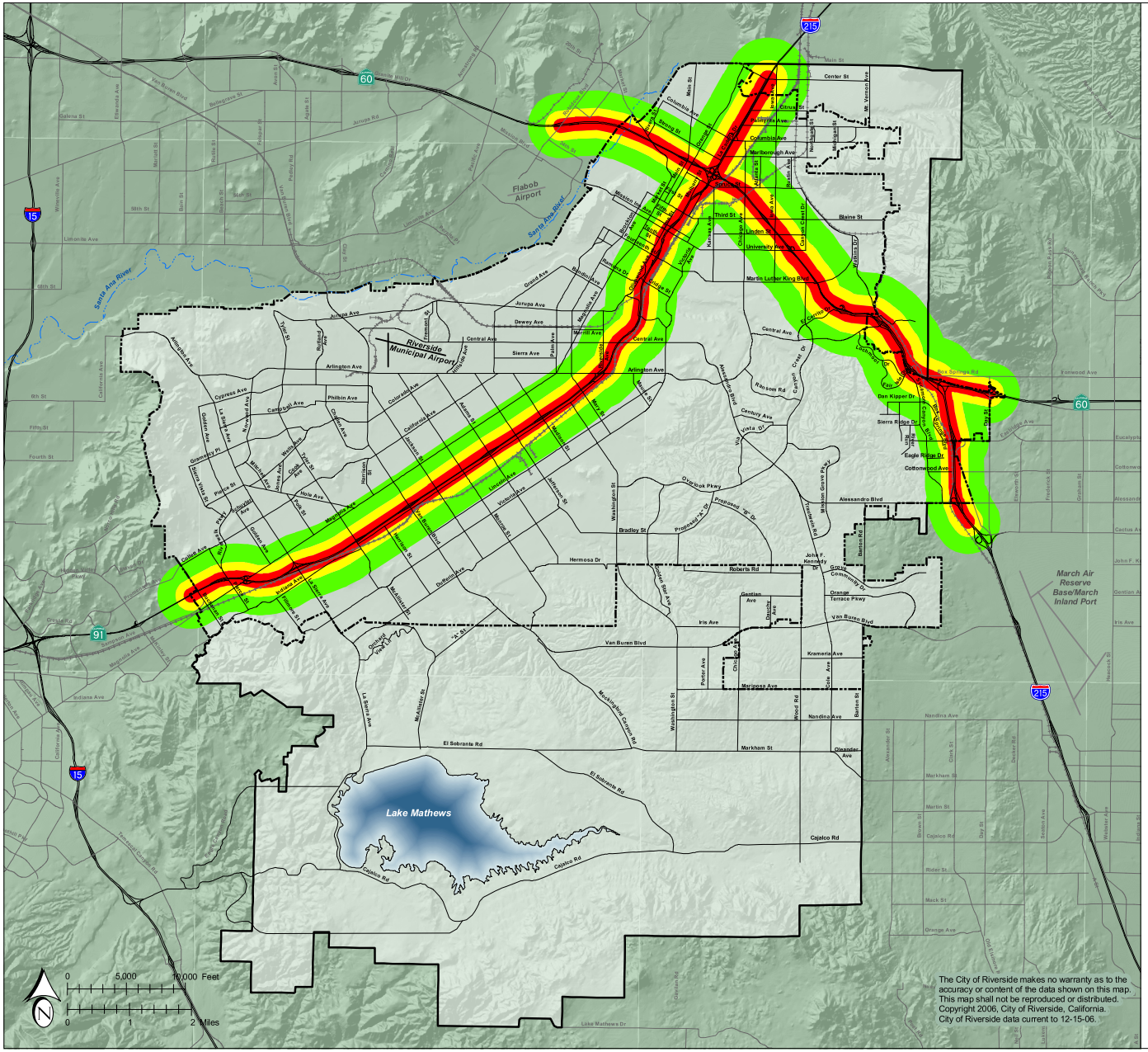
RIVERSIDE PROPOSED SPHERE OF INFLUENCE

NOTE: FOR AN EXPLANATION OF CNEL METHODOLOGY, PLEASE REFER TO THE NOISE ELEMENT TEXT.

SOURCE: CITY OF RIVERSIDE, AND P&D CONSULTANTS, 2005

Figure N-5

2025 ROADWAY NOISE



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

PROPOSED NOISE

- 70 CNEL
- 65 CNEL
- 60 CNEL

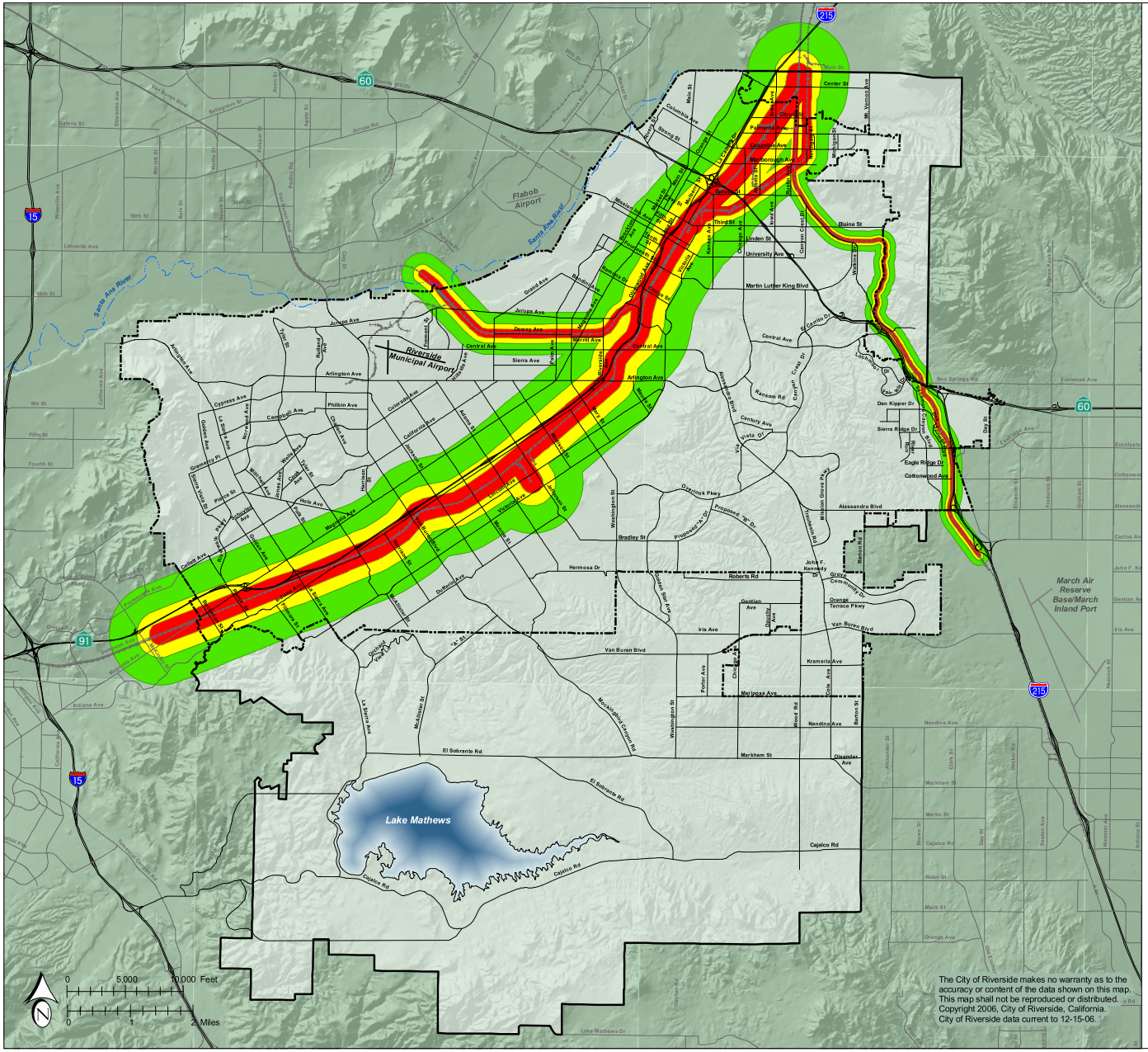
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

NOTE: FOR AN EXPLANATION OF CNEL METHODOLOGY, PLEASE REFER TO THE NOISE ELEMENT TEXT.

SOURCE: CITY OF RIVERSIDE, AND P&D CONSULTANTS, 2005

Figure N-6

2025 FREEWAY NOISE



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

PROPOSED NOISE

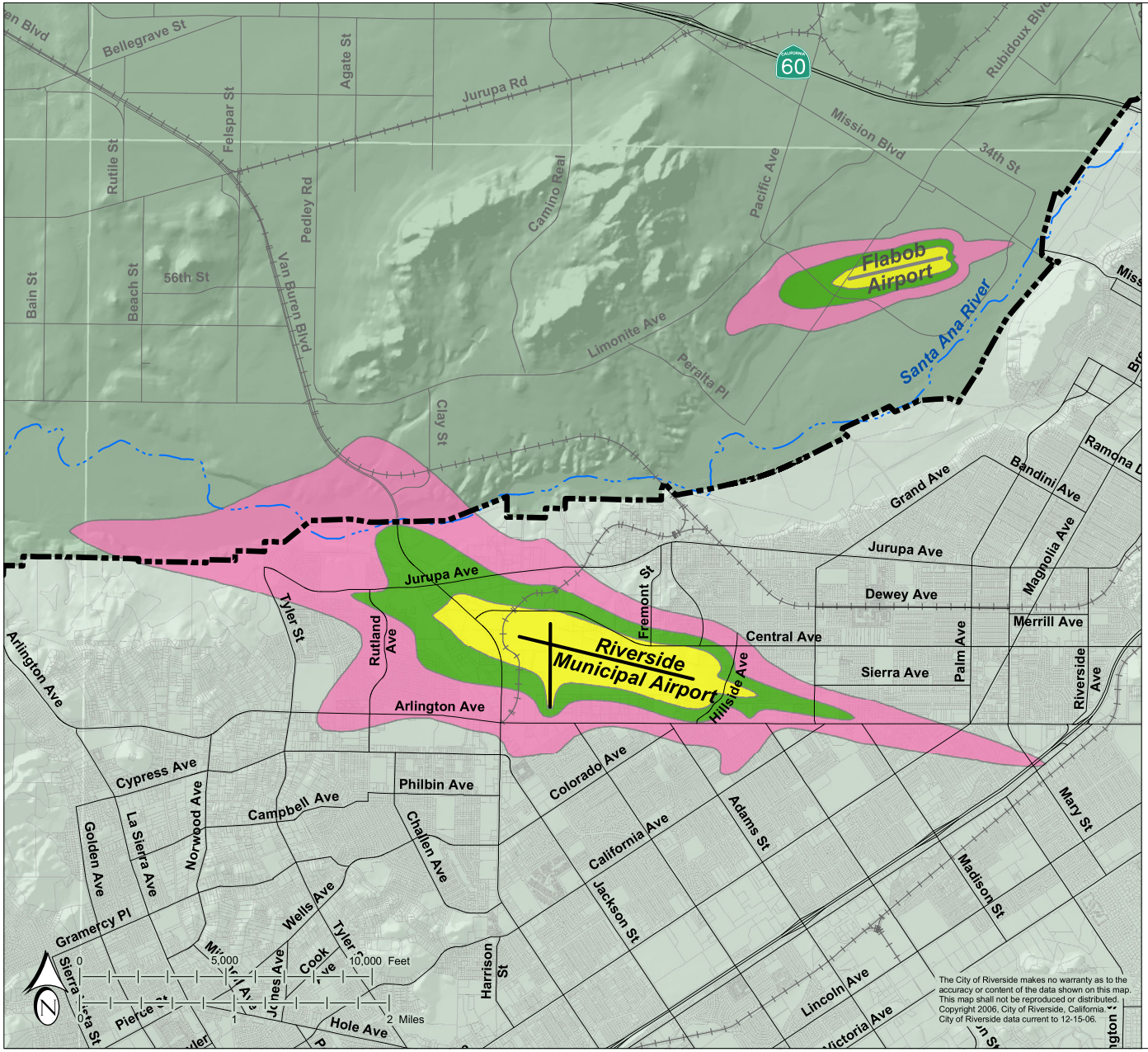
- 70 CNEL
- 65 CNEL
- 60 CNEL
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

NOTE: FOR AN EXPLANATION OF CNEL METHODOLOGY, PLEASE REFER TO THE NOISE ELEMENT TEXT.

SOURCE: CITY OF RIVERSIDE, AND P&D CONSULTANTS, 2005

Figure N-7

2025 RAILROAD NOISE



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

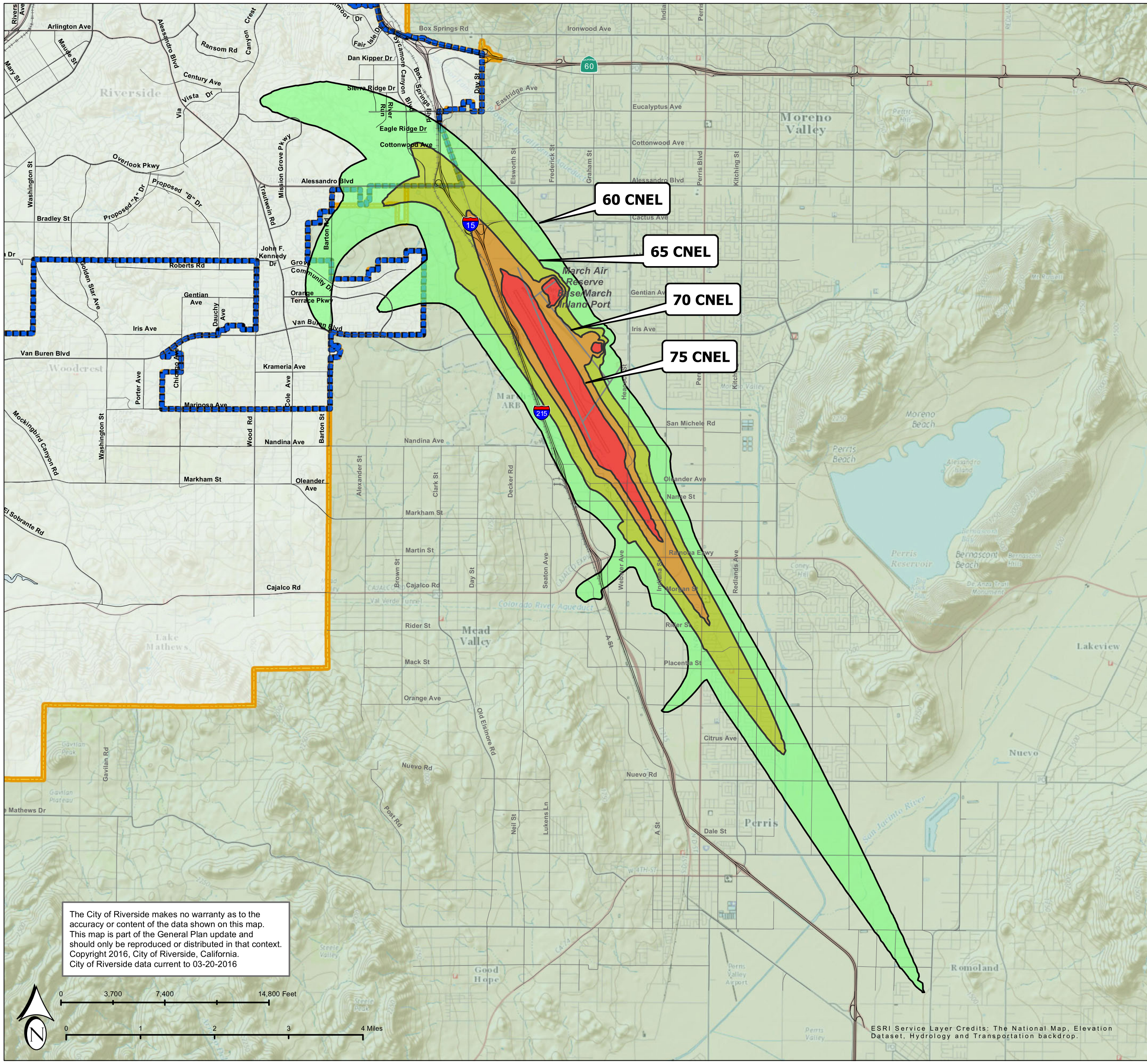
NOISE CONTOURS

- 65 CNEL
- 60 CNEL
- 55 CNEL
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

SOURCE: RIVERSIDE COUNTY AIRPORT LAND USE COMPATIBILITY PLAN, ADOPTED DECEMBER 2004 FOR FLABOB AIRPORT AND MARCH 2005 FOR RIVERSIDE MUNICIPAL AIRPORT.

Figure N-8

RIVERSIDE AND FLABOB AIRPORT NOISE CONTOURS



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

RIVERSIDE COUNTY AIRPORT
LAND USE COMPATIBILITY PLAN

Noise Contours

Decibals

- 60 - 65 dB CNEL
- 65 - 70 db CNEL
- 70 - 75 db CNEL
- 75 + db CNEL

Boundary Lines

- Riverside City Boundary
- Riverside Sphere of Influence

Projected Activity Level

Annual Operations 75,104
Average Annual Day 206

Noise Contour Notes:
Contours represent composite of noise contours from four sources:

Forecasts and noise contours from the Air Installation Compatible Use Study for March Air Researve Base (August 2005).

Environmental Assessment for Proposed Military Construction and Total Air Force Reserve Integration Command at March Air Reserve Base (June 2010)

Environmental Imapct Report for March Inland Port General Aviation Faciities Development (March Joint Powers Authority, August 2012)

F15 Aircrate Conversion Environmental Impact Statement 144th Fighter Wing California Air National Guard Fresno-Yosemite International Airport (National Guard Bureau March 2013)

CNEL = Community Noise Equivelent Levels

Figure N-9

March Air Reserve Base/ Inland Port Airport

AIRPORT NOISE IMPACT AREA

Figure N–8 (2025 Riverside and Flabob Airport Noise) focuses on noise impacts projected for these small facilities by the Riverside County Airport Land Use Commission. Figure N–9 indicates future noise levels associated with March Air Reserve Base/March Inland Port consistent with the March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan (March ARB/IPA ALUCP) adopted by the Riverside County Airport Land Use Commission in November, 2014.

The Land Use Policy Map (Figure LU-10 in the Land Use and Urban Design Element) has been developed to avoid placing intensive new uses with the airport-influenced areas. These policies are carried out through congruent zoning regulations. Development controls include limiting development within areas subject to high noise levels and limiting the intensity and height of development within aircraft hazard zones. The Riverside County Airport Land Use Compatibility Plan (CLUP), adopted in October 2004 by the Riverside County Airport Land Use Commission, and the 2014 March ARB/IPA ALUCP designates zones of airport-influenced areas for every airport in Riverside County and proposes a series of policies and compatibility criteria to ensure that both aviation uses and surrounding areas may continue.

The noise contours in Figures N–5 through N–9 assist in setting policies for establishing new land uses and appropriate mitigation for properties that will continue to be exposed to higher noise levels.

Riverside's primary goal with regard to community noise is to minimize the exposure of new residential development, schools, hospitals and similar noise-sensitive uses to excessive or unhealthy noise levels to the greatest extent possible. Toward this end, this Element establishes the noise/land use compatibility guidelines set forth in Figure N–10 (Noise/Land Use Noise Compatibility Criteria) for outdoor noise.

The compatibility guidelines recognize and respond to the many different noise environments in Riverside: the relative quiet within the greenbelt area, the sounds typical in suburban neighborhoods and the higher activity areas such as Downtown and within mixed-use districts. As a matter of policy, the City supports new residential development within already urbanized areas where ambient noise levels may be higher than those experienced in neighborhoods located on the urban periphery. This is in an effort to promote “smart growth,” mixed use development, making more efficient use of land and resources.

Interior noise levels for new residential development, regardless of location within the Planning Area, will be required to comply with standards set forth in Title 24 of the State Health and Safety Code. New construction may need to incorporate special insulation, windows and sealants in order to ensure that interior noise levels meet Title 24 standards.

MINIMIZING NOISE IMPACTS

NOISE AND LAND USE PLANNING

Primary noise sources in the City will not go away. The City will utilize the noise/land use compatibility guidelines outlined in Figure N–10 (Noise/Land Use Compatibility Criteria) in making land use decisions. These compatibility guidelines show a range of noise standards for various land use categories. Depending on the ambient environment of a particular community, these basic guidelines m ay be tailored to reflect existing noise and land use characteristics. The matrix defines noise in terms of CNEL and expressed in dB that measure sound intensity. Noise levels occurring during nighttime hours are weighted more heavily than during the daytime. Additionally, the City provides levels of acceptable noise exposure based on the sensitivity of specific land uses (Municipal Code Section 7.25.010). The City will pursue proactive measures to limit additional exposure of sensitive uses and to address longstanding noise issues.

Land uses deemed the most noise sensitive include amphitheaters, concert halls, auditoriums and meeting halls. Many jurisdictions consider residential uses particularly noise sensitive because families and individuals expect to use time in the home for rest and relaxation; intrusive noise can interfere with such pursuits. Some variability in standards for noise sensitivity may apply to different densities of residential development, specifically infill and mixed use developments; single family uses are frequently considered the most sensitive. New construction or development should generally not be undertaken, unless it can be demonstrated that noise reduction requirements can be employed to reduce noise impacts to an acceptable level. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.

Sensitive receptors must also be protected from excessive noise associated with commercial and industrial businesses and agricultural activities. Application and enforcement of the City Noise Control Code will continue to be the primary means of regulating and controlling so-called point-source noise. During the preliminary stages of the development process, potential noise impacts and appropriate mitigation will be identified.

Similarly, enforcement of the Noise Control Code will address nuisance noise such as loud animals or birds, loud audio equipment, domestic power tools, vehicle repair and testing, powered motor vehicles and construction activities.

Objective N–1:	**Minimize noise levels from point sources throughout the community and, wherever possible, mitigate the effects of noise to provide a safe and healthful environment.**

Policy N–1.1: Continue to enforce noise abatement and control measures particularly within residential neighborhoods.

Policy N–1.2: Require the inclusion of noise-reducing design features in development consistent with standards in Figure N–10 (Noise/Land Use Compatibility Criteria), Title 24 California Code of Regulations and Title 7 of the Municipal Code.

Policy N–1.3: Enforce the City of Riverside Noise Control Code to ensure that stationary noise and noise emanating from construction activities, private developments/residences and special events are minimized.

Policy N–1.4: Incorporate noise considerations into the site plan review process, particularly with regard to parking and loading areas, ingress/egress points and refuse collection areas.

Policy N–1-5: Avoid locating noise-sensitive land uses in existing and anticipated noise-impacted areas.

Policy N–1.6: Educate the public about City noise regulations.

Policy N–1.7: Evaluate noise impacts from roadway improvement projects by using the City's Acoustical Assessment Procedure.

Policy N–1.8: Continue to consider noise concerns in evaluating all proposed development decisions and roadway projects.

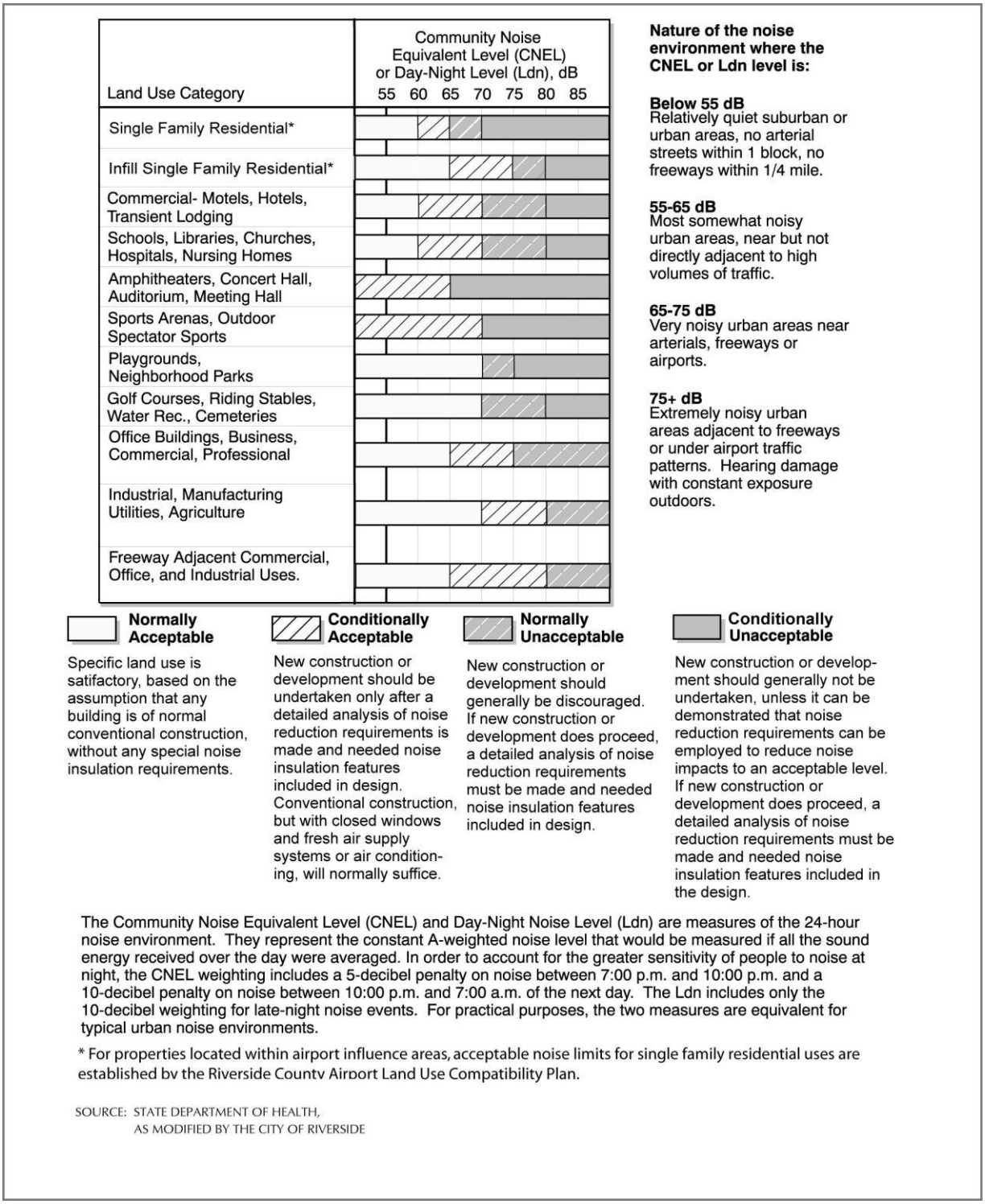


FIGURE N-10
NOISE/LAND USE NOISE COMPATIBILITY CRITERIA

Objective N–2:	**Minimize the adverse effects of airport-related noise through proper land use planning.**

Policy N–2.1: Ensure that new development can be made compatible with the noise environment by using noise/land use compatibility standards (Figure N–10 – Noise/Land Use Noise Compatibility Criteria) and the airport noise contour maps (found in the Riverside County Airport Land Use Compatibility Plans) as guides to future planning and development decisions.

See the Land Use and Urban Design, Circulation and Community Mobilityand Public Safety Elements for more information on Airports.

In particular, review Objectives LU-21, LU-22, CCM-11 and PS-4.

Policy N–2.2: Avoid placing noise-sensitive land uses (e.g., residential uses, hospitals, assisted living facilities, group homes, schools, day care centers, etc.) within the high noise impact areas (over 60 dB CNEL) for Riverside Municipal Airport and Flabob Airport in accordance with the Riverside County Airport Land Use Compatibility Plan.

Policy N–2.3: Support efforts of the Federal Aviation Administration and other responsible agencies to require the development of quieter aircraft.

Policy N–2.4: Work with the Federal Aviation Administration and neighboring airport authorities to minimize the noise impacts of air routes through residential neighborhoods within the City.

Policy N–2.5: Utilize the Airport Protection Overlay Zone, as appropriate, to advise landowners of special noise considerations associated with their development.

Refer to the Land Use and Urban Design Element for additional objectives and policies related to March Air Reserve Base and Inland Port.

In particular, review Objectives LU-21, LU-22.

Objective N–3:	**Ensure the viability of March Air Reserve Base/March Inland Port.**

Policy N–3.1: Avoid placing noise-sensitive land uses (e.g., residential uses, hospitals, assisted living facilities, group homes, schools, day care centers, etc.) within the high noise impact areas (over 65 dB CNEL) for March Air Reserve Base/March Inland Port in accordance with the Riverside County 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan.

Policy N–3.2: Work with the Riverside County Airport Land Use Commission and the March Joint Powers Authority to develop noise/land use guidelines and City land use plans that are consistent with ALUC policies.

Policy N–3.3: Carefully consider planned future operations of the March Air Reserve Base and March Inland Port in land use decisions for properties located within the airport-influenced area.

ADDRESSING TRANSPORTATION NOISE

The most efficient and effective means of controlling noise from transportation systems is to reduce noise at the source. However, the City has no direct control over noise produced by trucks, cars and trains because State and Federal regulations preempt local laws. Given that the City cannot control this noise at the source, City noise programs focus on reducing the impact of transportation noise along freeways, arterial roadways and rail corridors.

Site planning, landscaping, topography and the design and construction of noise barriers are the most common and effective method of alleviating vehicular traffic and train noise impacts. Setbacks and buffers can also be used to achieve noise reduction.

Noise-attenuating barriers can and will be incorporated into new development projects to reduce noise exposure. The effectiveness of the barrier will depend upon: 1) the relative height and materials of the barrier; 2) the noise source; 3) the affected area; and 4) the horizontal distance between the barrier and the affected area.

Freeway noise associated with SR-91 has largely been addressed to greatest extent practicable with recent improvements. The SR-60/I-215 upgrade project includes elements to shield freeway noise, particularly along areas of the freeways adjoining residential areas. The City will continue to pursue mitigation with Caltrans for any remaining areas not addressed by freeway enhancement projects.

Mitigating rail noise represents one of the biggest challenges the City will continue to face. Eliminating all at-grade crossings for existing railways would significantly reduce noise impacts and solve road/rail traffic conflicts, but this solution involves costs beyond the collective resources of the City, Federal agencies and railroad owners/operators. Thus, City efforts will focus on minimizing noise associated with train horns, prioritizing grade separations and implementing noise reduction programs.

Objective N–4:	Minimize ground transportation-related noise impacts.

Policy N–4.1: Ensure that noise impacts generated by vehicular sources are minimized through the use of noise reduction features (e.g., earthen berms, landscaped walls, lowered streets, improved technology).

Policy N–4.2: Investigate and pursue innovative approaches to reducing noise from railroad sources.

Policy N–4.3: Identify and aggressively pursue funding sources to provide grade separations and sound walls along train routes as noise reduction measures.

See Policies CCM-12.5 and PS–4.8 for additional information relating to road/rail grade separations..

Policy N–4.4: Prioritize locations for implementing road/rail grade separations.

Policy N–4.5: Use speed limit controls on local streets as appropriate to minimize vehicle traffic noise.

Title 7 - NOISE CONTROL

Chapter 7.05 - POLICY AND INTENT

7.05.010 - Policy and intent.

It is determined that certain noise levels are detrimental to the public health, safety and welfare and are contrary to the public interest. Therefore, the City Council declares that creating, maintaining, causing or allowing to create, maintain or cause any noise in a manner not in conformity with the provisions of this chapter, is a public nuisance and shall be punishable as such.

In order to control unnecessary, excessive and/or annoying noise in the City, it is declared to be the policy of the City to prohibit such noise generated by the sources specified in this chapter. It shall be the goal of the City to minimize noise levels and mitigate the effects of noise to provide a safe and healthy living environment.

(Ord. 6273 § 1 (part), 1996)

Chapter 7.10 - DEFINITIONS

7.10.010 - Definitions generally.

For the purposes of this title, the words and phrases defined in this chapter shall have the meanings respectively ascribed to them by this chapter.

7.10.015 - A-weighted sound level.

"A-weighted sound level" means the sound pressure level in decibels as measured on a sound level meter using the A-weighing network. The level is designated dB(A) or dBA.

(Ord. 6273 § 1(part), 1996)

7.10.020 - Agricultural property.

"Agricultural property" means a parcel of real property which is developed for agricultural and incidental residential purposes which is located within any permitted zone.

(Ord. 6273 § 1(part), 1996)

7.10.025 - Ambient noise level.

"Ambient noise level" means the all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding an alleged offensive noise, at the location and approximate time at which the comparison with the offensive noise is to be made. The ambient noise level constitutes the normal or existing level of environmental noise at a given location.

(Ord. 6273 § 1(part), 1996)

7.10.030 - Commercial purpose.

"Commercial purpose" means the use, operation or maintenance of any sound amplification equipment for the purpose of advertising any business, goods or services, or for the purposes of attracting the attention of the public, or soliciting patronage of customers to any performance, show, entertainment, exhibition or event, or for the purpose of demonstrating such sound equipment.

(Ord. 6273 § 1(part), 1996)

7.10.035 - Construction.

"Construction" means any site preparation including grading, building, fabricating, assembly, substantial repair, alteration, or similar action.

(Ord. 6273 § 1(part), 1996)

7.10.040 - Community support land use category.

"Community support land use category" means areas developed with schools, libraries, fire stations, hospitals and similar uses in any zone.

(Ord. 6273 § 1(part), 1996)

7.10.045 - Cumulative period.

"Cumulative period" means a total period of time composed of time segments which may be continuous or discontinuous.

(Ord. 6273 § 1(part), 1996)

7.10.050 - Decibel (dB).

"Decibel (dB)" means a unit for measuring amplitude of a sound, equal to 20 times the logarithm to the base ten of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

(Ord. 6273 § 1(part), 1996)

7.10.055 - Demolition.

"Demolition" means any dismantling, intentional destruction or removal of structures, site improvements, landscaping or utilities.

(Ord. 6273 § 1(part), 1996)

7.10.060 - Emergency.

"Emergency" means any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate action.

(Ord. 6273 § 1(part), 1996)

7.10.065 - Emergency work.

"Emergency work" means work made necessary to restore property to a safe condition following a physical trauma or property damage caused by an emergency or work necessary to prevent or minimize damage from a potential emergency.

(Ord. 6273 § 1(part), 1996)

7.10.070 - Fixed noise source.

"Fixed noise source" means a stationary device which creates sounds from a fixed location, including residential, agricultural, industrial and commercial machinery and equipment, pumps fans, compressors, air conditioners and refrigeration devices.

(Ord. 6273 § 1(part), 1996)

7.10.075 - Grading.

"Grading" means any excavating and/or filling of earth material to prepare a site for construction or the placement of improvements.

(Ord. 6273 § 1(part), 1996)

7.10.080 - Impulsive sound.

"Impulsive sound" means sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples include explosions, drum beats, drop-forge impacts, fire crackers, discharge of firearms and one object striking another.

(Ord. 6273 § 1(part), 1996)

7.10.085 - Industrial land use category.

"Industrial land use category" means any area occupied by land uses whose primary operation involves warehousing, manufacturing, assembling, distributing, packaging or processing goods in the BMP, I, and AIR zones.

(Ord. 6273 § 1(part), 1996)

7.10.090 - Intrusive noise.

"Intrusive noise" means a noise which intrudes over and above the existing ambient noise. The relative intrusiveness of the sound depends upon its amplitude, duration, frequency and time of occurrence, tonal or informational content as well as its relationship to the prevailing ambient noise level.

(Ord. 6273 § 1(part), 1996)

7.10.095 - Minor maintenance.

"Minor maintenance" means work required to keep property used for residential purposes in an existing state.

(Ord. 6273 § 1(part), 1996)

7.10.100 - Mobile noise source.

"Mobile noise source" means any noise source other than a fixed noise source.

(Ord. 6273 § 1(part), 1996)

7.10.105 - Motor vehicle.

"Motor vehicle" means any self-propelled vehicle as defined in the California Vehicle Code, including all on-highway types of motor vehicles subject to registration under said code, and all off-highway type motor vehicles subject to identification under said code.

(Ord. 6273 § 1(part), 1996)

7.10.110 - Muffler.

"Muffler" or "sound dissapative device" means a device for abating the sound of escaping gases from an internal combustion engine.

(Ord. 6273 § 1(part), 1996)

7.10.115 - Noise.

"Noise" means any sound which exceeds the appropriate actual or presumed ambient noise level or which annoys or tends to disturb humans or which causes or tends to cause an adverse psychological or physiological effect on humans.

(Ord. 6273 § 1(part), 1996)

7.10.120 - Noise Control Officer.

"Noise Control Officer" means the City official(s) or duly authorized representative(s) with the responsibility to enforce the noise ordinance.

(Ord. 6273 § 1(part), 1996)

7.10.125 - Noise disturbance.

"Noise disturbance" means any sound which endangers or injures the safety or health of humans or animals, or annoys or disturbs a reasonable person of normal sensitivities or endangers or injures personal or real property.

(Ord. 6273 § 1(part), 1996)

7.10.130 - Noise source.

"Noise source" means a disturbance causing operation which originates from noise generating mechanism. An example of a noise source is the combination of a motor, pump and compressor.

(Ord. 6273 § 1(part), 1996)

7.10.135 - Noise zone.

"Noise zone" means defined areas of generally consistent land use where the ambient noise levels are generally similar within a range of five decibels.

(Ord. 6273 § 1(part), 1996)

7.10.140 - Nonurban land use category.

"Nonurban land use category" means vacant land or land primarily for agricultural production containing ten acres or more.

(Ord. 6273 § 1(part), 1996)

7.10.145 - Office/commercial land use category.

"Office/commercial land use category" means areas developed with office and/or commercial uses in the O, CRC, CR-NC, CR, and CG zones.

(Ord. 6967 § 2, 2007; Ord. 6273 § 1(part), 1996)

7.10.150 - Person.

"Person" means any individual, association, partnership or corporation and includes any officer, employee, department, agency or instrumentality of a State or any political subdivision of a State.

(Ord. 6273 § 1(part), 1996)

7.10.155 - Powered model vehicle.

"Powered model vehicle" means airborne, waterborne or land-borne vehicles such as model airplanes, model boats, and model vehicles of any type or size which are not designed for carrying persons or property and which can be propelled in any form other than manpower or wind power.

(Ord. 6273 § 1(part), 1996)

7.10.160 - Public recreation facility land use category.

"Public recreation facility land use category" means areas developed with public parks and other public recreational facilities.

(Ord. 6273 § 1(part), 1996)

7.10.165 - Public right-of-way.

"Public right-of-way" means any street, avenue, boulevard, highway, sidewalk or alley or similar place which is owned or controlled by a government entity.

(Ord. 6273 § 1(part), 1996)

7.10.170 - Public space.

"Public space" means any real property or structures which are owned or controlled by a government entity.

(Ord. 6273 § 1(part), 1996)

7.10.175 - Residential land use category.

"Residential land use category" means areas primarily used for residential purposes in the RE, RA-5, RR, RC, R-1-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-2500, R-3-4000, R-3-3000, R-3-2000, R-3-1500, and R-4 zones.

(Ord. 6967, § 2, 2007; Ord. 6273 § 1(part), 1996)

7.10.180 - Sound.

"Sound" means an oscillation in pressure, particle displacement, particle velocity or other physical parameter, in a medium with internal forces that causes compression and rarefaction of that medium. The description of sound may include any characteristic of such sound, including duration, intensity and frequency.

(Ord. 6273 § 1(part), 1996)

7.10.185 - Sound amplifying equipment.

"Sound amplifying equipment" means any device for the amplification of the human voice, or music, or any other sound, excluding devices in motor vehicles when heard only by the occupants of the vehicle, excluding warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes.

(Ord. 6273 § 1(part), 1996)

7.10.190 - Sound level.

"Sound level" means the weighted sound pressure level obtained by the use of a sound level meter and frequency weighing network, such as A, B or C, as specified in American National Standards Institute specifications for sound level meter ANSI S1.4-1971 or the latest approved revision thereof. If the frequency weighing method used is not stated, the A-weighing shall apply.

(Ord. 6273 § 1(part), 1996)

7.10.195 - Sound level meter.

"Sound level meter" means an instrument, including a microphone, an amplifier, an output meter, and frequency weighing networks for the measurement of sound levels which satisfies the requirements for S2A meters in American National Standards Institute specifications for sound level meters, S1.4-1971, or the most recent revision thereof.

(Ord. 6273 § 1(part), 1996)

7.10.200 - Sound pressure.

"Sound pressure" means the instantaneous difference between the actual pressure and the average or barometric pressure at a given point in space, as produced by sound energy.

(Ord. 6273 § 1(part), 1996)

7.10.205 - Sound pressure level in decibels.

"Sound pressure level in decibels" means 20 times the logarithm to the base ten of the ratio of the pressure of this sound to the reference pressure, which reference pressure shall be explicitly stated.

(Ord. 6273 § 1(part), 1996)

7.10.210 - Supplementary definitions of technical terms.

Definitions of technical terms not defined herein shall be obtained from the American National Standard, "Acoustical Terminology" S1.1-1961 (R-1971) or the latest revision thereof.

(Ord. 6273 § 1 (part), 1996)

Chapter 7.15 - ADMINISTRATION AND ENFORCEMENT

7.15.005 - Administration and enforcement.

A. The noise regulation shall be enforced by the Code Enforcement Division of the Community & Economic Development Department and/or the Riverside Police Department.

B. It shall be the responsibility of the Code Enforcement Division and/or the Riverside Police Department to enforce the provisions of this title and to perform all other functions required by this title. Such duties shall include, but not be limited to investigating potential violations, issuing warning notices and citations,

and providing evidence to the City Attorney for legal action.

C. A violation of these regulations may be prosecuted as a misdemeanor or as an infraction. Each day a violation occurs shall constitute a separate offense and shall be punishable as such. However, nothing in these regulations shall prevent any code compliance officer or his duly authorized representatives from efforts to obtain voluntary compliance by way of warning, notice or education.

(Ord. 7341 § 6, 2016; Ord. 6959 § 1, 2007; Ord. 6844 § 15, 2006; Ord. 6273 § 1 (part), 1996)

Chapter 7.20 - SOUND LEVEL MEASUREMENT

7.20.010 - Sound level measurement.

Except as provided by Chapter 17.35, General Noise Regulations, any sound or noise level measurement made to enforce this title shall be measured with a sound level meter using the A-weighing scale at slow response. The exterior noise level shall be measured at the position or positions along the complainant's property line closest to the noise source or where the noise level is highest. If the complaint concerns an interior source, noise measurements shall be made at a point at least four feet from the wall, ceiling or floor nearest the noise source with windows opened or closed as would be normal for the season.

(Ord. 6273 § 1 (part), 1996)

Chapter 7.23 - AMBIENT NOISE LEVELS

7.23.010 - Ambient sound levels.

Title 7 - Noise Control of the Riverside Municipal Code shall be consistent with Title 24 of the Health and Safety Code of the State of California as may be amended from time to time.

(Ord. 6967 § 3, 2007)

7.23.020 - Mixed use development.

Where a new development proposal includes a mix of residential and nonresidential uses within the same project, the interior ambient noise standard for the residential component of the project may be increased by five decibels.

(Ord. 6967 § 3, 2007)

7.23.030 - Infill single-family residential development.

Where a new development proposal includes an infill single-family residential use, the interior ambient noise standard for the proposal may be increased by five decibels.

(Ord. 6967 § 3, 2007)

Chapter 7.25 - NUISANCE EXTERIOR SOUND LEVEL LIMITS

7.25.010 - Exterior sound level limits.

A. Unless a variance has been granted as provided in this chapter, it shall be unlawful for any person to cause or allow the creation of any noise which exceeds the following:
   1. The exterior noise standard of the applicable land use category, up to five decibels, for a cumulative period of more than 30 minutes in any hour; or
   2. The exterior noise standard of the applicable land use category, plus five decibels, for a cumulative period of more than 15 minutes in any hour; or
   3. The exterior noise standard of the applicable land use category, plus ten decibels, for a cumulative period of more than five minutes in any hour; or
   4. The exterior noise standard of the applicable land use category, plus 15 decibels, for the cumulative period of more than one minute in any hour; or
   5. The exterior noise standard for the applicable land use category, plus 20 decibels or the maximum measured ambient noise level, for any period of time.

B. If the measured ambient noise level exceeds that permissible within any of the first four noise limit categories, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to encompass the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

C. If possible, the ambient noise level shall be measured at the same location along the property line with the alleged offending noise source inoperative. If for any reason the alleged offending noise source cannot be shut down, then the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the offending noise is inaudible. If the measurement location is on the boundary between two different districts, the noise shall be the arithmetic mean of the two districts.

D. Where the intruding noise source is an air-conditioning unit or refrigeration system which was installed prior to the effective date of this chapter, the exterior noise level when measured at the property line shall not exceed 60 dBA for units installed before 1-1-80 and 55 dBA for units installed after 1-1-80.

Table 7.25.010A

Exterior Noise Standards		
Land Use Category	**Time Period**	**Noise Level**
Residential	Night (10 p.m. to 7 a.m.) Day (7 a.m. to 10 p.m.)	45 dBA 55 dBA
Office/commercial	Any time	65 dBA

Industrial	Any time	70 dBA
Community support	Any time	60 dBA
Public recreation facility	Any time	65 dBA
Nonurban	Any time	70 dBA

Table 7.25.010.B

Land Use Category/Zoning Matrix	
Land Use Category	**Underlying Zone**
Residential	RE, RA-5, RR, RC, R-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-2500, R-3-4000, R-3-3000, R-3-2000, R-3-1500, R-4
Office/commercial	O, CRC, CR-NC, CR, CG
Industrial	BMP, I, AIR
Community support	Any permitted zone
Nonurban	Any permitted zone

(Ord. 6967 § 5, 2007; Ord. 6273 § 1 (part), 1996)

Chapter 7.30 - NUISANCE INTERIOR SOUND LEVEL LIMITS

7.30.015 - Interior sound level limits.

A. No person shall operate or cause to be operated, any source of sound indoors which causes the noise level, when measured inside another dwelling unit, school or hospital, to exceed:

1. The interior noise standard for the applicable land category area, up to five decibels, for a cumulative period of more than five minutes in any hour;
2. The interior noise standard for the applicable land use category, plus five decibels, for a cumulative

period of more than one minute in any hour;

3. The interior noise standard for the applicable land use category, plus ten decibels or the maximum measured ambient noise level, for any period of time.

B. If the measured interior ambient noise level exceeds that permissible within the first two noise limit categories in this section, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to reflect the interior ambient noise level. In the event the interior ambient noise level exceeds the third noise limit category, the maximum allowable interior noise level under said category shall be increased to reflect the maximum interior ambient noise level.

C. The interior noise standard for various land use districts shall apply, unless otherwise specifically indicated, within structures located in designated zones with windows opened or closed as is typical of the season.

Table 7.30.015

Interior Noise Standard		
Land Use Category	**Time Period**	**Noise Level**
Residential	Night (10 p.m. to 7 a.m.) Day (7 a.m. to 10 p.m.)	35 dBA 45 dBA
School	7 a.m. to 10 p.m. (while school is in session)	45 dBA
Hospital	Any time	45 dBA

(Ord. 6273 § 1 (part), 1996)

Chapter 7.35 - GENERAL NOISE REGULATIONS

7.35.010 - General noise regulations.

A. Notwithstanding the sound level meter standards described in this ordinance, it is nonetheless unlawful for any person to make, continue, or cause to be made or continued any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity. The factors which should be considered in determining whether a violation of this section exists, include the following:

1. The sound level of the objectionable noise.
2. The sound level of the ambient noise.
3. The proximity of the noise to residential sleeping facilities.

4. The zoning of the area.
5. The population density of the area.
6. The time of day or night.
7. The duration of the noise.
8. Whether the noise is recurrent, intermittent, or constant.
9. Whether the noise is produced by a commercial or noncommercial activity.
10. Whether the nature of the noise is usual or unusual.
11. Whether the noise is natural or unnatural.

B. It is unlawful for any person to make, continue, or cause to be made or continued any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity. The following acts, among others, are declared to be disturbing, excessive and offensive noises in violation of this section:

1. *Radios, television sets, musical instruments and similar stationary or mobile devices* . Operating, playing or permitting the operation or playing of any radio, television set, audio equipment, drum, musical instrument, or similar device which produces or reproduces sound in such a manner as to disturb the peace, quiet and comfort of neighboring residents or persons of normal sensitivity. The operation of any such set, instrument, audio equipment, television set, machine or similar device between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to be plainly audible at a distance of 50 feet from the building, structure or vehicle in which it is located, shall be prima facie evidence of a violation of this section.
2. *Loud speakers (amplified sound)* . Using, or operating, or permitting to be used or operated, for any purpose, any loud speaker, loudspeaker system, or similar device between the hours of 10:00 p.m. and 7:00 a.m. such that the sound therefrom creates a noise disturbance across a residential property line, or at any time exceeds the maximum permitted noise level for the underlying land use category, except for any non-commercial public speaking, public assembly or other activity for which a variance has been issued.
3. *Animals and birds* . Owning, possessing, or permitting to be harbored any animal or bird which frequently or for a continued duration howls, barks, meows, squawks, or makes other sounds which create a noise disturbance across a residential or commercial property line.
4. *Loading and unloading* . Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects, or permitting these activities between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to cause a noise disturbance across a residential property line or at any time exceeds the maximum permitted noise level for the underlying land use category.
5. *Construction* . Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, grading or demolition work between the hours of 7:00 p.m. and 7:00 a.m. on week days and between 5:00 p.m. and 8:00 a.m. on Saturdays or at any time on Sunday or federal holidays.
6. *Domestic power tools* . Operating or permitting the operation of any mechanically powered saw, sander, drill grinder, lawn or garden tool, or similar tool between 10:00 p.m. and 7:00 a.m. so as to create a noise disturbance across a residential or commercial property line. Any motor, machinery,

pump, compressor, generator etc., shall be sufficiently muffled and maintained so as not to create a noise disturbance.

7. *Powered model vehicles* . Operating or permitting the operation of powered model vehicles between the hours of 10:00 p.m. and 7:00 a.m. so as to create a noise disturbance across a residential or commercial property line or at any time exceeds the maximum permitted noise level for the underlying land use category.
8. *Stationary non-emergency signaling devices* . Sounding, or permitting the sounding of any signal from any stationary bell, chime, siren, whistle, or similar device intended primarily for non-emergency purposes, from any place, for more than ten seconds in any hourly period. Houses of worship and the Mission Inn carillons shall be exempt from the operation of this provision. Sound sources covered by this provision and not exempted under this subsection may be exempted by a variance.
9. *Emergency signaling devices* . The intentional sounding or permitting the sounding outdoors of any fire, burglar or civil defense alarm, siren, whistle or similar stationary emergency signaling device, except for emergency purposes or for testing. Testing of a stationary emergency signaling device shall not occur before 7:00 a.m. or after 7:00 p.m. Any such testing shall only use the minimum cycle test time. In no case shall the test time exceed ten seconds or occur more than once each calendar month.
10. *Vehicle, motorcycle, motorboat or aircraft repair and testing* . Repairing, rebuilding, modifying or testing any motor vehicle, motorboat or aircraft, or permitting any these activities, in such a manner as to create a noise disturbance across a residential property line, or at any time exceeds the maximum permitted noise level for the underlying land use category shall not be permitted except where said activities are directly related to officially sanctioned events. underlying land use category.
11. For other than noise sources identified in 1—10 above, the following noise disturbance shall be prohibited:
    a. Plainly audible across property boundaries;
    b. Plainly audible through partitions common to two residences within a building;
    c. Plainly audible at a distance of 50 feet in any direction from the source of music or sound between the hours of 7:00 a.m. and 10:00 p.m.; or
    d. Plainly audible at a distance of 25 feet in any direction from the source of music or sound between the hours of 10:00 p.m. and 7:00 a.m.

(Ord. 7341 §6, 2016; Ord. 6959 §2, 2007; Ord. 6328 § 1, 1996; Ord. 6273 § 1 (part), 1996)

7.35.020 - Exemptions.

The following activities shall be exempt from the provisions of this title:

A. *Emergency work* . The provisions of this title shall not apply to the emission of sound for the purpose of alerting persons to the existence of an emergency or in the performance of emergency work.
B. *Entertainment events* . The provisions of this title shall not apply to those reasonable sounds

emanating from authorized school bands, school athletic and school entertainment events and occasional public and private outdoor or indoor gatherings, public dances, shows, bands, sporting and entertainment events conducted between the hours of 7:00 a.m. and 10:00 p.m.

C. *Federal or State preempted activities* . The provisions of this Chapter shall not apply to any other activity the noise level of which is regulated by state or federal law.

D. *Minor maintenance to residential property* . The provisions of this title shall not apply to noise sources associated with minor maintenance to property used for residential purposes, provided the activities take place between the hours of 7:00 a.m. and 10:00 p.m.

E. *Right-of-way construction* . The provisions of this title shall not apply to any work performed in the City right-of-ways when, in the opinion of the Public Works Director or his designee, such work will create traffic congestion and/or hazardous or unsafe conditions.

F. *Public health, welfare and safety activities* . The provisions of this title shall not apply to construction maintenance and repair operations conducted by public agencies and/or utility companies or their contractors which are deemed necessary to serve the best interests of the public and to protect the public health, welfare and safety, including but not limited to, trash collection, street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic signals, unplugging sewers, vacuuming catch basins, repairing of damaged poles, removal of abandoned vehicles, repairing of water hydrants and mains, gas lines, oil lines, sewers, storm drains, roads, sidewalks, etc.

G. Noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or at any time on Sunday or a federal holiday.

(Ord. 7341 § 6, 2016; Ord. 6917 § 1, 2006; Ord. 6328 § 2, 1996; Ord. 6273 § 1 (part), 1996)

Chapter 7.40 - VARIANCE PROCEDURE

7.40.010 - Variance procedure.

A. The Zoning Administrator is authorized to grant variances for exemption from any provision of this title, and may limit area of applicability, noise levels, time limits, and other terms and conditions determined appropriate to protect the public health, safety, and welfare. The provisions of this section shall in no way affect the duty to obtain any permit or license required by law for such activities.

B. Any person seeking a variance pursuant to this section shall file an application with the Zoning Administrator. The application shall be signed by the property owner or owner's representative using forms supplied by the Community & Economic Development Department-Planning Division. The application shall contain information which demonstrates that bringing the source of the sound or activity into compliance with this title would constitute an unreasonable hardship to the applicant, the community, or other persons. The Zoning Administrator may require additional information if it is necessary to make a determination regarding the variance request. The application shall be accompanied by a fee established by resolution of the City Council.

C. A separate application shall be filed for each noise source; provided, however, several mobile sources unde ownership or several fixed sources on a single property may be combined into one application. Any person to be adversely affected by the allowance of the variance may file a statement with the Zoning Administrato containing any information to support his claim. If the Zoning Administrator determines that a sufficient cor exists regarding a variance application, the variance may be set for public hearing before the Planning Com

D. Public notice of the consideration of a proposed variance from the standards of this chapter shall be provided by the Zoning Administrator by mailing such notice to property owners within 300 feet of the exterior boundaries of the property under consideration. The notice shall invite interested persons to notify the Planning Division of any concerns or comments within ten days of the date of the notice.

E. In determining whether to grant or deny the application, the Zoning Administrator or the Planning Commission shall consider comments received from property owners within 300 feet, hardship on the applicant, the community, or other persons affected and property affected and any other adverse impacts. The requested variance may be granted in whole or in part and upon such terms and conditions as it deems necessary if, from the facts presented on the application, the Zoning Administrator or the Planning Commission finds that:

    1. The strict application of the provisions of this title would result in practical difficulties or unnecessary hardships inconsistent with the general purpose of this Title; 2. There are exceptional circumstances or conditions applicable to the property involved or to the intended use or development of the property that do not apply generally to other property in the same zone or neighborhood;

    3. The granting of such variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the zone or neighborhood in which the property is located;

    4. The granting of such variance will not be contrary to the objectives of any part of the adopted General Plan.

F. A variance shall be granted by a notice to the applicant containing all the necessary conditions, including any time limits on the permitted activity. The variance shall not become effective until all the conditions are agreed to by the applicant. Noncompliance with any condition of the variance shall terminate the variance and subject the person holding it to those provisions of this chapter for which the variance was granted.

G. A variance shall be valid for a period not exceeding one year after the date on which it was granted. Applications for extensions of the time limits specified in variances or for the modification of other substantial conditions shall be treated like applications for initial variances.

H. In the event the Zoning Administrator does not approve an application for a variance within ten days after the application is filed it shall be placed on the agenda of the next regularly scheduled Planning Commission, unless the Commission refers the matter to the City Council.

(Ord. 7341 § 6, 2016; Ord. 6967 § 7, 2007; Ord. 6462 § 8-10, 1999; Ord. 6273 § 1 (part), 1996)

7.40.020 - Appeals.

Any person aggrieved by the approval or disapproval of a variance, may appeal the decision of the Zoning Administrator or Planning Commission to the City Council within ten days after the date of such approval or disapproval. The City Council shall hold a hearing thereon, upon notice to the applicant, considering the

same criteria presented to the Zoning Administrator.

(Ord. 6462 § 11, 1999; Ord. 6273 § 1 (part), 1996)

Chapter 7.45 - SEVERABILITY

7.45.010 - Severability.

If any section, subsection, sentence, clause or phrase in this title is for any reason held to be invalid or unconstitutional by decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this title. The City Council hereby declares that it would have passed this title and each section, subsection, clause or phrase thereof irrespective of the fact that any one or more other sections, subsections, clauses or phrases may be declared invalid or unconstitutional.

(Ord. 6328 § 3, 1996)

19.590.090 - Noise.

A. These regulations aim to prohibit unnecessary, excessive and annoying noises from all sources, as certain noise levels are detrimental to the health and welfare of individuals. The standards apply to all land uses in all zones unless otherwise specified in the Zoning Code or other applicable law. In addition to the requirements of this chapter, any use or activity within the City shall comply with the noise regulations of Title 7 (Noise Control) of the Riverside Municipal Code.

B. No person shall create nor allow the creation of noise that causes the noise level when measured on any property to exceed the noise standards set forth in Title 7 (Noise Control) of the Riverside Municipal Code.

C. Utilization of compressors or other equipment, including but not limited to vents, ducts, and conduits, but excluding window or wall-mounted air-conditioners, that are located outside of the exterior walls of any building, shall be enclosed within a permanent, noncombustible, view-obscuring enclosure to ensure that the equipment will not emit noise in excess of the American National Standards Institute specifications for sound level meter ANSI S1.4-1971 or the latest approved revision thereof.

(Ord. 7331 §95, 2016; Ord. 6966 §1, 2007)

CONSTRUCTION NOISE MODELING

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/03/2022
Case Description: RIV-30

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Building & Asphalt Demo	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Concrete Saw	No	20	89.6	50.0		0.0
Excavator	No	40	80.7	50.0		0.0
Dozer	No	40	81.7	50.0		0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	84.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/03/2022
Case Description: RIV-30

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Site Preparation	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	50.0	0.0
Tractor	No	40	84.0		50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	82.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/03/2022
Case Description: RIV-30

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Rough Grading	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85.0		50.0	0.0
Dozer	No	40		81.7	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	84.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/03/2022
Case Description: RIV-30

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Fine Grading	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85.0		50.0	0.0
Dozer	No	40		81.7	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	84.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/03/2022
Case Description: RIV-30

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Utility Trenching	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Tractor	No	40	84.0		50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	81.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/03/2022
Case Description: RIV-30

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Building Construction	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50	80.6	50.0	0.0	
Tractor	No	40	84.0	50.0	0.0	
Front End Loader	No	40	79.1	50.0	0.0	

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Generator	80.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	82.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/03/2022
Case Description: RIV-30

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Architectural Coating	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	50.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Compressor (air)	77.7	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	77.7	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/03/2022
Case Description: RIV-30

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Finish/Landscaping	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Man Lift	No	20		74.7	50.0	0.0
Tractor	No	40	84.0		50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	81.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

RIV-30 Construction Noise Modeling Attenuation Calculations

Levels in dBA Leq

Phase	RCNM Reference Noise Level	Residence to north	Resiences to east	Residences to South
Distance in feet	*50*	*210*	*430*	*250*
Demolition	85	72	66	71
Site Prep	83	70	64	69
Grading	85	72	66	71
Distance in feet	*50*	*90*	*140*	*350*
Architectural Coating	74	69	65	57
Building Construction	82	77	73	65
Distance in feet	*50*	*120*	*180*	*260*
Paving	83	75	72	69
Distance in feet	*50*	*100*	*190*	*260*
Utility Trenching	81	75	70	67
Finish/Landscaping	81	75	70	67
Distance in feet	*50*	*100*	*190*	*260*

Attenuation calculated through Inverse Square Law: Lp(R2) = Lp(R1) - 20Log(R2/R1)

RIV-30 Vibration Annoyance Attenuation Calculations

Levels in in/sec PPV

Distance in feet	**Vibration Reference Level at *25 feet***	**Residential to north** *60*	**Residential to east** *75*	**Onsite Historical Structure** *20*
Vibratory Roller	0.21	0.056	0.040	0.293
Large Bulldozer	0.089	0.024	0.017	0.282
Caisson Drilling	0.089	0.024	0.017	0.124
Loaded Trucks	0.076	0.020	0.015	0.124
Jackhammer	0.035	0.009	0.007	0.124
Small Bulldozer	0.003	0.001	0.001	0.106
Clam shovel	0.202	0.054	0.039	0.049

TRAFFIC NOISE MODELING

RIV-30 Option 1

Traffic Noise Calculations

	ADT Volumes				dBA CNEL Increae			
Roadway Segment	Existing No Project	Existing Plus Project	Future No Project	Future Plus Project	Existing CNEL	Project Noise Increase	Cumulative Increase	Project Cumulative Contribution
Howard Avenue								
North of 12th Street	1,220	1,280	2,230	2,290	70	0.2	2.7	0.1
12th Street to 13th Street	1,300	1,620	2,320	2,640	70	1.0	3.1	0.6
13th Street to 14th Street	1,740	2,860	2,840	3,960	70	2.2	3.6	1.4
South of 14th Street	1,220	1,380	1,430	1,590	70	0.5	1.2	0.5
Park Avenue								
North of 12th Street	1,040	1,100	1,220	1,280	63	0.2	0.9	0.2
12th Street to 13th Street	1,390	1,500	1,630	1,740	63	0.3	1.0	0.3
South of 14th Street	1,800	1,910	2,110	2,220	63	0.3	0.9	0.2
Victoria Avenue								
North of 13th Street	6,000	6,280	7,020	7,300	70	0.2	0.9	0.2
13th Street to 14th Street	6,000	7,180	7,020	8,200	70	0.8	1.4	0.7
South of 14th Street	7,820	7,980	9,150	9,310	70	0.1	0.8	0.1
12th Street								
Howard Avenue to Park Avenue	520	790	610	880	63	1.8	2.3	1.6
East of Park Avenue	700	1,190	820	1,310	63	2.3	2.7	2.0
13th Street								
Howard Avenue to Park Avenue	870	1,790	1,020	1,940	63	3.1	3.5	2.8
Park Avenue to Victoria Avenue	610	1,720	710	1,820	63	4.5	4.7	4.1
14th Street								
West of Mulberry Street	18,500	18,610	22,400	22,510	73	0.0	0.9	0.0
Riverside Fwy to Howard Avenue	16,800	16,960	20,400	20,560	73	0.0	0.9	0.0
Howard Avenue to Park Avenue	15,600	15,960	18,500	18,860	73	0.1	0.8	0.1
Park Avenue to Victoria Avenue	16,200	16,560	19,200	19,560	73	0.1	0.8	0.1
East of Victoria Avenue	16,300	16,520	19,300	19,520	73	0.1	0.8	0.0

RIV-30 Option 2

Traffic Noise Calculations

Roadway Segment	ADT Volumes				dBA CNEL Increae			
	Existing No Project	Existing Plus Project	Future No Project	Future Plus Project	Existing CNEL	Project Noise Increase	Cumulative Increase	Project Cumulative Contribution
Howard Avenue								
North of 12th Street	1,220	1,650	2,230	2,660	70	1.3	3.4	0.8
12th Street to 13th Street	1,300	2,550	2,320	3,570	70	2.9	4.4	1.9
13th Street to 14th Street	1,740	2,990	2,840	4,090	70	2.4	3.7	1.6
South of 14th Street	1,220	1,470	1,430	1,680	70	0.8	1.4	0.7
Park Avenue								
North of 12th Street	1,040	1,470	1,220	1,650	63	1.5	2.0	1.3
12th Street to 13th Street	1,390	2,530	1,630	2,770	63	2.6	3.0	2.3
South of 14th Street	1,800	1,960	2,110	2,270	63	0.4	1.0	0.3
Victoria Avenue								
North of 13th Street	6,000	6,590	7,020	7,610	70	0.4	1.0	0.4
13th Street to 14th Street	6,000	7,890	7,020	8,910	70	1.2	1.7	1.0
South of 14th Street	7,820	8,070	9,150	9,400	70	0.1	0.8	0.1
12th Street								
Howard Avenue to Park Avenue	520	2,020	610	2,110	63	5.9	6.1	5.4
East of Park Avenue	700	950	820	1,070	63	1.3	1.8	1.2
13th Street								
Park Avenue to Victoria Avenue	610	2,240	710	2,340	63	5.6	5.8	5.2
14th Street								
West of Mulberry Street	18,500	18,660	22,400	22,560	73	0.0	0.9	0.0
Riverside Fwy to Howard Avenue	16,800	17,050	20,400	20,650	73	0.1	0.9	0.1
Howard Avenue to Park Avenue	15,600	16,510	18,500	19,410	73	0.2	0.9	0.2
Park Avenue to Victoria Avenue	16,200	17,090	19,200	20,090	73	0.2	0.9	0.2
East of Victoria Avenue	16,300	16,630	19,300	19,630	73	0.1	0.8	0.1

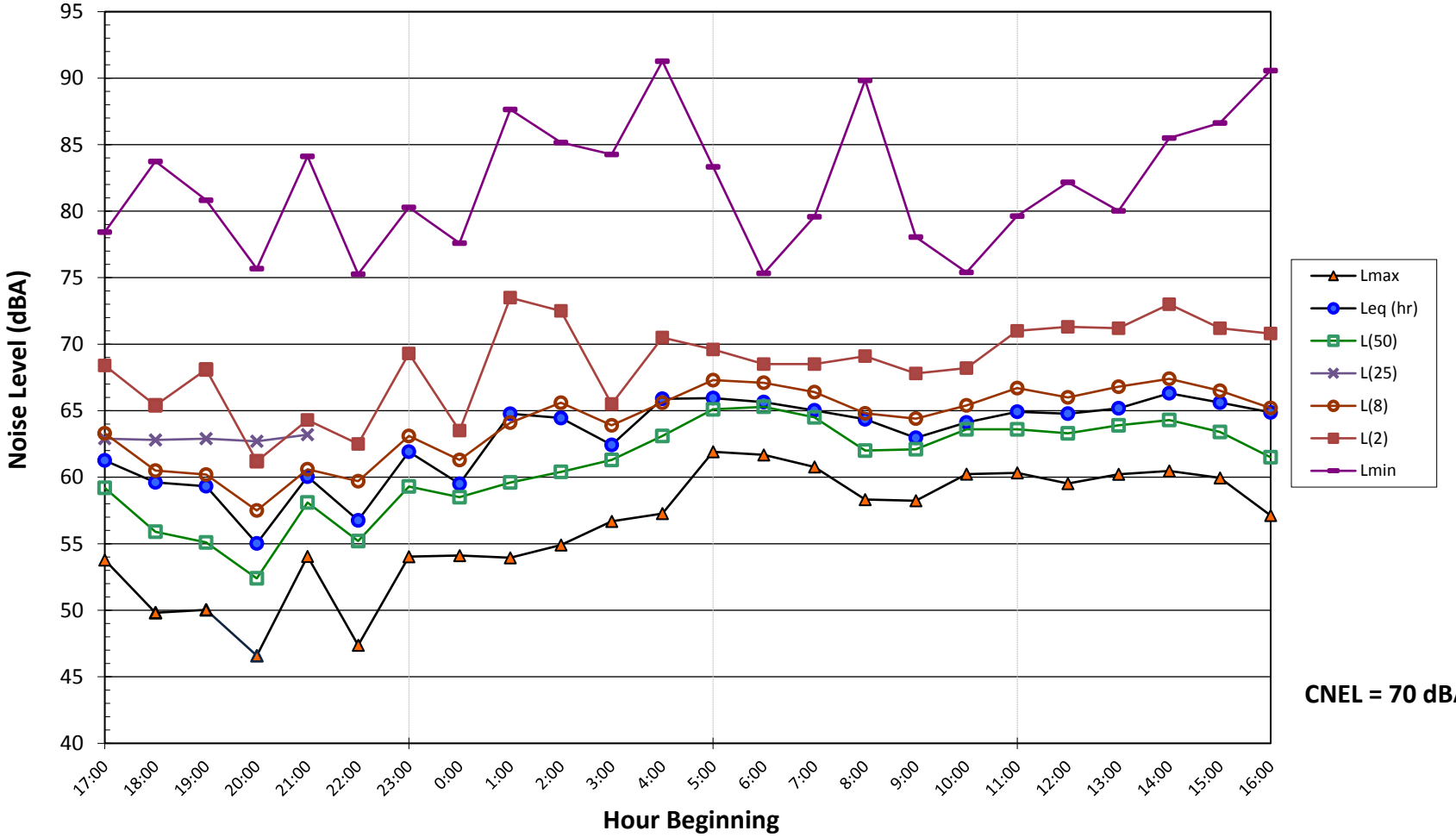
RIV-30 Option 3

Traffic Noise Calculations

	ADT Volumes				dBA CNEL Increae			
Roadway Segment	Existing No Project	Existing Plus Project	Future No Project	Future Plus Project	Existing CNEL	Project Noise Increase	Cumulative Increase	Project Cumulative Contribution
Howard Avenue								
North of 12th Street	1,220	1,290	2,230	2,300	70	0.2	2.8	0.1
12th Street to 13th Street	1,300	1,630	2,320	2,650	70	1.0	3.1	0.6
13th Street to 14th Street	1,740	2,980	2,840	4,080	70	2.3	3.7	1.6
South of 14th Street	1,220	1,440	1,430	1,650	70	0.7	1.3	0.6
Park Avenue								
North of 12th Street	1,040	1,110	1,220	1,290	63	0.3	0.9	0.2
12th Street to 13th Street	1,390	1,540	1,630	1,780	63	0.4	1.1	0.4
South of 14th Street	1,800	1,950	2,110	2,260	63	0.3	1.0	0.3
Victoria Avenue								
North of 13th Street	6,000	6,320	7,020	7,340	70	0.2	0.9	0.2
13th Street to 14th Street	6,000	7,350	7,020	8,370	70	0.9	1.4	0.8
South of 14th Street	7,820	8,040	9,150	9,370	70	0.1	0.8	0.1
12th Street								
Howard Avenue to Park Avenue	520	790	610	880	63	1.8	2.3	1.6
East of Park Avenue	700	1,200	820	1,320	63	2.3	2.8	2.1
13th Street								
Howard Avenue to Park Avenue	870	1,920	1,020	2,070	63	3.4	3.8	3.1
Park Avenue to Victoria Avenue	610	1,930	710	2,030	63	5.0	5.2	4.6
14th Street								
West of Mulberry Street	18,500	18,650	22,400	22,550	73	0.0	0.9	0.0
Riverside Fwy to Howard Avenue	16,800	17,020	20,400	20,620	73	0.1	0.9	0.0
Howard Avenue to Park Avenue	15,600	15,990	18,500	18,890	73	0.1	0.8	0.1
Park Avenue to Victoria Avenue	16,200	16,590	19,200	19,590	73	0.1	0.8	0.1
East of Victoria Avenue	16,300	16,600	19,300	19,600	73	0.1	0.8	0.1

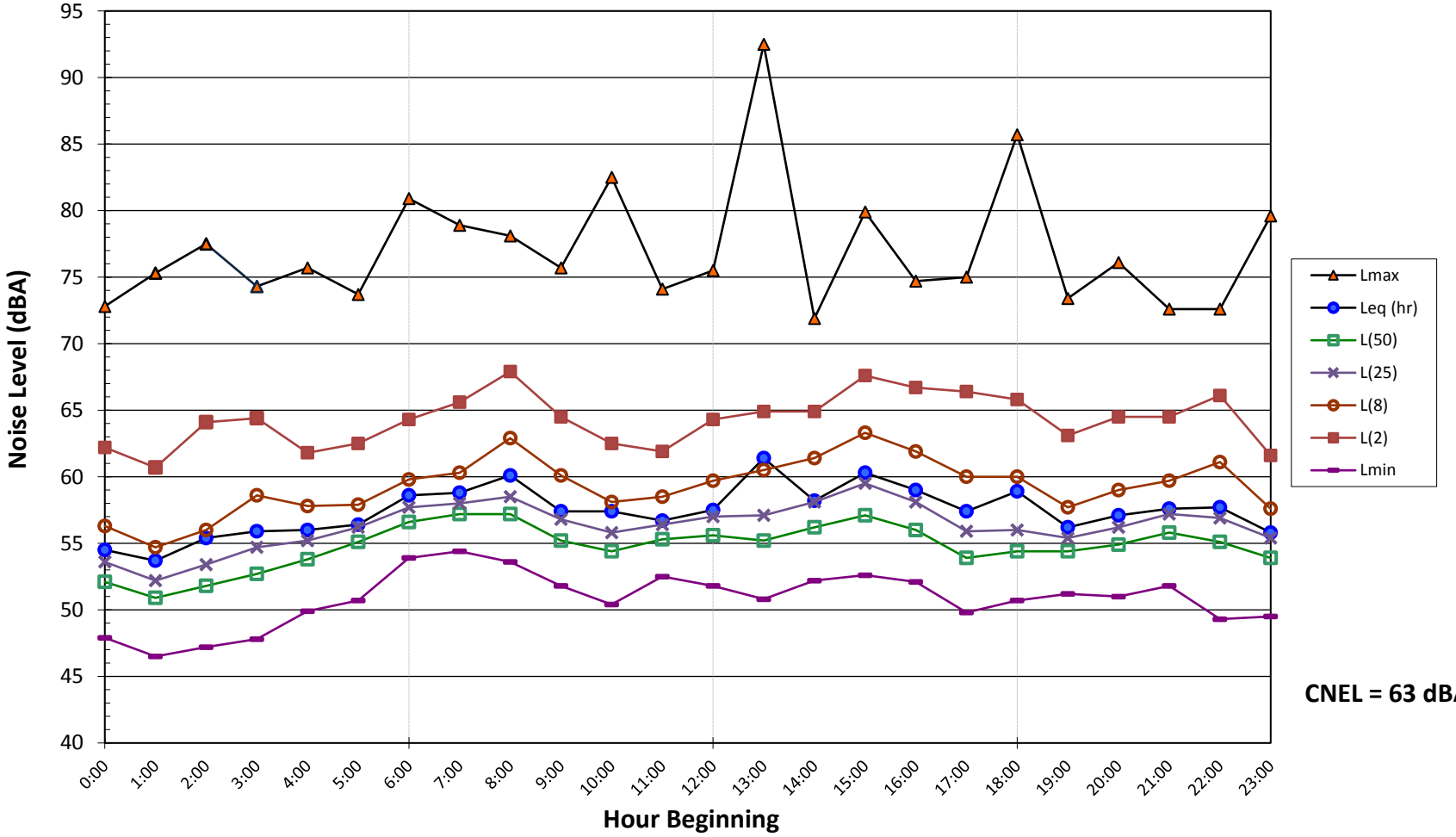
NOISE MONITORING LONG-TERM GRAPHS

Noise Levels at LT-1
Lincoln Park and Haward Avenue, Riverside, CA
Wednesday, Februrary 9 through Thursday, February 10, 2022



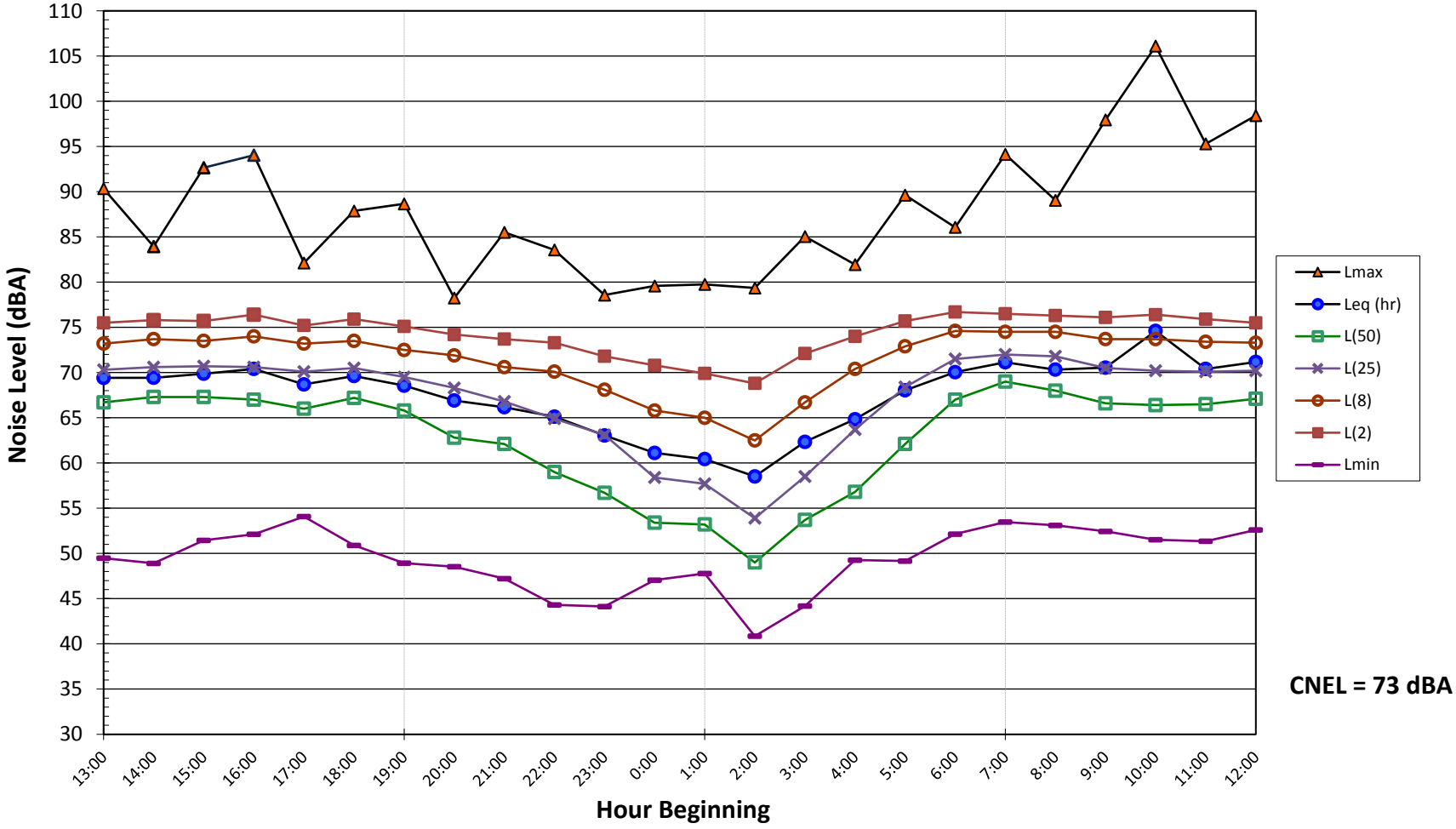
CNEL = 70 dBA

Noise Levels at LT-2
Lincoln High School along 13th Street, Riverside, CA
Thursday, February 10, 2022



CNEL = 63 dBA

Noise Levels at LT-3
Linchon High School along 14th Street, Riverside, CA
Wednesday, February 16 through Thursday, February 17, 2022



CNEL = 73 dBA