GENERAL PLAN AMENDMENT AND REZONING OF SEVEN AIRPORT PARCELS NOISE AND VIBRATION ASSESSMENT

San José, California

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INTRODUCTION

The General Plan Amendment and Rezoning on Seven Airport-Owned Parcels project proposes to change the *Envision San José 2040 General Plan* Land Use Designation on seven City-owned parcels in the Guadalupe Gardens from Open Space Parks Habitat to Combined Industrial Commercial. The Project would also rezone the seven parcels to Planned Development. With the new General Plan Land Use Designation and rezoning in place, the City intends to market the seven parcels for development that is consistent with the underlying purpose of the parcels for aviation-related objectives.

This report evaluates the project's potential to result in significant impacts with respect to applicable California Environmental Quality Act (CEQA) guidelines. The report is divided into three sections: 1) the Setting Section provides a brief description of the fundamentals of environmental noise and ground borne vibration, summarizes applicable regulatory criteria, and discusses ambient noise conditions in the project vicinity; 2) the Plan Consistency Analysis section discusses noise and land use compatibility utilizing applicable policies; and, 3) the Impacts and Mitigation Measures Section describes the significance criteria used to evaluate project impacts, provides a discussion of each project impact, and presents mitigation measures, where necessary, to mitigate project impacts to a less-than-significant level.

SETTING

Fundamentals of Environmental Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its *loudness*. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (*frequency*) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is the intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level (dBA).* This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a

method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This *energy-equivalent sound/noise descriptor* is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level* (*CNEL*) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level* (*DNL* or L_{dn}) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Effects of Noise

Sleep and Speech Interference

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noises of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA DNL. Typically, the highest steady traffic noise level during the daytime is about equal to the DNL and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12 to 17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57 to 62 dBA DNL with open windows and 65 to 70 dBA DNL if the windows are closed. Levels of 55 to 60 dBA are common along collector streets and secondary arterials, while 65 to 70 dBA is a typical value for a primary/major arterial. Levels of 75 to 80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, those facing major roadways and freeways typically need special glass windows.

Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that the causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The DNL as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 50 dBA DNL. At a DNL of about 60 dBA, approximately 12 percent of the population is highly annoyed. When the DNL increases to 70 dBA, the percentage of the population highly annoyed increases to about 25 to 30 percent of the population. There is, therefore, an increase of about 2 percent per dBA between a DNL of 60 to 70 dBA. Between a DNL of 70 to 80 dBA, each decibel increase increases by about 3 percent the percentage of the population highly annoyed. People appear to respond more adversely to aircraft noise. When the DNL is 60 dBA, approximately 30 to 35 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about 3 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a 4 percent increase in the percentage of the population highly annoyed.

TABLE 1 Definition of Acoustical Terms Used in this Report

Term	Definition
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro-Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro-Pascals (or 20 micro-Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro-Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998.

TABLE 2 Typical Noise Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110 dBA	Rock band
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime		
	30 dBA	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20 dBA	
		Broadcast/recording studio
	10 dBA	
	0 dBA	

Source: Technical Noise Supplement (TeNS), California Department of Transportation, September 2013.

Fundamentals of Groundborne Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One method is the Peak Particle Velocity (PPV). The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. In this report, a PPV descriptor with units of mm/sec or in/sec is used to evaluate construction generated vibration for building damage and human complaints. Table 3 displays the reactions of people and the effects on buildings that continuous or frequent intermittent vibration levels produce. The guidelines in Table 3 represent syntheses of vibration criteria for human response and potential damage to buildings resulting from construction vibration.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving, and vibratory compaction equipment typically generates the highest construction related ground borne vibration levels. Because of the impulsive nature of such activities, the use of the PPV descriptor has been routinely used to measure and assess ground borne vibration and almost exclusively to assess the potential of vibration to cause damage and the degree of annoyance for humans.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as paint flaking or minimal extension of cracks in building surfaces; minor, including limited surface cracking; or major, that may threaten the structural integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher. The damage criteria presented in Table 3 include several categories for ancient, fragile, and historic structures, the types of structures most at risk to damage. Most buildings are included within the categories ranging from “Historic and some old buildings” to “Modern industrial/commercial buildings”. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

The annoyance levels shown in Table 3 should be interpreted with care since vibration may be found to be annoying at lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage.

TABLE 3 Reaction of People and Damage to Buildings from Continuous or Frequent Intermittent Vibration Levels

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.01	Barely perceptible	No effect
0.04	Distinctly perceptible	Vibration unlikely to cause damage of any type to any structure
0.08	Distinctly perceptible to strongly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Threshold at which there is a risk of damage to fragile buildings with no risk of damage to most buildings
0.25	Strongly perceptible to severe	Threshold at which there is a risk of damage to historic and some old buildings.
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential structures
0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to new residential and modern commercial/industrial structures

Source: Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020.

Regulatory Background – Noise

This section describes the relevant guidelines, policies, and standards established by Federal Agencies, State Agencies, Santa Clara County, and the City of San José. The State CEQA Guidelines, Appendix G, are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. A summary of the applicable regulatory criteria is provided below.

Federal Government

Federal Transit Administration. The Federal Transit Administration (FTA) has identified construction noise thresholds in the *Transit Noise and Vibration Impact Assessment Manual*,[1] which limit daytime construction noise to 80 dBA L_{eq} at residential land uses, 85 dBA L_{eq} at commercial land uses, and 90 dBA L_{eq} at industrial land uses.

State of California

State CEQA Guidelines. The California Environmental Quality Act (CEQA) contains guidelines to evaluate the significance of effects of environmental noise attributable to a proposed project. Under CEQA, noise impacts would be considered significant if the project would result in:

1 Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, FTA Report No. 0123, September 2018.

(a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

(b) Generation of excessive ground borne vibration or ground borne noise levels;

(c) For a project located within the vicinity of a private airstrip or 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, if the project would expose people residing or working in the project area to excessive noise levels.

2022 California Building Cal Green Code. The State of California established exterior sound transmission control standards for new non-residential buildings as set forth in the 2022 California Green Building Standards Code (Section 5.507.4.1 and 5.507.4.2). The sections that pertain to this project are as follows:

> **5.507.4.1 Exterior noise transmission, prescriptive method.** Wall and roof-ceiling assemblies exposed to the noise source making up the building envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 when the building falls within the 65 dBA L_{dn} noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway noise source, as determined by the local general plan noise element.
>
> **5.507.4.2 Performance method.** For buildings located, as defined by Section 5.507.4.1, wall and roof-ceiling assemblies exposed to the noise source making up the building envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level ($L_{eq\ (1\text{-}hr)}$) of 50 dBA in occupied areas during any hour of operation.

The performance method, which establishes the acceptable interior noise level, is the method typically used when applying these standards.

Santa Clara County

***Santa Clara County Airport Land Use Commission Comprehensive Land Use Plan*.** The Comprehensive Land Use Plan (CLUP) adopted by the Santa Clara County Airport Land Use Commission contains standards for projects within the vicinity of San José Mineta International Airport which are relevant to this project;

4.3.2.1 Noise Compatibility Policies

N-1 The Community Noise Equivalent Level (CNEL) method of representing noise levels shall be used to determine if a specific land use is consistent with the CLUP.

N-2 In addition to the other policies herein, the Noise Compatibility Policies presented in Table 4-1 shall be used to determine if a specific land use is consistent with this CLUP.

N-3 Noise impacts shall be evaluated according to the Aircraft Noise Contours presented on Figure 5.

N-6 Noise level compatibility standards for other types of land uses shall be applied in the same manner as the above residential noise level criteria. Table 4-1 presents acceptable noise levels for other land uses in the vicinity of the Airport.

N-7 Single-event noise levels (SENL) from single aircraft overflights are also to be considered when evaluating the compatibility of highly noise-sensitive land uses such as schools, libraries, outdoor theaters, and mobile homes. Single-event noise levels are especially important in the areas regularly overflown by aircraft, but which may not produce significant CNEL contours, such as the down-wind segment of the traffic pattern, and airport entry and departure flight corridors.

Table 4-1: Noise Compatibility Policies of the CLUP for San José Mineta International Airport (SJC)

	CNEL					
LAND USE CATEGORY	**55-60**	**60-65**	**65-70**	**70-75**	**75-80**	**80-85**
Residential – low density single-family, duplex, mobile homes	*	**	***	****	****	****
Residential – multi-family, condominiums, townhouses	*	**	***	****	****	****
Transient lodging – motels, hotels	*	*	**	****	****	****
Schools, libraries, indoor religious assembles, hospitals, nursing homes	*	***	****	****	****	****
Auditoriums, concert halls, amphitheaters	*	***	***	****	****	****
Sports arena, outdoor spectator sports, parking	*	*	*	**	***	****
Playgrounds, neighborhood parks	*	*	***	****	****	****
Golf courses, riding stables, water recreation, cemeteries	*	*	*	**	***	****
Office buildings, business commercial and professional, retail	*	*	**	***	****	****
Industrial, Manufacturing, utilities, agriculture	*	*	*	***	***	****

* Generally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements. Mobile homes may not be acceptable in these areas. Some outdoor activities might be adversely affected.
** Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Outdoor activities may be adversely affected. Residential: Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
*** Generally Unacceptable	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor activities are likely to be adversely affected.
**** Unacceptable	New construction or development shall not be undertaken.

Source: Table 4-1 of the Comprehensive Land Use Plan for SJC

Source: Comprehensive Land Use Plan Santa Clara County, Norman Y Mineta San José International Airport, May 25, 2011, Amended May 23, 2019.

City of San José

City of San José General Plan. The Environmental Leadership Chapter in the Envision San José 2040 General Plan sets forth policies with the goal of minimizing the impact of noise on people through noise reduction and suppression techniques, and through appropriate land use policies in the City of San José. The following policies are applicable to the proposed project:

EC-1.1 Locate new development in areas where noise levels are appropriate for the proposed uses. Consider federal, state, and City noise standards and guidelines as a part of new development review. Applicable standards and guidelines for land uses in San José include:

Table EC-1: Land Use Compatibility Guidelines for Community Noise in San José

LAND USE CATEGORY	EXTERIOR NOISE EXPOSURE (DNL IN DECIBELS (DBA)) 55 60 65 70 75 80
1. Residential, Hotels and Motels, Hospitals and Residential Care[1]	
2. Outdoor Sports and Recreation, Neighborhood Parks and Playgrounds	
3. Schools, Libraries, Museums, Meeting Halls, Churches	
4. Office Buildings, Business Commercial, and Professional Offices	
5. Sports Arena, Outdoor Spectator Sports	
6. Public and Quasi-Public Auditoriums, Concert Halls, Amphitheaters	

[1]Noise mitigation to reduce interior noise levels pursuant to Policy EC-1.1 is required.

Normally Acceptable:

- Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable:

- Specified land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features included in the design.

Unacceptable:

- New construction or development should generally not be undertaken because mitigation is usually not feasible to comply with noise element policies.

Source: Envision San José 2040 General Plan, Adopted November 1, 2011, As Amended on May 16, 2019.

EC-1.2 Minimize the noise impacts of new development on land uses sensitive to increased noise levels (Categories 1, 2, 3 and 6) by limiting noise generation and by requiring use of noise attenuation measures such as acoustical enclosures and sound barriers, where feasible. The City considers significant noise impacts to occur if a project would:

- Cause the DNL at noise sensitive receptors to increase by five dBA DNL or more where the noise levels would remain "Normally Acceptable;" or

- Cause the DNL at noise sensitive receptors to increase by three dBA DNL or more where noise levels would equal or exceed the "Normally Acceptable" level.

EC-1.3 Mitigate noise generation of new nonresidential land uses to 55 dBA DNL at the property line when located adjacent to existing or planned noise sensitive residential and public/quasi-public land uses.

EC-1.6 Regulate the effects of operational noise from existing and new industrial and commercial development on adjacent uses through noise standards in the City's Municipal Code.

EC-1.7 Require construction operations within San José to use best available noise suppression devices and techniques and limit construction hours near residential uses per the City's Municipal Code. The City considers significant construction noise impacts to occur if a project located within 500 feet of residential uses or 200 feet of commercial or office uses would:

- Involve substantial noise generating activities (such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing) continuing for more than 12 months.

For such large or complex projects, a construction noise logistics plan that specifies hours of construction, noise and vibration minimization measures, posting or notification of construction schedules, and designation of a noise disturbance coordinator who would respond to neighborhood complaints will be required to be in place prior to the start of construction and implemented during construction to reduce noise impacts on neighboring residents and other uses.

EC-1.11 Require safe and compatible land uses within the Mineta International Airport noise zone (defined by the 65 CNEL contour as set forth in State law) and encourage aircraft operating procedures that minimize noise.

Regulatory Background – Vibration

City of San José

City of San José General Plan. The Environmental Leadership Chapter in the Envision San José 2040 General Plan sets forth policies to achieve the goal of minimizing vibration impacts on people, residences, and business operations in the City of San José. The following policies are applicable to the proposed project:

EC-2.3 Require new development to minimize continuous vibration impacts to adjacent uses during demolition and construction. For sensitive historic structures, including ruins and ancient monuments or building that are documented to be structurally weakened, a continuous vibration limit of 0.08 in/sec PPV (peak particle velocity) will be used to minimize the potential for cosmetic damage to a building. A continuous vibration limit of 0.20 in/sec PPV will be used to minimize the potential for cosmetic damage at buildings of normal conventional construction. Equipment or activities typical of generating continuous vibration include but are not limited to: excavation equipment; static compaction equipment; vibratory pile drivers; pile-extraction equipment; and vibratory compaction equipment. Avoid use of impact pile drivers within 125 feet of any buildings, and within 300 feet of historical buildings, or buildings in poor condition. On a project-specific basis, this distance of 300 feet may be reduced where warranted by a technical study by a qualified professional that verifies that there will be virtually no risk of cosmetic damage to sensitive buildings from the new development during demolition and construction. Transient vibration impacts may exceed a vibration limit of 0.08 in/sec PPV only when and where warranted by a technical study by a qualified professional that verifies that there will be virtually no risk of cosmetic damage to sensitive buildings from the new development during demolition and construction.

Existing Noise Environment

The seven project sites are located within Guadalupe Gardens, a 120-acre area immediately south of San José Mineta International Airport. Bounded by I-880, the Guadalupe River, and Coleman Avenue, and once known as the "Coleman Loop" neighborhood, the Guadalupe Gardens is under the primary flight path for SJC. Figure 1 shows an aerial image of the project site along with the short (ST) and long-term (LT) measurement locations identified.

The existing noise environment at the seven sites results primarily from overhead aircraft associated with the SJC and traffic along Coleman Avenue and West Hedding Street. Noise from Interstate 880 also contributes to the noise environment.

A noise monitoring survey consisting of two long-term (LT-1 and LT-2) and five short-term (ST-1 through ST-5) noise measurements were made at the sites between Wednesday, July 19, 2023, and Friday, July 21, 2023. Noise measurement locations are shown in Figure 1.

Long term noise measurement LT-1 was made approximately 120 feet from the Coleman Avenue centerline. This measurement location best represents the noise environment at sites along Coleman Avenue at a similar setback. Hourly average noise levels at LT-1 typically ranged from 63 to 70 dBA L_{eq} during daytime hours (7:00 a.m. and 10:00 p.m.) and from 53 to 65 dBA L_{eq} during nighttime hours (10:00 p.m. and 7:00 a.m.). The day-night average noise level on Thursday, July 20, 2023, was 68 dBA DNL/CNEL. The daily trend in noise levels at LT-1 is shown in Figures A1 through A3 of Appendix A.

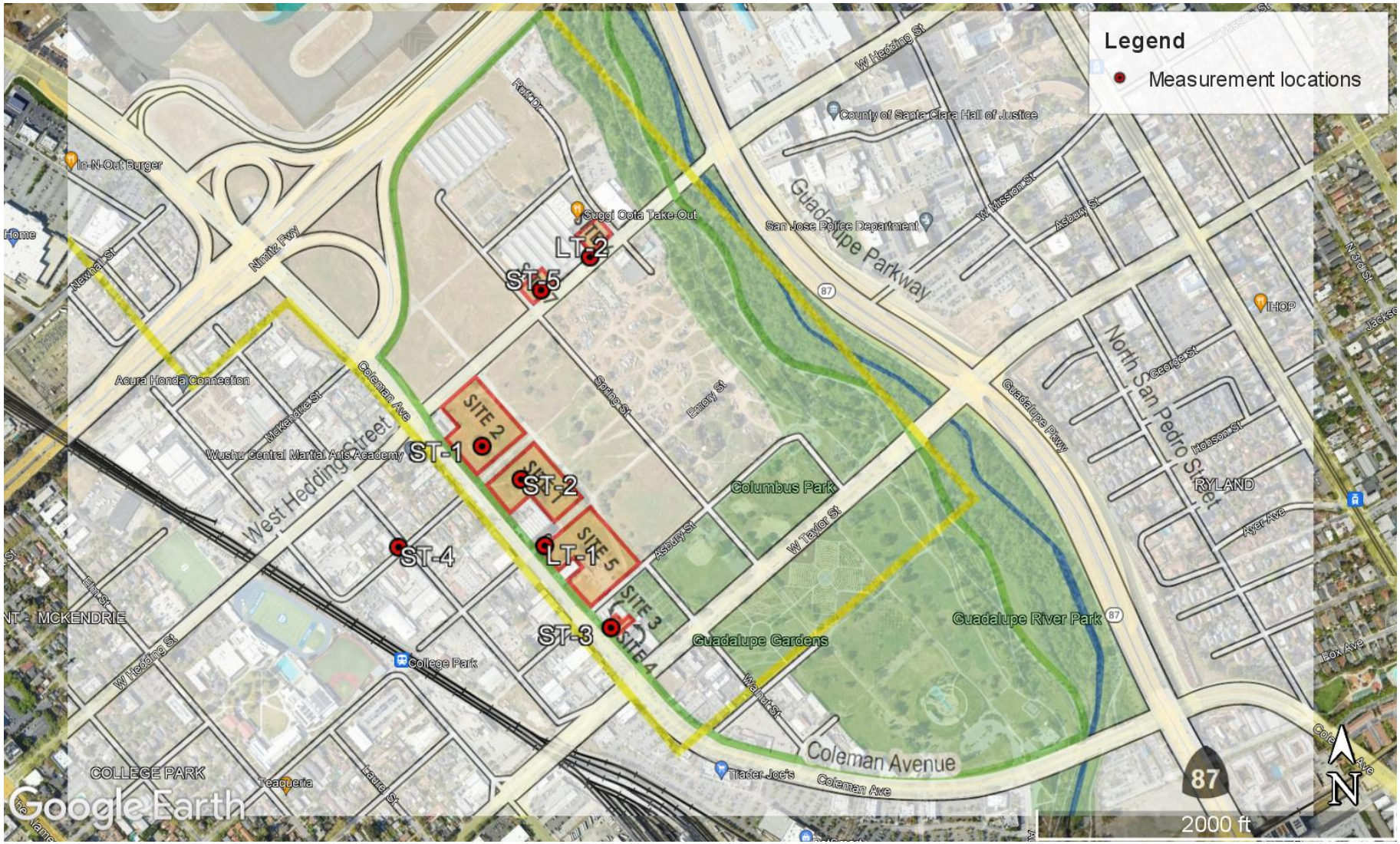
Long term noise measurement LT-2 was made approximately 35 feet north of the West Hedding Street centerline. This measurement location best represents the noise environment at sites along West Hedding Street at a similar setback. Hourly average noise levels at LT-2 typically ranged from 66 to 74 dBA L_{eq} during daytime hours (7:00 a.m. and 10:00 p.m.) and from 56 to 68 dBA L_{eq} during nighttime hours (10:00 p.m. and 7:00 a.m.). The day-night average noise level on Thursday, July 20, 2023, was 71 dBA DNL/CNEL. The daily trend in noise levels at LT-1 is shown in Figures A4 through A6 of Appendix A.

A summary of the short-term measurements is shown in Table 4.

TABLE 4 Summary of Short-Term Noise Measurements

Noise Measurement Location	Date, Time	Measured Noise Level, dBA					
		L_{max}	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	L_{eq}
ST-1: ~215 feet east of Coleman Avenue centerline, ~350 feet south of West Hedding Street centerline	7/19/2023, 12:50-13:00	77	75	64	54	52	62
ST-2: ~260 feet east of Coleman Avenue	7/19/2023, 13:10-13:20	83	80	61	54	52	65
ST-3: ~100 feet east of Coleman Avenue	7/19/2023, 12:50-13:00	82	75	69	59	54	65
ST-4: University Avenue, Chestnut Street intersection	7/19/2023, 13:10-13:20	74	71	64	54	51	61
ST-5: ~80 feet north of West Hedding Street	7/19/2023, 12:40-12:50	79	70	65	58	48	61

FIGURE 1 Aerial Image of the Project Site and Surrounding Area with Long- and Short-Term Measurement Locations Identified



Source: Google Earth, 2023.

PLAN CONSISTENCY ANALYSIS

Noise and Land Use Compatibility

The Comprehensive Land Use Plan (CLUP) adopted by the Santa Clara County Airport Land Use Commission contains standards for projects within the vicinity of San José Mineta International Airport which are relevant to this project. These are summarized below:

- The CLUP's acceptable exterior noise level standard is 70 dBA CNEL or less for the proposed commercial land uses.

- The Cal Green Code standards specify an interior noise environment attributable to exterior sources not to exceed an hourly equivalent noise level ($L_{eq\ (1\text{-}hr)}$) of 50 dBA in occupied areas of nonresidential uses during any hour of operation.

The future noise environment at the site would be dominated by aircraft associated with San José Mineta International Airport. Secondary noise sources include traffic along Coleman Avenue and West Hedding Street. Noise from Interstate 880 traffic would also contribute to the noise environment.

Future 2037 noise contours (Figure 2) from the SJC indicate that the project sites would be located between the 65 and 75 dBA CNEL noise contours. Specifically, Sites 6 and 7 would be exposed to aircraft noise levels ranging from 68 to 72 dBA CNEL, while Sites 1 through 5 would be exposed to noise levels between 66 and 71 dBA CNEL. Note, aircraft noise exposure associated with the SJC is discussed below in Impact 3 of this report.

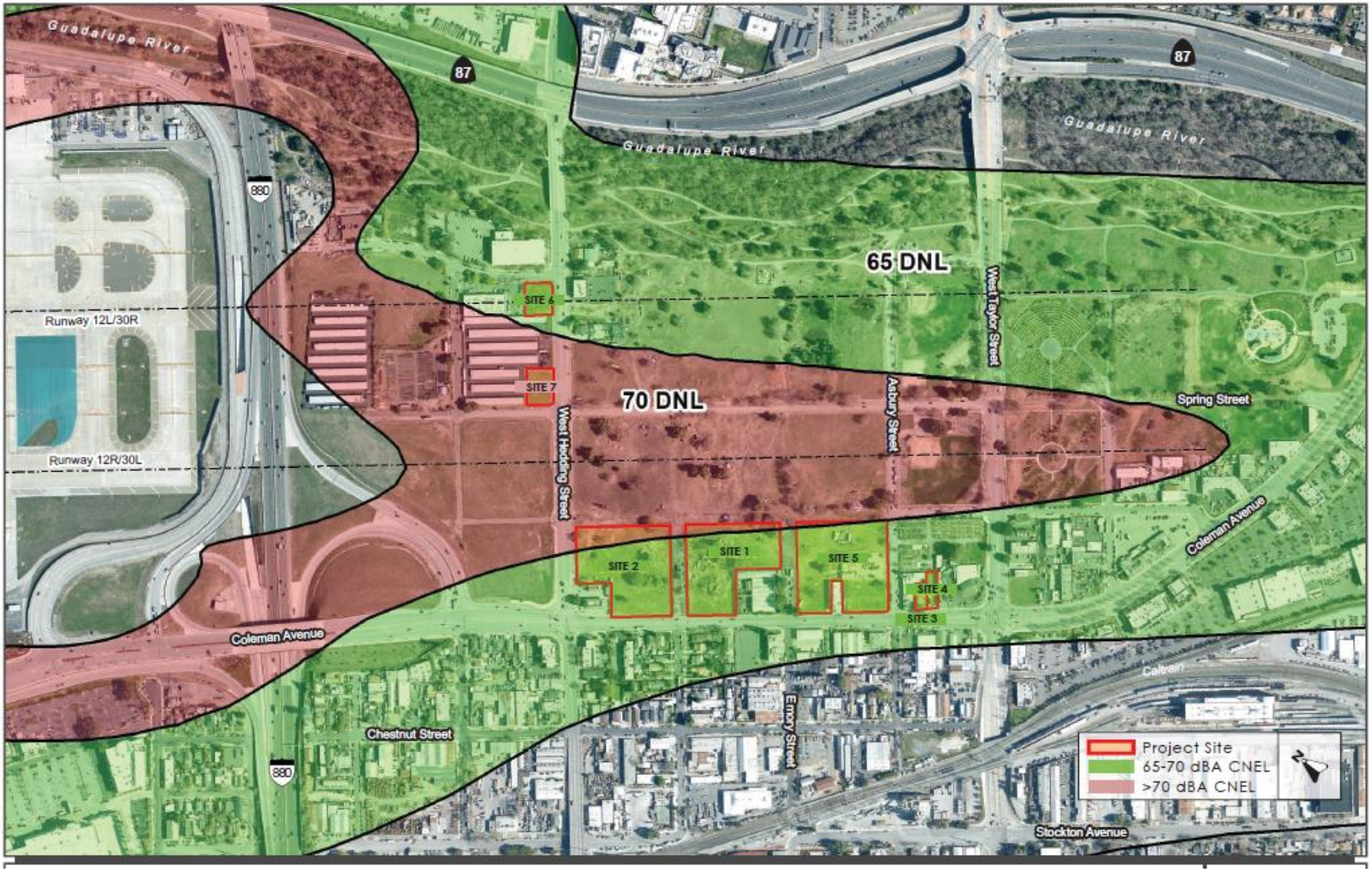
The traffic study completed for the proposed project[2] along with traffic volumes posted by the City[3] indicated that the existing average daily traffic volumes on Coleman Avenue were recorded as 31,544 vehicles per day and traffic volumes along West Hedding Street near the project sites were recorded as 11,946 vehicles per day. It is estimated that a total of 9,575 trips would be generated from the project. Future traffic noise increase in the vicinity of the project sites based on the estimated trips generated by the project is about 1 dBA DNL/CNEL.

Future ambient noise levels in the vicinity of the project sites based on the 2037 SJC noise contours and the project trip generated increase of about 1 dBA DNL/CNEL range from about 71 to 74 dBA DNL/CNEL for sites along Coleman Avenue and from about 73 to 75 dBA DNL/CNEL for sites along West Hedding Street.

[2] *Guadalupe Gardens Transportation Analysis* prepared by Hexagon Transportation Consultants, Inc., June 25, 2023

[3] https://gisdata-csj.opendata.arcgis.com/datasets/3f4978184afa48bb8353170e0d428623_504/about

FIGURE 2 2037 SJC Noise Contours for project sites



Future Exterior Noise Environment

Figure 2 shows the location of the seven sites that would be rezoned from a Land Use Designation of Open Space Parks Habitat to Combined Industrial Commercial in relation to the projected 2037 aircraft noise levels. As indicated on Figure 2, the future ambient noise levels at Parcels 1-6 are projected to range from about 65 to 70 dBA DNL/CNEL and from 70 to 75 dBA DNL/CNEL at Parcel 7. Based on these noise levels, commercial land uses would hence fall in the "Conditionally Acceptable" and "Generally Unacceptable" categories of the CLUP policies, and the "Conditionally Acceptable" category of the City's General Plan Policies. These categories state that commercial land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features are included in the design.

Future Interior Noise Environment

As discussed above, future exterior noise environment at the sites ranges from about 71 to 75 dBA DNL/CNEL. Since there are no specific building plans provided for the seven sites, standard construction material used for commercial buildings is assumed for the sites. This would provide about 25 dBA of noise reduction in interior spaces. The inclusion of adequate forced-air mechanical ventilation systems is normally required so that windows may be kept closed at the occupant's discretion and would provide an additional 5 dBA reduction. The standard construction materials in combination with forced-air mechanical ventilation would satisfy the daytime threshold of 50 dBA $L_{eq(1\text{-}hr)}$. Spaces where lower noise levels would be desired, such as private offices and conference rooms, may benefit from additional noise control in order to meet a lower, more desirable interior noise level. Additional noise control could be accomplished by selecting higher sound-rated windows. Wall and roof-ceiling assemblies exposed to the noise source making up the building envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq (1-hr)) of 50 dBA in occupied areas during any hour of operation.

Conditions of Approval

When project-level development information, such as site plans, building elevations, floor plans, and the position of buildings and outdoor use areas within the project sites are known, site-specific project-level noise studies should be conducted to confirm the recommendations for exterior and interior noise reduction methods for commercial uses. An acoustical study shall be conducted when an application is received for a development project that could be exposed to noise greater than that deemed acceptable by the maximum noise levels specified in Table 4-1 of the CLUP or Table EC-1 of City's General Plan for any given land use proposed on the site. The study shall determine compliance with the noise and land use compatibility standards, identify potential noise impacts, and propose site-specific measures to reduce exposure to exterior and interior noise levels that exceed maximum permissible levels.

For consistency with the General Plan the following Conditions of Approval are recommended for consideration by the City:

- When refining the project's site plan, locate outdoor areas away from adjacent noise sources and continue to shield noise-sensitive outdoor spaces with buildings or noise barriers where feasible.

- Project-specific acoustical analyses are required by the state building code to confirm that interior noise levels will be reduced to the daytime threshold of 50 dBA $L_{eq(1\text{-}hr)}$. or lower. The specific determination of what treatments are necessary will be conducted on an individual property basis. Results of the analysis, including the description of the necessary noise control treatments, will be submitted to the City along with the building plans and approved prior to issuance of a building permit.

- Building sound insulation requirements would need to include the provision of forced-air mechanical ventilation for commercial buildings at all sites so that windows could be kept closed at the occupant's discretion to control noise.

- Special building techniques (e.g., sound-rated windows and building facade treatments) may be required to maintain interior noise levels at or below acceptable levels. These treatments would include, but are not limited to, sound rated windows and doors, sound rated wall constructions, acoustical caulking, protected ventilation openings, etc.

NOISE IMPACTS AND MITIGATION MEASURES

This section describes the significance criteria used to evaluate project impacts under CEQA, provides a discussion of each project impact, and presents mitigation measures, where necessary, to reduce project impacts to less-than-significant levels.

Significance Criteria

The following criteria were used to evaluate the significance of environmental noise resulting from the project:

(a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

(b) Generation of excessive groundborne vibration or groundborne noise levels;

(c) For a project located within the vicinity of a private airstrip or 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, if the project would expose people residing or working in the project area to excessive noise levels.

Impact 1a: **Temporary Construction Noise.** Existing noise-sensitive residential land uses located within 500 feet of project sites and adjacent commercial uses within 200 feet of project sites would be exposed to a temporary increase in ambient noise levels due to project construction activities. This is a **potentially significant** impact.

Noise impacts resulting from construction depend upon the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise-sensitive areas. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (e.g., early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction lasts over extended periods of time.

Policy EC-1.7 of the City's General Plan requires that all construction operations within the City to use best available noise suppression devices and techniques and to limit construction hours near residential uses per the Municipal Code allowable hours, which are between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday when construction occurs within 500 feet of a residential land use. Further, the City considers significant construction noise impacts to occur if a project that is located within 500 feet of residential uses or 200 feet of commercial or office uses would involve substantial noise-generating activities (such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing) continuing for more than 12 months.

While the City of San José does not establish noise level thresholds for construction activities, this analysis uses the noise limits established by the Federal Transit Administration (FTA) to identify the potential for impacts due to substantial temporary construction noise. The FTA identifies construction noise limits in the *Transit Noise and Vibration Impact Assessment Manual*.[1] During daytime hours, an exterior threshold of 80 dBA L_{eq} shall be applied at residential land uses, 85 dBA L_{eq} at commercial land uses and 90 dBA L_{eq} at industrial land uses.

Major noise generating construction activities associated with the development of the seven sites would typically include site grading, excavation, installation of utilities, the construction of building foundations, cores, and shells, paving, and landscaping. Construction activities generate considerable amounts of noise, especially during earth-moving activities when heavy equipment is used. While specific project information is unknown at this time, construction operations such as site grading, excavation activities, the operation of heavy construction equipment, and the arrival/departure of heavy-duty trucks would generate high noise levels, as these phases often require the simultaneous use of multiple pieces of heavy equipment such as dozers, excavators, scrapers, and loaders.

Typical hourly average construction generated noise levels are about 71 to 89 dBA L_{eq}, measured at a distance of 50 feet from the center of the site during busy construction periods (e.g., earth moving equipment, impact tools, etc.) for commercial uses. Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of distance between the source and receptor. Shielding by buildings or terrain often result in lower construction noise levels at distant receptors. Lower noise levels result from building construction activities when these activities move indoors, and less heavy equipment is required to complete the tasks. Typical construction noise levels at a

distance of 50 feet are shown in Tables 5 and 6. Table 5 shows maximum noise levels for each construction equipment while Table 6 shows the average noise level ranges by construction phase.

TABLE 5 Construction Equipment 50-Foot Noise Emission Limits

Equipment Category	L_{max} Level (dBA)[1,2]	Impact/Continuous
Arc Welder	73	Continuous
Auger Drill Rig	85	Continuous
Backhoe	80	Continuous
Bar Bender	80	Continuous
Boring Jack Power Unit	80	Continuous
Chain Saw	85	Continuous
Compressor[3]	70	Continuous
Compressor (other)	80	Continuous
Concrete Mixer	85	Continuous
Concrete Pump	82	Continuous
Concrete Saw	90	Continuous
Concrete Vibrator	80	Continuous
Crane	85	Continuous
Dozer	85	Continuous
Excavator	85	Continuous
Front End Loader	80	Continuous
Generator	82	Continuous
Generator (25 KVA or less)	70	Continuous
Gradall	85	Continuous
Grader	85	Continuous
Grinder Saw	85	Continuous
Horizontal Boring Hydro Jack	80	Continuous
Hydra Break Ram	90	Impact
Impact Pile Driver	105	Impact
Insitu Soil Sampling Rig	84	Continuous
Jackhammer	85	Impact
Mounted Impact Hammer (hoe ram)	90	Impact
Paver	85	Continuous
Pneumatic Tools	85	Continuous
Pumps	77	Continuous
Rock Drill	85	Continuous
Scraper	85	Continuous
Slurry Trenching Machine	82	Continuous
Soil Mix Drill Rig	80	Continuous
Street Sweeper	80	Continuous
Tractor	84	Continuous
Truck (dump, delivery)	84	Continuous
Vacuum Excavator Truck (vac-truck)	85	Continuous
Vibratory Compactor	80	Continuous
Vibratory Pile Driver	95	Continuous
All other equipment with engines larger than 5 HP	85	Continuous

Notes:
[1] Measured at 50 feet from the construction equipment, with a "slow" (1 sec.) time constant. [2] Noise limits apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation. [3]Portable Air Compressor rated at 75 cfm or greater and that operates at greater than 50 psi.

TABLE 6 Typical Ranges of Construction Noise Levels at 50 Feet, L_{eq} (dBA)

	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	II	I	II	I	II	I	II
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84

I - All pertinent equipment present at site.
II - Minimum required equipment present at site.

Source: U.S.E.P.A., Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

Figure 3 shows the nearest noise sensitive residential and commercial receptors to the proposed project sites. Table 7 below shows the distances of the individual sites from the closest residential and commercial receptors, as well as the range of construction noise levels expected based on levels at 50 feet from Table 6. Standard methods for acoustical analysis of construction sites are based on the distance from the "acoustical center" or construction activity center on the site to the nearest receiving property lines of existing noise-sensitive receptors, as was the case for this analysis. The proposed pieces of construction equipment are modeled at the approximate center of the area in which most construction activity is likely to occur. The worst-case hourly average noise level, calculated from combining all equipment per phase, was propagated from the geometrical center of the project site to the property lines of the receptors.

FIGURE 3 Nearest receptors to the project sites

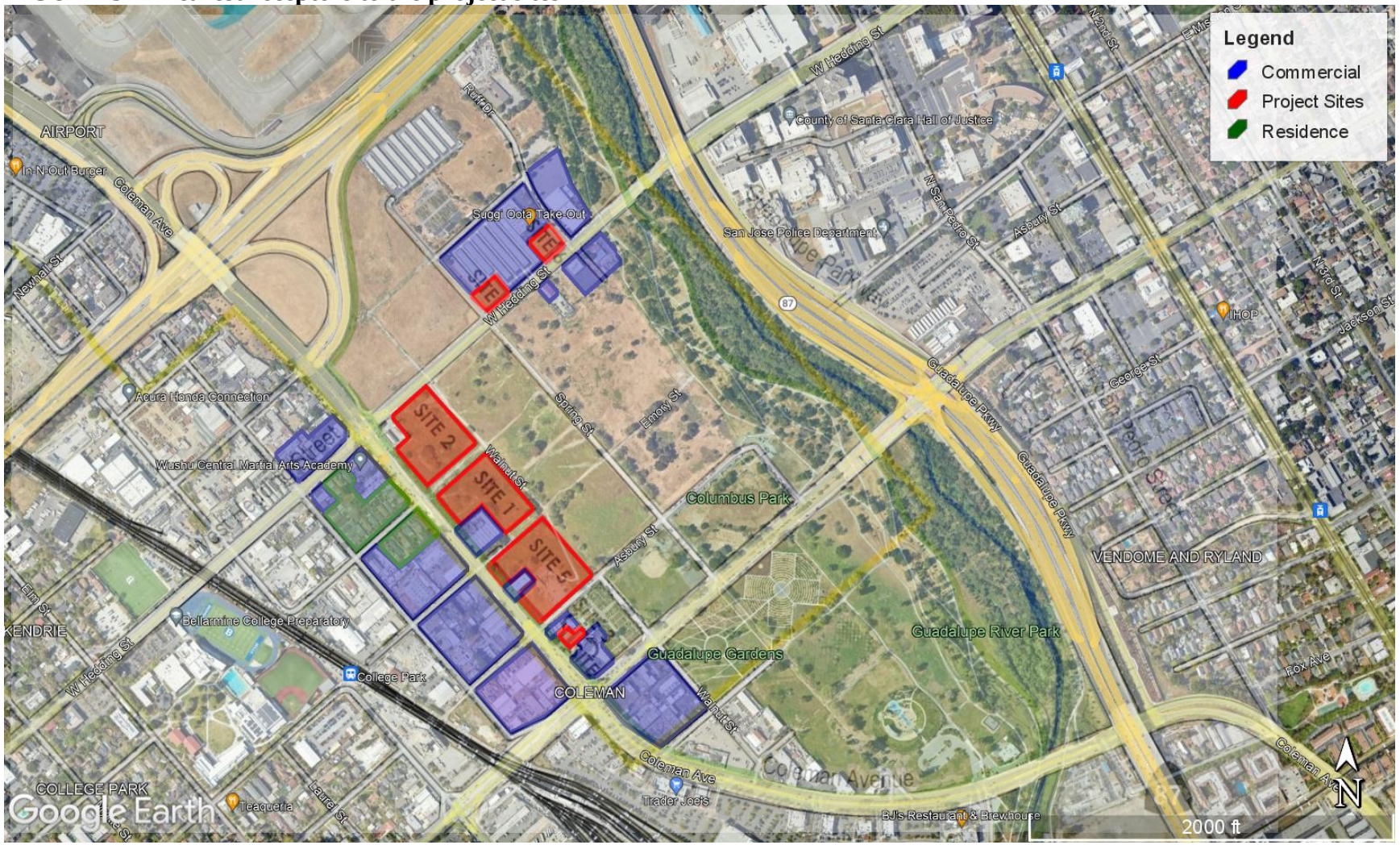


TABLE 7 Distance from acoustic center of project sites to closest residential and commercial receptors

Site	Distance from residences, feet	Distance from commercial/industrial uses	Range of construction noise levels expected, L_{eq} dBA
Site 1	340 ft	150 ft	54 to 72 (Residences) 64 to 82 (Commercial)
Site 2	360 ft	150 ft	54 to 72 (Residences) 64 to 82 (Commercial)
Site 3	Greater than 500 ft	35 ft	73 to 91 (Commercial)
Site 4	Greater than 500 ft	20 ft	77 to 95 (Commercial)
Site 5	Greater than 500 ft	65 ft	69 to 87 (Commercial)
Site 6	Greater than 500 ft	70 ft	69 to 87 (Commercial)
Site 7	Greater than 500 ft	85 ft	68 to 86 (Commercial)

Noise levels in Table 7 do not assume reductions due to intervening buildings or existing barriers. Noise levels due to construction within 500 feet of residential receptors do not exceed the exterior threshold of 80 dBA L_{eq} for residential uses. For commercial receptors within 200 feet of Sites 3-7, noise levels would exceed the exterior threshold of 85 dBA L_{eq}. Project construction would last for more than 12 months. Noise from construction would result in a potentially significant impact in accordance with Policy EC-1.7 of the City's General Plan.

Mitigation Measure 1a:

Pursuant to this General Plan Policy EC-1.7, a construction noise logistics plan shall be prepared that specifies hours of construction, noise and vibration minimization measures, posting or notification of construction schedules, and designation of a noise disturbance coordinator who would respond to neighborhood complaints will be required to be in place prior to the start of construction and implemented during construction to reduce noise impacts on neighboring residents and other uses. Project construction operations shall use best available noise suppression devices and techniques including, but not limited to the following:

- Limit construction hours to between 7:00 a.m. and 7:00 p.m., Monday through Friday, unless permission is granted with a development permit or other planning approval. No construction activities are permitted on the weekends at sites within 500 feet of a residence. Construction outside of these hours may be approved through a development permit based on a site-specific "construction noise mitigation plan" and a finding by the Director of PBCE that the construction noise mitigation plan is adequate to prevent noise disturbance of affected residential uses.

- Construct solid plywood fences or similar around ground level construction sites adjacent to operational businesses. A temporary 10-foot noise barrier shall be constructed along the property lines of the project sites to shield adjacent commercial uses from ground-level construction equipment and activities. The noise barrier shall be solid over the face and at the base of the barrier in order to provide a 10 dBA noise reduction.

- Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.

- Prohibit unnecessary idling of internal combustion engines.

- Locate stationary noise-generating equipment such as air compressors or portable power generators as far as possible from sensitive receptors. Construct temporary noise barriers to screen stationary noise-generating equipment when located near adjoining sensitive land uses.

- Utilize "quiet" air compressors and other stationary noise sources where technology exists.

- Control noise from construction workers' radios to a point where they are not audible at existing residences bordering the project site.

- Notify all adjacent business, residences, and other noise-sensitive land uses of the construction schedule, in writing, and provide a written schedule of "noisy" construction activities.

- Designate a "disturbance coordinator" who shall be responsible for responding to any complaints about construction noise. The disturbance coordinator shall determine the cause of the noise complaint (e.g., bad muffler, etc.) and shall require that reasonable measures be implemented to correct the problem. Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction schedule.

With the implementation of GP Policy EC-1.7, Zoning Code requirements, and the above measures, temporary construction noise would be reduced to a **less-than-significant** level (85 dBA L_{eq} or less).

Impact 1b: **Permanent Noise Level Increase/Exceed Applicable Standards.** The proposed project would not result in a substantial permanent noise level increase due to project traffic at receptors in the project vicinity. Operational noise increases could be **potentially significant** for certain land uses.

According to Policy EC-1.2 of the City's General Plan, a significant permanent noise increase would occur if the project would substantially increase noise levels at existing sensitive receptors in the project vicinity. A substantial increase would occur if: a) the noise level increase is 5 dBA DNL or greater, with a future noise level of less than 60 dBA DNL at residences; or b) the noise level increase is 3 dBA DNL or greater, with a future noise level of 60 dBA DNL or greater at residences. Based on the 2037 SJC Airport CNEL contours (Figure 2), noise levels at sensitive land uses exceed 60 dBA DNL; therefore, a significant impact would occur if traffic or operational noise due to the proposed project would permanently increase ambient levels by 3 dBA DNL.

The City's General Plan and the Municipal Code do not include thresholds for nonresidential receptors. However, performance standards included in Section 20.40.600 of the Municipal Code

are conservatively used in this study to provide a noise limit of 60 dBA at adjacent receiving commercial uses. Under the City's Noise Element, noise levels from nonresidential building equipment shall not exceed a noise level of 55 dBA DNL at receiving noise-sensitive residential land uses.

Project Traffic Increase

The traffic study completed for the proposed project[4] along with traffic volumes posted by the City[5] indicate that the existing average daily traffic volumes on Coleman Avenue are 31,544 vehicles per day and traffic volumes along West Hedding Street near the project sites are 11,946 vehicles per day. It is estimated that a total of 9,575 trips would be generated from the project.

It is conservatively assumed that all 9,575 trips would be generated from sites along Coleman Avenue (Sites 1 through 5) since they make up about 90 percent of the total project parcel size. Future traffic noise increases in the vicinity of project sites along Coleman Avenue due to 9,575 additional project trips would result in a noise level increase of about 1 dBA DNL/CNEL. Sites along West Hedding Street (Sites 6 and 7) make up about 10 percent of the total project parcel size. Assuming 10 percent of the total project trips would be generated at sites along West Hedding Street, this would result in a future traffic noise increase of less than 1 dBA DNL/CNEL.

To summarize, future traffic noise increase in the vicinity of the project sites based on the estimated trips generated by the project is about 1 dBA DNL/CNEL. This is a less-than-significant impact.

Operational Noise

Various mechanical equipment for heating, ventilation, and cooling purposes, exhaust fans, emergency generators, and other similar equipment could produce noise levels exceeding the maximum noise limits when located near existing residential or commercial land uses. Additionally, potential noise-generating sources, such as truck deliveries or other project-specific noise sources, may also be proposed at the project-level.

A list of potential land uses[6] on the project sites were evaluated, out of which the worst-case noise-generating land uses were identified in terms of operational noise impacts to the adjacent commercial uses. Such land uses include animal boarding, any use without a permanent fully enclosed building on-site, car wash, detailing, recreation, commercial outdoor, and winery, brewery, distillery. Noise levels due to operations at these land uses could potentially exceed the 60 dBA noise limit at adjacent commercial uses. This is a significant impact.

All other potential commercial uses would not result in noise levels that could cause a significant noise increase. It is important to note that the proposed project sites are located in a relatively loud ambient noise environment due to flights from the SJC (within the 65 to 75 dBA CNEL noise contour) and local traffic along with other commercial uses in the area. Hence, operational noise

[4] *Guadalupe Gardens Transportation Analysis* prepared by Hexagon Transportation Consultants, Inc., June 25, 2023

[5] https://gisdata-csj.opendata.arcgis.com/datasets/3f4978184afa48bb8353170e0d428623_504/about

[6] Project description document dated May 2023

from all other land uses not listed above would result in less-than-significant noise levels at adjacent commercial land uses.

Total Combined Project-Generated Noise

Noise levels produced by the project in terms of anticipated traffic increases would result in an increase of 1 dBA DNL/CNEL or less at all existing receptors in the project vicinity. However, operational noise levels (due to mechanical equipment, truck deliveries, parking lots etc.) could potentially exceed 55 dBA DNL at the nearest residential receptors or 60 dBA at commercial uses for the land uses identified above. All other commercial land uses at the project site would result in a less-than-significant impact.

Mitigation Measure 1b:

- A qualified acoustical consultant should review the final design plans for the identified land uses (animal boarding, any use without a permanent fully enclosed building on-site, car wash, detailing, recreation, commercial outdoor, and winery, brewery, distillery) to address any potential conflicts with the General Plan or Municipal Code. The City's standard permit condition shall be implemented as a condition of approval for the proposed project. The standard permit condition states the following:

    - A detailed acoustical study shall be prepared during final building design to evaluate the potential noise generated by building mechanical equipment and demonstrate the necessary noise control to meet the City's 55 dBA DNL goal for residences and 60 dBA at commercial uses as per the Municipal Code Performance Standards. Noise control features such as sound attenuators, baffles, and barriers shall be identified and evaluated to demonstrate that mechanical equipment noise would not exceed the respective appropriate thresholds at noise-sensitive locations around the project site. The noise control features identified by the study shall be incorporated into the project prior to issuance of a building permit.

- Additionally, the implementation of General Plan Policies EC-1.2, EC-1.3, and EC-1.9 would reduce potential impacts associated with the identified new noise-producing land uses facilitated by the plan to a less-than-significant level. Policy EC-1.2 limits noise generation by requiring the use of noise attenuation measures, such as acoustical enclosures and sound barriers, where feasible, to avoid substantial increases to ambient noise. General Plan Policy EC-1.3 would be implemented and would require new projects to mitigate noise generation to 55 dBA DNL at the property line for residences. Lastly, General Plan Policy EC-1.9 would be implemented and would require that studies be conducted to mitigate loud intermittent noise sources associated with new projects.

With the incorporation of the City's General Plan Policies EC-1.2, EC-1.3, and EC-1.9 and performance standards included in Section 20.40.600 of the Municipal Code, operational noise levels would not exceed applicable standards at the noise-sensitive receptors in the project vicinity resulting in a **less-than-significant** impact.

Impact 2: **Exposure to Excessive Groundborne Vibration.** Construction-related vibration levels would potentially exceed applicable vibration thresholds at nearby sensitive land uses. This is a potentially significant impact.

The construction of the project may generate perceptible vibration when heavy equipment or impact tools (e.g., jackhammers, hoe rams) are used. Construction activities would include grading, foundation work, paving, and new building framing and finishing. Detailed information regarding construction equipment and phasing is not available at this time.

The Master Metal Products building, located at 495 Emory Street, is a historic building located adjacent to Site 1 and within 200 feet of Site 5. Master Metal Products engages in the custom fabrication of steel, aluminum, and stainless-steel sheet metal products. The building was constructed in 1947 and enlarged in 1958. The building is composed of eight connected Quonset hut-style structures constructed with fabricated metal. Although classified by the City as a historic building, this type of building is not sensitive to damage from relatively low level vibrations as fabricated metal would not be expected to crack like plaster in historic residential buildings, for instance. This analysis considers the Master Metal Products building to be of normal conventional construction. No other historic buildings are located within 200 feet of any of the seven project sites as per the City's Historic Resource Inventory[7]. Policy EC-2.3 of the City of San José General Plan states that a vibration limit of 0.08 in/sec PPV for historic buildings and a vibration limit of 0.20 in/sec PPV shall be used to minimize damage at buildings of normal conventional construction. The vibration limits contained in this policy are conservative and designed to provide the ultimate level of protection for existing buildings in San José. As discussed in detail below, vibration levels exceeding these thresholds would be capable of cosmetically damaging adjacent buildings. Cosmetic damage (also known as threshold damage) is defined as hairline cracking in plaster, the opening of old cracks, the loosening of paint or the dislodging of loose objects. Minor damage is defined as hairline cracking in masonry or the loosening of plaster. Major structural damage is defined as wide cracking or the shifting of foundation or bearing walls.

Table 8 presents typical vibration levels that could be expected from construction equipment at a distance of 25 feet. Project construction activities, such as drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.), may generate substantial vibration in the immediate vicinity. Jackhammers typically generate vibration levels of 0.035 in/sec PPV and drilling typically generates vibration levels of 0.09 in/sec PPV at a distance of 25 feet.

Vibration levels would vary depending on soil conditions, construction methods, and equipment used. Table 8 also summarizes the distances to the 0.2 in/sec PPV threshold for buildings of normal construction.

[7] www.sanjoseca.gov/your-government/departments/planning-building-code-enforcement/planning-division/historic-preservation/historic-resources-inventory

TABLE 8 Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 ft. (in/sec)	Minimum Distance to Meet 0.2 in/sec PPV (feet)
Clam shovel drop		0.202	26
Hydromill (slurry wall)	in soil	0.008	2
	in rock	0.017	3
Vibratory Roller		0.210	27
Hoe Ram		0.089	13
Large bulldozer		0.089	13
Caisson drilling		0.089	13
Loaded trucks		0.076	11
Jackhammer		0.035	6
Small bulldozer		0.003	<1

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, September 2018, as modified by Illingworth & Rodkin, Inc., August 2023.

Vibration levels are highest close to the source and then attenuate with increasing distance at the rate $\left({D_{ref}}/{D}\right)^{1.1}$, where D is the distance from the source in feet and D_{ref} is the reference distance of 25 feet. While construction noise levels increase based on the cumulative equipment in use simultaneously, construction vibration levels would be dependent on the location of individual pieces of equipment. That is, equipment scattered throughout the site would not generate a collective vibration level, but a vibratory roller, for instance, operating near the project site boundary would generate the worst-case vibration levels for the receptor sharing that property line.

Depending on the proximity of existing structures to each construction site, the structural soundness of the existing buildings, and the methods of construction used, vibration levels may be high enough to damage existing structures. Given the scope of the proposed project sites and the location of the project sites with respect to existing structures in the immediate vicinity (i.e., within 200 feet), ground borne vibration impacts would be potentially significant.

As with any type of construction, vibration levels may at times be perceptible. However, construction phases that have the highest potential of producing vibration (pile driving and use of jackhammers and other high-power tools) would be intermittent and would only occur for short periods of time for any individual project site. By use of administrative controls, such as notifying neighbors of scheduled construction activities and scheduling construction activities with the highest potential to produce perceptible vibration to hours with least potential to affect nearby businesses, perceptible vibration can be kept to a minimum and as such would not result in a significant impact with respect to perception.

Mitigation Measure 2:

The following measures shall be implemented at sites that are within 30 feet of existing structures where construction vibration levels could exceed 0.2 in/sec PPV for buildings of conventional construction:

- A list of all heavy construction equipment to be used for this project known to produce high vibration levels (e.g., tracked vehicles, vibratory compaction, jackhammers, hoe rams, clam shovel drop, and vibratory roller, etc.) shall be submitted to the City by the contractor. This list shall be used to identify equipment and activities that would potentially generate substantial vibration and to define the level of effort for reducing vibration levels below the thresholds.

- Place operating equipment on the construction site as far as possible from vibration-sensitive receptors.

- Use smaller equipment to minimize vibration levels to below 0.2 in/sec PPV shall be used at the property lines. For example, a smaller vibratory roller, such as the Caterpillar model CP433E vibratory compactor, could be used when compacting materials within 30 feet of the adjacent conventional building.

- Avoid using vibratory rollers and clam shovel drops near sensitive areas.

- Select demolition methods not involving impact tools.

- Modify/design or identify alternative construction methods to reduce vibration levels below the limits.

- Avoid dropping heavy equipment and use alternative methods for breaking up existing pavement, such as a pavement grinder, instead of dropping heavy objects, within 30 feet of the adjacent conventional building.

- Designate a person responsible for registering and investigating claims of excessive vibration. The contact information of such a person shall be clearly posted on the construction site.

The implementation of these mitigation measures would reduce a potential impact to a **less-than-significant** level.

Impact 3: **Excessive Aircraft Noise.** The project site is located within 1 mile of San José Mineta International Airport. The noise environment attributable to aircraft is considered Conditionally Acceptable or Generally Unacceptable under the Santa Clara County ALUC noise compatibility policies for commercial land uses. This is a **potentially significant** impact.

San José Mineta International Airport is a public-use airport located within 1 mile north of the project sites. According to the 2037 Airport noise contours (Figure 2), all project sites are located within the 65 CNEL/DNL contour line. Site 7 is located just within the 70 dBA CNEL/DNL contour line. The Comprehensive Land Use Plan (CLUP) adopted by the Santa Clara County Airport Land Use Commission contains standards for projects within the vicinity of San José Mineta International Airport which are relevant to this project.

The project proposes to develop commercial uses at the sites which fall under the CLUP's "Conditionally Acceptable" to "Generally Unacceptable" categories. Developments at sites 1 through 6 (located within the 65 CNEL/DNL contour line) should be undertaken only after a detailed analysis of the noise reduction requirements is made and the needed noise insulation features included in the design. Development at site 7 (located within the 70 CNEL/DNL contour line) is discouraged but if new construction does proceed, a detailed analysis of noise reduction requirements must be made, and the needed noise insulation features included in the design. Outdoor activities may be adversely affected for all sites.

Mitigation Measure 3:

Implement CLUP Policies N-2 and N-6 to mitigate aircraft noise impacts. The implementation of noise insulation to meet CLUP interior noise standards would ensure that the 2022 Cal Green Code standards are also met, achieving an interior noise level of 50 dBA $L_{eq(1\text{-}hr)}$. or lower during daytime hours. At site 7, only those commercial uses are permitted that do not have any outdoor use areas. This would reduce impacts due to excessive aircraft noise to a **less-than significant** level and the project would therefore be compatible with the noise policies of the CLUP.

Cumulative Impacts

Cumulative noise impacts would include temporary construction noise and traffic from cumulative construction projects. There are no other planned or approved projects in the vicinity of the proposed project as per the City's website,[8]. Therefore, no additional cumulative noise increases would occur due to the proposed project.

[8] https://gis.sanjoseca.gov/maps/devprojects/

APPENDIX A

FIGURE A1 Daily Trend in Noise Levels for LT-1, Wednesday, July 19, 2023

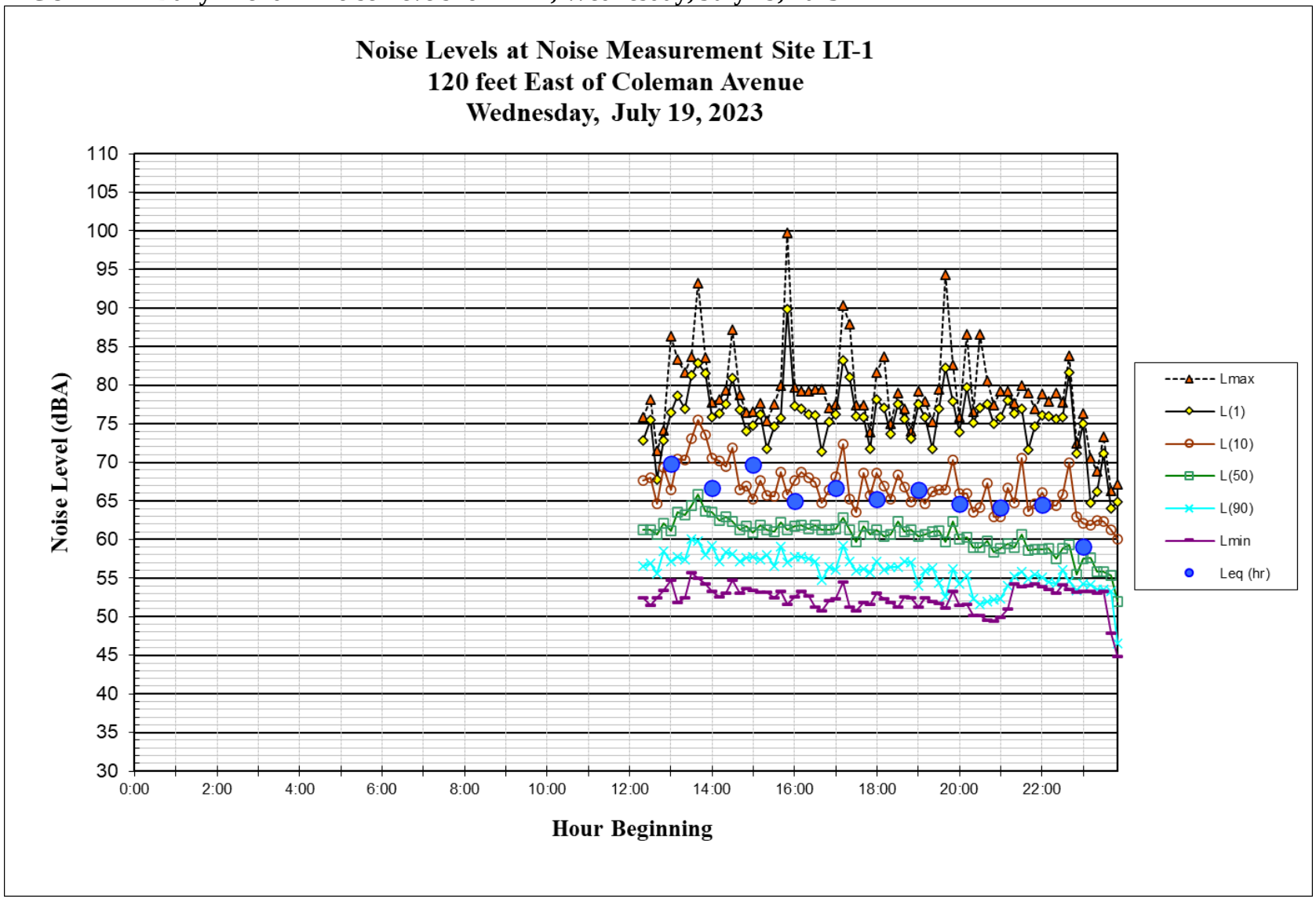


FIGURE A2 Daily Trend in Noise Levels for LT-1, Thursday, July 20, 2023

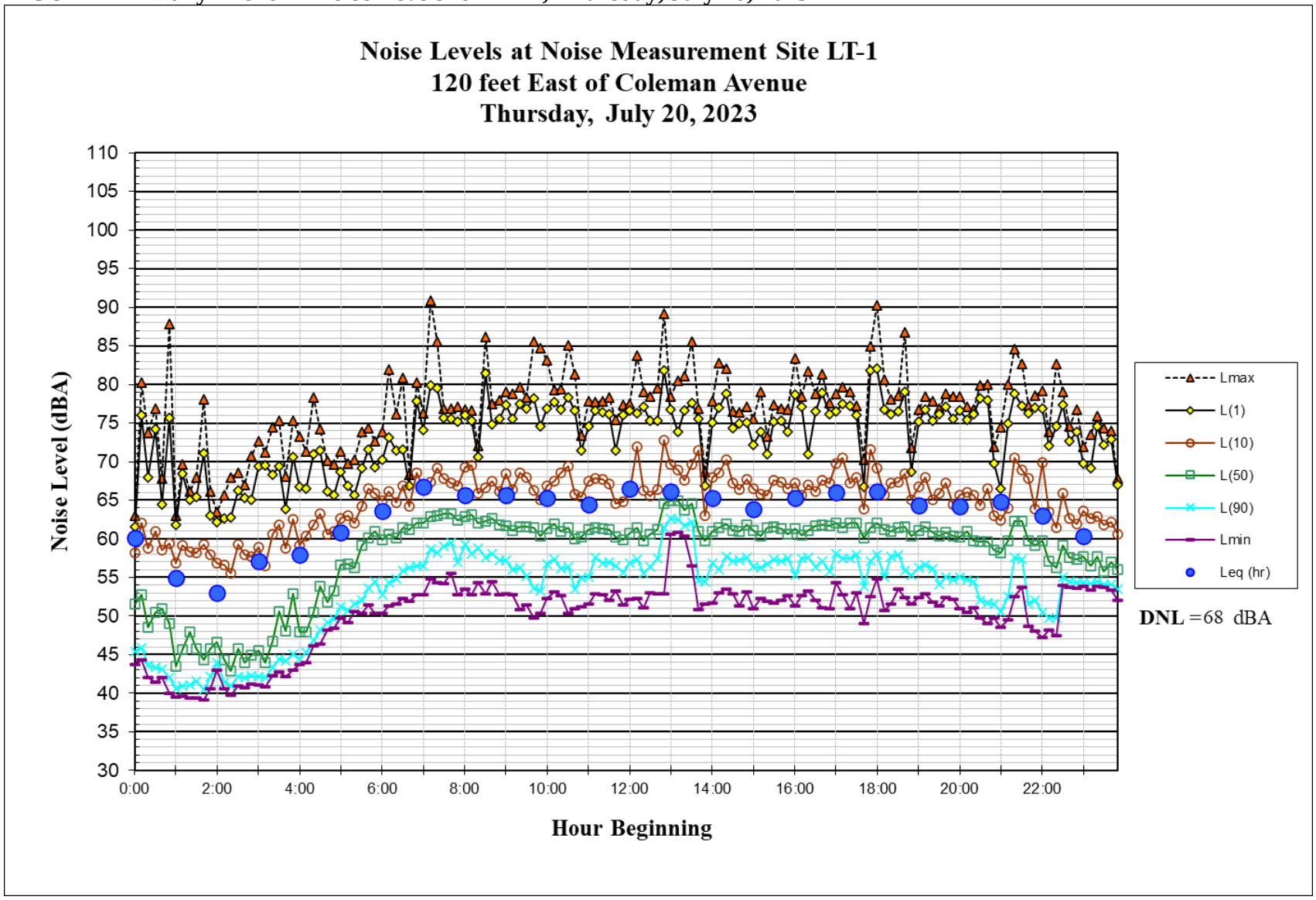


FIGURE A3 Daily Trend in Noise Levels for LT-1, Friday, July 21, 2023

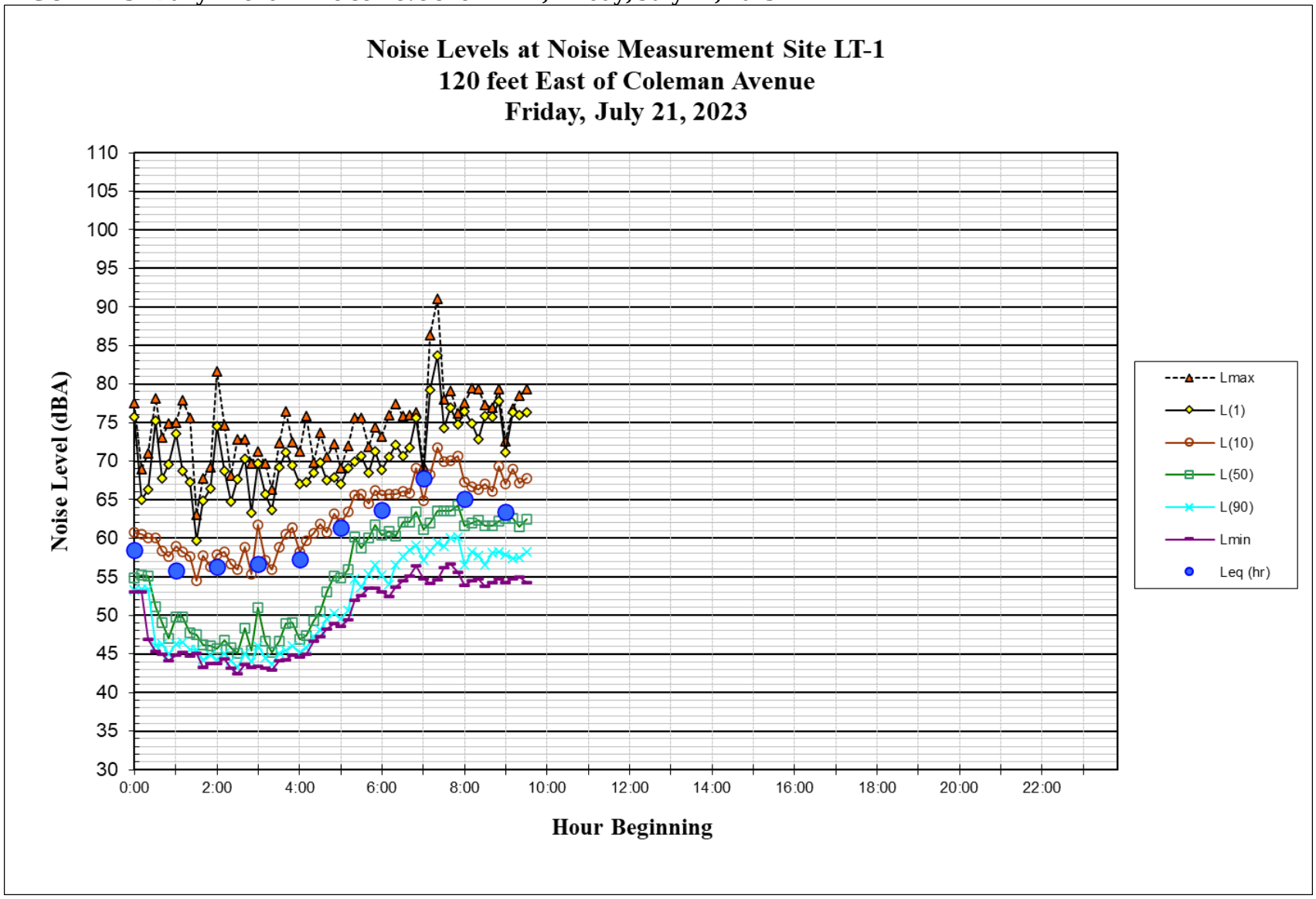


FIGURE A4 Daily Trend in Noise Levels for LT-2, Wednesday, July 19, 2023

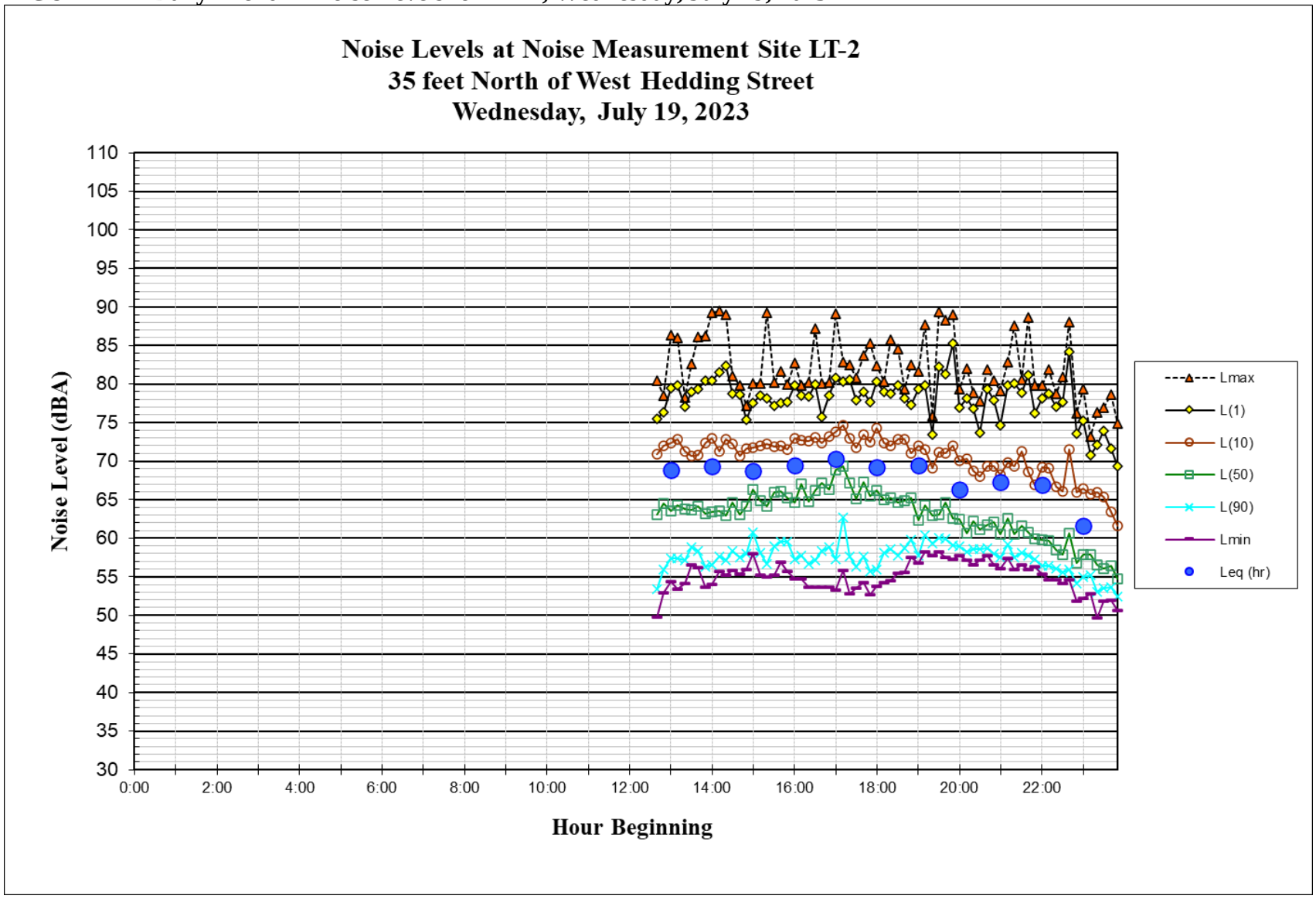


FIGURE A5 Daily Trend in Noise Levels for LT-2, Thursday, July 20, 2023

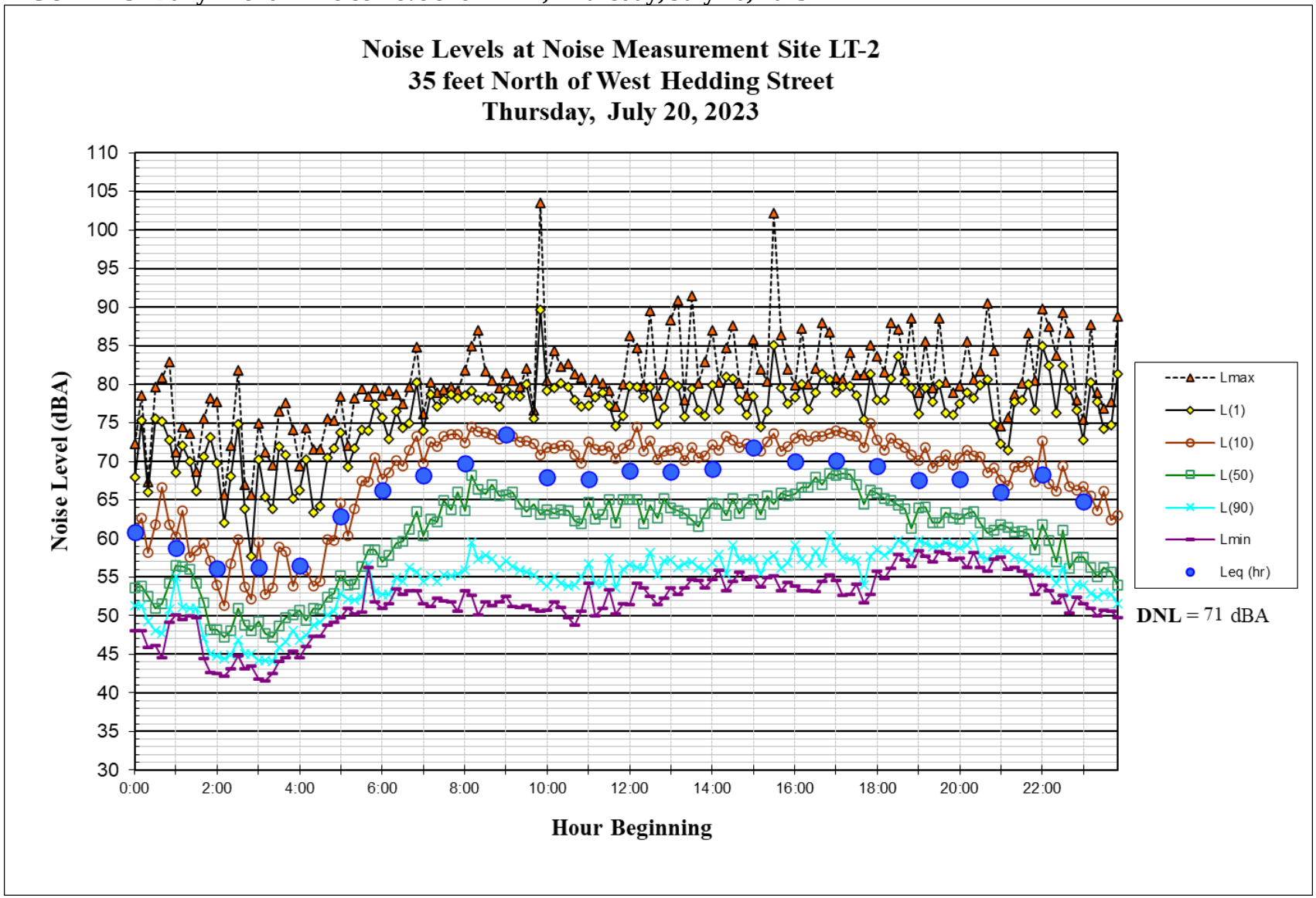


FIGURE A6 Daily Trend in Noise Levels for LT-2, Friday, July 21, 2023