Environmental Noise Assessments

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Environmental Noise Assessment

ENVISION SAN JOSÉ 2040
GENERAL PLAN COMPREHENSIVE UPDATE
ENVIRONMENTAL NOISE ASSESSMENT
SAN JOSÉ, CALIFORNIA

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Introduction

The Noise Element of a General Plan is a comprehensive approach for including noise control in the planning process. It is a tool for achieving and maintaining environmental noise levels compatible with land use. The Noise Element identifies noise-sensitive land uses and noise sources, defines areas of noise impact, and establishes goals, policies, and programs so that residents in the City of San José will be protected from excessive noise. The Noise Element also presents information regarding sources of ground vibration such as construction activities and railroad trains.

This report summarizes information on the noise and vibration environment in the City of San José and provides an evaluation of the effects of the proposed General Plan update on noise. A brief discussion of noise and vibration concepts is presented to assist the reader in understanding the discussion. The report focuses on the predominant sources of environmental noise that affect the City, including vehicular traffic, aircraft, and railroad trains. Impacts resulting from the General Plan Update are discussed and mitigation measures, in the form of policy recommendations, are provided.

A. Noise and Vibration Concepts

1. Terminology

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 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 or 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 about 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*, 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.

2. Effects of Noise

a. Hearing Loss

While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise, but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise.

The Occupational Safety and Health Administration (OSHA) has a noise exposure standard which is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over eight hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

b. 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 noise 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 12-17 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 57-62 dBA DNL with open windows and 65-70 dBA DNL if the windows are closed. Levels of 55-60 dBA are common along collector streets and secondary arterials, while 65-70 dBA is a typical value for a primary/major arterial. Levels of 75-80 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 with Sound Transmission Class ratings greater than 30 STC.

c. 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 55 dBA DNL. At a DNL of about 60 dBA, approximately 2 percent of the population is highly annoyed. When the DNL increases to 70 dBA, the percentage of the population highly annoyed increases to about 12 percent of the population. Therefore, there is an increase in annoyance due to ground vehicle noise of about 1 percent per dBA between a DNL of 60-70 dBA. Between a DNL of 70-80 dBA, each decibel increase increases the percentage of the population highly annoyed by about 2 percent. People appear to respond more adversely to aircraft noise. When the DNL due to aircraft noise is 60 dBA, approximately 10 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about 2 percentage points to the number of

people highly annoyed. Above 70 dBA, each decibel increase in aircraft noise results in about a 3 percent increase in the percentage of the population highly annoyed.

Table 1 Definitions of Acoustical Terms Used in this Report

Term	Definitions
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.
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 that are 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), Caltrans, November 2009.

3. Ground-borne Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several methods are typically used to quantify the amplitude of vibration including Peak Particle Velocity (PPV) and Root Mean Square (RMS) velocity. PPV is defined as the

maximum instantaneous positive or negative peak of the vibration wave. RMS velocity is defined as the average of the squared amplitude of the signal. PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

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. In high noise environments, which are more prevalent where ground-borne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

In urban environments, such as San José, sources of ground-borne vibration include construction activities, light and heavy rail transit, and heavy trucks and buses.

a. 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 peak particle velocity descriptor (PPV) has been routinely used to measure and assess ground-borne vibration and almost exclusively to assess the potential of vibration to induce structural 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. Studies have shown that the threshold of perception for average persons is in the range of 0.2 to 0.3 mm/sec (0.008 to 0.012 inches/sec), PPV. 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 minor cracking of building elements, or may threaten the integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher and there is no general consensus as to what amount of vibration may pose a threat for structural damage to the building. Construction-induced vibration that can be detrimental to a 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 (e.g., impact pile driving) occurs immediately adjacent to the structure.

Table 3 displays continuous vibration impacts on human annoyance and on buildings. As discussed previously, annoyance is a subjective measure and vibrations may be found to be annoying at much 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.

Table 3 Reaction of People and Damage to Buildings for Continuous Vibration Levels[1]

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006 to 0.019	Threshold of perception: Possibility of intrusion	Vibration unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage[2] to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk of "architectural" damage to normal dwellings such as plastered walls or ceilings.
0.4 to 0.6	Vibrations considered unpleasant by people subjected to continuous vibrations	Vibration at this level would cause "architectural" damage and possibly minor structural damage.

b. Light-Rail/ Heavy-Rail Vibration

Rail operations are potential sources of substantial ground-borne vibration depending on distance, the type and the speed of trains, and the type of railroad track. People's response to ground-borne vibration has been correlated best with the velocity of the ground. The velocity of the ground is expressed on the decibel scale. The reference velocity is 1×10^{-6} in. /sec. RMS, which equals 0 VdB, and 1 in. /sec. equals 120 VdB. Although not a universally accepted notation, the abbreviation "VdB" is used in this document for vibration decibels to reduce the potential for confusion with sound decibels.

[1] Transportation Related Earthborne Vibrations. Caltrans, Technical Advisory, TAV-02-01-R9601, February 2002.

[2] "Architectural" damage is cosmetic in nature, involving minor cracking of building elements, and would not affect the structural integrity of the building.

One of the problems with developing suitable criteria for ground-borne vibration is the limited research into human response to vibration and more importantly human annoyance inside buildings. The U.S. Department of Transportation, Federal Transit Administration has developed rational vibration limits that can be used to evaluate human annoyance to ground-borne vibration. These criteria are primarily based on experience with passenger train operations, such as rapid transit and commuter rail systems. The main difference between passenger and freight operations is the time duration of individual events; a passenger train lasts a few seconds whereas a long freight train may last several minutes, depending on speed and length.

c. Heavy Trucks and Buses

Ground-borne vibration levels from heavy trucks and buses are not normally perceptible, especially if roadway surfaces are smooth. Buses and trucks typically generate ground-borne vibration levels of about 63 VdB at a distance of 25 feet when traveling at a speed of 30 mph. Higher vibration levels can occur when buses or trucks travel at higher rates of speed or when the pavement is in poor condition. Vibration levels below 65 VdB are below the threshold for human perception.

B. Regulatory Framework

This section describes the relevant guidelines, policies, and standards established by Federal and State Agencies and the City of San José.

1. Federal

a. Department of Housing and Urban Development (HUD)

HUD environmental criteria and standards are presented in 24 CFR Part 51. New residential construction qualifying for HUD financing proposed in high noise areas (exceeding 65 dBA DNL) must incorporate noise attenuation features to maintain acceptable interior noise levels. A goal of 45 dBA DNL is set forth for interior noise levels and attenuation requirements are geared toward achieving that goal. It is assumed that with standard construction any building will provide sufficient attenuation to achieve an interior level of 45 dBA DNL or less if the exterior level is 65 dBA DNL or less. Approvals in a "normally unacceptable noise zone" (exceeding 65 decibels but not exceeding 75 decibels) require a minimum of 5 decibels additional noise attenuation for buildings if the day-night average is greater than 65 decibels but does not exceed 70 decibels, or minimum of 10 decibels of additional noise attenuation if the day-night average is greater than 70 decibels but does not exceed 75 decibels.

b. Federal Highway Administration

Proposed federal or federal-aid highway construction projects at a new location, or the physical alteration of an existing highway that significantly changes either the horizontal or vertical alignment, or increases the number of through-traffic lanes requires an assessment of noise and consideration of noise abatement per Title 23 of the Code of Federal Regulations, Part 772 (23 CFR Part 772), "Procedures for Abatement of Highway Traffic Noise and Construction Noise." FHWA has adopted noise abatement criteria (NAC) for sensitive receivers such as picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals when "worst-hour" noise levels approach or exceed 67 dBA L_{eq}. Caltrans has further defined approaching the NAC to be 1 dBA below the NAC for noise sensitive receivers identified as Category B activity areas (e.g., 66 dBA L_{eq} is considered approaching the NAC).[3]

c. Federal Transit Administration

The Federal Transit Administration (FTA) has identified vibration impact criteria for sensitive buildings, residences, and institutional land uses near rail transit and railroads. The thresholds for residences and buildings where people normally sleep (e.g., nearby residences) are 72 VdB for frequent events (more than 70 events of the same source per day), 75 VdB for occasional events (30 to 70 vibration events of the same source per day), and 80 VdB for infrequent events (less than 30 vibration events of the same source per day).

2. State of California

a. California Administrative Code Section 65302(f)

California Government Code Section 65302(f) requires that all General Plans include a Noise Element to address noise problems in the community. The noise element shall recognize the guidelines established by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all of the following sources:

- Highways and freeways.
- Primary arterials and major local streets.
- Passenger and freight on-line railroad operations and ground rapid transit systems.

[3] Traffic Noise Analysis Protocol, Caltrans Division of Environmental Analysis, August 2006.

- Commercial, general aviation, heliport, and military airport operations, aircraft flyovers, jet engine tests stands and all other ground facilities and maintenance functions related to airport operation.

- Local industrial plants, including, but not limited to, railroad classification yards.

- Other stationary ground noise sources identified by local agencies as contributing to the community noise environment.

Noise contours shall be shown for all of these sources and stated in terms of community noise equivalent level (CNEL) or day-night average level (DNL or L_{dn}). The noise contours shall be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified above.

The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise. The noise element shall include implementation measures and possible solutions that address existing and foreseeable noise problems, if any. The adopted noise element shall serve as a guideline for compliance with the state's noise insulation standards.

b. California Noise Insulation Standards

The State of California establishes minimum noise insulation performance standards for hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family dwellings as set forth in the 2007 California Building Code (Chapter 12, Appendix Section 1207.11.2). The noise limit is a maximum interior noise level of 45 dBA DNL. Where exterior noise levels exceed 60 dBA DNL, a report must be submitted with the building plans describing the noise control measures that have been incorporated into the design of the project to meet the noise limit. The General Plan facilitates the implementation of the Building Code noise insulation standards.

c. Division of Aeronautic Noise Standards

Title 21 of the *California Code of Regulations*[4] sets forth the State's airport noise standards. In the findings described in Section 5006, the standard states the following: "A level of noise acceptable to a reasonable person residing in the vicinity of an airport is established as a community noise equivalent level (CNEL) value of 65 dB for purposes of these regulations. This criterion level has been chosen for reasonable persons residing in urban residential areas

[4] California Code of Regulations Airport Noise Standards, Title 21, Public Works Division 2.5, Division of Aeronautics (Department of Transportation), Chapter 6 Noise Standards, Article 1.General.

where houses are of typical California construction and may have windows partially open. It has been selected with reference to speech, sleep, and community reaction." Based on this finding, the airport noise standard as defined in Section 5012 is set at a CNEL of 65 dB.

d. California Department of Transportation – Construction Vibration

There are no applicable state plans, policies, regulations or laws related to ground-borne vibration from construction activities, but guidance developed by the California Department of Transportation (Caltrans) has been used in past construction vibration impact assessments of projects developed in San José. Caltrans uses a vibration limit of 12.7 mm/sec (0.5 inches/sec), PPV for buildings structurally sound and designed to modern engineering standards. A conservative vibration limit of 5 mm/sec (0.2 inches/sec), PPV has been used for buildings that are found to be structurally sound but structural damage is a major concern. For historic buildings or buildings that are documented to be structurally weakened, a conservative limit of 2 mm/sec (0.08 inches/sec), PPV is often used to provide the highest level of protection. All of these limits have been used successfully and compliance to these limits has not been known to result in appreciable structural damage. All vibration limits referred to herein apply on the ground level and take into account the response of structural elements (i.e. walls and floors) to ground-borne excitation.

3. City of San José

a. San José 2020 General Plan

The Noise Element of the San José 2020 General Plan identifies noise and land use compatibility standards for various land uses. The City's goal is to, "…minimize the impact of noise on people through noise reduction and suppression techniques, and through appropriate land use policies." Policies and programs in support of these goals are as follows:

Policy 1. The City's acceptable noise level objectives are 55 DNL as the long-range exterior noise quality level, 60 DNL as the short-range exterior noise quality level, 45 DNL as the interior noise level, and 76 DNL as the maximum exterior noise level necessary to avoid significant adverse health effects. These objectives are established for the City, recognizing that the attainment of exterior noise levels in the environs of the San José International Airport, the Downtown Core Area, and along major roadways may not be achieved in the time frame of this Plan. To achieve the noise objectives, the City should require appropriate site and building

design, building construction and noise attenuation techniques in new residential development.

Policy 2. The City should include appropriate attenuation techniques in the design of all new arterial streets.

Policy 3. The City should encourage the State Department of Transportation and County Transportation Agency to provide sound attenuation devices which are visually pleasing on all new and existing freeways and expressways.

Policy 4. The City should monitor Federal legislative and administrative activity pertaining to aircraft noise for new possibilities for noise-reducing modifications to aircraft engines beyond existing Stage 3 requirements. In addition, the City should monitor ongoing FAA study group discussions pertaining to land use around airports and oppose Federal policies pre-empting local land use authority. The City should monitor any efforts at the Federal level to revise or modify the Federal schedule for phase-out of Stage 2 aircraft. The City should continue to encourage the use of quieter aircraft at the San José International and Reid-Hillview airports.

Policy 5. The City should continue to require safe and compatible land uses within airport noise zones (defined by the 65 CNEL contour as set forth in State law) and should also encourage operating procedures which minimize noise.

Policy 6. The City should continue to encourage the Federal Aviation Administration to enforce current cruise altitudes which minimize the impact of aircraft noise on land use.

Policy 7. The use of off-road vehicles such as trail bikes, mini-bikes and dune buggies should only be allowed in areas where the resulting noise is consistent with the City's exterior noise level guidelines and is compatible with adjacent land uses.

Policy 8. The City should discourage the use of outdoor appliances, air conditioners, and other consumer products which generate noise levels in excess of the City's exterior noise level guidelines.

Policy 9. Construction operations should use available noise suppression devices and techniques.

Policy 10. Commercial drive-through uses should only be allowed when consistency with the City's exterior noise level guidelines and compatibility with adjacent land uses can be demonstrated.

Policy 11. When located adjacent to existing or planned noise sensitive residential and public/quasi-public land uses, nonresidential land uses should mitigate noise generation to meet the 55 DNL guideline at the property line.

Policy 12. Noise studies should be required for land use proposals where known or suspected peak event noise sources occur which may impact adjacent existing or planned land uses.

Table 4 shows the compatibility of various land use categories with varying noise levels.

Table 4 Land Use Compatibility Guidelines for Community Noise in San José

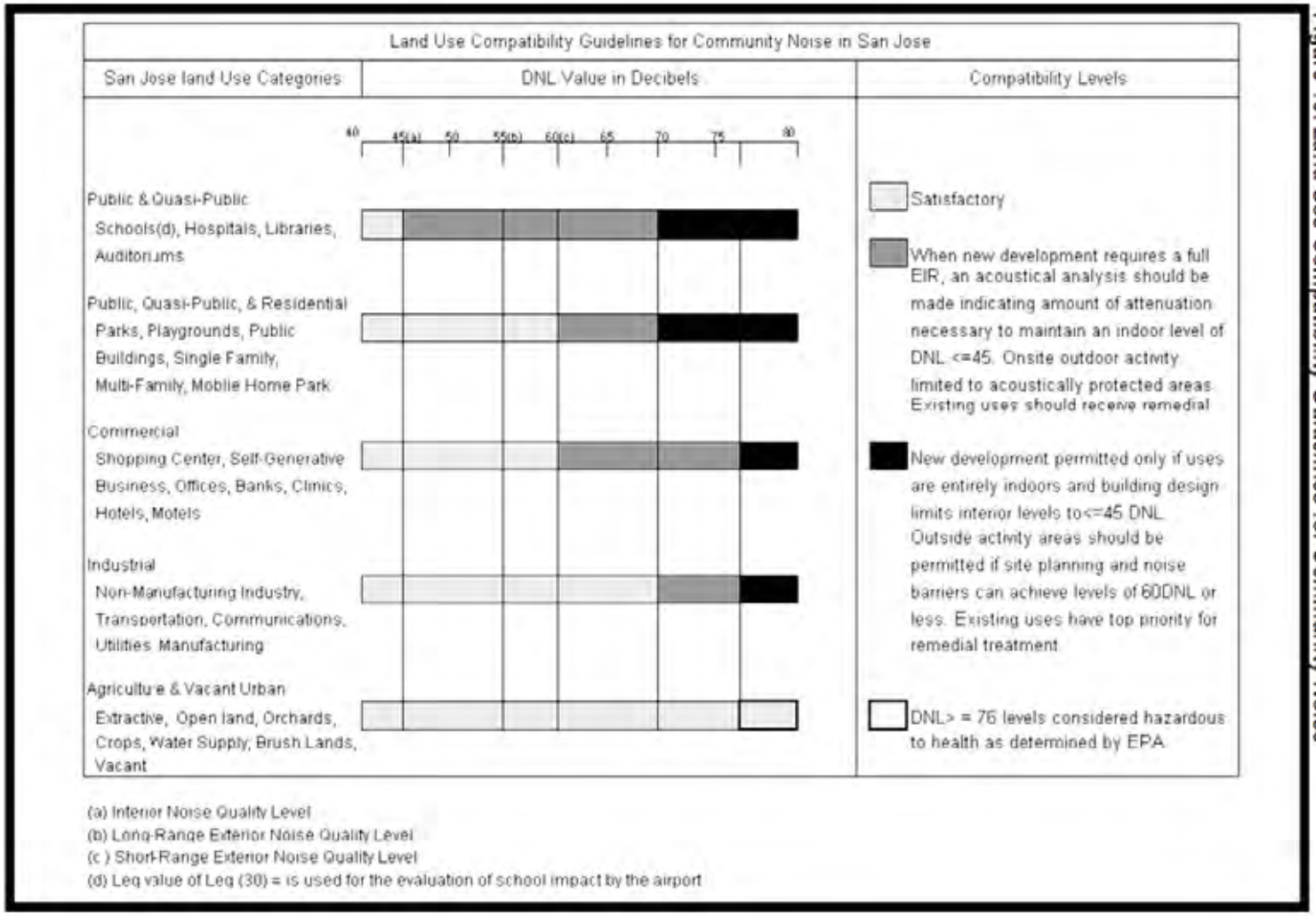

Figure 16. Land Use Compatibility Guidelines for Community Noise

Source: Noise Element of the City of San José's General Plan, Chapter 4

b. City of San José Municipal Code

The City's Municipal Code contains a Zoning Ordinance that limits noise levels at any property line of residential, commercial, or industrial properties as shown in Table 5.

Table 5 City of San José Zoning Ordinance Noise Standards

Land Use Types	Maximum Noise Level in Decibels at Property Line
Residential, open space, industrial or commercial uses adjacent to a property used or zoned for residential purposes	55
Open space, commercial, or industrial use adjacent to a property used or zoned for commercial purposes or other non-residential uses	60
Industrial use adjacent to a property used or zoned for industrial or use other than commercial or residential purposes	70

The City's Municipal Code also contains a Zoning Ordinance that limits noise levels generated by stand-by/backup and emergency generators. The noise level emitted by these generators shall not exceed 55 decibels at the property line of residential properties. The standards and criteria for stand-by/ backup generators are set as follows:

1. Maximum noise levels, based upon a noise analysis by an acoustical engineer, will not exceed the applicable noise standards set forth in Title 20.80.2030.
2. Testing of generators is limited to 7 a.m. to 7 p.m., Monday through Friday.

C. Existing Conditions

1. Noise

Existing noise conditions within the City of San José were documented through a noise monitoring survey for the General Plan Update completed in February and March 2009. In addition, noise data collected by Illingworth & Rodkin, Inc. since 2005 were utilized to supplement the General Plan Update noise monitoring survey. Appendix A summarizes the locations and results of the noise measurements by Planning Area.

a. Transportation-Related Noise Sources

The ambient noise environment in San José is predominantly the result of transportation-related noise sources. U.S. Highway 101, Interstates 280, 680, and 880, and State Routes 17, 82, 85, 87, and 237 are the most significant sources of traffic noise throughout the

community. In areas removed from highways, local arterial and collector roadways are the primary noise sources at nearby land uses.

Noise barriers exist along the majority of highways, expressways, and arterial roadways that traverse the City. These barriers have been built as part of roadway improvement projects for noise abatement purposes or by developers of sensitive land uses when locating noise sensitive projects adjacent to roadways. The existing noise barriers provide acoustical shielding at outdoor use areas and at ground-level facades of buildings. Large noise barriers adjoining highways typically provide 8 to 12 dBA of noise reduction, and smaller noise barriers along arterial roadways can provide 5 to 10 dBA of noise reduction.

Aircraft operations associated with Norman Y. Mineta San José International Airport and Reid-Hillview Airport generate noise that varies throughout the community. Near primary flight paths and the airports, these operations are substantial contributors to ambient day-night average noise levels. In portions of the City away from the airports and flight paths, aircraft generate noise levels that are audible at times.

Helicopter operations associated with hospital heliports intermittently generate fairly high noise levels over short periods of time. Although audible over a large area, hospital helipads do not normally make a substantial contribution to ambient day-night average noise levels at neighboring residences.

Rail operations along the Valley Transportation Authority (VTA) rights-of-way and along Union Pacific Railroad rights-of-way also are substantial sources of noise in some areas of the City. There are three light-rail lines that are located primarily along major transportation corridors including Capitol Avenue, Tasman Drive, North First Street, SR 85, and SR 87. Heavy-rail tracks generally traverse the City from north to south from the Peninsula and East Bay. In addition to UPRR freight trains, rail operators also include the Altamont Commuter Express (ACE), Caltrain, and Amtrak. The number of train passbys varies on a daily basis. Passenger and commuter train schedules are fairly consistent on weekdays with fewer passby events occurring on weekends. The number of freight trains passing through San Jose varies on a daily basis depending on the specific rail line and local demand. Day-night average noise levels vary throughout the community depending on the number of trains operating along a given line per day, the timing and duration of train passby events, and whether or not trains must sound their warning whistles. Day-night average noise levels commonly range from 65 to 75 dBA DNL at land uses adjoining a railroad right-of-way. When railroad trains approach a passenger station or “at-grade” crossing, they are required to use their warning horn by sounding a short signal with the horn. When giving a warning to people and/or animals, they are required to produce a succession of sounds with the horn. Trains are required to sound a long signal followed by a short signal when approaching stations, curves,

or other points where view may be obscured, and when approaching passenger or freight trains. When passing a standing train, the moving train is required to sound two long signals followed by a short signal followed by a long signal, the same requirement when signaling for at-grade crossings. Train warning whistles can generate maximum noise levels of approximately 105 dBA at 100 feet.

b. Stationary Noise Sources

Industrial operations are the primary stationary noise sources that make a significant local contribution to community noise levels. In general, these stationary noise sources (e.g. fabrication, large mechanical equipment and loading areas) are often located in primarily commercial and industrial areas and are isolated from noise sensitive land uses. However, sensitive development has encroached on some of these stationary noise sources resulting in some land use conflicts. Noise sources that affect sensitive receptors within the community would also include commercial land uses or those normally associated with and/or secondary to residential development. These include nightclubs, outdoor dining areas, gas stations, car washes, fire stations, drive-throughs, air conditioning units, swimming pool pumps, school playgrounds, athletic and music events, and public parks.

c. Temporary Noise Sources

Construction is a temporary source of noise for residences and businesses located near construction sites. Construction noise can be significant for short periods of time at any particular location as a result of public improvement projects, private development projects, remodeling, etc. The highest construction noise levels are normally generated during grading and excavation, with lower noise levels occurring during building construction. Large pieces of earth-moving equipment, such as graders, scrapers, and bulldozers, generate maximum noise levels of 85 to 90 dBA at a distance of 50 feet. Typical hourly average construction-generated noise levels are about 80 to 85 dBA measured at a distance of 50 feet from the site during busy construction periods. Some construction techniques, such as impact pile driving, can generate very high levels of noise (105 dBA L_{max} at 50 feet) that are difficult to control. Construction activities can elevate noise levels at adjacent businesses and residences by 15 to 20 dBA or more.

2. Vibration

a. Transportation-Related Vibration Sources

Ground-borne vibration occurs in areas adjacent to fixed rail lines when railroad trains pass through San José. Ground vibration levels along the railroad corridors are proportional to the

speed and weight of the trains as well as the condition of the tracks and train engine and car wheels. Vibration levels resulting from railroad trains vary by site, but are generally perceptible within 100 feet of the tracks. Light-rail operations generate less vibration than heavy-rail trains, and oftentimes, vibration levels generated by light-rail trains are barely perceptible just outside the common light-rail/roadway right-of-way.

b. Temporary Vibration Sources

Construction activities such as demolition, site preparation work, excavation, and foundation work can generate ground-borne vibration at land uses adjoining construction sites. Impact pile driving has the potential of generating the highest ground vibration levels and is of primary concern to structural damage. Other project construction activities, such as caisson drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.) may also generate substantial vibration levels in the immediate vicinity.

3. Planned Rapid and Rail Transit

Currently, California is considering construction of a high-speed train system that would link the San Francisco Bay Area and Los Angeles. The plan would be for high-speed trains to operate through San José on or near the existing Caltrain right-of-way. High-speed trains would operate on dedicated tracks. Numerous at-grade crossings would need to be eliminated or a grade-separated track would be necessary to facilitate the high-speed trains. This may reduce noise from the sounding of traditional railroad train horns. The high-speed trains would likely use electric power cars, which would minimize the low frequency rumble, associated with diesel-powered locomotives. At higher speeds above conventional trains, high-speed train noise levels would increase over conventional trains due to the aerodynamic effects. Studies are currently ongoing to quantify future noise levels in the rail corridor. Vibration of the ground caused by the passby of high-speed trains is similar to that caused by conventional steels wheels/steel rail trains. At comparable speeds, vibration levels associated with high-speed trains are relatively lower than conventional passenger and freight trains due to advanced track technology, smooth track and wheel surfaces, and high maintenance standards required for high-speed operation. Conversely, vibration levels increase with increasing speed, so the previously described benefits would be at least partially offset by higher operating speeds.[5] As information becomes available, it should be incorporated into the Noise Element and utilized in noise/vibration and land use planning accordingly.

[5] Final Bay Area to Central Valley High-Speed Train (HST) Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS), Volume 1: Report May 2008.

A former UPRR railroad right-of-way is designated as the Silicon Valley Rapid Transit Corridor where the BART extension to San José is planned. Noise levels resulting from the operation of the proposed BART extension were assessed in the Silicon Valley Rapid Transit Corridor Final EIR.[6] The SVRTC study predicts wayside noise levels for BART operations of 60 dBA DNL at approximately 144 feet from the near track. Maximum passby noise levels are predicted to be approximately 76 dBA L_{max} at 88 feet.[7]

Rapid transit along the future BART Extension would also be a source of ground-borne vibration. Predicted ground vibration levels without mitigation are presented in the Silicon Valley Rapid Transit Corridor FEIR.[8] Based on data contained in the SVRTC FEIR, the 72 VdB threshold is estimated to occur within approximately 100 feet of the near track without mitigation.

4. Planning Areas

The City of San José's Urban Growth Boundary covers approximately 143 square miles and there are a range of noise sources and levels throughout the City. For the purposes of this report, City of San José Planning Areas are utilized to describe noise levels throughout the City. The City of San José is divided into fifteen Planning Areas: Alviso (ALV), North (NOR), Berryessa (BER), West Valley (WV), Central (CEN), Alum Rock (AR), Willow Glen (WG), South (SOU), Evergreen (EVE), Cambrian/Pioneer (CP), Edenvale (EDE), Almaden (ALM), Coyote (COY), San Felipe (SF), and Calero (CAL). Figures showing approximate noise measurement locations made in each of the Planning Areas and summary tables of these noise measurement data are shown in Appendix A.

a. Alviso (ALV)

The Alviso Planning Area is the northernmost Planning Area in San José and is comprised mostly of wetlands, airport approach zone land uses, and residential communities. The main sources of noise in the Alviso Planning Area include State Route 237 and Interstate 880, railroad train operations along the UPRR, and aircraft. Noise measurement ALV-1 was made along State Route 237 yielding a Day-Night Average noise level of 74 dBA DNL. Other major noise-generating roadways include North First Street, Gold Street, Los Esteros Road, and Zanker Road. Noise-sensitive land uses are generally located in areas well away from stationary noise sources (e.g., Zanker Road Landfill) where noise from these sources is insignificant.

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[6] Silicon Valley Rapid Transit Corridor Final EIR, prepared by Santa Clara Valley Transportation Authority, November 2004.
[7] SVRTC FEIR, pages 4.13-16 and 4.13-17.
[8] SVRTC FEIR, Table 4.13-17, page 4.13-54.

b. North (NOR)

The North Planning Area of the City of San José is predominately comprised of commercial and industrial land-uses with sparse low, medium, and high density residential in some northern portions. The area's predominant noise source is the Norman Y. Mineta San José International Airport. The 65 dBA CNEL noise contour generated by San José International Airport extends from north of Tasman Drive to about Keyes Street in the south (Central Planning Area). The airport averages about 533 aircraft operations per day.[9] Approximately 60 percent of aircraft operations are commercial, 19 percent are transient general aviation, 13 percent are jet air taxi operations, 8 percent are local general aviation, and less than 1 percent are military operations. The airport sets noise-based curfew hours from 11:30 P.M. to 6:30 A.M. The noise-based curfew prohibits takeoffs or landings within curfew hours exceeding an average of 89 decibels[10]. Other major sources of noise include State Route 237 along the northern border, Interstate 880 along the eastern border, Highway 101 in the southern third of the Planning Area, and State Route 87. Major arterial roadways include West Tasman Drive, Montague Expressway, North First Street, Zanker Road, West Trimble Road, and East Brokaw Road. Two VTA Light Rail lines, Alum Rock to Santa Teresa and Mountain View to Winchester, run along West Tasman Drive and North First Street. Noise measurements conducted in the North Planning Area include NOR-1 to NOR-8, which yielded Day-Night Average noise levels ranging from 60 to 71 dBA DNL.

c. Berryessa (BER)

The Berryessa Planning Area is located in the northeast portion of the City of San José north of the Alum Rock and Central/Downtown Planning Areas and east of the North San José Planning Area. Medium-low and low density residential land uses are predominant in the western half of the Berryessa Planning Area. Other land uses include public parks, commercial, and high density residential along Interstate 680. The eastern half of the Planning Area includes land uses such as low density and rural residential, campus industrial, urban and non-urban hillside, and open space. Major sources of noise primarily include highways, arterial roadways, and three rail lines. Interstate 680 transects the western half of the Planning Area roughly two miles east of Interstate 880, which serves as the westernmost boundary. A small portion of Highway 101 serves as the southernmost border of the Planning Area. Major arterial roadways include Oakland Road, Murphy Avenue, Berryessa Road, North Capitol Avenue, Cropley Avenue, Morrill Avenue, Piedmont Road, and Sierra

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[9] FAA Information for Norman Y. Mineta San José International Airport, website: www.airnav.com/airport/KSJC, Effective March 12, 2009.

[10] Website: www.sjc.org/about/newsroom/AirportStats.pdf

Road. Noise measurement BER-1 along Interstate 680 showed a Day-Night Average noise level of 74 dBA DNL. A Day-Night Average noise level of 65 dBA DNL was measured at BER-2 along Interstate 880. Noise measurement BER-3 yielded a Day-Night Average noise level of 59 dBA DNL along Berryessa Road. Two Union Pacific freight-train railroads run almost parallel between the two interstates and the Alum Rock to Santa Teresa portion of the VTA Light Rail cuts across and runs along North Capitol Avenue.

Graniterock (San José Concrete and Building Materials) is located at 11711 Berryessa Road. The major noise sources at this facility include truck loading and unloading activities, rail car shaking, slack action, movement of freight cars and engines on the spur line leading to the facility, and truck movements. Measurements made at existing and planned (Flea Market site) residential land uses in the vicinity range from 58 to 62 dBA DNL.

d. West Valley (WV)

The major source of environmental noise in the West Valley Planning Area (WV), located in the central west portion of the City of San José, is vehicular traffic. Interstates 280 and 880, and State Routes 17, 82 and 85 are the most significant sources of traffic noise. Major arterials, including Saratoga Avenue, San Tomas Expressway, Bollinger Road, Stevens Creek Boulevard, Moorpark Avenue, Williams Road, Lawrence Expressway, Hamilton Avenue, De Anza Boulevard, Prospect Road, Winchester Boulevard, Bascom Avenue, Pruneridge Avenue and Homestead Road are the most significant noise sources at land uses immediately joining these roadways. The West Valley Planning Area is mainly developed with residential and commercial land uses. Noise measurements made by Illingworth & Rodkin, Inc. since 2005 documented ambient noise levels along Interstates 280 and 880, State Routes 17, 82, and 85, and major roadways. Noise measurements (WV-1 to WV-8) resulted in Day-Night Average noise levels ranging from 54 to 68 dBA DNL.

e. Central/Downtown (CEN)

The Central/Downtown Planning Area encompasses downtown San José and shares borders with the North, Berryessa, Alum Rock, South, Willow Glen, and West Valley Planning Areas. The northernmost point of the Planning Area adjoins the Highway 101 and Interstate 880 interchange. U.S. Highway 101 serves as the northeast border and Interstate 880 serves as the north and west borders for the Central/Downtown Planning Area. In the southern portion, Interstate 280 turns into Interstate 680 at the Highway 101 interchange, and State Route 87 runs north to south through the Planning Area. Major arterial roadways include Bascom Avenue, Hedding Street, Naglee Avenue, West Taylor Street, West San Carlos Street/Stevens Creek Boulevard, Coleman Avenue, State Route 82/West Santa Clara Street, East Santa Clara Street, St. James Street, Julian Street, 1st Street, 3rd Street, 10th Street, 11th

Street, 24th Street/McLaughlin Avenue, Keys Street/Story Road, Alma Avenue, and Almaden Road.

There are multiple railroads that contribute to the noise environment in the Central/Downtown Planning Area. Two VTA Light Rail train lines, Alum Rock to Santa Teresa and Mountain View to Winchester, converge and split just north of the Guadalupe Parkway (Route 87) and Interstate 280 interchange. Also converging at the Diridon train station are separate train lines that run northwest/southeast and are utilized by Caltrain, Altamont Commuter Express (ACE), Amtrak Capitol Corridor, and Union Pacific freight trains. The Norman Y. Mineta San José International Airport is beyond the northwest border of the Planning Area, but as previously stated, the 65 dBA CNEL noise contour generated by the airport extends into the Planning Area. Public parks, open space, and industrial/commercial land uses are within the Central/Downtown Planning Area nearest the airport runways. General commercial land uses are located along Stevens Creek/West San Carlos Street, East Santa Clara Street, North 1st and 2nd streets, Monterey Street/South 1st Street, and Story Road. High-density residential land uses are located primarily within the Downtown Core Area and south of San José State University. Medium and low-density residences account for the majority of land uses in the Planning Area apart from the downtown and airport spheres of influence. Medium-high density residential, small parks, and light industrial land uses make up a smaller portion of the Planning Area comparatively. Sixteen long-term noise measurements (CEN-1 to CEN-16) taken from 2006 to 2009, documented ambient noise levels within the Planning Area. Measured noise levels varied with distance from the noise source, but typically ranged from 62 to 75 dBA DNL.

f. Alum Rock (AR)

The Alum Rock Planning Area (AR) is located in the northeast portion of the City of San José and is also primarily affected by noise from traffic and aircraft. The Planning Area is mainly developed with residential land uses, with commercial land uses concentrated along Alum Rock Avenue. Interstates 280 and 680, Highway 101 and State Route 130 (Alum Rock Avenue) generate the highest noise levels. Major arterials, including Capitol Expressway, White Road, King Road, McLaughlin Avenue, Senter Road, Santa Clara Street, Story Road, McKee Road, East Julian Street, Jackson Avenue, Toyon Avenue, Kirk Avenue, Clayton Road, Mount Pleasant Road, and Fleming Avenue are the most significant noise sources at land uses immediately joining these roadways. Five long-term noise measurements (AR-1 to AR-5) were taken between 2006 and 2009 to document ambient noise levels within the Planning Area. Noise levels in areas adjacent to King Road, Alum Rock Avenue, McKee Road, and Story Road ranged from 70-74 dBA DNL. Noise levels in areas adjoining Capitol Expressway are calculated to range from 73-75 dBA DNL. Noise levels in residential settings were approximately 55 dBA DNL.

Reid-Hillview Airport, located at 2500 Cunningham Avenue west of East Capitol Expressway and north of Tully Road, is also a significant source of environmental noise. This general aviation airport averages 630 aircraft operations per day[11]. Approximately 60 percent of aircraft operations are general aviation, and 40 percent are transient general aviation. The airport operates from 7:00 A.M. to 9:00 P.M.[12]. Maximum instantaneous noise levels typically range from 64 to 72 dBA L_{max} when departing aircraft are overhead of land uses near the airport.

Other sources that contribute to community noise levels include VTA light rail and freight trains that run from the south to the north of the Planning Area as well as intermittent helicopter operations associated with Regional Medical Center.

g. Willow Glen (WG)

The Willow Glen Planning Area (WG) is located in the southwest portion of the City of San José, and is mainly developed with residential land uses. Interstates 280 and 880, and State Routes 17 and 87 are the most significant sources of traffic noise. Major arterials include Southwest Expressway, Camden Avenue, Hillsdale Avenue, Foxworthy Avenue, Bascom Avenue, Curtner Avenue, Pine Avenue, Hamilton Avenue, Moorpark Avenue, Winchester Boulevard, Leigh Avenue, Meridian Avenue, Lincoln Avenue, Bird Avenue, Union Avenue, Minnesota Avenue, Willow Street, Alma Avenue, Auzerais Avenue, Stevens Creek Boulevard, Almaden Expressway, West Virginia Street, and Race Street. VTA light-rail trains along the Mountain View to Winchester line pass through the Planning Area. The Valley Medical Center heliport also generates noise that intermittently increases ambient noise levels within the community. Nine noise measurements (WG-1 to WG-9) made by Illingworth & Rodkin, Inc. since 2005 documented ambient noise levels along Interstates 280 and 880, State Routes 17 and 87, and major roadways. Measured noise levels within the Planning Area ranged from 65 to 74 dBA DNL.

h. South (SOU)

The South Planning Area (SOU) is located south of the Central Planning Area and is primarily developed with residential and commercial land uses. Traffic and aircraft are the predominant sources of noise affecting the ambient noise environment in the South Planning Area. Highway 101, and State Routes 82 (Monterey Road) and 87 are the most significant sources of traffic noise. Major arterials include Capitol Expressway, Hillsdale Avenue, Snell Avenue, Curtner Avenue, Tully Road, Story Road, Senter Road, McLaughlin Avenue, and

[11] FAA Information for Reid-Hillview Airport, website: www.airnav.com/airport/KSJC, Effective January 15, 2009.
[12] www.reidhillviewairport.com/new_website/rhv-noise.html

King Road. Aircraft on approach or departure routes from the Norman Y. Mineta San José International Airport also contribute to measured noise levels. Measured noise levels (SOU-1 and SOU-2) in the vicinity of major thoroughfares such as Tully Road and Capitol Expressway range from 73 to 74 dBA DNL.

The Raisch Products Asphalt and Concrete Plant is located off Monterey Road near Pullman Way. The major noise sources on site include the asphalt batch plant, truck circulation, and railroad off-loading. Noise measurements conducted by Illingworth & Rodkin, Inc. in 2005 showed that the typical noise level generated by the plant is 63 to 64 dBA at a distance of 200 feet from the asphalt batch plant.

i. Evergreen (EVE)

The Evergreen Planning Area (EVE) is located in the central southeast portion of the City of San José. Highway 101 is the most significant source of traffic noise affecting the Planning Area. Major arterials, including Capitol Expressway, San Felipe Road, White Road, Story Road, Yerba Buena Road, Aborn Road, Quimby Road, Ruby Avenue, Mount Pleasant Road, Clayton Road, Silver Creek Boulevard, Nieman Boulevard, Marten Avenue, and Murillo Avenue are also significant sources of noise at land uses immediately adjacent to these roadways. Reid-Hillview Airport is located just north of the Planning Area. Noise measurements made by Illingworth & Rodkin, Inc. since 2005 (EVE-1 to EVE-3) documented ambient noise levels along major roadways, resulting in measured noise levels ranging from 62 to 77 dBA DNL.

j. Cambrian/Pioneer (CP)

The Cambrian/Pioneer Planning Area (CP) is located in west San José. State Route 85 is the most significant source of traffic noise that affects the Planning Area. Major arterials, including Almaden Expressway, Capitol Expressway, Coleman Road, Blossom Hill Road, Branham Lane, Hillsdale Avenue, South Bascom Avenue, Union Avenue, Leigh Avenue, Meridian Avenue, Cherry Avenue, Camden Avenue, Kooser Road, and Pearl Avenue are the most significant noise sources at land uses immediately adjacent to these roadways. Operations associated with the Good Samaritan Hospital heliport also generate noise that is intermittently audible within the community. The Cambrian/Pioneer Planning Area is mainly developed with residential land uses. The Planning Area is also developed with commercial land uses along Bascom Avenue, Hillsdale Avenue near Leigh Avenue, Almaden Expressway near State Route 85 and Capitol Expressway, and at the intersection of Branham Lane and Camden Avenue.

Noise measurement CP-1 was made along Almaden Expressway yielding a Day-Night Average noise level of 70 dBA DNL. State Route 85 generates existing day-night average noise levels ranging from 77 to 78 dBA DNL at 75 feet. Vehicle traffic along Blossom Hill Road generates a day-night average noise level of about 71 dBA DNL at 75 feet.

k. Edenvale (EDE)

The Edenvale Planning Area (EDE) is located in south central San José. The major source of noise in the Planning Area is traffic along highways, state routes, and roadways with Highway 101 and State Routes 82, 85, and 87 as the most significant sources of traffic noise. Major arterial roadways include Snell Avenue, Pearl Avenue, Capitol Expressway, Branham Lane, Chynoweth Avenue, Blossom Hill Road, Santa Teresa Boulevard, Coleman Road, and Winfield Boulevard. The Planning Area is mainly developed by residential land uses. Other sources that contribute to community noise levels include VTA light rail trains that run from the north to the south of the Planning Area along State Route 87, and from the northwest to the southeast along State Route 85. The UPPR, Amtrak, and Caltrain run from the north to the south along State Route 82 (Monterey Road). Noise measurements made by Illingworth & Rodkin, Inc. since 2005 (EDE-1 to EDE-5) documented ambient noise levels ranging from 66 to 72 dBA DNL along State Routes 85 and 87, and major roadways.

l. Almaden (ALM)

The Almaden Planning Area is located in the southwestern portion of the City of San José. The major source of noise is traffic along roadways. Major arterials, including Almaden Expressway, Coleman Road, Redmond Avenue, Camden Avenue, Meridian Avenue, Harry Road, and McKean Road are the most significant noise sources at land uses immediately adjacent to these roadways. The Planning Area is developed with residential land uses in the northeast portion, and with non-urban hillside and public park land uses in the southwest portion. Noise measurement ALM-1 was made along Almaden Expressway yielding a Day-Night Average noise level of 56 dBA DNL.

m. Coyote (COY)

Traffic is the major source of noise in the Coyote Planning Area (COY) located in the southern portion of the City of San José, with Planning Areas Calero to the west and San Felipe to the east. Highway 101 is the most significant source of traffic noise. Major arterials, including Santa Teresa Boulevard, Monterey Highway, and Hale Avenue are the most significant noise sources at land uses immediately adjacent to these roadways. The Planning Area is mainly developed with residential and agricultural land uses. The IBM Campus is located north of Bailey Avenue between Monterey Highway and McKean Road. Coyote also is developed with public parks, open spaces, and private open spaces. Noise measurements made by Illingworth & Rodkin, Inc. since 2005 (COY-1 to COY-6) documented ambient noise levels ranging from 66 to 73 dBA DNL along Highway 101 and major roadways.

n. San Felipe (SF)

The San Felipe Planning Area is in the southeastern portion of San José outside the Urban Growth Boundary, mostly outside the City limits, and not planned for development. The Evergreen Planning Area is to the northwest and the Coyote Planning Area is to the west. Primary noise sources include industrial operations and automobile traffic along San Felipe Road, Metcalf Road, and Las Animas Road. The Planning Area is comprised of private open space, non-urban hillside, and industrial park land uses.

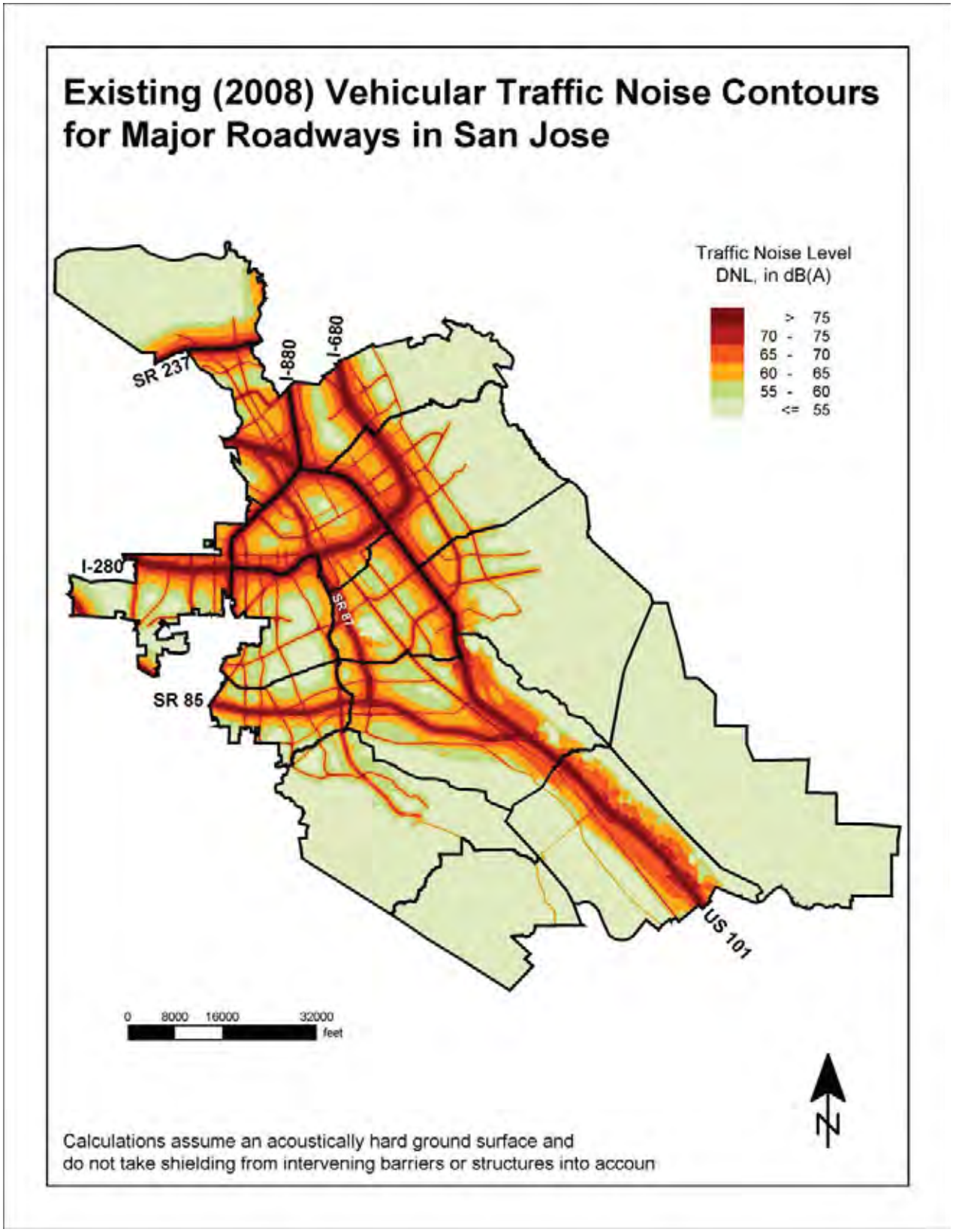
o. Calero (CAL)

Calero is the southernmost Planning Area of San José with Almaden to the northwest and Coyote to the northeast. The Planning Area is outside the Urban Growth Boundary and mostly outside the City limits; it is comprised primarily of public park and non-urban hillside land uses. Calero is not planned for development. The primary noise source is automobile traffic along McKean Road.

D. Noise Map

SoundPLAN Version 7.0, a three-dimensional ray-tracing computer program, was used to calculate existing traffic noise levels along major roadways, expressways, and highways throughout the City of San José. Calculations took into account the source of noise (traffic), the frequency spectra of the noise source, and the topography of the area. In order to provide a worst-case assessment of existing and future traffic noise conditions throughout San José, the computer program used to calculate noise levels (SoundPLAN Version 7.0) did not incorporate existing barriers or buildings into the calculations. The geometric data used to create the model were based on GIS information provided by the City of San José. Existing average daily trip (ADT) data, provided by Fehr and Peers Transportation Consultants, and observed vehicle mix data and travel speeds were also input into the model. For highways and expressways, traffic volumes and truck mix data input into the model was based on information published by the California Department of Transportation (Caltrans). The predicted noise levels were then compared to measured noise levels for calibration purposes and adjustments were made as necessary to the model. Contours presented in this report represent the primary noise sources in San José. Sources such as local industrial plants and stationary ground sources were omitted due to the broad scope of the General Plan Update project. Such sources only affect limited areas and would not be apparent on a citywide map. Figure 1 provides noise contours for existing traffic throughout San José.

Figure 1 Existing San José Noise Contour Map



E. Noise Impacts and Mitigation Measures

The proposed Envision San José 2040 General Plan Update project consists of: the development of General Plan goals, policies and implementation actions; the development of land use designations and identification of specific job and housing growth capacity to guide future growth; identification of targeted areas to develop or redevelop to accommodate this future economic and population growth; and setting policy for the provision of City services for new and existing development of all types for the City of San José through the year 2040.

Standards of Significance

A significant impact will occur if implementation of the project would:

a) Expose people to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

b) Expose people to or generate excessive groundborne vibration or groundborne noise levels;

c) Create a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

d) Create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels; or

f) For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

Land Use Compatibility Impact Discussion

Development facilitated by the Envision San José 2040 General Plan Update project would include noise sensitive land uses that would be located in varying noise environments. New noise-sensitive development is planned along major transportation corridors, railroad and light-rail corridors, in the vicinity of Norman Y. Mineta San José International Airport, and in the vicinity of stationary noise sources. A significant noise impact would be identified where noise sensitive land uses are proposed in areas where existing or future noise levels would exceed the noise and land use compatibility standards established by the City of San José.

Impact **Existing and future noise levels at the locations of proposed noise sensitive developments envisioned in the 2040 General Plan could exceed the City's noise thresholds of acceptability.**

Single-family residential development, schools, libraries, hospitals, convalescent homes, and places of worship are considered the most noise-sensitive land uses. Residential development is sensitive to community noise both outdoors and indoors during the daytime and nighttime. High-density/mixed-use residential, commercial, and industrial development is less noise sensitive because uses are primarily indoors, and noise levels are mitigated with building design and construction. However, noise exposures along many roadways, rail transit corridors, and in the environs of Norman Y. Mineta San José International Airport could exceed the 45 dBA DNL interior compatibility level and the 60 dBA DNL exterior compatibility level for these uses.

Where exterior noise levels exceed 60 dBA DNL in new residential development areas, interior levels may exceed 45 dBA DNL. Interior noise levels are a function of the space but should generally be limited to 45 dBA DNL or less. Interior noise levels are about 15 dBA lower than exterior levels within residential units with the windows partially open and approximately 20 to 25 decibels lower than exterior noise levels with the windows closed, assuming typical California construction methods. Where exterior day-night average noise levels are 60 to 70 dBA DNL, interior noise levels can typically be maintained below 45 dBA DNL with the incorporation of an adequate forced air mechanical ventilation system in the residential units to allow residents the option of controlling noise by keeping the windows closed. Standard office construction methods typically provide about 25 to 30 decibels of noise reduction in interior spaces. The need for noise attenuation measures in building construction and project design for non-sensitive land uses (e.g. commercial, industrial, and institutional) will be determined on a project by project basis at the time development is proposed. In all areas exceeding 70 dBA DNL, the inclusion of windows and doors with high Sound Transmission Class (STC) ratings, and the incorporation of forced-air mechanical ventilation systems, may be necessary to meet 45 dBA DNL.

Future traffic noise levels throughout San José were modeled based on the Envision San José 2040 traffic data (Scenario 6) to determine the noise level contours along major roadways, which are depicted for each Planning Area, along with corresponding land-use maps, in Figures 2 through 28. Please notice that due to varying sizes of Planning Areas, length scales are not all proportional. For the purposes of this assessment, noise levels along the railroad and light rails are estimated to remain similar to existing conditions. The overall noise environment at each site would be comprised primarily of local and distant traffic, and where applicable, from intermittent railroad, light-rail, and aircraft passbys, as well as contributions from local stationary noise sources.

The San Felipe and Calero Planning Areas both are outside the Urban Growth Boundary. No villages, corridors, or other substantial land use changes allowing for urban development are proposed under the Envision San José 2040 General Plan for these two Planning Areas and therefore noise levels are not anticipated to affect new sensitive land uses.

Figure 2 Planning Areas throughout San José

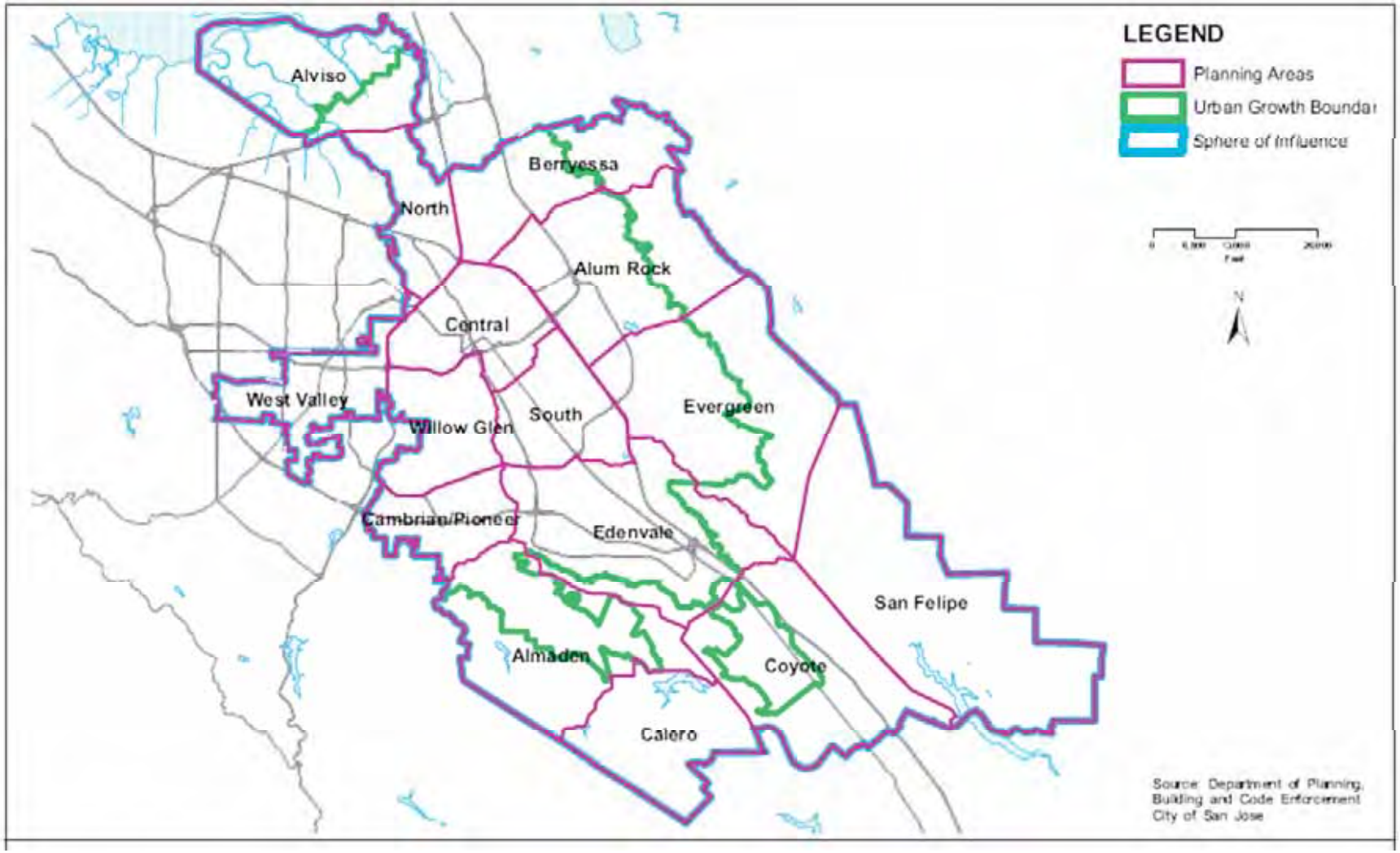


Figure 3 Alviso 2040 Growth Areas

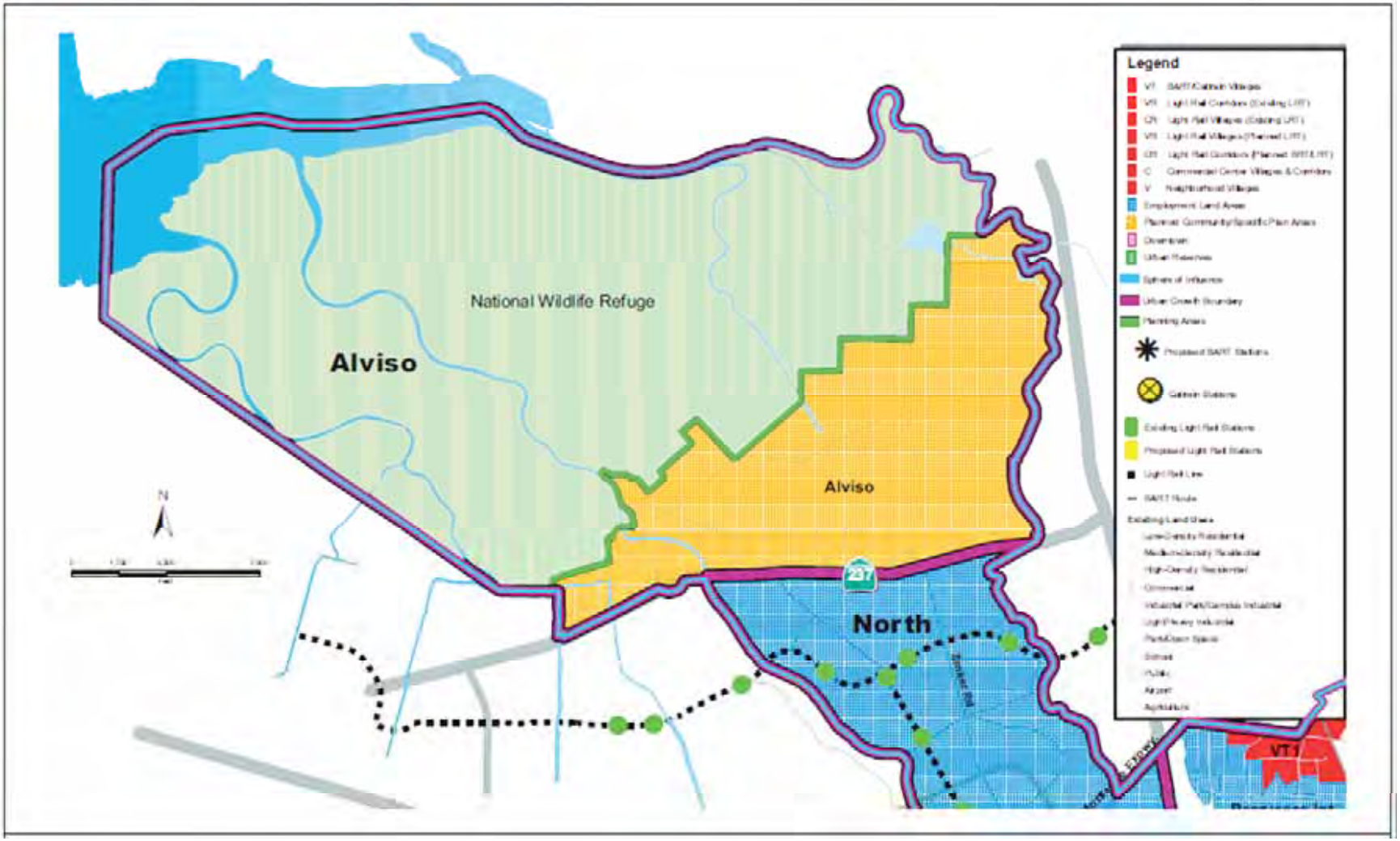
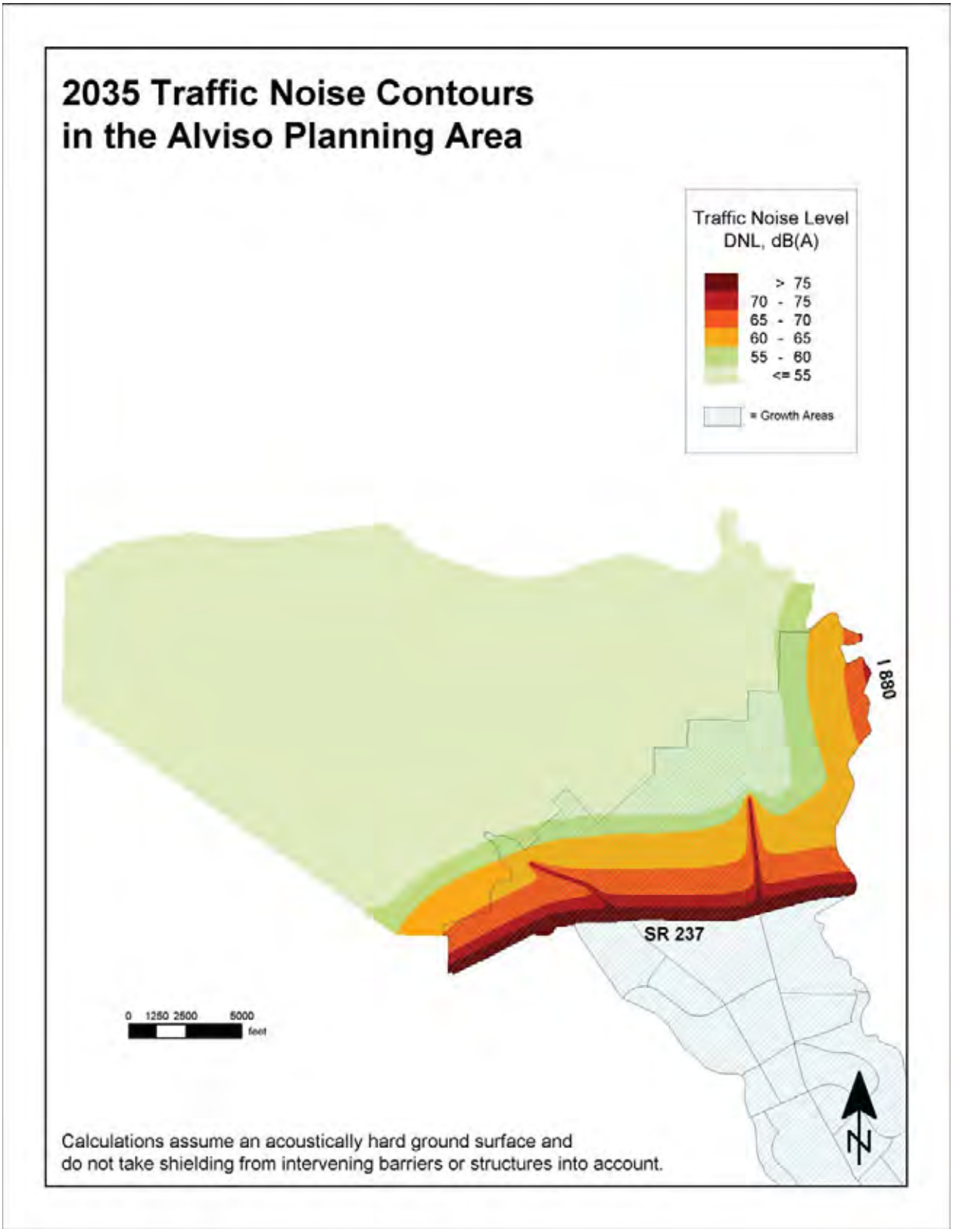


Figure 4 Alviso 2035 Noise Contour Map



The Alviso Planning Area includes a National Wildlife Refuge and the Alviso Master Plan Area in the Proposed General Plan Update's Planned and Identified Growth Areas map. Residential and commercial development would occur primarily on the Water Pollution Control Plant buffer lands within the Alviso Master Plan Area as part of the Envision 2040 General Plan Update Project. Residential and commercial development in the vicinity of North First Street, Zanker Road, and State Route 237 would be exposed to noise levels exceeding the City's noise acceptability thresholds.

A majority of the North San José Planning Area is made up of employment-generating land uses shown on the Planned and Identified Growth Areas map as an Employment Land Area. This Employment Land Area is included in the North San José Area Development Policy. Development allowed under the proposed General Plan is anticipated to result in approximately 97,000 new jobs and 25,300 dwelling units by 2035. The Rincon South Specific Plan Area and a BART/Caltrain Village (VT5) are also included in the southernmost portion of the Planning Area. The Rincon South Specific Plan Area includes residential land uses within the 65-75 dBA DNL noise contours and would exceed the City's noise thresholds of acceptability. VT 5 is planned for additional employment-generating land uses. Residential development in the North San Jose planning area would exceed noise compatibility thresholds.

Development proposed in the Berryessa Planning Area includes proposed Neighborhood Villages V47 and V48, BART/Caltrain Villages VT1 and a portion of VT2, and Light Rail Corridors VR12 and VR13. Employment land areas include the Berryessa International Business Park and East Gish. The Berryessa Planned Residential Community is also included in the Berryessa Planning Area and will be phased out upon adoption of the General Plan update. The location of VT1 is within noise contour areas with levels ranging from 55 to 75 dBA DNL. The location of VT2 would be exposed to noise levels ranging from 55 to 65 dBA DNL throughout most of this growth area, except the areas near Highway 101 and Berryessa Road where noise levels would be up to 70 dBA DNL. The location of V47 would be exposed to traffic noise levels from 65 to 70 dBA DNL. The location of V48 is primarily within the 55 to 65 DNL noise contours. VR12 and VR13 are located along Capitol Avenue and a light rail line, and reside within noise contours with traffic noise levels ranging from 65 to greater than 75 dBA DNL. Noise levels would exceed the City's noise thresholds of acceptability.

Figure 5 North San José 2040 Growth Areas

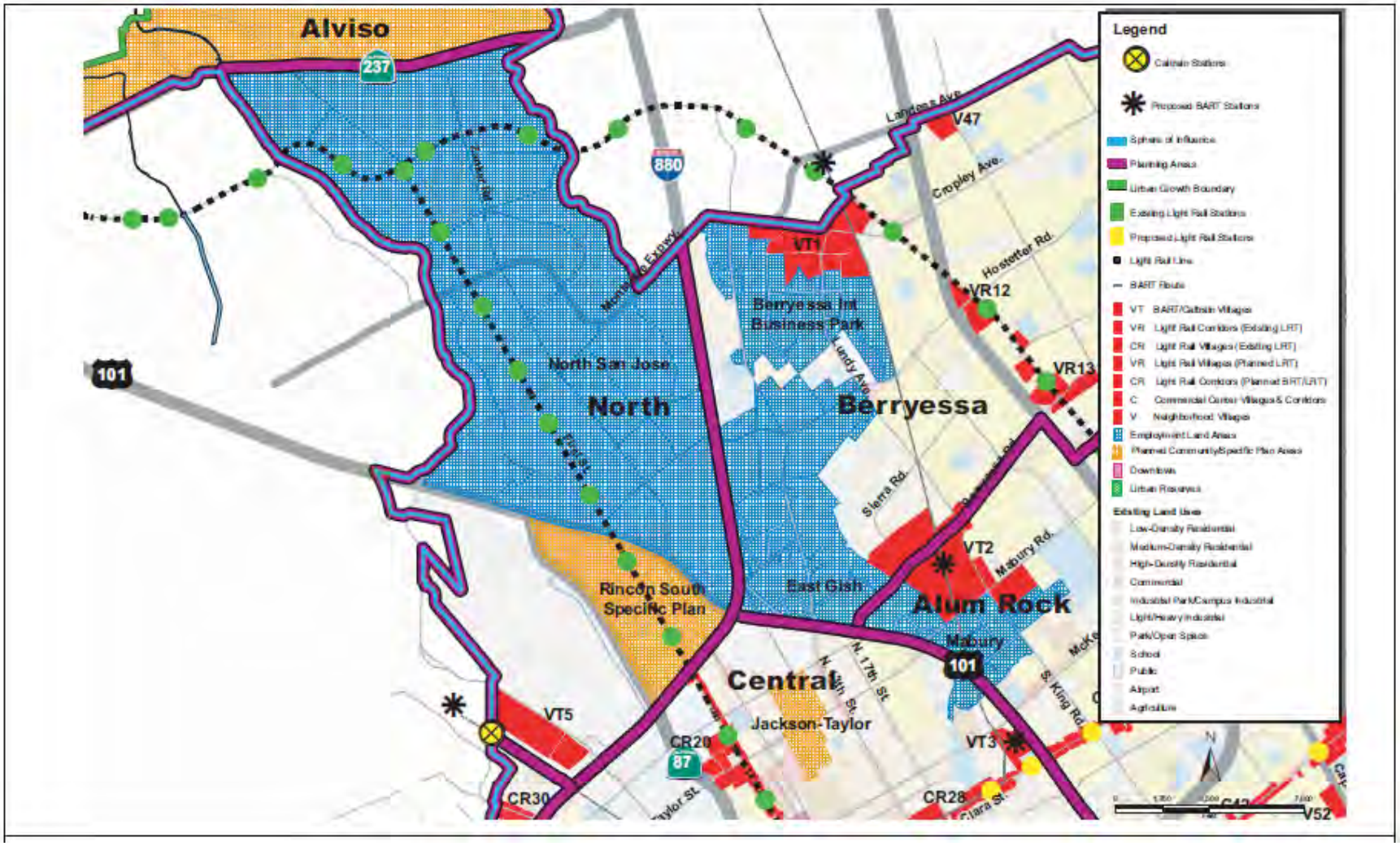


Figure 6 North San José 2035 Noise Contour Map

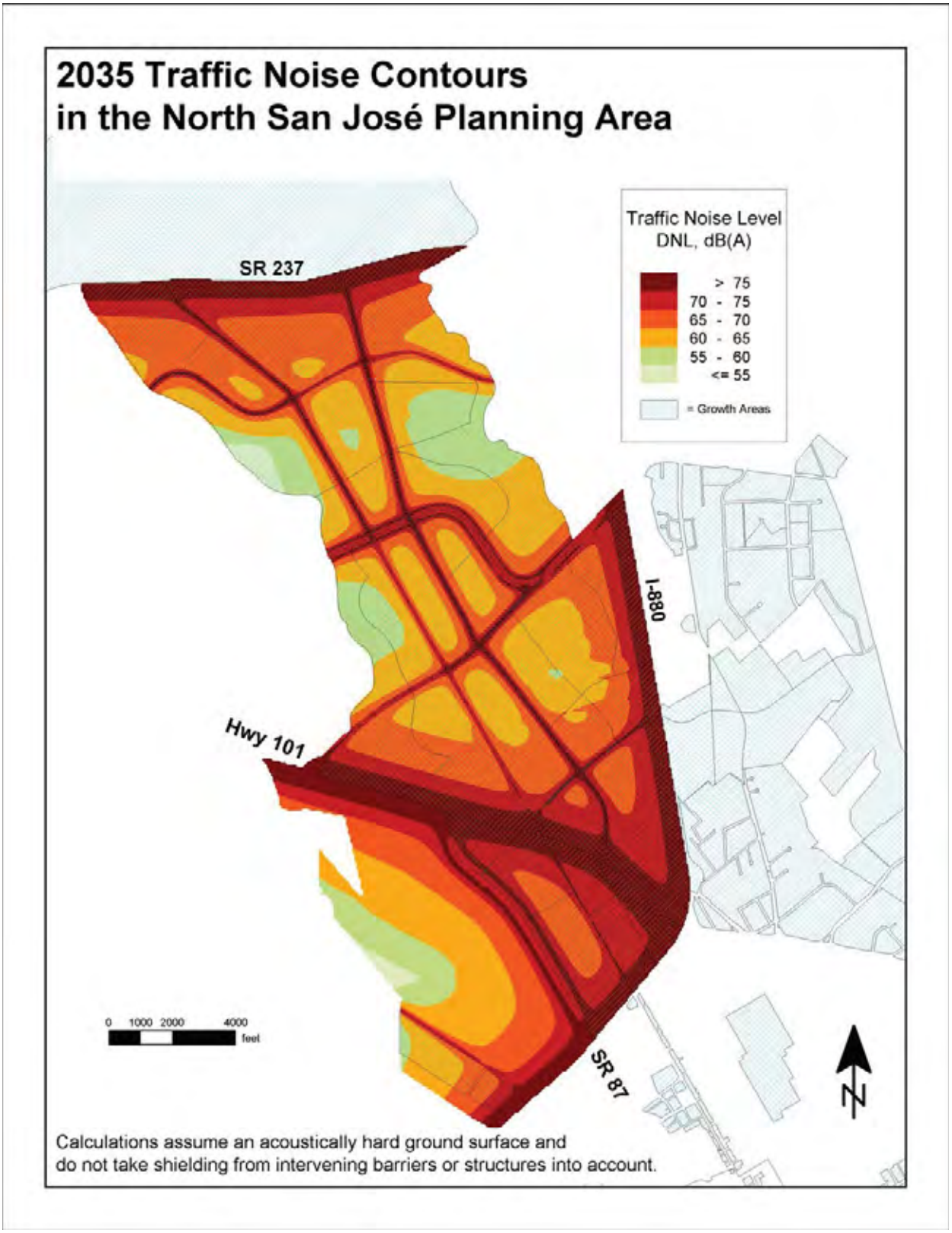


Figure 7 Berryessa 2040 Growth Areas

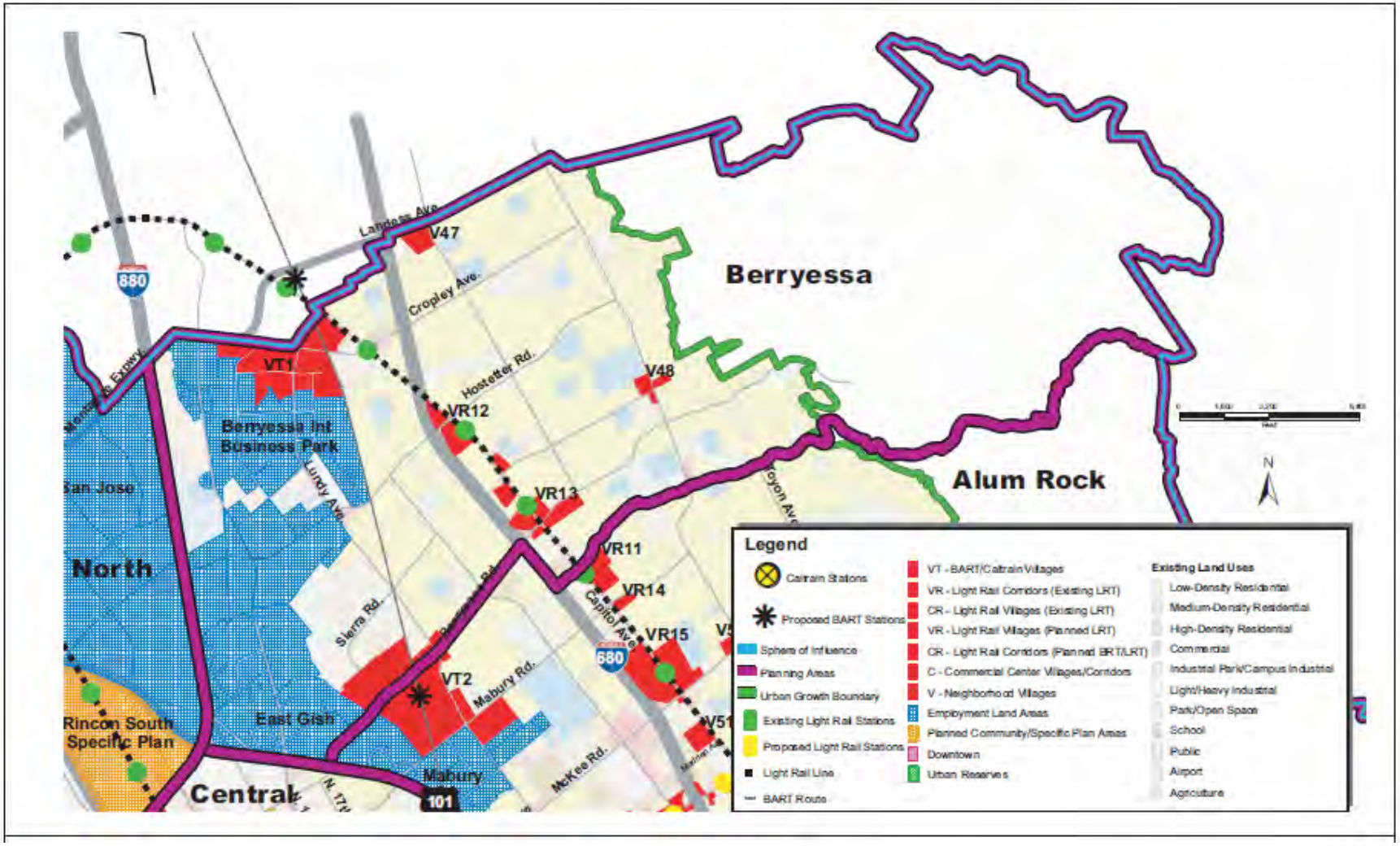


Figure 8 Berryessa 2035 Noise Contour Map

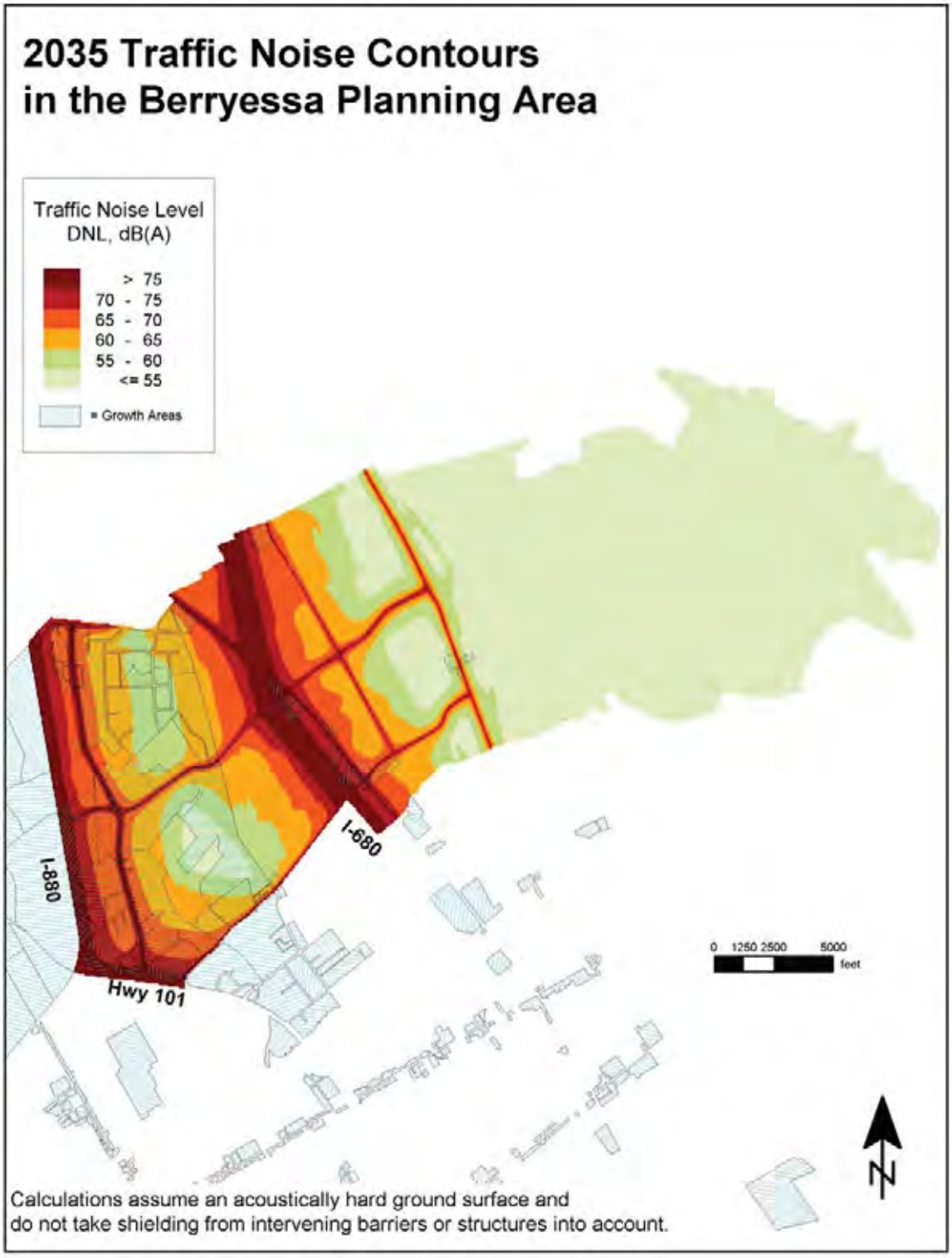


Figure 9 West Valley 2040 Growth Areas

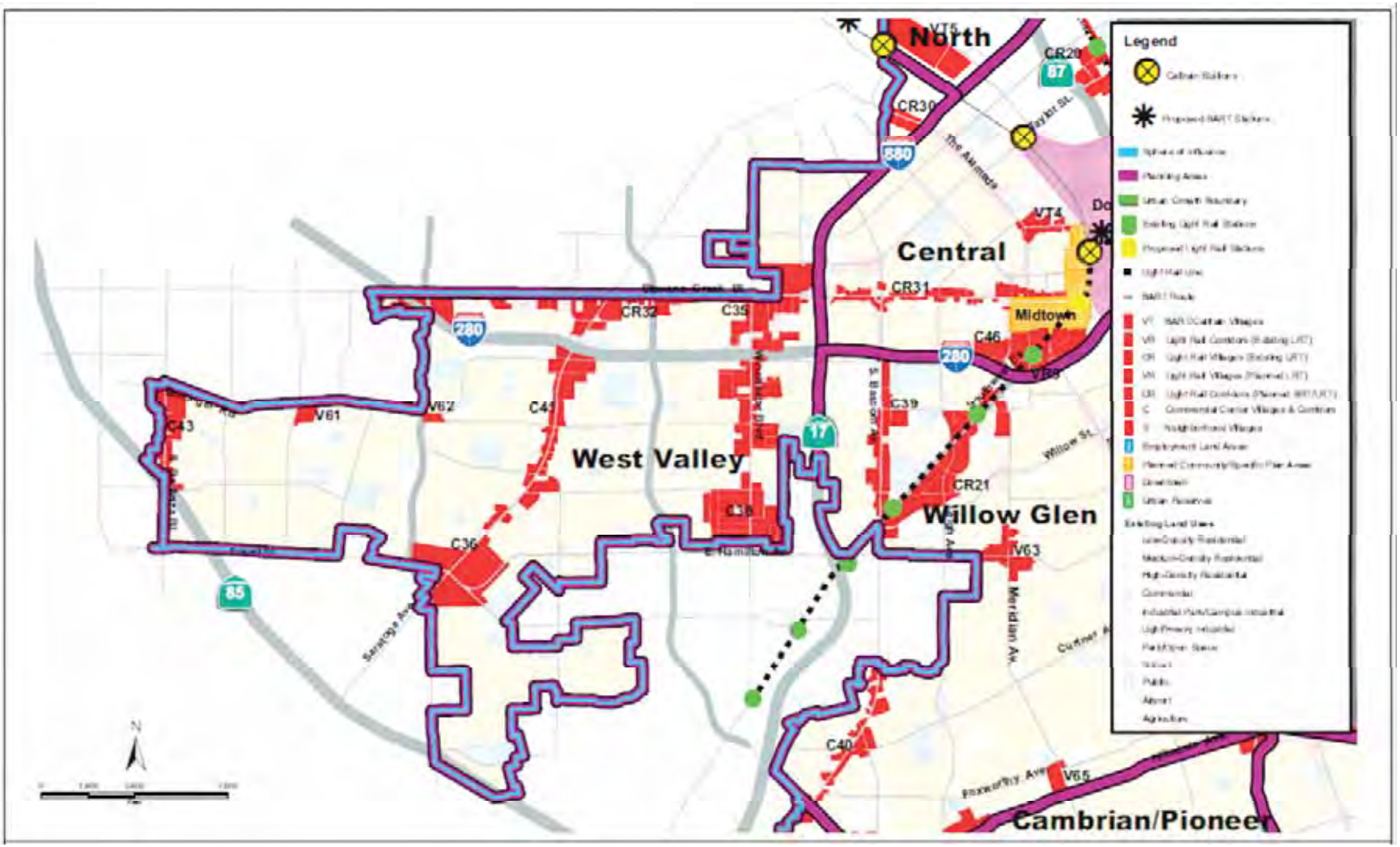
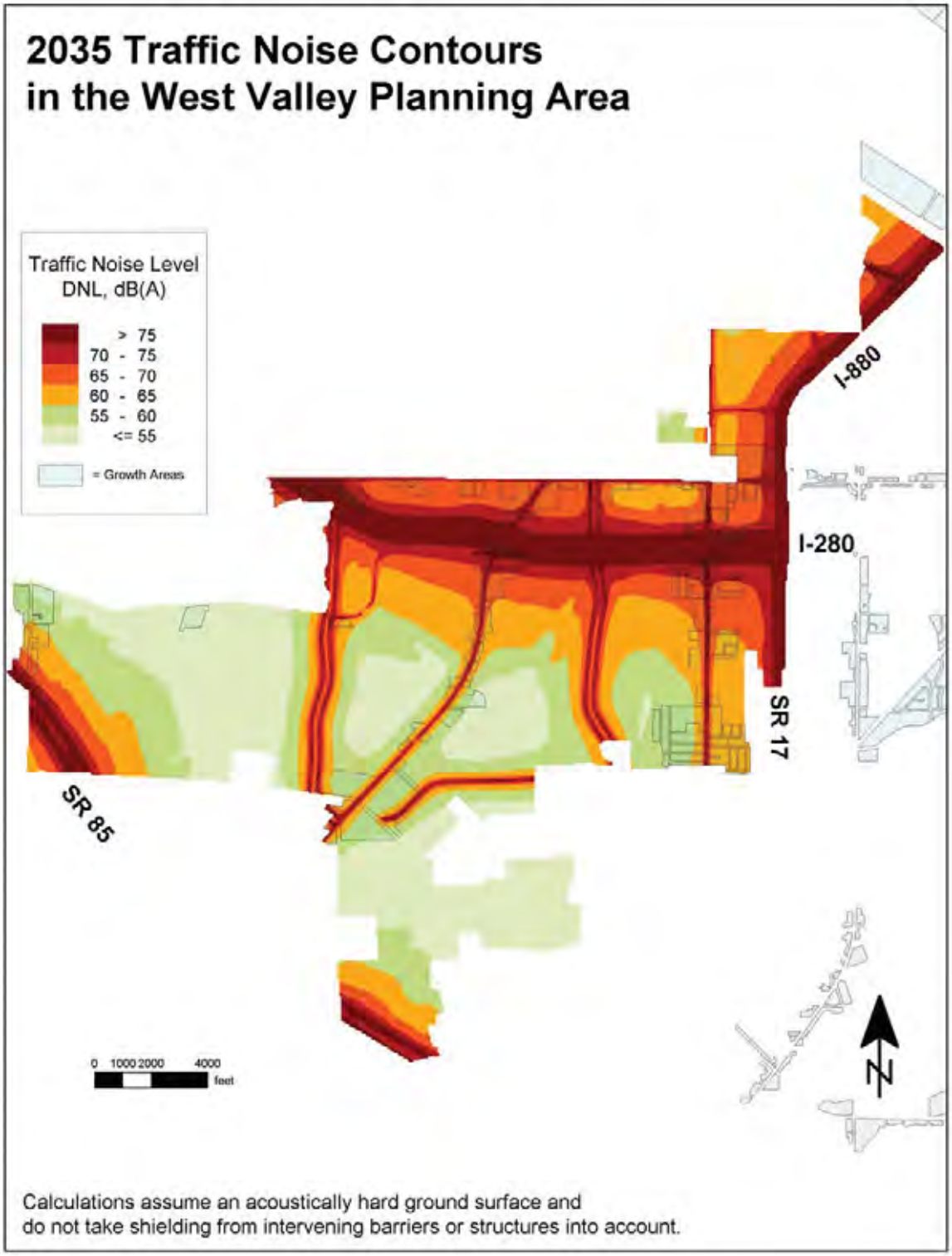


Figure 10 West Valley 2035 Noise Contour Map



Neighborhood Villages V61 and V62 are proposed along Bollinger Road and Lawrence Expressway, respectively. While V61 would be located in an area exposed to traffic noise levels less than 60 dBA DNL, noise levels at portions of V62 would be 60 to 70 dBA DNL. Commercial Center Villages and Corridors are proposed along De Anza Boulevard (C43), Saratoga Avenue (C36 & C41), Stevens Creek Boulevard and Interstate 280 (C35), and Winchester Boulevard (C38). These land uses would be located in zones exposed to traffic noise levels that range from 60 to greater than 75 dBA DNL. Since C35 is located between Stevens Creek and I-280, traffic noise levels would exceed 60 dBA DNL throughout the growth area and exceed 70 dBA DNL in areas closest to the roadways. Planned Light Rail Corridor CR32 is located along Stevens Creek Boulevard and Saratoga Avenue, and would be exposed to traffic noise levels similar to C35. Growth area CR30 is located near Interstate 880 and consists of planned light rail villages and corridors. Traffic noise levels at CR30 would range from 65 to greater than 75 dBA DNL. Noise levels at proposed development areas would exceed the City's noise thresholds of acceptability.

The Central/Downtown Planning Area includes three proposed BART stations; two along Santa Clara Street within the Downtown land use area, and one located north of Santa Clara Street near Highway 101 that is within a BART/Caltrain Village (VT3). Four light rail stations and coinciding Light Rail Corridor (CR28) are proposed along Santa Clara Street. Planned Community/Specific Plan Areas within the Central/Downtown Planning Area include: Jackson-Taylor, Midtown, Martha Gardens, and Tamien Station. Traffic noise levels within the Jackson/Taylor Planned Residential Community range from 55 to 70 dBA DNL. The Midtown Planned Community would experience traffic noise levels of 60 dBA DNL to 75 dBA DNL. Traffic noise levels in the Martha Gardens Planned Community range from close to 65 dBA DNL to greater than 75 dBA DNL. The Tamien Station Planned Community would experience noise levels ranging from 65 to greater than 75 dBA DNL. Neighborhood Village V57 is proposed at William Street and 24th Street and would be exposed to a noise environment where traffic noise contributes less than 70 dBA DNL except in the easternmost portions of the site where Highway 101 traffic noise would be 70 dBA DNL. Light Rail Village VR9 and neighboring Commercial Center C46 are located south of the Midtown Specific Plan area and adjacent to Interstate 280. Southwest Expressway borders VR9 to the south and both VR9 and C46 would be exposed to traffic noise levels widely ranging from 65 dBA DNL in some northern sections to greater than 75 dBA DNL at locations near I-280.

Proposed Light Rail Corridors and Villages along West San Carlos Street (CR31) would also be exposed to a wide range of traffic noise levels: 55 dBA DNL north of and away from San Carlos Street to 70 dBA DNL near the roadway. Proposed BART/Caltrain Village VT4 follows The Alameda (SR82) east of the intersection with Julian Street, and would be exposed to traffic noise levels ranging from 55 to 70 dBA DNL. Growth area CR20 consists of planned light rail villages and corridors, and is bounded by State Route 87 to the west and the light rail line/North

First Street to the east. West Taylor Street transects the area and traffic noise levels would range from 60 dBA DNL along First Street to 75 dBA DNL along State Route 87. The City's noise thresholds of acceptability would be exceeded at proposed sensitive land uses.

The Alum Rock Planning Area includes the Mabury employment land area and a proposed BART station amid the BART/Caltrain Village growth area VT2, which is bisected by Berryessa Road in the north and Mabury Road to the south. Traffic noise levels are expected to range from 60 to 65 dBA DNL throughout most of this growth area, except western parts being closer to Highway 101 where noise levels would be up to 70 dBA DNL. The light rail corridors and villages VR11, VR14, and VR15 are planned along Capitol Avenue and an existing light rail line. In portions west of the light rail line, traffic noise levels would range from 70 to greater than 75 dBA DNL due to the proximity to Highway 101. In areas east of the light rail line and Capitol Expressway traffic noise levels would range from 60 to 70 dBA DNL. South of VR15 on the west side of the light rail line is V51; a planned neighborhood village that would be located in the 70 to 75 dBA DNL traffic noise contours, exceeding the City's noise threshold of acceptability. Traffic noise levels would be less than 70 dBA DNL in some southeastern portions away from Highway 101.

The remaining Neighborhood Village growth areas V49, V50, and V52, would be exposed to relatively lower traffic noise levels. Traffic noise levels in the northern areas of V49 would range from 55 to 60 and reach up to 70 dBA DNL near McKee Road to the south. Traffic noise levels at V50 and V52 are expected to range from 60 to 70 dBA DNL, except for locations nearest roadways where traffic noise levels reach or exceed 70_dBA DNL. CR29 is a planned Light Rail Corridor following a stretch of Alum Rock Avenue that intersects major arterial roadways including King Road, Jackson Avenue, I-680, Capitol Expressway and White Road. This growth area includes four proposed light rail stations. Development within CR29 would exceed the City's noise acceptability thresholds.

Commercial and residential growth areas are proposed within the Willow Glen Planning Area. Following Bascom Avenue from I-280 to Southwest Expressway and continuing in the southern portion of Willow Glen, land uses in the C39 (north portion) and C40 (south portion) commercial centers would be exposed to traffic noise levels ranging from 60 to 75 dBA DNL. The V63 neighborhood villages are roughly centered about the intersection of Meridian Avenue and Hamilton Avenue, and would be exposed to traffic noise levels ranging from 55 to 75 dBA DNL. Planned neighborhood village V64 is located near the intersection of Almaden Expressway and Hillsdale Avenue and would be exposed to traffic noise levels ranging from 60 to 75 dBA DNL. Planned neighborhood village V65 is located west of Meridian Avenue near Foxworthy Avenue and bounded by Hillsdale Avenue to the south. Traffic noise levels would be in the range of 55 to 70 dBA DNL except along areas closest to Meridian Avenue, where noise levels would exceed 70 dBA DNL.

Figure 11 Central/Downtown 2040 Growth Areas

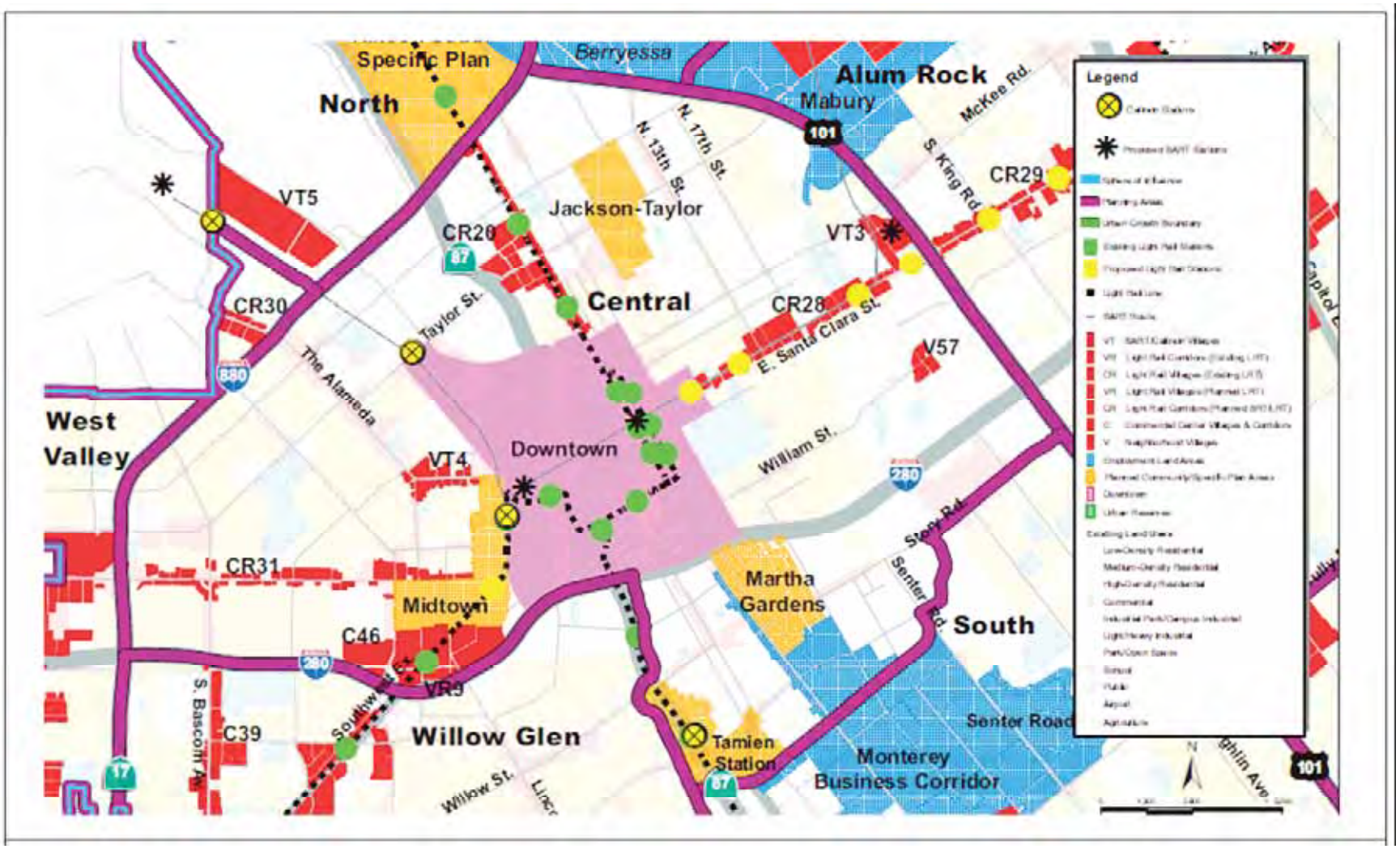


Figure 12 Central/Downtown 2035 Noise Contour Map

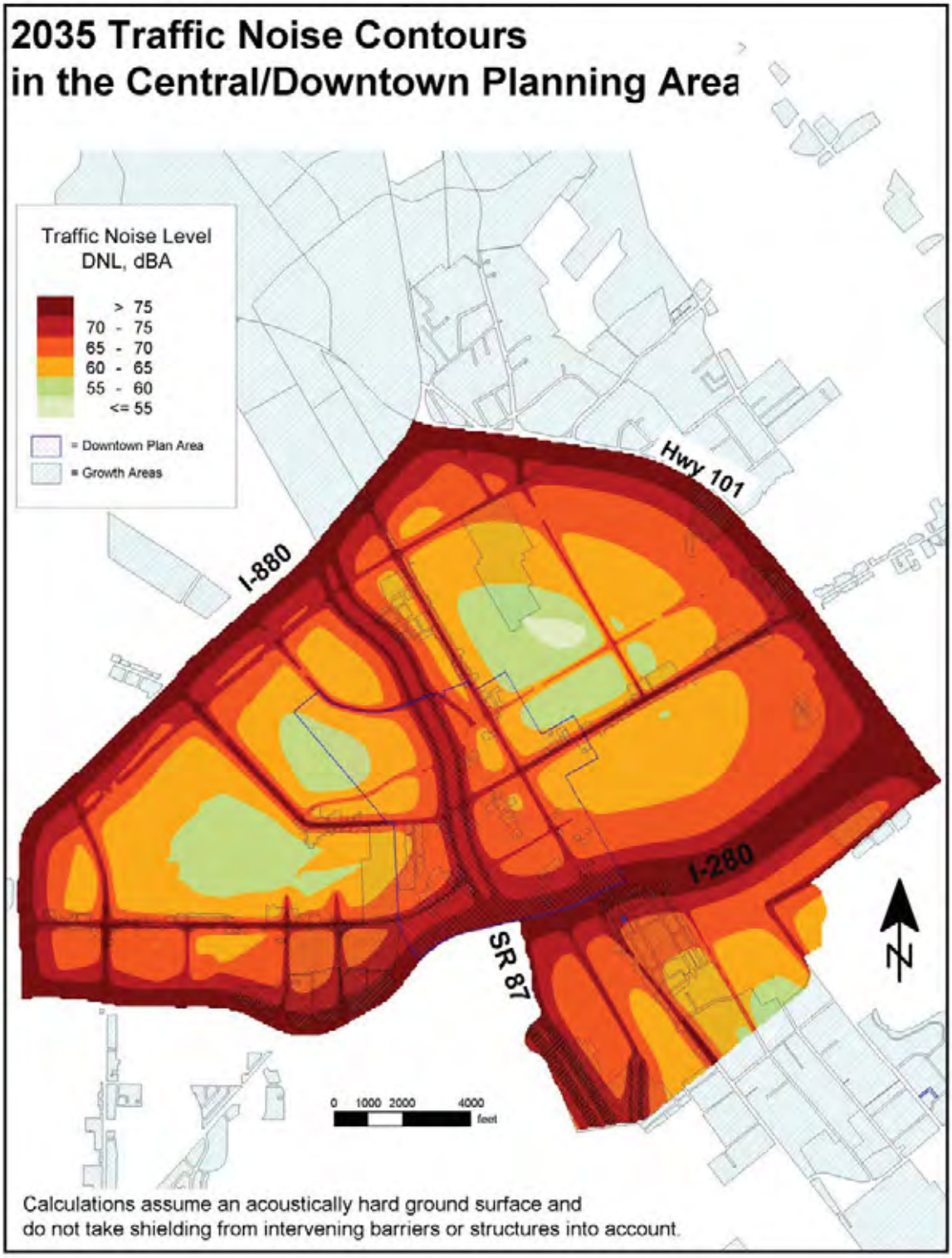


Figure 13 Alum Rock 2040 Growth Areas

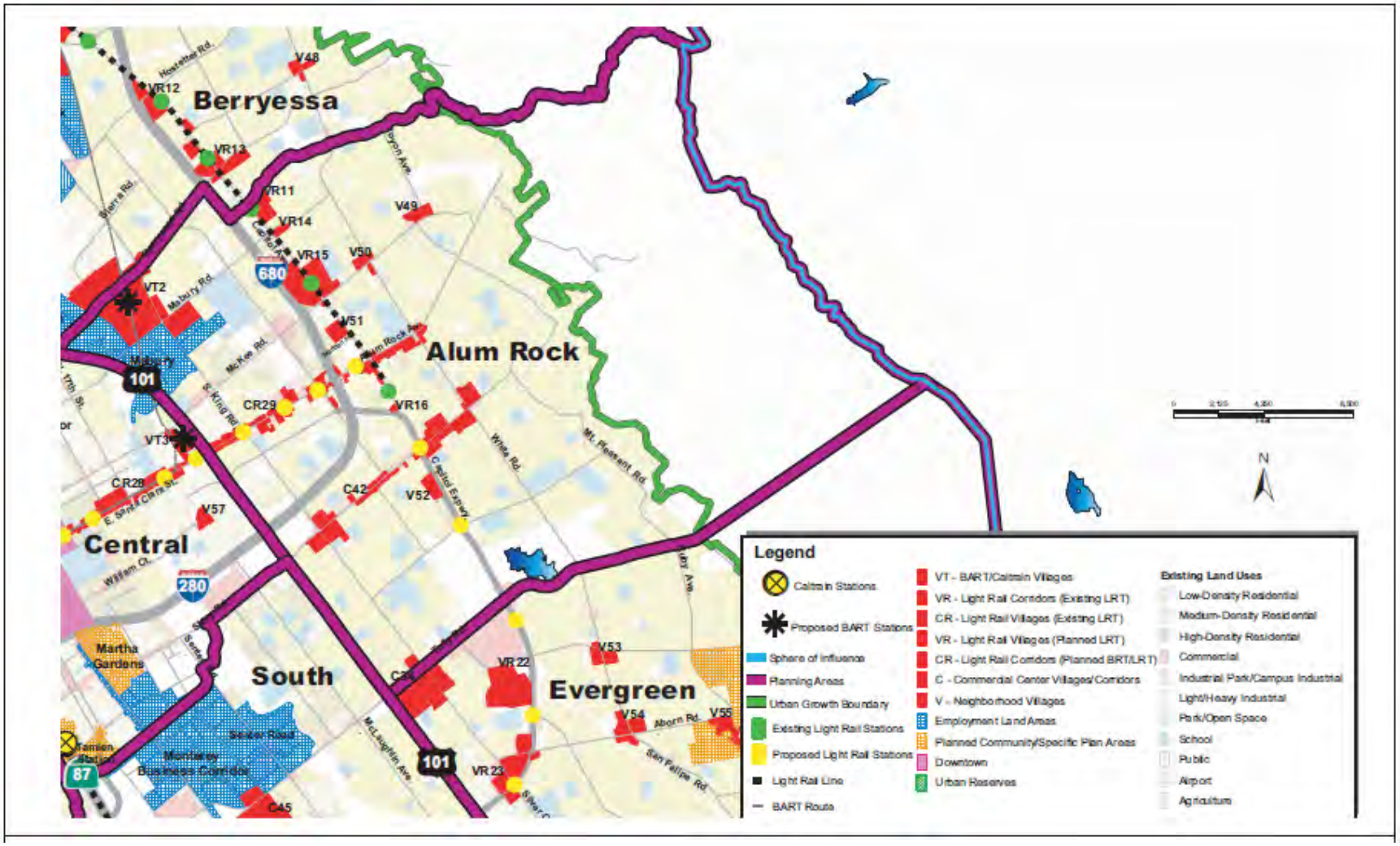


Figure 14 Alum Rock 2035 Noise Contour Map

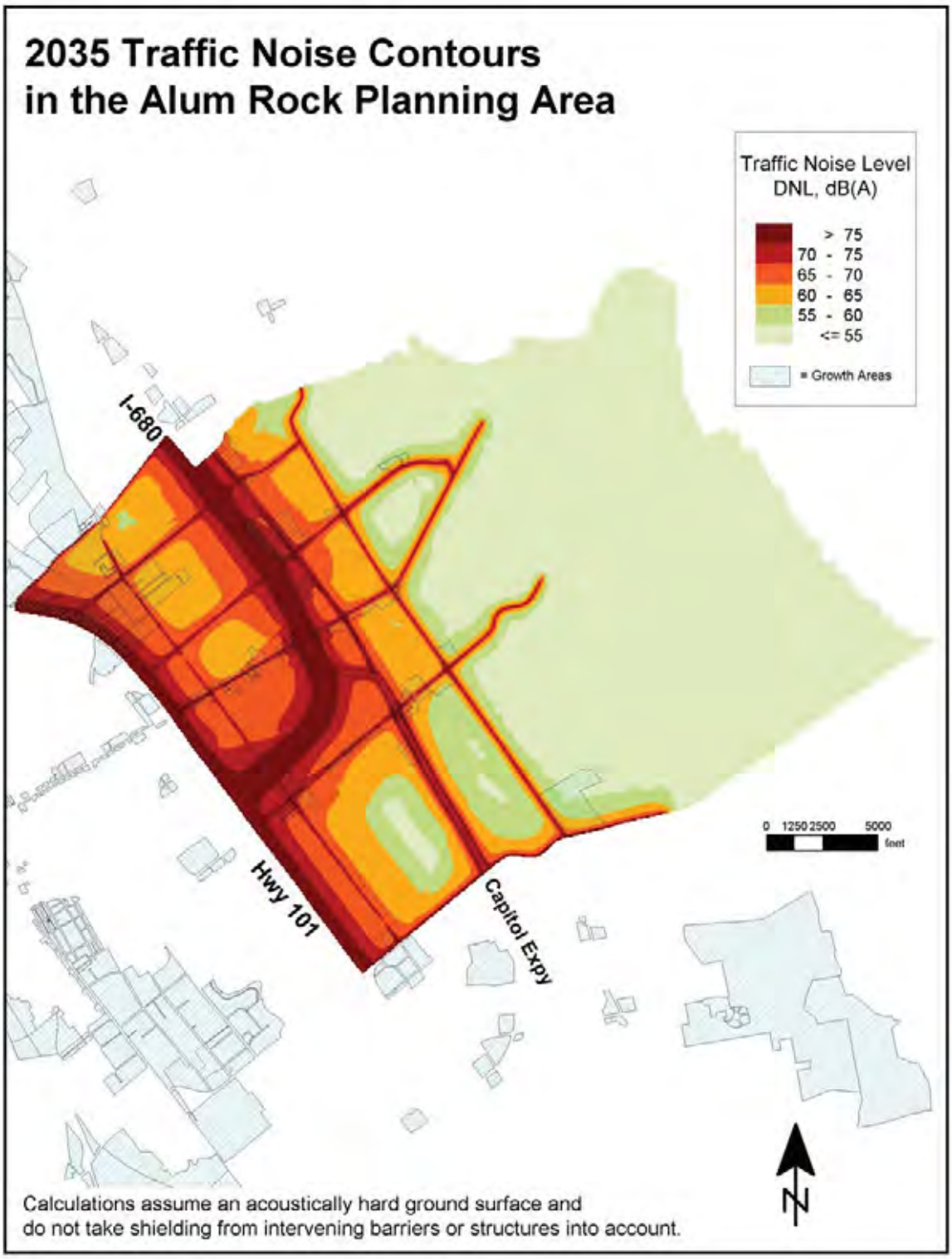


Figure 15 Willow Glen 2040 Growth Areas

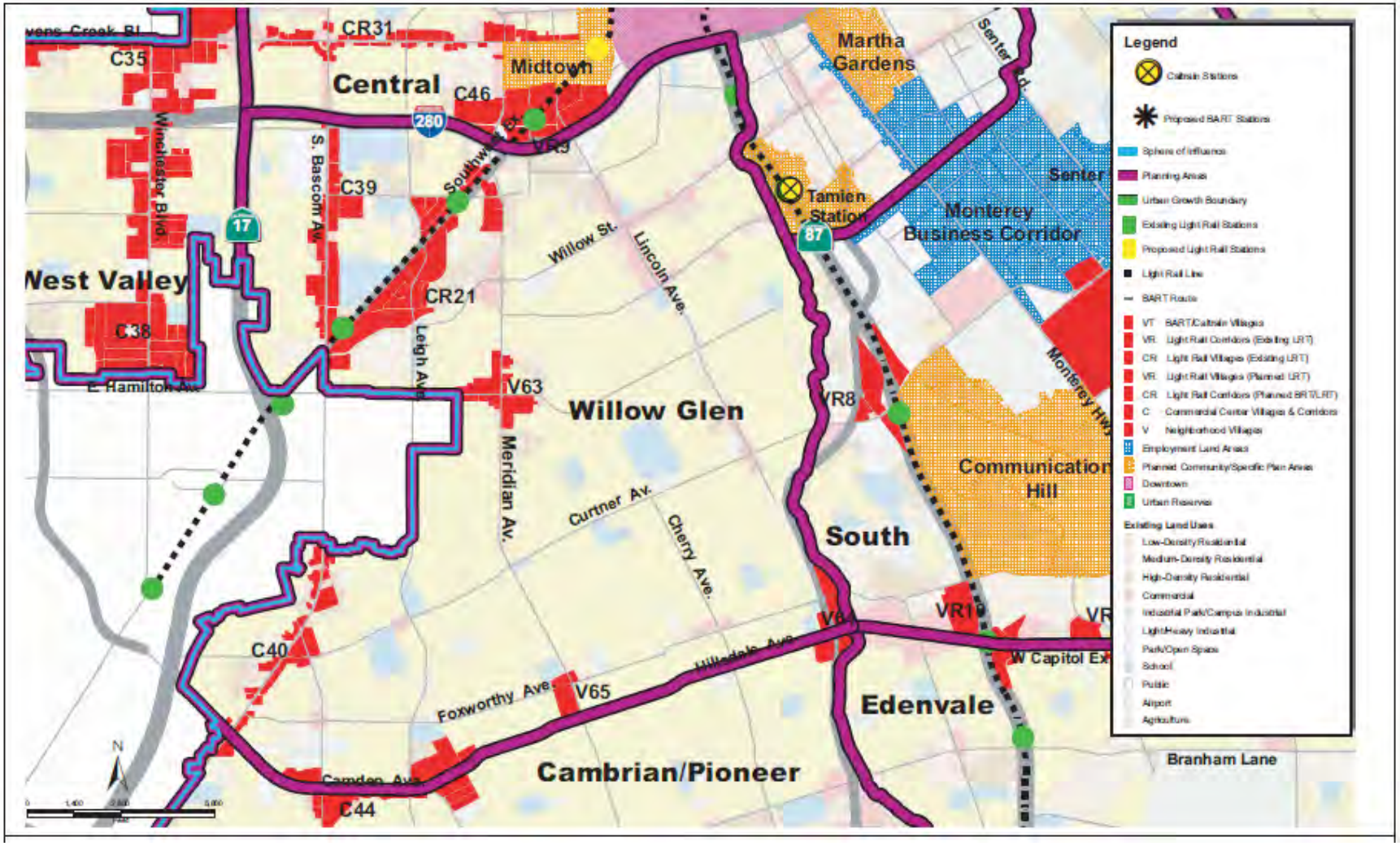
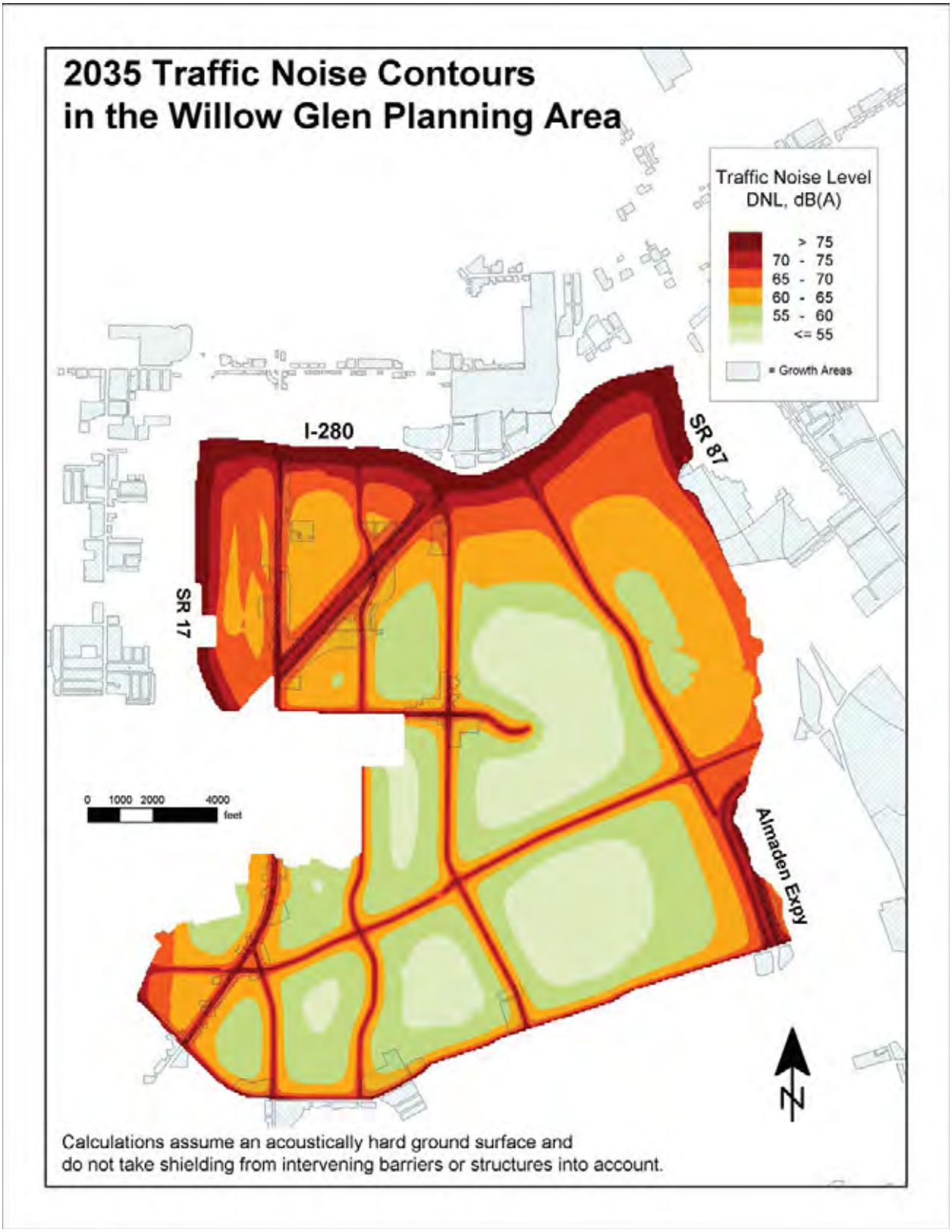


Figure 16 Willow Glen 2035 Noise Contour Map



Four light rail stations are proposed along Capitol Expressway in the South San José Planning Area. The Communications Hill Specific Plan area, one commercial center villages and corridor, and six light rail villages are planned throughout the area. Light rail village VR26 is adjacent to the light rail station at McLaughlin Avenue and would be exposed to traffic noise levels ranging from 60 to 75 dBA DNL. The light rail station proposed at Senter Road and Capitol Expressway would be adjacent to an existing school. Light rail villages VR24 and VR25 are east of Monterey Highway/SR82 and would both be exposed to traffic noise levels from 60 to 75 dBA DNL. VR27 light rail village is planned adjacent to a proposed light rail station at Vistapark Drive and Capitol Expressway. Much of VR27 would be exposed to traffic noise levels of less than 65 dBA DNL, with exceptions in areas adjacent to Capitol Expressway which would be exposed to traffic noise levels up to 75 dBA DNL. Light rail village VR19 is planned adjacent to an existing light rail line and station at SR 87 and Capitol Expressway. Traffic noise levels in these locations are expected to range from 65 to greater than 75 dBA DNL. VR8 light rail village is planned between Almaden Expressway and SR87, adjacent to the existing light rail station at SR87 south of Curtner Avenue. Exposure to traffic noise levels in these areas are likely to range from 65 to greater than 75 dBA DNL with development allowed through 2035, and would exceed the City's noise threshold of acceptability.

Commercial center villages and corridors designation C45 is planned between Monterey Highway/SR82 and Senter Road, adjacent to the southeast border of the Monterey Business Corridor. As shown in Figure 18, a majority of this land use would be exposed to traffic noise levels of less than 60 dBA DNL but traffic noise levels would reach 75 dBA DNL adjacent to Tully Road and Monterey Highway.

The Evergreen Planning Area includes three proposed light rail stations, three planned neighborhood villages, two proposed light rail villages, one commercial center village and corridor, one specific plan area, and one employment land area—as shown in Figure 19. Neighborhood village V53 is oriented about the intersection of White Road and Quimby Road, mostly south of White Road. Neighborhood village V54 encompasses the intersection of White Road/San Felipe Road and Aborn Road, while V55 is planned just south of Aborn Road, adjacent to Ruby Avenue. Traffic noise levels are expected to range from 55 to 65 dBA DNL throughout the majority of each area and 65 to 75 dBA DNL nearing the roadways and intersections. Light rail villages VR22 and VR23 are predominately west of Capitol Expressway and adjacent to corresponding planned light rail stations. Neighborhood village VR22 would have most areas with traffic noise levels under 65 dBA DNL; however traffic noise levels closer to Capitol Expressway and Quimby Road would range from 65 to 75 dBA DNL. Traffic noise levels throughout most of VR23 would range from 60 to 70 dBA DNL. Commercial center C34 is planned in the westernmost portion of the Planning Area, and would be exposed to traffic noise levels of 60 to 75 dBA DNL. The Evergreen Campus Industrial Employment Land Area and Evergreen Specific Plan are also located in the Planning Area. Traffic noise levels

throughout most of the Specific Plan areas would be less than 55 dBA DNL, exceptions being at close proximities to roadways (e.g., Aborn Road, Quimby Road) where noise levels are expected to be 60 to 75 dBA DNL (See Figure 20).

The Cambrian/Pioneer Planning Area includes five planned neighborhood villages, a light rail village, and two commercial center villages, as shown in Figure 21. Neighborhood Village V67 is located east of Meridian Avenue and Branham Lane transects the area. Traffic noise levels throughout V67 would range from 60 to 70 dBA DNL. Neighborhood Village V68 would be located northeast of the Camden Avenue and Branham Lane intersection, near State Route 85. Traffic noise levels throughout V68 would range from 65 to 75 dBA DNL. Neighborhood Village V69 would be located where Kooser Road, Meridian Avenue, and Blossom Hill Road converge. Traffic noise levels in most areas of V69 would range from 60 to 70 dBA DNL and those areas closest to Blossom Hill Road and Meridian Avenue would reach 75 dBA DNL. Neighborhood Village V70 is adjacent to the Camden Avenue and Kooser Road intersection and extends down to Blossom Hill Road. Traffic noise levels throughout much of V70 would be less than 60 dBA DNL except near roadways where traffic noise levels would range from 65 to 75 dBA DNL. Bound to the north by State Route 85 and with Almaden Expressway and Blossom Hill Road intersecting, Light Rail Village VR17 would be exposed to a wide range of traffic noise levels from 60 dBA DNL to greater than 75 dBA DNL. Commercial Center Village C44 is located along Camden Avenue near Union Avenue and Leigh Avenue and extends east. At this location, traffic noise levels are generally within the 60 to 65 dBA DNL range but could be as high as 75 dBA DNL adjacent to Camden Avenue. Portions of Commercial Center Village C40 and Neighborhood Village V64 are located in this Planning Area and were previously discussed in detail with the Willow Glen Planning Area. Development planned in the Cambrian/Pioneer area would be exposed to noise levels above the City's noise threshold of acceptability.

Neighborhood Villages, BART/Caltrain Villages, light rail villages, and commercial center villages are proposed in the Edenvale Planning Area. Neighborhood Village V58 would be located on the east side of SR82/Monterey Highway at its intersection with Roeder Road/ Chynoweth Avenue. Neighborhood Village V59 would be located east of Cottle Road where Santa Teresa Boulevard intersects and Neighborhood Village V60 would be located west of the Snell Avenue and Santa Teresa intersection. Most areas of V58, V59, and V60 would be exposed to traffic noise levels ranging from 60 to 70 dBA DNL; however, nearest Monterey Highway and Santa Teresa Boulevard traffic noise levels would reach 75 dBA DNL. Light rail villages VR18 and VR19 would both be located along Blossom Hill Road, on opposite sides of SR85 from each other and would be exposed to similar, wide-ranging, traffic noise levels of 60 to greater than 75 dBA DNL. SR85 and the Old Edenvale Employment Land Area bound the BART/Caltrains village VT6 to the south.

Cottle Road to the west, Blossom Hill Road to the north, and Monterey Road (SR82) bounds VT6 to the northeast. Most of the project area would be exposed to traffic noise levels ranging from 60 to 70 dBA DNL; however areas of VT6 closest to SR 85 would be exposed to traffic noise levels up to 75 dBA DNL. Commercial center village C37 is located adjacent to Bernal Road and Santa Teresa Boulevard and would predominantly be exposed to traffic noise levels from 55 to 65 dBA DNL. Noise levels in proposed growth areas would exceed the City's noise threshold of acceptability.

The Almaden Planning Area includes one proposed Neighborhood Village, V71, which is located northwest of the Redmond Avenue and Meridian Avenue intersection. Traffic noise levels within V71 would range from 55 to 60 dBA DNL in western portions and reach 70 dBA DNL nearest Meridian Avenue. Noise levels would exceed the City's noise threshold of acceptability.

The Coyote Planning Area includes the North Coyote Valley employment land area and the adjacent Coyote Valley Urban Reserve. Noise contours for development allowed under the proposed General Plan Update are shown in Figure 28. Traffic noise levels in North Coyote Valley would range from less than 55 dBA DNL to 75 dBA DNL adjacent to Monterey Highway and would be up to 67 dBA DNL on Bailey Avenue. Noise levels would not exceed the City's noise threshold of acceptability for office and commercial uses but would exceed the threshold for planned educational uses on Bailey Avenue.

The implementation of Proposed General Plan Policies EC-1.1, EC-1.9, and EC-1.14, in conjunction with the proposed Land Use Compatibility Guidelines in Table 6, would require that the General Plan compatibility standards be used to determine where noise levels in the community are acceptable or unacceptable, and require noise attenuation measures to achieve the "normally acceptable" noise level standards. Noise studies of new development proposals are required when existing or future noise levels from transportation or non-transportation noise sources exceed the "acceptable" levels for that use in order to determine the controls necessary to maintain consistency with the interior and exterior noise standards of the Noise Element. The interior noise limits set forth in the State Building Code are extended to residential, hotel, motel, residential care, and hospital land uses in San José. The proposed goals and policies of the Noise Element reduce potential impacts associated with noise and land use compatibility to a ***less-than-significant*** level by requiring project level analysis to identify mitigation measures necessary to adequately reduce transportation and non-transportation noise to acceptable levels.

Figure 17 South San José 2040 Growth Areas

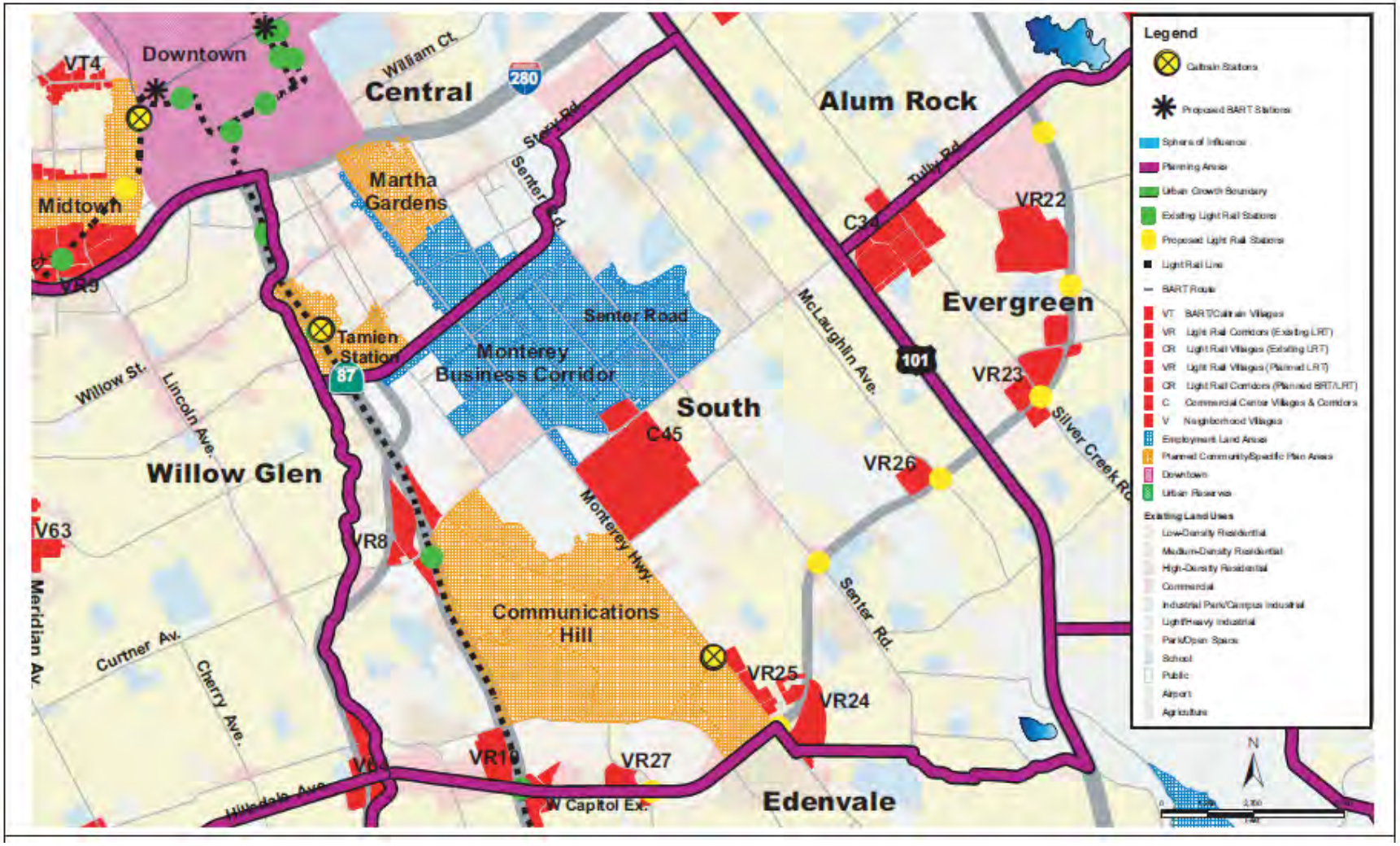


Figure 18 South San José 2035 Noise Contour Map

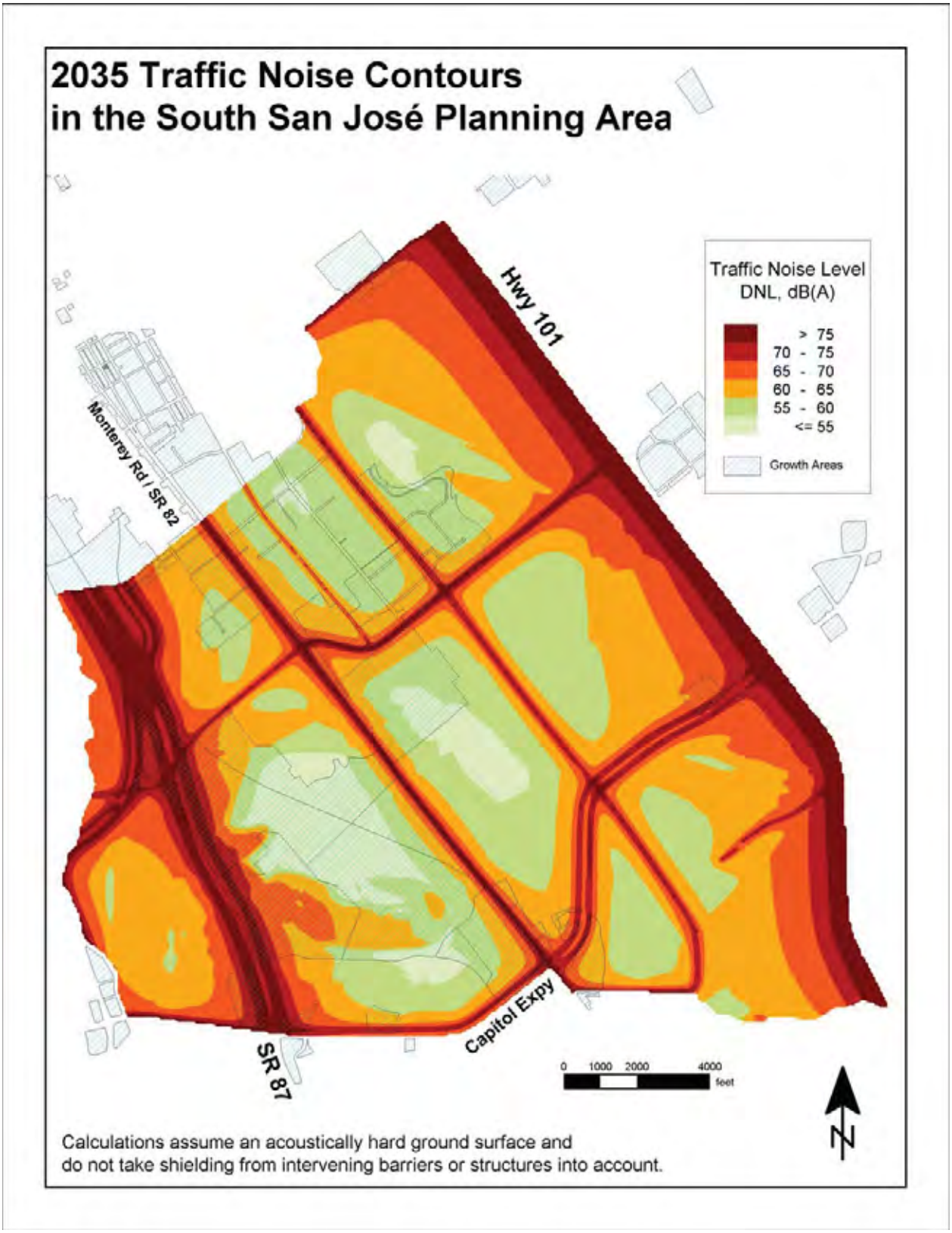


Figure 19 Evergreen 2040 Growth Areas

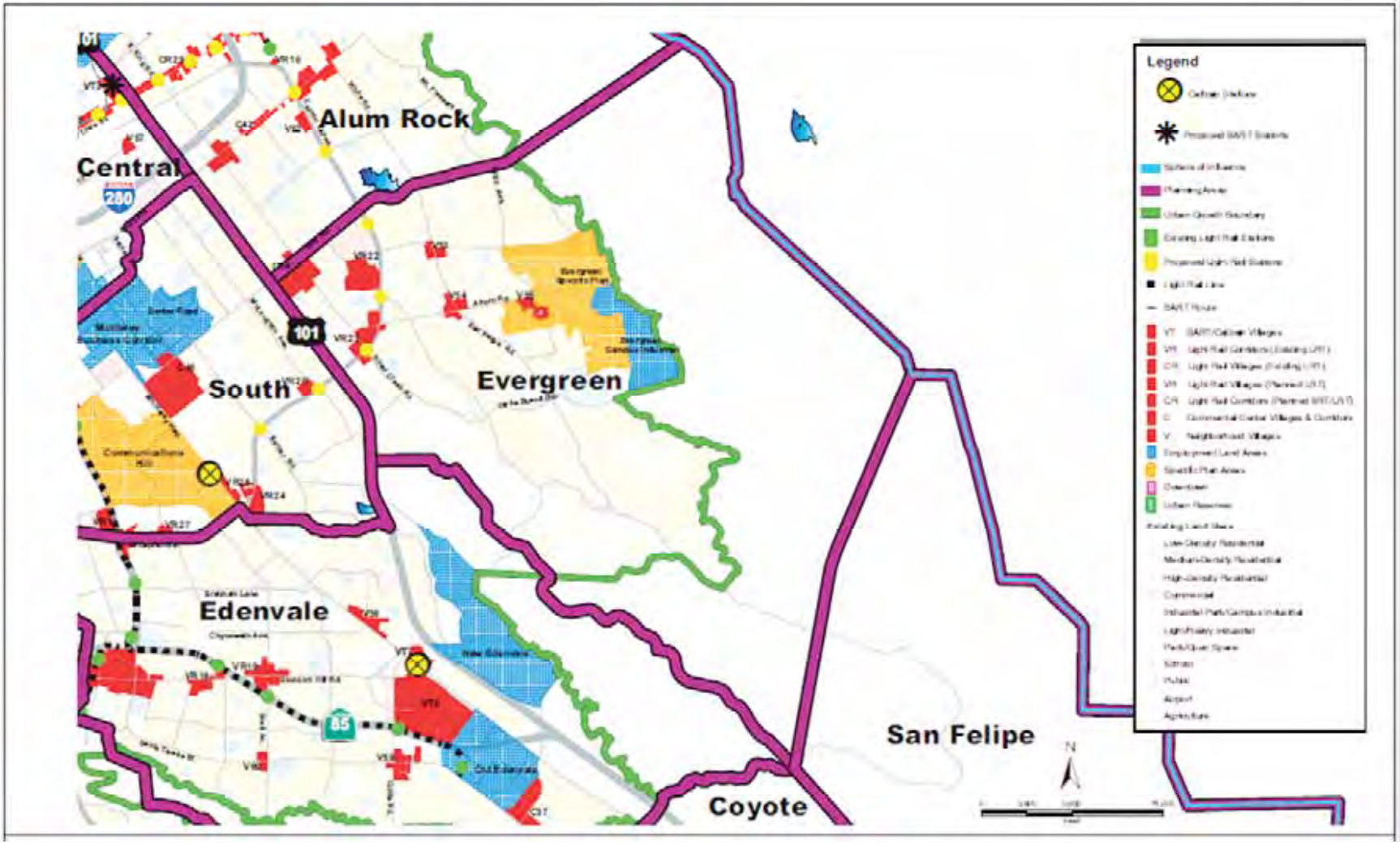


Figure 20 Evergreen 2035 Noise Contour Map

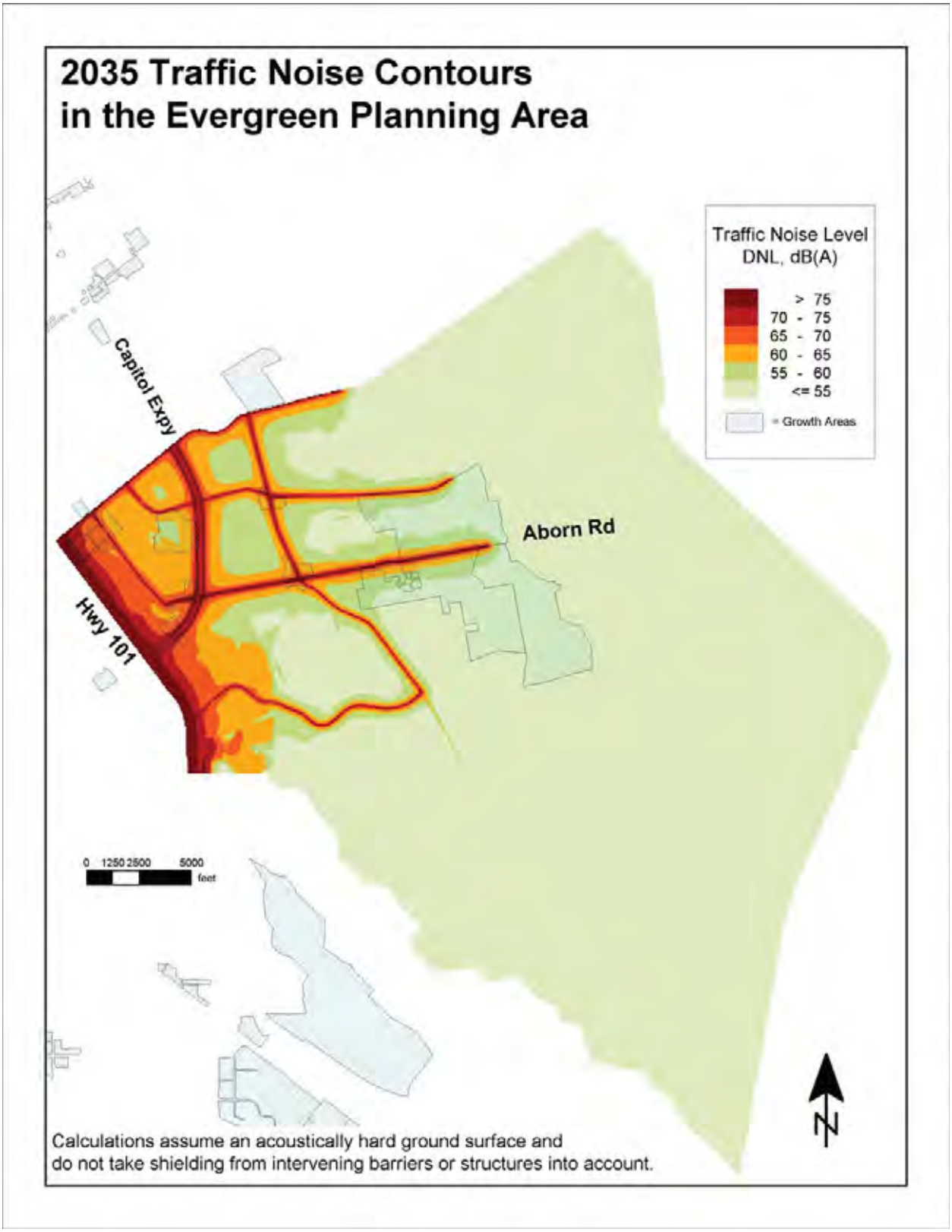


Figure 21 Cambrian/Pioneer 2040 Growth Areas

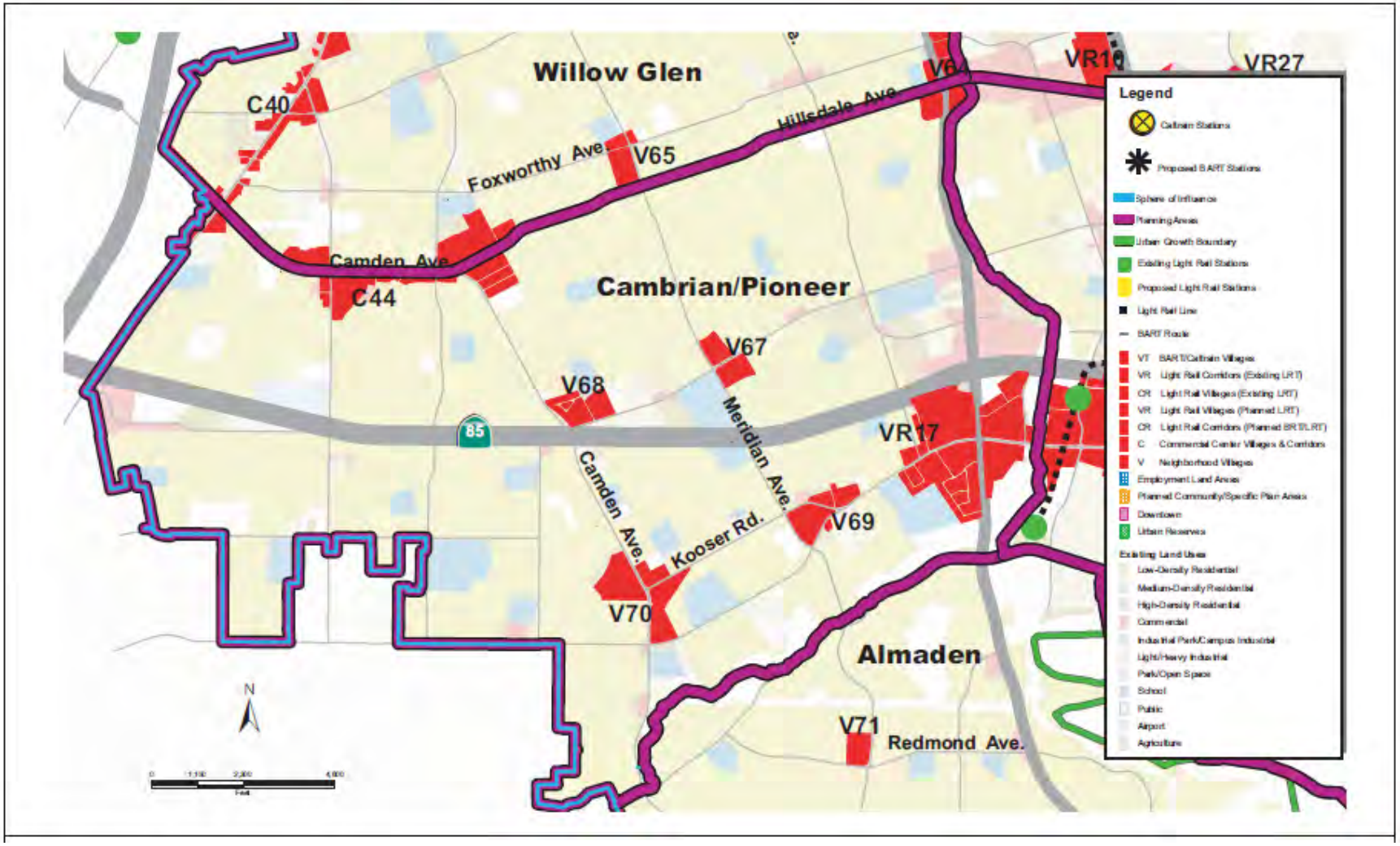


Figure 22 Cambrian/Pioneer 2035 Noise Contour Map

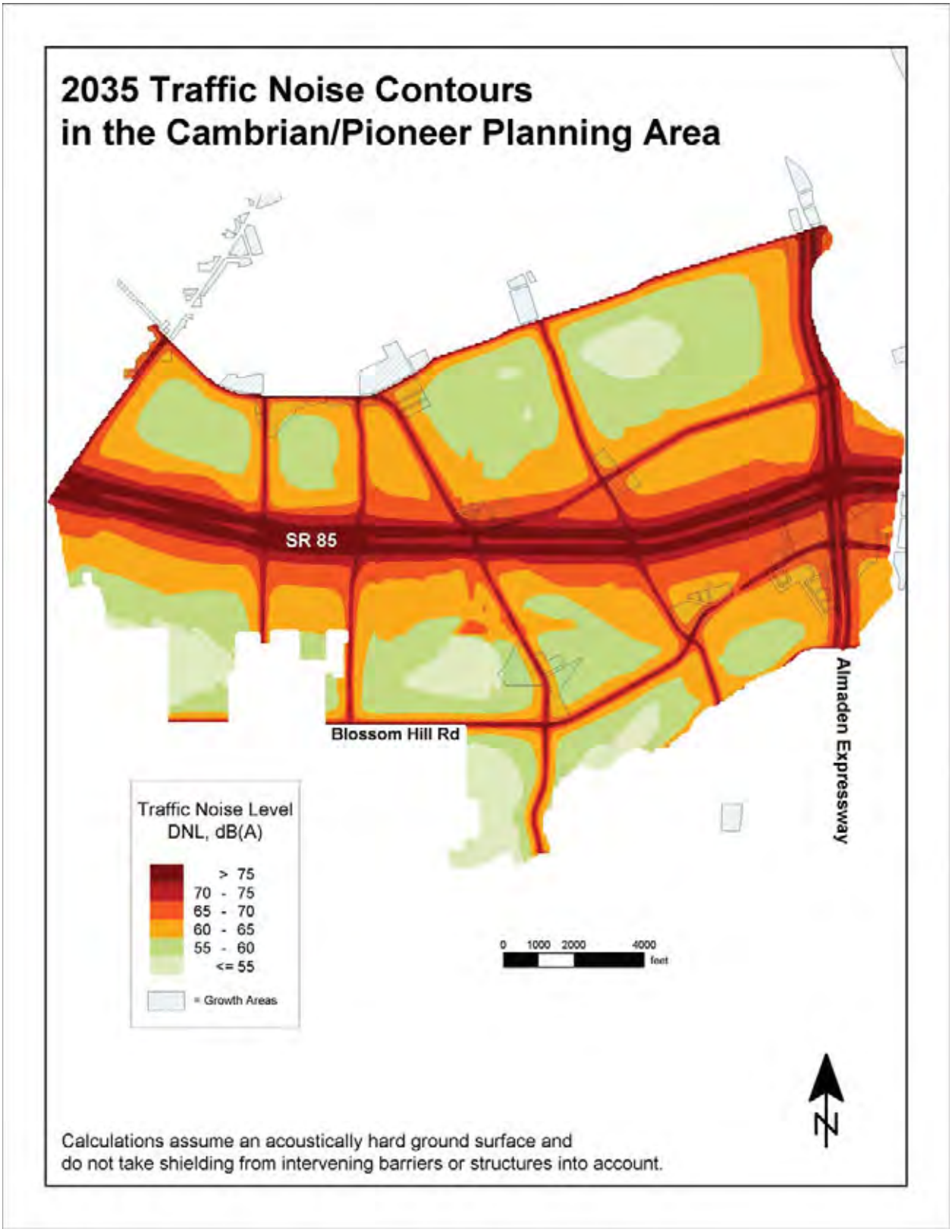


Figure 23 Edenvale 2040 Growth Areas

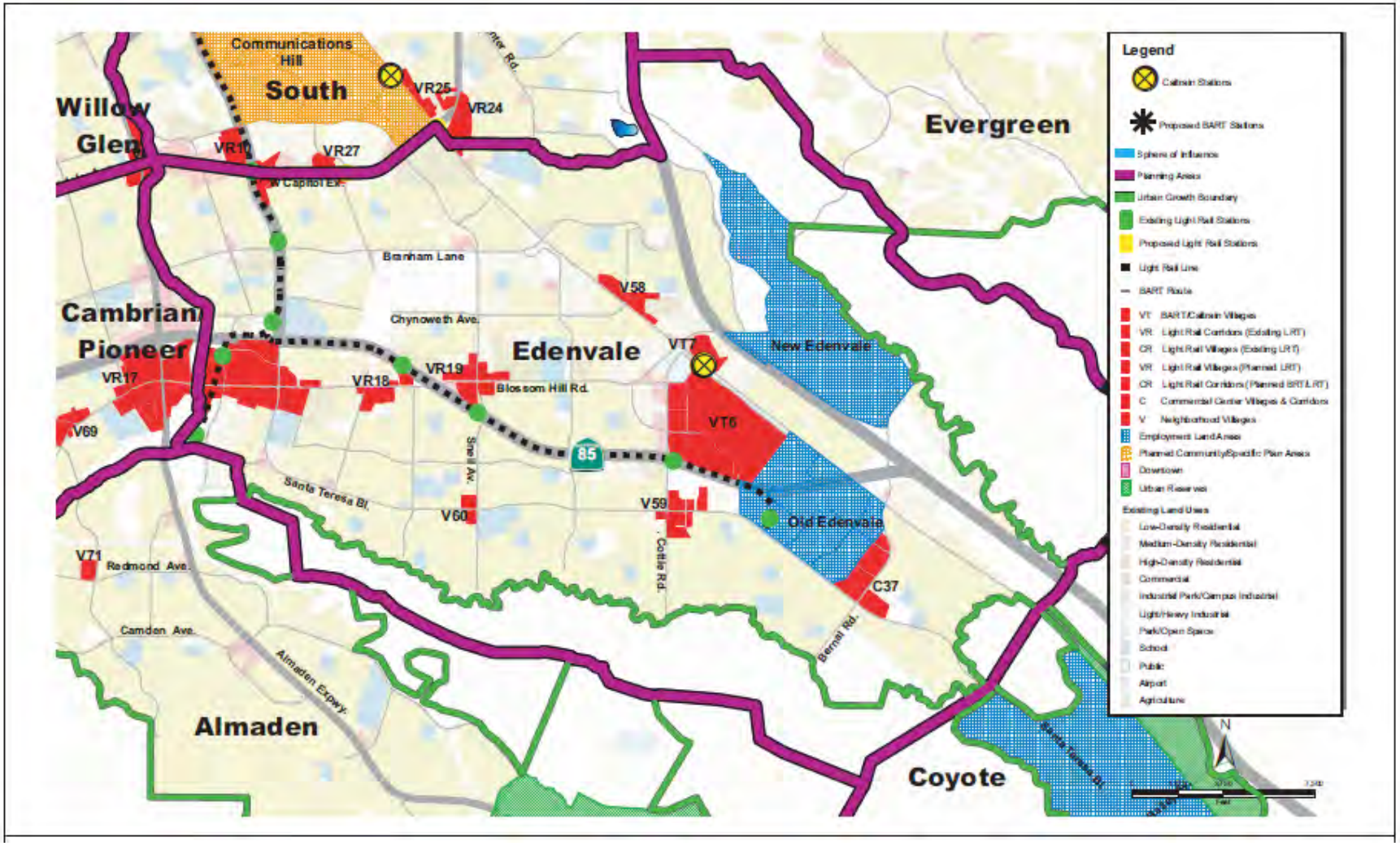


Figure 24 Edenvale 2035 Noise Contour Map

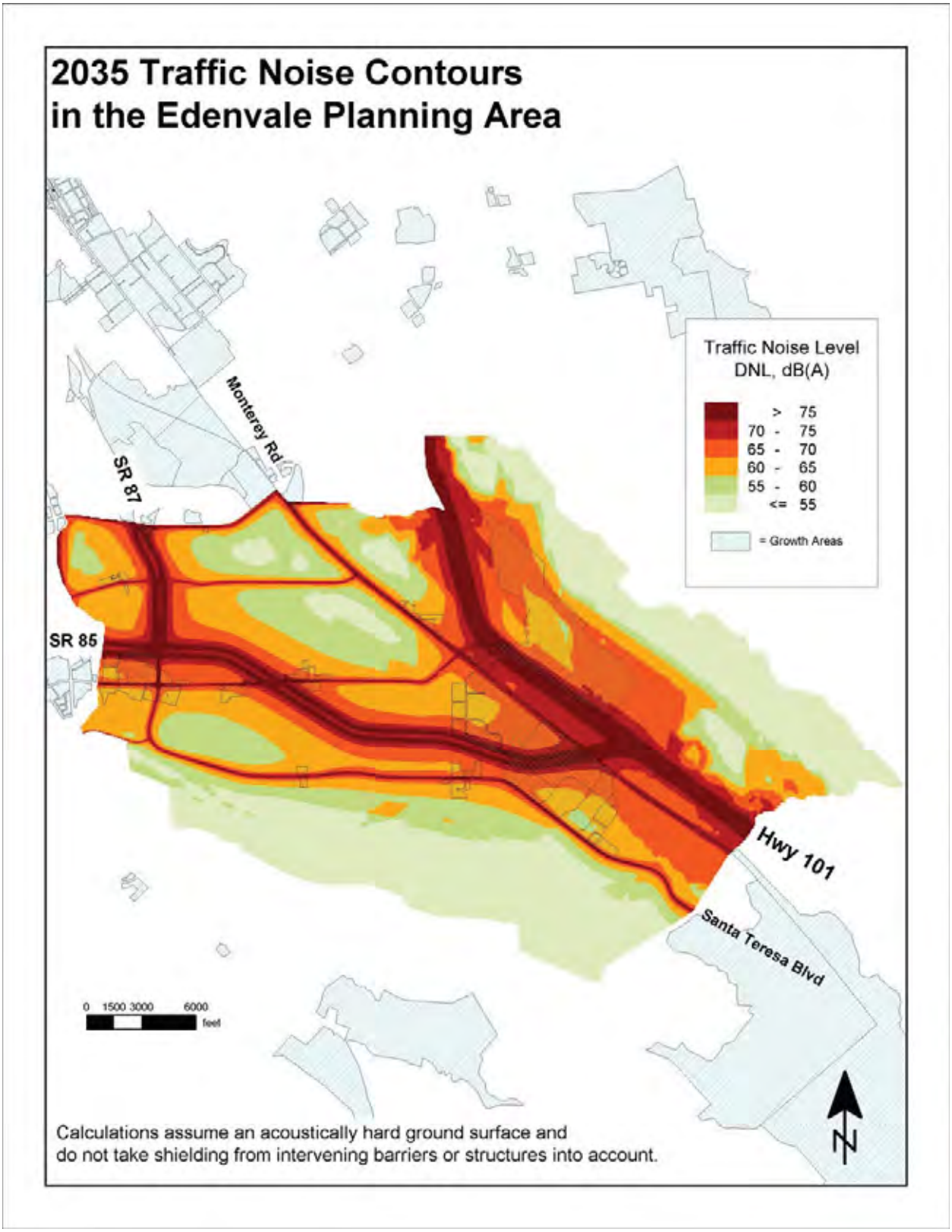


Figure 25 Almaden 2040 Growth Areas

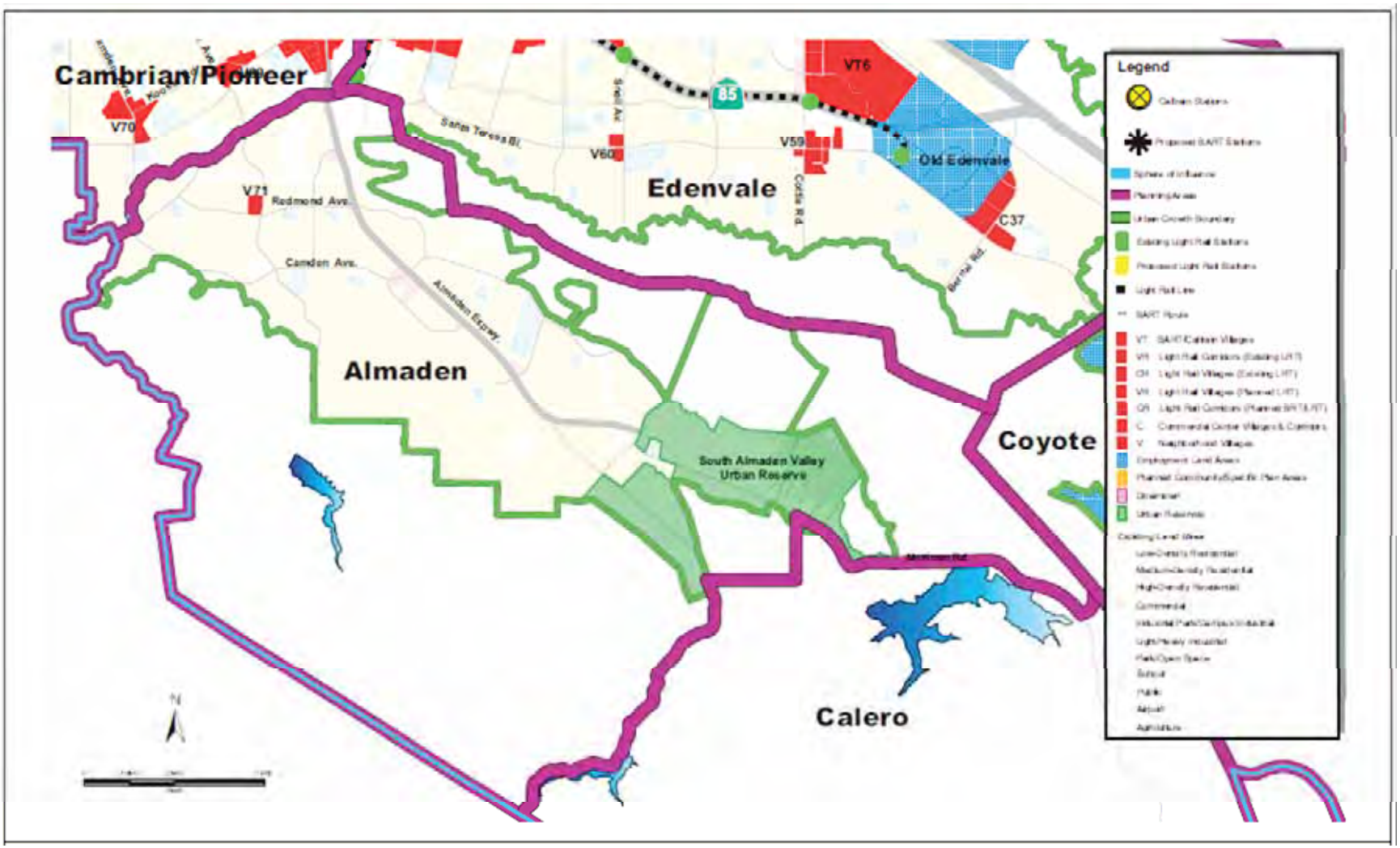


Figure 26 Almaden 2035 Noise Contour Map

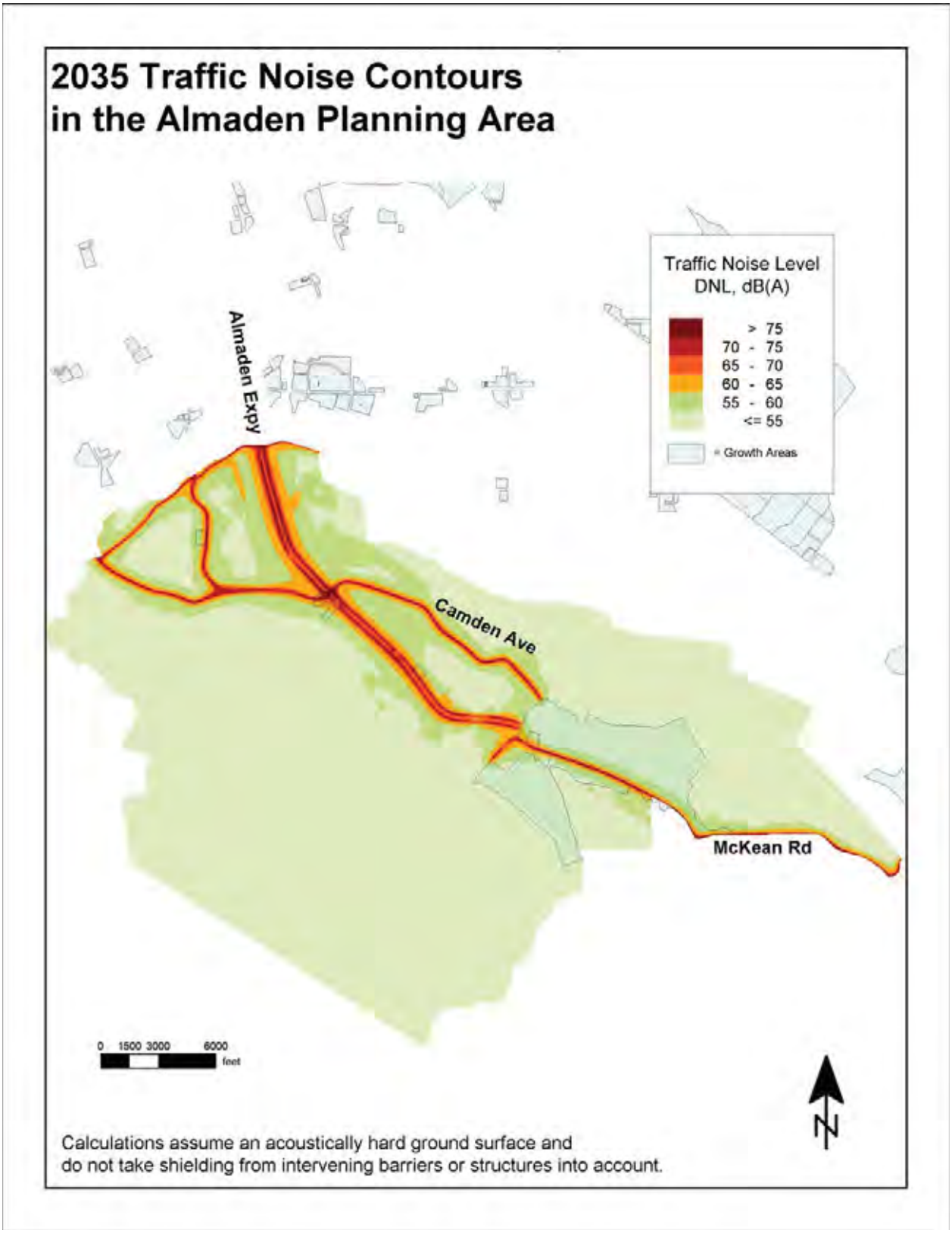


Figure 27 Coyote 2040 Growth Areas

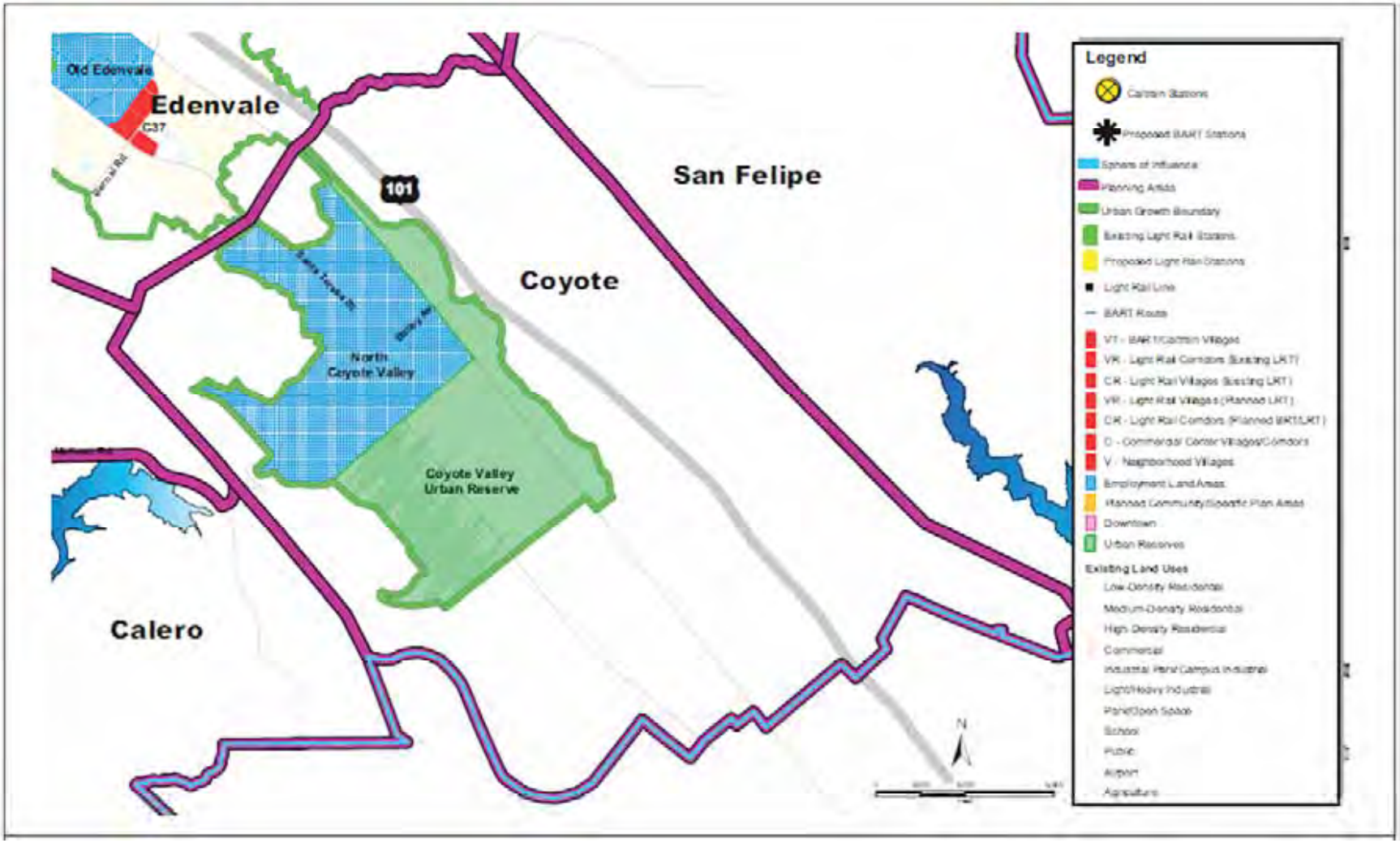


Figure 28 Coyote 2035 Noise Contour Map

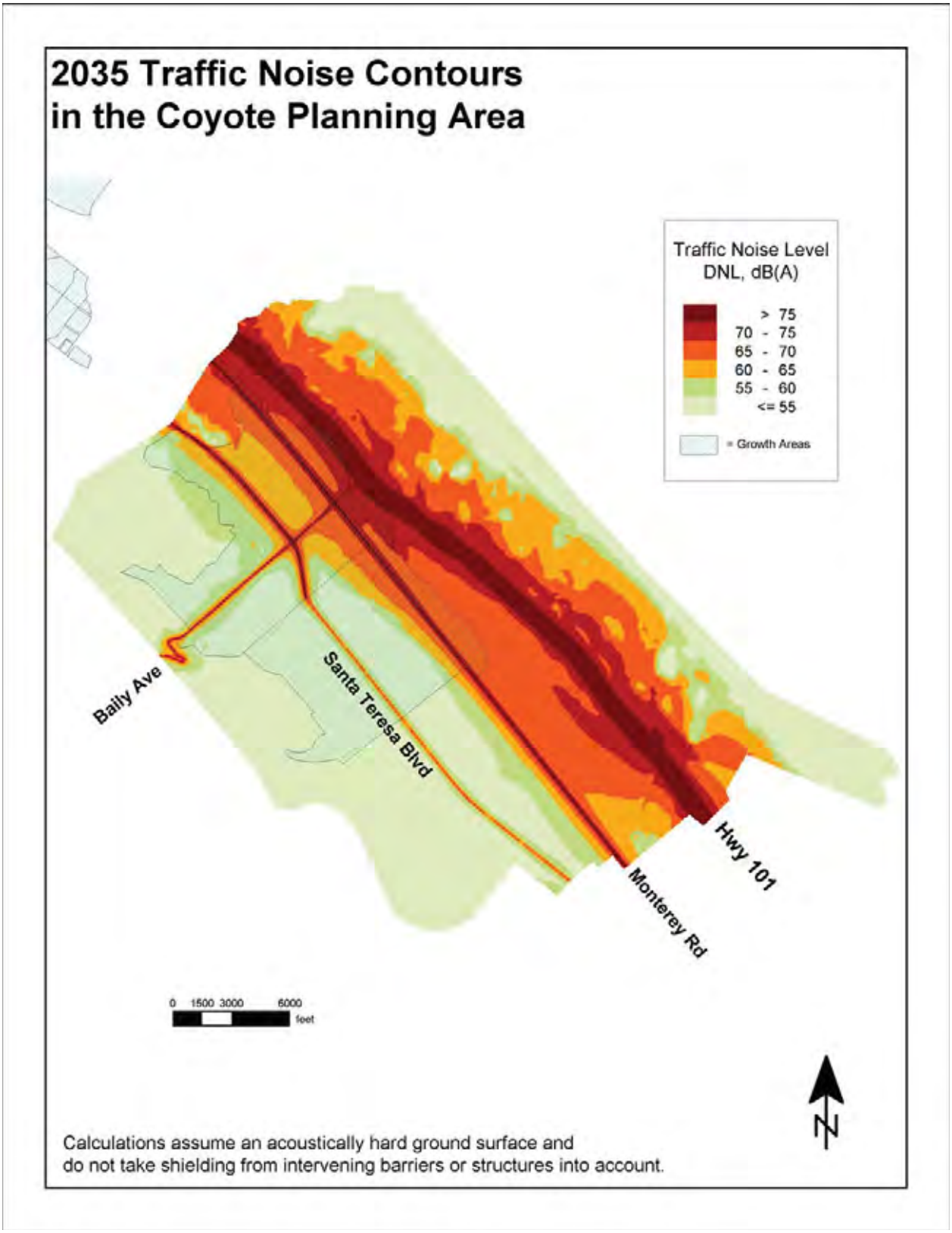


Table 6 Proposed Land Use Compatibility Guidelines

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.

Land Use Compatibility Impact Discussion for New Noise and Vibration Sensitive Land Uses Near Railroads and Light Rail

The Envision San José 2040 General Plan Update project proposes noise and vibration sensitive land uses near existing railroad and light-rail corridors. A significant impact would be identified where noise and vibration sensitive land uses are proposed where noise and vibration levels from passby events would be considered excessive.

Impact: Existing rail systems could expose persons to excessive noise and groundborne vibration.

The Envision San José 2040 General Plan Update project would locate sensitive land uses within portions of the plan area adjacent to existing active railroad corridors and the VTA light rail. As discussed previously, day-night average noise levels vary throughout the community depending on the number of trains operating along a given line per day, the timing and duration of train passby events, and whether or not trains must sound their warning whistles. Another important factor to consider in determining noise levels in areas near railroad corridors and the VTA light

rail is shielding provided by buildings or other barriers. Day-night average noise levels commonly range from 65 to 75 dBA DNL at land uses adjoining a railroad right-of-way. Railroad train noise levels would generally exceed 60 dBA DNL within about 350 feet of active railroad corridors (10 to 15 trains per day). Where residential development is located adjacent to at-grade rail crossings, these sensitive uses would be subject to maximum instantaneous noise levels (L_{max}) from train warning whistles that range from approximately 90 to 110 dBA L_{max}.

Ground vibration from conventional railroad trains or light rail trains passing through the plan area could exceed the guidelines set forth by the FTA if new buildings housing sensitive uses such as residences within BART/Caltrain Villages (VT) or Light Rail Corridors and Villages (VR or CR) are constructed within approximately 100 feet of the tracks. Employment areas such as offices and R&D facilities can also be sensitive to ground-borne vibration. The specific locations of proposed buildings and their sensitivities to vibration levels are not known at this time, however, such uses located in these areas could be exposed to ground vibration levels exceeding FTA guidelines.

Proposed General Plan Policies EC-1.1, EC-1.9, and EC-1.14 would ensure that new sensitive land uses proposed near railroad corridors or the VTA light rail meet allowable exterior and interior noise standards. Policy EC-2.1 requires new development within 100 feet of light and heavy rail lines or other sources of ground-borne vibration, to use setbacks and/or structural design features that reduce vibration to levels at or below the guidelines of the Federal Transit Administration. Conversely, Policy EC-2.2 requires new sources of ground-borne vibration, such as transit along fixed rail systems or the operation of impulsive equipment, to minimize vibration impacts on existing sensitive land uses to levels at or below the guidelines of the Federal Transit Administration. The implementation of these new General Plan policies would ensure that program-level noise and vibration impacts are reduced to a less than significant level. In addition, the City will require that individual development projects undergo project-specific environmental review. If significant project-level noise or vibration impacts are identified, specific mitigation measures will be required under CEQA. The implementation of these policies would reduce the impact to a less-than-significant level.

Noise and Land Use Compatibility Impact Discussion for New Noise Generating Land Uses

The Envision San José 2040 General Plan Update project would facilitate the development of new noise-generating land uses. These new land uses could result in operational noise levels that exceed General Plan noise standards as well as noise level standards contained in the Municipal Code. A significant noise impact would be identified where the operation of noise-generating land uses would create noise levels that exceed the noise and land use compatibility of Municipal Code noise standards as established by the City of San José.

Impact: **New noise-generating land uses or the siting of new sensitive receivers could result in noise levels that would exceed the City's noise thresholds of acceptability or Municipal Code noise limits at sensitive receivers in the vicinity.**

Mixed Use development projects often include residential uses located above or in proximity to commercial uses, and are located in areas served by rail and bus transit along major roadways and the railroad corridor. Under the Envision San José 2040 General Plan, the Village land use designation includes proposed mixed-use residential development throughout San José. Many of the proposed Village location are along major roadways, the existing light rail corridor, proposed light rail stations, and proposed BART stations. Office, commercial, retail, or other noise-generating uses developed under the 2040 General Plan could substantially increase noise levels at noise-sensitive land uses or could expose receivers to noise levels that exceed the City's Municipal Code noise limits.

Future operations at existing and proposed noise-producing land uses are dependent on many variables and information is unavailable to allow meaningful projections of noise. Noise conflicts may be caused by noise sources such as outdoor dining areas or bars, mechanical equipment, outdoor maintenance areas, truck loading docks and delivery activities, public address systems, and parking lots (e.g., opening and closing of vehicle doors, people talking, car alarms). Development under the proposed General Plan would introduce new noise-generating sources adjacent to existing noise-sensitive areas and new noise-sensitive uses adjacent to existing noise sources.

The implementation of the following Proposed General Plan Policies would reduce potential impacts associated with new noise-producing land uses to a ***less-than-significant*** level:

Policy 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.

Policy EC-1.3: Nonresidential land uses will mitigate noise generation to 55 dBA DNL at the property line when located adjacent to existing or planned noise sensitive residential and public/quasi-public land uses.

Policy EC-1.9: Noise studies are required for land use proposals where known or suspected loud intermittent noise sources occur which may impact adjacent existing or planned land uses. For new residential development affected by noise from heavy rail, light rail, BART or other single-event noise sources, mitigation will be implemented so that recurring maximum instantaneous noise levels do not exceed 50 dBA L_{max} in bedrooms and 55 dBA L_{max} in other rooms.

New noise-generating projects implemented by the Plan or the siting of noise sensitive receptors would be subject to the City's Municipal Code, ensuring that existing or proposed residences and other noise-sensitive land uses would not be exposed to excessive noise. Compliance with the City's Municipal Code noise limits would result in a ***less than significant impact***.

Permanent Noise Increase Impact Discussion Resulting from Increased Traffic

Development facilitated by the Envision San José 2040 General Plan Update would result in increased traffic volumes along roadways throughout San José. A significant noise impact would be identified where existing noise sensitive land uses would be subject to permanent noise level increases of 3 dBA DNL or more where noise levels would equal or exceed the "Normally Acceptable" level or 5 dBA DNL or more where noise levels would remain "Normally Acceptable".

Impact: The anticipated increase in vehicular traffic would result in increased traffic noise, and in some cases, the increases would be substantial.

Increases in traffic noise gradually degrade the environment in areas sensitive to noise. According to CEQA, "a substantial increase" is necessary to cause a significant environmental impact. An increase of 3 dBA DNL is considered substantial in noise sensitive areas along the roadways analyzed in San José as noise exposures at a distance of 75 feet from the roadway centerline generally exceed 60 dBA DNL. Vehicular traffic on roadways in the city would increase as development occurs and the city's population increases. These projected increases in traffic would, over time, increase noise levels throughout the community. Proposed roadway modifications could increase or decrease traffic noise levels depending on the circumstances of each project. Traffic noise levels throughout San José were projected for General Plan build-out in the year 2035 to determine noise impacts resulting from changes in vehicular traffic volumes.

Noise levels along highways, expressways, and arterial roadways in San José were calculated for the year 2035 and compared to existing conditions (2008) to quantify the noise increase attributable to the development facilitated by the proposed General Plan. These data are summarized in Tables 7 and 8. The relative increases in traffic noise 75 feet from the affected

arterial roadway segments for each Planning Area are shown in Table 8. Noise levels would increase by less than 3 dBA DNL between 2008 and 2035 throughout much of San José with build out of the General Plan. However, noise levels would increase substantially along segments of Bailey Avenue, Blossom Hill Road, Lincoln Avenue, Mabury Road, McKean Road, Monterey Road, Moorpark Avenue, Oakland Road, Santa Clara Street, Santa Teresa Boulevard, Tasman Drive, Trimble Road, and Zanker Road. Noise levels along Highway 101, Interstate 280, Interstate 680, Interstate 880, State Route 237, State Route 85, and State Route 87 are expected to increase 0 to 1 dBA DNL. Expressways would also generally increase 0 to 1 dBA DNL except for Southwest Expressway calculated to increase by as much as 4 dBA DNL, as shown in Table 8.

Traffic noise levels are expected to increase by 7 dBA DNL along the segment of Bailey Avenue (Coyote Planning Area) between McKean Road and Santa Teresa Boulevard, which is currently occupied by an industrial park land use that is not sensitive to noise from increased traffic along Bailey Avenue. The noise environment in this area results from a combination of traffic noise along Bailey Avenue and intermittent aircraft operations associated with Norman Y. Mineta San José International Airport. Since there are no existing noise sensitive uses along Bailey Avenue, a less-than-significant impact would be expected with the City's General Plan build out.

The roadway segment of Blossom Hill Road from Union Avenue to Los Gatos Boulevard (Cambrian/Pioneer Planning Area) would result in noise level increases of 4 dBA DNL. Since the area is developed with medium and medium low density residential land uses that are sensitive to increased traffic noise, increased traffic forecast for the City's General Plan build out would cause a significant noise impact

Traffic noise levels are expected to increase by 3 dBA DNL along Lincoln Avenue (Willow Glen Planning Area) between Willow Street and Pine Avenue. Land uses adjacent to this roadway segment include neighborhood business district and medium low density residential; therefore, a significant impact would result along this segment of Lincoln Avenue with build out of the General Plan.

Traffic noise levels along Mabury Road (Alum Rock Planning Area), between King Road and Jackson Avenue are expected to increase by 3 dBA DNL. Existing land uses include transit corridor residential, medium and medium-high density residential, light industrial, and public park open space. The residential and park land uses are noise sensitive and the build out of the City's General Plan would result in a significant impact at these locations.

McKean Road, between Harry Road and Hunters Hill Road (Almaden Planning Area) is the main arterial roadway traversing the South Almaden Valley Urban Reserve area. It is comprised of non-urban hillside, residential, and public/quasi-public land uses. Traffic noise levels are

expected to increase by 5 dBA DNL along McKean Road with build out of the General Plan and would result in a significant impact.

Traffic noise levels along Monterey Road (SR 82) are expected to increase by more than 3 dBA DNL at two segments in the Coyote Planning Area; Bernal Road to Bailey Avenue would increase by 6 dBA DNL and Kalana Avenue to Palm Avenue would increase by 5 dBA DNL. The segment from Kalana Avenue to Palm Avenue is an agriculture land use that is not sensitive to noise; however, low density residential uses exist further north on Monterey Road that may be impacted by these representative noise level increases. Between the two segments assessed is the Coyote Valley Urban Reserve. Land uses from Bernal Road to Bailey Avenue include medium and medium low density residential, public park and open space, non-urban hillside, and campus industrial. The residential land uses are noise sensitive and the build out of the City's General Plan would result in a significant impact at these locations.

Traffic noise levels are expected to increase on Moorpark Avenue (West Valley Planning Area) by 3 dBA DNL. Medium low density residential land uses are adjacent to the roadway at three segments: from the I-280 and SR17 interchange to Baywood Avenue, from Eden Avenue to San Tomas Expressway, and from Pinewood Drive to Williams Road. Interstate 280 roughly parallels Moorpark Avenue. Build out of the City's General Plan would result in a significant impact along these segments.

Many urban land use categories are along Oakland Road from Montague Expressway to Murphy Avenue (Berryessa Planning Area); including medium density residential, transit corridor residential, commercial, and industrial. With build out of the General Plan, traffic noise levels are expected to increase by 4 dBA DNL along this roadway segment, and would result in a significant impact.

Traffic noise levels are expected to increase by 3 dBA DNL along Santa Clara Street, from 17th Street to 19th Street in the Central/Downtown Planning Area. Land uses along this segment include neighborhood business district, school and public park, and medium high density residential. The overall increase in noise levels in the area would result a significant impact.

Two segments of Santa Teresa Boulevard (Edenvale and Coyote Planning Areas) are expected to result in increases in traffic noise levels greater than 3 dBA DNL. Traffic noise levels from Cottle Road to Bernal Road would increase by 5 dBA DNL and by 10 dBA DNL from Bernal Avenue to Bailey Avenue. Medium density residential and medium low density residential land uses are adjacent to both segments of Santa Teresa Boulevard. A significant impact would result with build out of the City's General Plan.

Traffic levels are expected to increase along Southwest Expressway by 4 dBA DNL. From I-280 to Bascom Avenue medium high residential and high residential land uses, among others, are adjacent to the roadway. The overall increase in noise levels in some areas would actually be less than 4 dBA DNL as a result of the influence of I-280 traffic, nearby arterial roadways, and aircraft in the area. With build out of the City's General Plan, a significant impact would result along portions of Southwest Expressway near the intersection with Leigh Avenue.

Traffic noise levels are expected to increase by 4 dBA DNL along Tasman Drive from the Guadalupe River to 1st Street in the North San José Planning Area. High density residential, transit/employment residential, and industrial park land uses are located along this roadway segment. With build out of the General Plan a significant impact would result.

Land uses along Trimble Road, from Zanker Road to Montague Expressway (North San José Planning Area), are expected to experience a traffic noise increase of 6 dBA DNL. Since the only land uses along the roadway segment are industrial park and industrial core area and are not noise sensitive, the impact would be less-than-significant.

Zanker Road runs the length of the North San José Planning Area and into the Alviso Planning Area. Traffic noise levels along most of Zanker Road are expected to increase by 3 to 5 dBA DNL. Though primarily composed of industrial land uses, there are medium density residential and transit corridor residential land uses in the North San José Planning Area and the Alviso Planned Community north of SR 237. With build out of the City's General Plan, a significant impact would result.

Policy EC-1.4 states that the City will include appropriate noise attenuation techniques in the design of new arterial streets projected to adversely impact noise sensitive uses. A combination of mitigation measures such as the repaving of area roadways with a "quiet pavement", replacement or construction of noise barriers, traffic calming, and sound insulation could be implemented to reduce the effects of increased traffic noise generated by development under the proposed General Plan.

Case studies have shown that the replacement of dense grade asphalt (standard type) with open-grade or rubberized asphalt can reduce traffic noise levels along local roadways by 2 to 3 dBA DNL. A possible noise reduction of 2 dBA would be expected using conservative engineering assumptions, and future traffic noise increases could be mitigated to a less than significant level by repaving roadways with "quieter pavements." To be a permanent mitigation, subsequent repaving would also have to use "quieter" pavements.

In situations where private outdoor use areas are located adjacent to the roadway, new or larger noise barriers could be constructed to provide the additional necessary noise attenuation in

private use areas. Typically, increasing the height of an existing barrier results in approximately one dBA of attenuation per one foot of additional barrier height. The design of such noise barriers would require additional analysis. Traffic calming could also be implemented to reduce noise levels expected with the project. Each five mph reduction in average speed provides approximately one dBA of noise reduction on an average basis (L_{eq}/DNL). Traffic calming measures that regulate speed improve the noise environment by smoothing out noise levels.

Residences could also be provided with sound insulation treatments if further study finds that interior noise levels within the affected residential units would exceed 45 dBA DNL as a result of the projected increase in traffic noise. Treatments to the homes may include the replacement of existing windows and doors with sound-rated windows and doors and the provision of a suitable form of forced-air mechanical ventilation to allow the occupants the option of controlling noise by closing the windows. The specific treatments for each affected residential unit would be identified on a case-by-case basis.

Each of these mitigation measures involves other non-acoustical considerations. Other engineering issues may dictate continued use of dense grade asphalt. Noise barriers and sound insulation treatments must be done on private property necessitating agreements with each property owner. The implementation of measures associated with this policy will not be able to reduce substantial noise increases to acceptable levels at all noise sensitive areas. This is a ***significant and unavoidable*** impact.

Table 7 Noise Levels along San José Highways and Expressways

Planning Area	Highway/Expressway Segment	DNL at 75 ft, dBA[1]		
		2008 Existing	2035	Increase[2]
Almaden	Almaden Expwy - Camden to Redmond	68	68	0
Willow Glen	Almaden Expwy - Foxworthy to Lincoln	71	72	1
Cambrian/Pioneer	Almaden Expwy - SR 85 to Blossom Hill	71	72	1
Evergreen	Capitol Expwy - Aborn to Silver Creek	71	71	0
Berryessa	Capitol Expwy - I-680 to Hostetter	70	71	1
Alum Rock	Capitol Expwy - Ocala to Tully	71	71	0
South San José	Capitol Expwy - Senter to Monterey	70	70	0
West Valley	I-280 - West of SR 17	81	82	1
Central/Willow Glen	I-280 - West of SR 87	82	82	0
Central/Downtown	I-280 - West of US 101	81	82	1
Alum Rock	I-680 - North of Alum Rock	82	83	1
Alum Rock	I-680 - South of Capitol Expwy	82	83	1
West Valley/Central	I-880 - North of I-280	80	81	1
North San José /Berryessa	I-880 - North of US 101	81	82	1
West Valley	Lawrence Expwy - Doyle to Prospect	70	70	0
North San José	Montague Expwy - Lafayette to 1st	71	71	0
North San José	Montague Expwy - McCarthy to I-880	69	69	0
Cambrian/Pioneer	SR 17 - East of SR 9	79	80	1
Alviso/North San José	SR 237 - West of I-880	82	82	0
Cambrian/Pioneer	SR 85 - East of SR 17	78	79	1
Edenvale	SR 85 - West of SR 87	77	78	1
South San José	SR 87 - South of Curtner	78	79	1
North San José	SR 87 - South of US 101	74	75	1
West Valley	San Tomas Expwy - Williams to Payne	70	70	0
Alum Rock	US 101 - North of I-680	82	83	1
Edenvale	US 101 - South of SR 85	80	81	1
North San José	US 101 - North of I-880	81	82	1

[1]Noise levels for Highways and Expressways are given at a distance of 75 feet from the center of the near direction of travel.

[2]Substantial noise level increases (i.e., 3 dBA DNL or greater) are indicated in bold font; such increases that would result in a significant impact would be shaded.

Table 8 Noise Levels along Major Roadways San José

Planning Area	Roadway Segment	DNL at 75 ft. (dBA)[1]		DNL Increase (dBA)[2]
		2008 Existing	2035 Build	
Central/Downtown	10th St – Hedding to US 101	67	68	1
Central/Downtown	13th St – US 101 to Berryessa	64	63	-1
Central/Downtown	1st St – I-880 to Hedding	68	68	0
Central/Downtown	1st St – South of I-280	73	73	0
North San José	1st St – Tasman to SR 237	72	74	2
North San José	1st St – Trimble to Brokaw	67	67	0
Central/Downtown	7th St – I-280 to Williams	60	60	0
Evergreen	Aborn Rd – Capitol to San Felipe	72	72	0
South San José	Almaden Rd – Alma to Almaden Expwy	69	69	0
Alum Rock	Alum Rock Avenue	68	68	0
Coyote	Bailey Ave – McKean to Santa Teresa	60	67	**7**
Cambrian/Pioneer	Bascom – Mozart to Camden	69	71	2
Willow Glen	Bascom Ave – Campbell to Curtner	70	72	2
Willow Glen	Bascom Ave – Hamilton to Fruitdale	70	72	2
West Valley	Bascom Ave – I-880 to Newhall	70	70	0
Berryessa	Berryessa Rd – Capitol to I-880	67	67	0
Edenvale	Blossom Hill Rd – Almaden to Santa Teresa	70	70	0
Cambrian/Pioneer	Blossom Hill Rd – Union to Los Gatos	64	68	**4**
Cambrian/Pioneer	Branham Ln – Almaden to Pearl	68	68	0
Berryessa	Brokaw Rd – I-880 to Oakland	73	73	0
North San José	Brokaw Rd – I-880 to Zanker	71	71	0
Almaden	Camden Ave – Coleman to Hicks	62	62	0
Willow Glen	Camden Ave – Leigh to Hillsdale	70	70	0
Berryessa	Capitol Ave – Hostetter to Berryessa	72	73	1
Alum Rock	Capitol Ave – McKee to Alum Rock	72	72	0
Berryessa	Capitol Ave – Montague to Cropley	73	75	2
Willow Glen	Curtner Ave – Cherry to Lincoln	67	67	0
Coyote	Hale Ave – Kalana to Palm	61	62	1
Central/Downtown	Hedding St – Coleman to SR 87	67	69	2
Berryessa	Hostetter Rd – Lundy to I-680	70	70	0
Central/Downtown	Julian St – 24th to 21st	62	62	0
Alum Rock	King Rd – McKee to Alum Rock	66	66	0

Planning Area	Roadway Segment	DNL at 75 ft. (dBA)[1]		DNL Increase (dBA)[2]
		2008 Existing	2035 Build	
Alum Rock	King Rd – Ocala to Tully	68	68	0
Willow Glen	Leigh Ave – Campbell to Curtner	67	67	0
Willow Glen	Lincoln Ave – Willow to Pine	67	70	**3**
Alum Rock	Mabury Rd – King to N Jackson	66	69	**3**
Alum Rock	Mabury Rd – King to Taylor	68	70	2
Almaden	McKean Rd – Harry to Hunters Hill	62	67	**5**
Alum Rock	McKee Rd – Capitol to I-680	70	70	0
Willow Glen	Meridian Ave – Hamilton to Campbell	68	68	0
Willow Glen	Meridian Ave – Southwest to Fruitdale	68	68	0
South San José	Monterey Rd – Alma to Curtner	73	73	0
Coyote	Monterey Rd – Bernal to Bailey	67	74	**7**
Edenvale	Monterey Rd – Blossom Hill to Branham	74	74	0
Coyote	Monterey Rd – Kalana to Palm	69	74	**5**
Edenvale	Monterey Rd – SR 85 to Bernal	70	71	1
West Valley	Moorpark Ave – Borina to Castlewood	61	64	**3**
Berryessa	Morrill Ave – Hostetter to Cropley	66	66	0
Berryessa	Oakland Rd – Montague to Murphy	70	74	**4**
Berryessa	Piedmont Rd – Pen Creek to Berryessa	64	64	0
Evergreen	Quimby Rd – Capitol to White	68	68	0
Central/Downtown	San Carlos St – East of SR 87	63	63	0
Central/Downtown	San Carlos St – SR 87 to Almaden	71	72	1
Evergreen	San Felipe Rd – Yerba Buena to Park Estates	64	66	2
Central/Downtown	Santa Clara St – 19th to 17th	67	70	**3**
Central/Downtown	Santa Clara St – Almaden to SR 87	68	68	0
Coyote	Santa Teresa Blvd – Bernal to Bailey	61	71	**10**
Edenvale	Santa Teresa Blvd – Cahalan to Blossom Hill	69	69	0
Coyote	Santa Teresa Blvd – Cottle to Bernal	68	73	**5**
Edenvale	Santa Teresa Blvd – SR 85 to Blossom Hill	71	71	0
West Valley	Saratoga Ave – Hamilton to Payne	67	67	0
West Valley	Saratoga Ave – Moorpark to I-280	71	71	0
South San José	Senter Rd – Tully to Capitol	70	70	0
Willow Glen	Southwest Expwy - Hamilton to Fruitdale	67	71	**4**

Planning Area	Roadway Segment	DNL at 75 ft. (dBA)[1]		DNL Increase (dBA)[2]
		2008 Existing	2035 Build	
Central/Downtown	Stevens Creek Blvd – I-880 to Bascom	68	68	0
Central/Downtown	Story Rd – 12th to Senter	70	71	1
Alum Rock	Story Rd – Capitol to White	68	68	0
Alum Rock	Story Rd – King to Adrian	70	70	0
Alum Rock	Story Rd – US 101 to King	71	72	1
North San José	Tasman Dr – Lafayette to 1st	67	71	**4**
North San José	Tasman Dr – McCarthy to Zanker	67	67	0
West Valley	The Alameda – I-880 to El Camino Real	75	75	0
Central/Downtown	The Alameda – Race to Julian	74	74	0
North San José	Trimble Rd – US 101 to 1st	70	70	0
North San José	Trimble Rd – Zanker to Montague	67	73	**6**
Evergreen	Tully Rd – Capitol to White	72	72	0
Evergreen	Tully Rd – King to Quimby	72	72	0
South San José	Tully Rd – Senter to McLaughlin	72	72	0
Cambrian/Pioneer	Union Ave – SR 85 to Camden	67	67	0
Evergreen	White Rd – Quimby to Aborn	70	70	0
Alum Rock	White Rd – Story to Marten	68	68	0
West Valley	Winchester Blvd – Stevens Creek to I-280	70	70	0
West Valley	Winchester Blvd – Williams to Payne	67	69	2
Evergreen	Yerba Buena Rd – Silver Creek to San Felipe	67	67	0
North San José	Zanker Rd – SR 237 to Holger	69	74	**5**

[1]Noise levels for major roadways are given at a distance of 75 feet from the center of the near direction of travel.
[2]Substantial noise level increases (i.e., 3 dBA DNL or greater) are indicated in bold font; such increases that would result in a significant impact are shaded.

Impact Discussion Resulting from Temporary Construction Noise

The proposed Envision San José 2040 General Plan Update project would facilitate the construction of new projects throughout the City. Residences and businesses located adjacent to proposed villages and corridors would be affected at times by construction noise. Temporary construction-related noise would be considered significant if noise levels would exceed 60 dBA L_{eq} at noise-sensitive land uses (e.g., residential land uses) or 70 dBA L_{eq} at sensitive industrial, office, or commercial land uses when the noise would exceed the ambient noise environment by 5 dBA L_{eq} or more for a period of more than one construction season.

Impact: Construction noise would cause a temporary or periodic increase in noise exposure above ambient noise levels.

Noise impacts resulting from construction depend on 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 receptors. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (early morning, evening, or nighttime hours), when construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction durations last over extended periods of time. For the purposes of this assessment, noise levels exceeding 60 dBA L_{eq} and the ambient noise environment by 5 dBA L_{eq} or more at nearby noise-sensitive land uses (e.g., residential land uses) for a period of more than one construction season would be considered significant. Where noise from construction activities exceeds 70 dBA L_{eq} and the ambient noise environment by 5 dBA L_{eq} or more at sensitive industrial, office, or commercial land uses for a period of more than one construction season, the impact would also be considered significant.

Major noise-generating construction activities associated with new projects would include removal of existing pavement and structures, site grading and excavation, installation of utilities, the construction of building foundations, cores, and shells, paving, and landscaping. The highest noise levels would be generated during the demolition of existing structures when impact tools are used (e.g., jackhammers, hoe rams) and during the construction of building foundations when impact pile driving is required to support the structure. Site grading and excavation activities would also 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. Lower noise levels result from building construction activities when these activities move indoors and less heavy equipment is required to complete the tasks. Construction equipment would typically include, but would not be limited to, earth-moving equipment and trucks, pile driving rigs, mobile cranes, compressors, pumps, generators, paving equipment, and pneumatic, hydraulic, and electric tools. Table 9 presents the typical range of hourly average noise levels generated by different phases of construction measured at a distance of 50 feet from a busy construction site. Typical hourly average construction-generated noise levels are about 77 to 89 dBA L_{eq} measured at a distance of 50 feet from the site during busy construction periods. Large pieces of earth-moving equipment, such as graders, scrapers, and dozers, generate maximum noise levels of 85 to 90 dBA Lmax at a distance of 50 feet. During each stage of construction, there would be a different mix of equipment operating and noise levels would vary based on the amount of equipment on site and the location of the activity. Construction noise levels drop off at a rate of about 6 dBA per doubling of distance between the noise source and receptor. Intervening structures or terrain would result in lower noise levels at distant receivers.

Table 9 Typical Ranges of Noise Levels at 50 Feet from Construction Sites (dBA L_{eq})

	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: United States Environmental Protection Agency, 1973, Legal Compilation on Noise, Vol. 1, p. 2-104.

The City of San José does not establish quantitative noise limits for demolition or construction activities occurring in the City. According to San José Municipal Code, the legal hours of construction within 500 feet of a residential unit are limited to the hours of 7:00 a.m. to 7:00 p.m. on Monday through Friday.

Noise generated by small infill projects facilitated by the General Plan Update would likely have relatively short overall construction durations, with the noisiest phases of construction (e.g., demolition, foundations, project infrastructure, building core and shell) limited to a timeframe of one year or less. These phases of construction are not anticipated to generate noise levels in excess of 60 dBA L_{eq} and the ambient noise environment by 5 dBA L_{eq} or more at sensitive land uses in the area over extended periods of time (beyond one construction season). Interior construction, landscaping, and finishing activities would not be expected to result in noise levels in excess of 60 dBA L_{eq}. Large construction projects facilitated by the Envision San José 2040 General Plan Update may result in a substantial temporary noise increase at adjacent noise-sensitive land uses. As a result, noise levels from these projects could exceed 60 dBA L_{eq} and the ambient noise environment by 5 dBA L_{eq} or more, and last over one year in duration.

The potential short-term noise impacts associated with construction facilitated by the General Plan Update would be mitigated by the adoption of Policy EC-1.7. This policy states:

> Construction operations within the City will be required to use available noise suppression devices and techniques and continue to 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.

A typical construction noise logistics plan would include, but not be limited to, the following measures to reduce construction noise levels as low as practical:

- Utilize 'quiet' models of air compressors and other stationary noise sources where technology exists;

- Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment;

- Locate all stationary noise-generating equipment, such as air compressors and portable power generators, as far away as possible from adjacent land uses;

- Locate staging areas and construction material areas as far away as possible from adjacent land uses;

- Prohibit all unnecessary idling of internal combustion engines;

- If impact pile driving is proposed, multiple-pile drivers shall be considered to expedite construction. Although noise levels generated by multiple pile drivers would be higher than the noise generated by a single pile driver, the total duration of pile driving activities would be reduced.

- If impact pile driving is proposed, temporary noise control blanket barriers shall shroud pile drivers or be erected in a manner to shield the adjacent land uses. Such noise control blanket barriers can be rented and quickly erected.

- If impact pile driving is proposed, foundation pile holes shall be pre-drilled to minimize the number of impacts required to seat the pile Pre-drilling foundation pile holes is a

standard construction noise control technique. Pre-drilling reduces the number of blows required to seat the pile. Notify all adjacent land uses of the construction schedule in writing;

- Designate a "disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and will require that reasonable measures warranted to correct the problem be implemented. 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.

The potential short-term noise impacts associated with construction facilitated by the Envision San José 2040 General Plan Update project would be mitigated by the adoption and implementation of the above policy that requires reasonable noise reduction measures be incorporated into the construction plan and implemented during all phases of construction activity to minimize the exposure of neighboring properties. Policy EC-1.7 in combination with the limitations on hours set forth in the Municipal Code, would reduce the impact to a less-than-significant level.

Impact Discussion Resulting from Construction Vibration

Demolition and construction activities required for projects implemented by the Envision San José 2040 General Plan Update project may generate perceptible vibration levels when heavy equipment or impact tools (e.g. jackhammers, pile drivers, hoe rams) are used in the vicinity of nearby sensitive land uses.

Impact: Demolition and construction activities facilitated by the Plan may expose persons to excessive vibration levels.

Heavy tracked vehicles (e.g., bulldozers or excavators) can generate distinctly perceptible groundborne vibration levels when this equipment operates within approximately 25 feet of sensitive land uses. Impact pile drivers can generate distinctly perceptible groundborne vibration levels at distances up to about 100 feet, and may exceed building damage thresholds within 25 feet of any building, and within 50-100 feet of a historical building, or building in poor condition.

The potential impacts associated with construction vibration would be mitigated by the adoption of Policy EC-2.3. This policy states:

> Require new development to minimize vibration impacts to adjacent uses during demolition and construction. For sensitive historic structures, a vibration limit of 0.08

in/sec PPV (peak particle velocity) will be used to minimize the potential for cosmetic damage to the building. A vibration limit of 0.20 in/sec PPV will be used to minimize the potential for cosmetic damage at buildings of normal conventional construction.

The potential vibration impacts associated with demolition and construction activities would be mitigated to a less-than-significant level by establishing safe limits to protect structures from potential damage and would minimize vibration impacts on people and businesses.

Land Use Compatibility Impact Discussion for New Noise Sensitive Land Uses Near Airports

Development facilitated by the Envision San José 2040 General Plan Update project would include noise sensitive land uses in the vicinity of Norman Y. Mineta San José International Airport or Reid-Hillview Airport. A significant noise impact would be identified where noise sensitive land uses are proposed in areas where existing or future noise levels would exceed the noise and land use compatibility standards established by the Santa Clara County Airport Land Use Commission (ALUC).

Impact: Aircraft noise over proposed noise-sensitive land uses would exceed ALUC noise thresholds, which could expose individuals living and working within the plan area to excessive aircraft noise.

The Santa Clara County ALUC has jurisdiction over new land uses in the vicinity of airports, and establishes 65 dBA CNEL as the maximum allowable noise level considered compatible with residential uses. The Envision San José 2040 General Plan Update project would allow new residential development in areas of the City where existing and future aircraft noise levels associated with operations at Norman Y. Mineta San José International Airport would be just at or slightly above 65 dBA CNEL (See Figure 29). The future 65 dBA CNEL noise contour passes through a portion of BART/Caltrain Village VT5 proposed southwest of Coleman Avenue and Mineta San José International Airport. No noise-sensitive residential development is planned on the BART/Caltrain Village VT5 parcel and, therefore, would not be impacted. Light Rail Village CR20 is proposed just east of the 65 dBA CNEL noise contour anticipated by 2027. Residential development within the Downtown would be within the 65 CNEL noise contour for Mineta San José International Airport. The project does not propose noise-sensitive land uses within the 65 dBA CNEL aircraft noise contour for Reid-Hillview Airport. Noise-sensitive land uses proposed in the Reid-Hillview Airport vicinity include Commercial Center Villages/Corridors C42, Neighborhood Village V52, and Light Rail Village VR22 all of which are located outside the 65 dBA and 60 dBA CNEL noise contours expected by 2022 (See Figure 30).

Draft General Plan Policies EC-1.1, EC-1.9, and EC-1.11 would guide new development proposed for areas susceptible to noise associated with Norman Y. Mineta San José International Airport. Policy EC-1.1 would require that the General Plan compatibility standards be used to

determine where noise levels in the community are acceptable or unacceptable, and require noise attenuation measures to achieve the "normally acceptable" noise level standards. This policy allows for noise levels to exceed the "normally acceptable" noise level standard in the environs of Mineta San José International Airport. The City will require that individual development projects undergo project-specific environmental review. If significant project-level aircraft noise impacts are identified, specific mitigation measures will be required under CEQA.

Policy EC-1.9 would require that studies be conducted to mitigate loud intermittent noise sources such as aircraft. Policy EC-1.11 would require that incompatible land uses be located outside of the 65 dBA CNEL noise contour.

By ensuring compliance with the local airport land use plan and the City's normally acceptable noise level standards, implementation of these policies would effectively reduce potential program-level aircraft noise impacts to a less-than-significant level.

Cumulative Noise Impact Discussion

Cumulative traffic noise impacts are considered as part of the General Plan analysis since the traffic noise analysis is based on the traffic model where input included planned and approved projects in the City (Future Conditions) plus traffic anticipated by General Plan build out projections. Therefore, cumulative traffic noise impacts would be the same as project level impacts.

Other reasonably foreseeable projects that could contribute to the future noise environment in the City of San José include the California High Speed Rail project, the BART extension to San José project, and the Caltrain electrification project. Each of these projects are currently undergoing design and environmental review but have not received final approvals or funding. The scope of each of these projects is such that there is a reasonable expectation that noise and vibration levels in the City will change. In some cases, noise and vibration impacts may occur. These impacts would be disclosed during the environmental review process and mitigated where feasible. These projects also have the potential to benefit land uses along the alignments as mitigation measures are implemented. The City of San Jose should continue to monitor these projects and encourage the High Speed Rail Authority, BART's Board of Directors, and Caltrain's Peninsula Corridor Joint Powers Board to reduce noise and vibration impacts from these projects to less than significant levels.

Figure 29 2027 Aircraft Noise Contours for Mineta San José International Airport

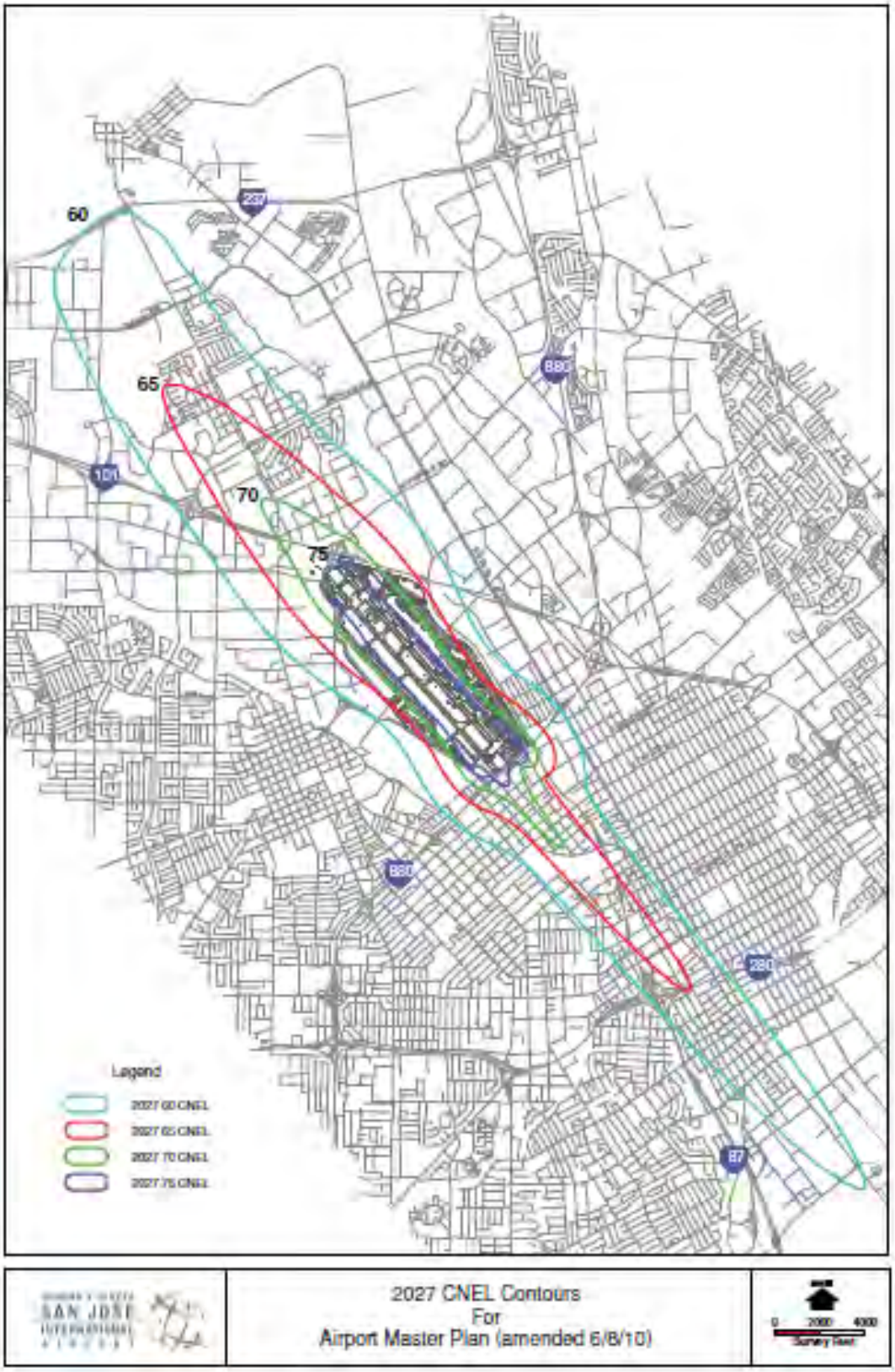
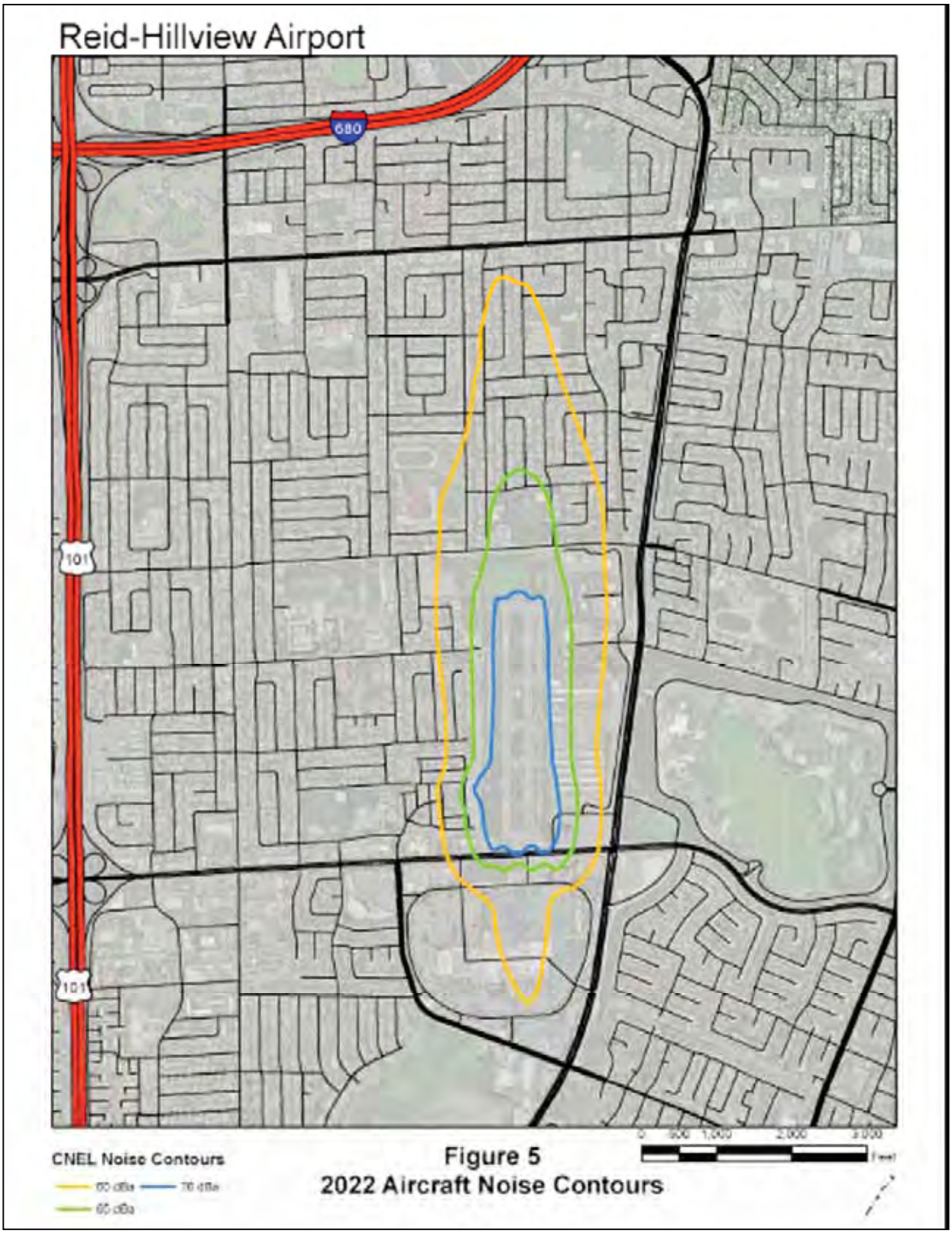
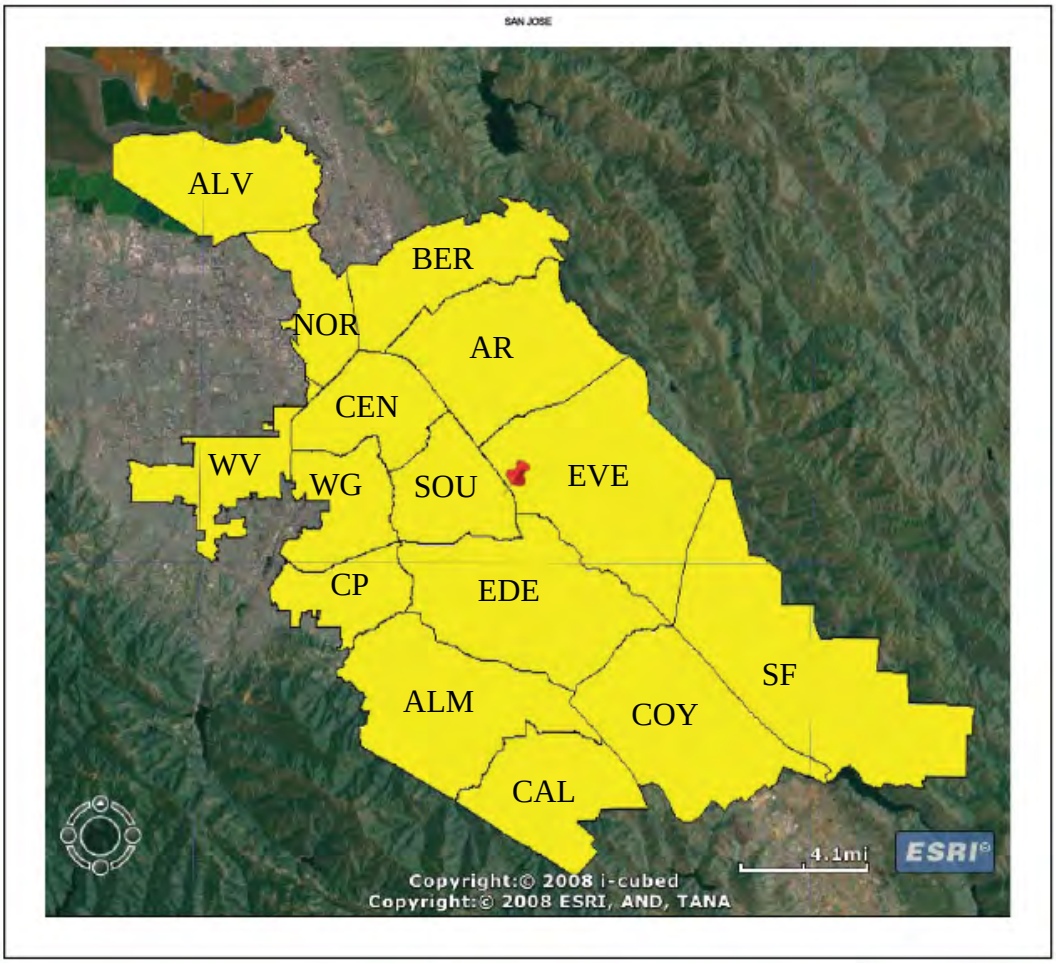


Figure 30 2022 Aircraft Noise Contours for Reid-Hillview Airport



Appendix A

Long-Term Noise Measurement Locations in San Jose

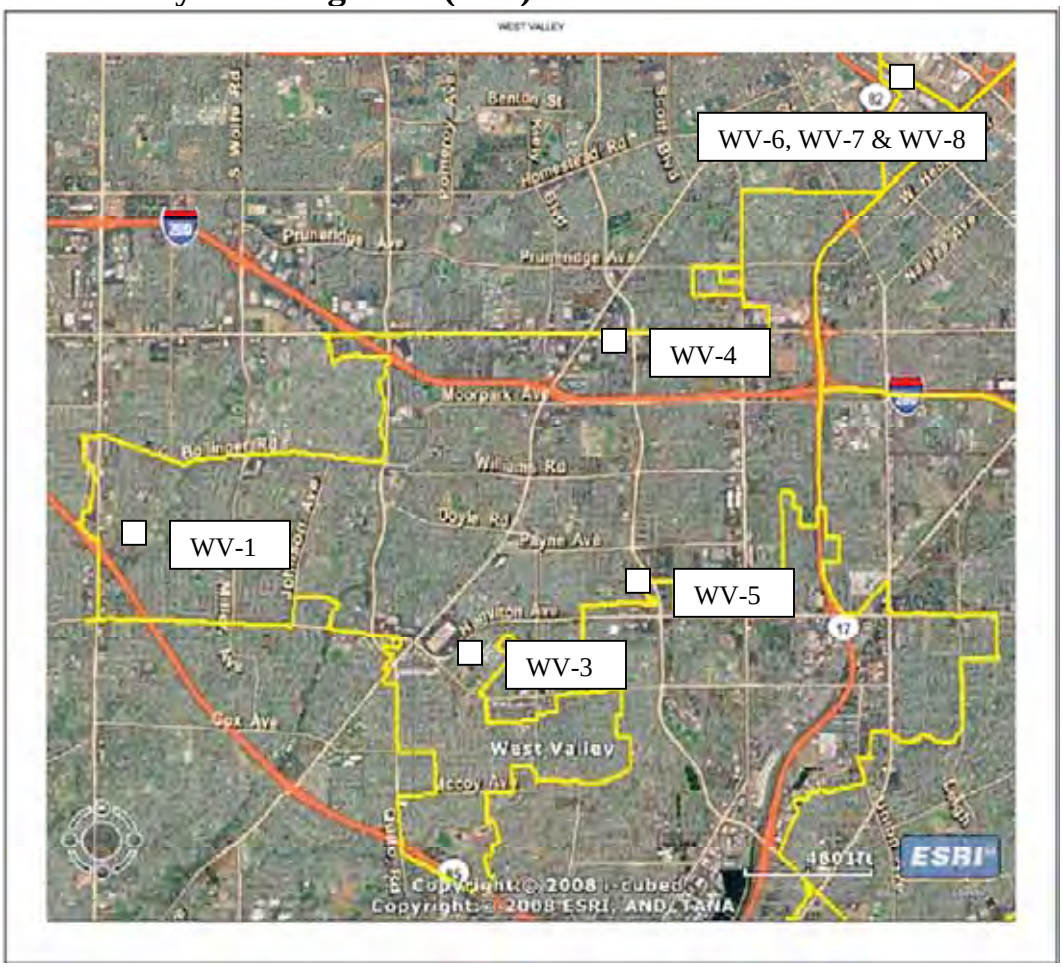


Alviso Planning Area (ALV)

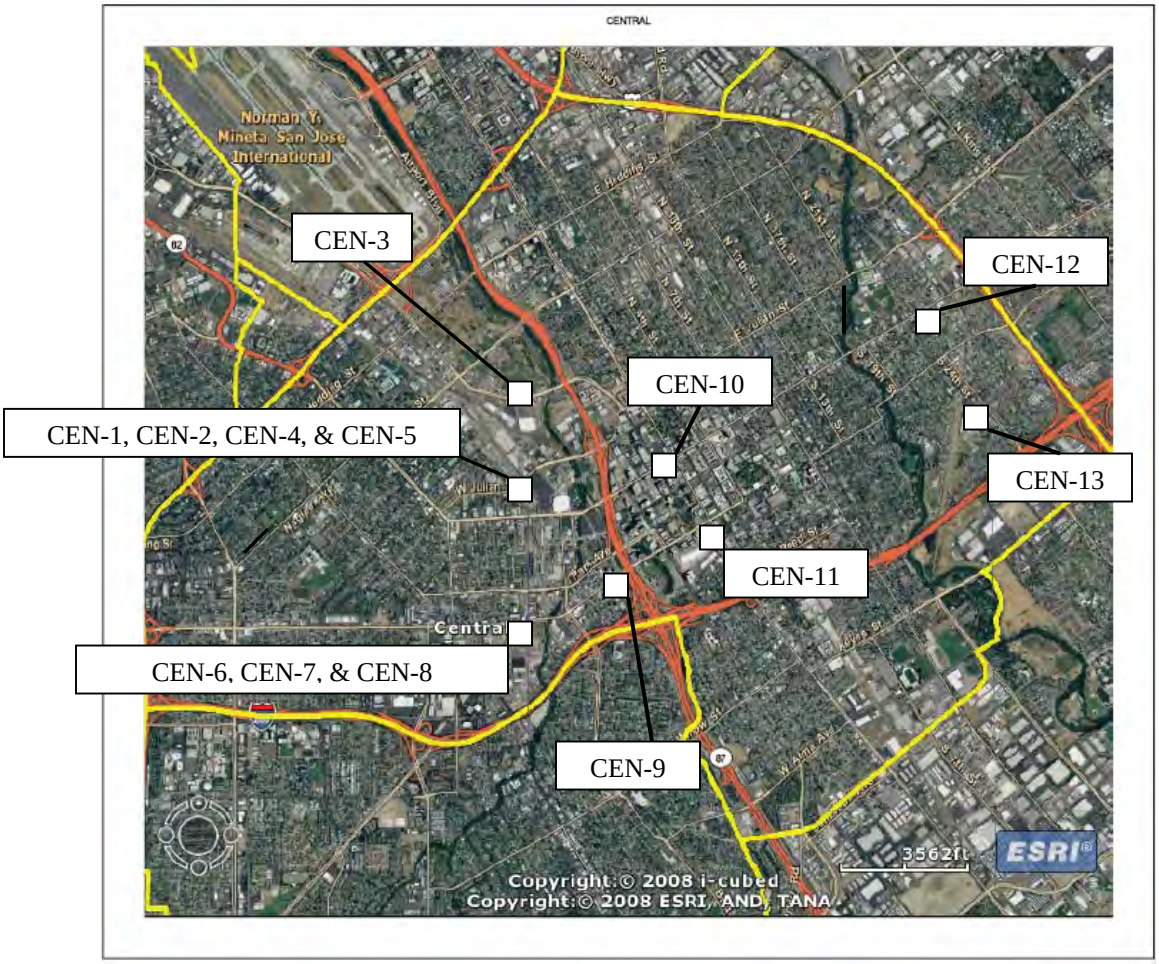
North Planning Area (NOR)

Berryessa Planning Area (BER)

West Valley Planning Area (WV)



Central Planning Area (CEN)



Alum Rock Planning Area (AR)

Willow Glen Planning Area (WG)

South Planning Area (SOU)

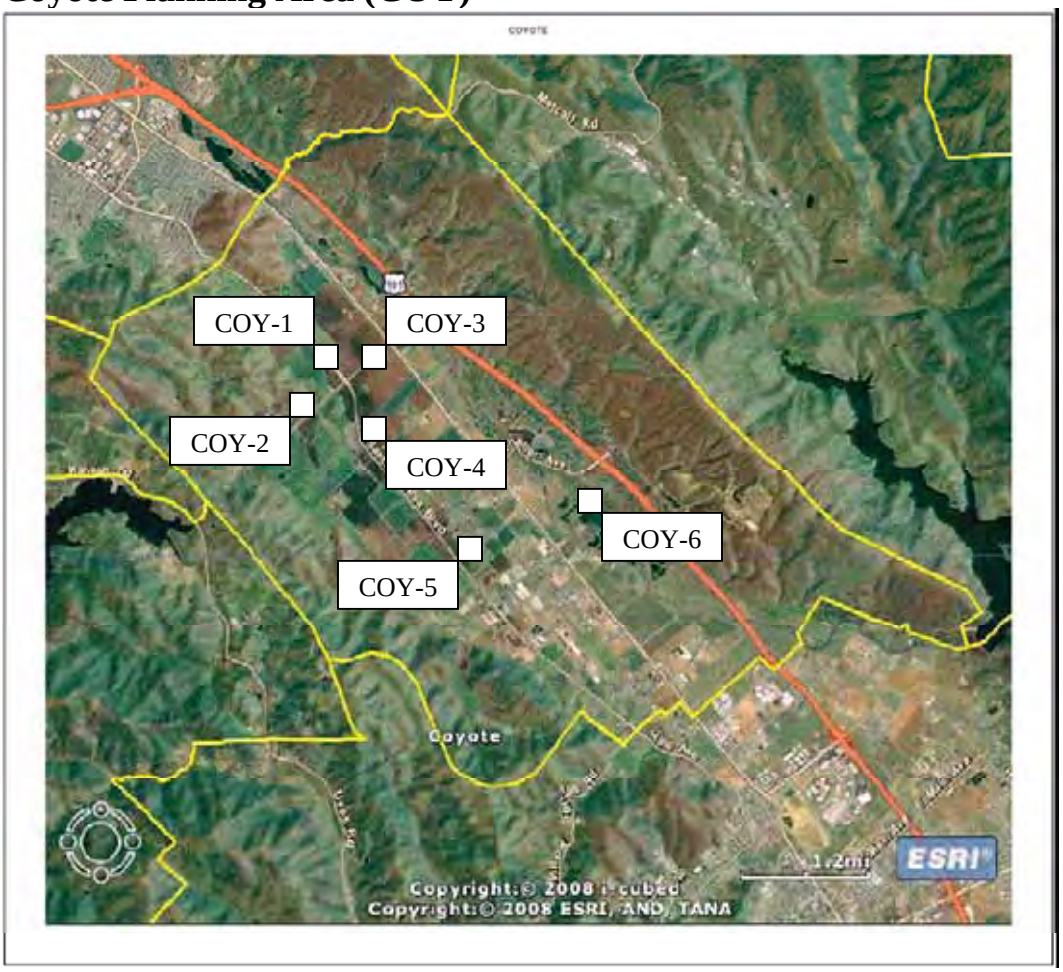
Evergreen Planning Area (EVE)

Cambrian/Pioneer Planning Area (CP)

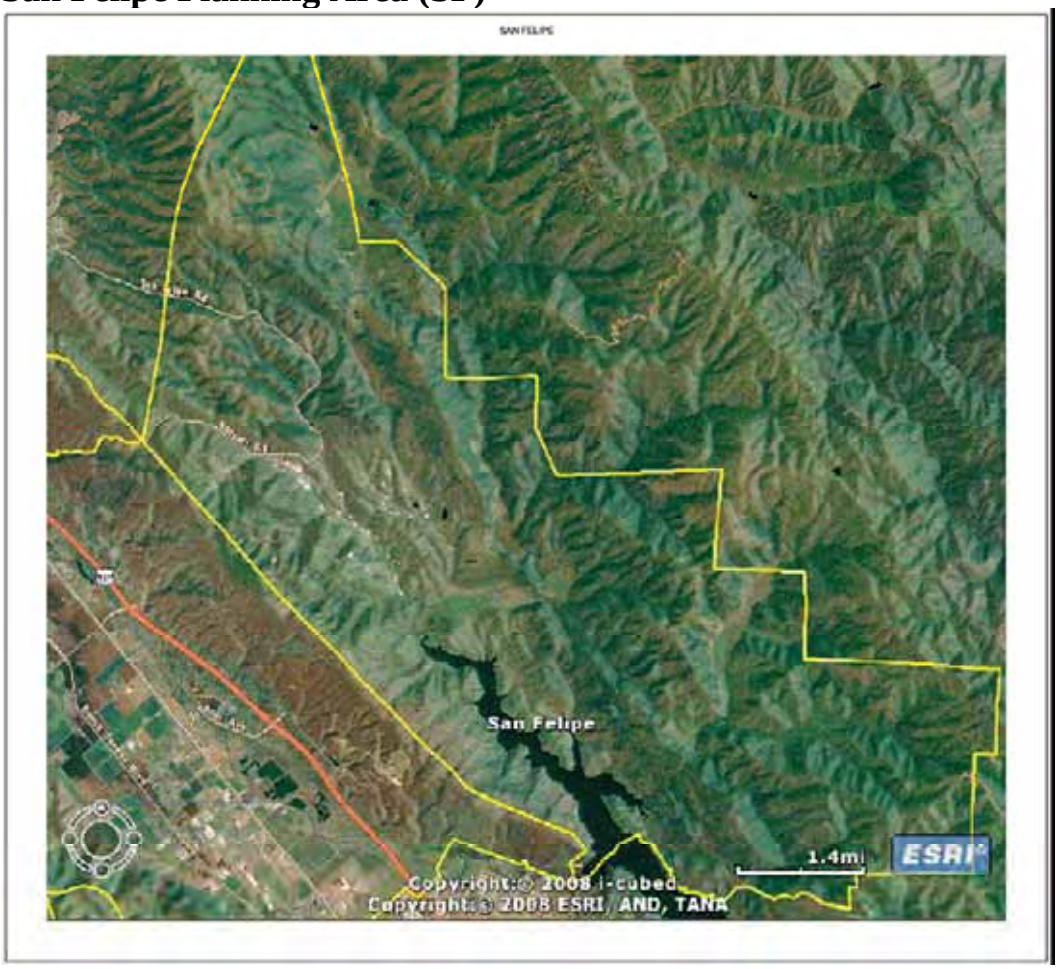
Edenvale Planning Area (EDE)

Almaden Planning Area (ALM)

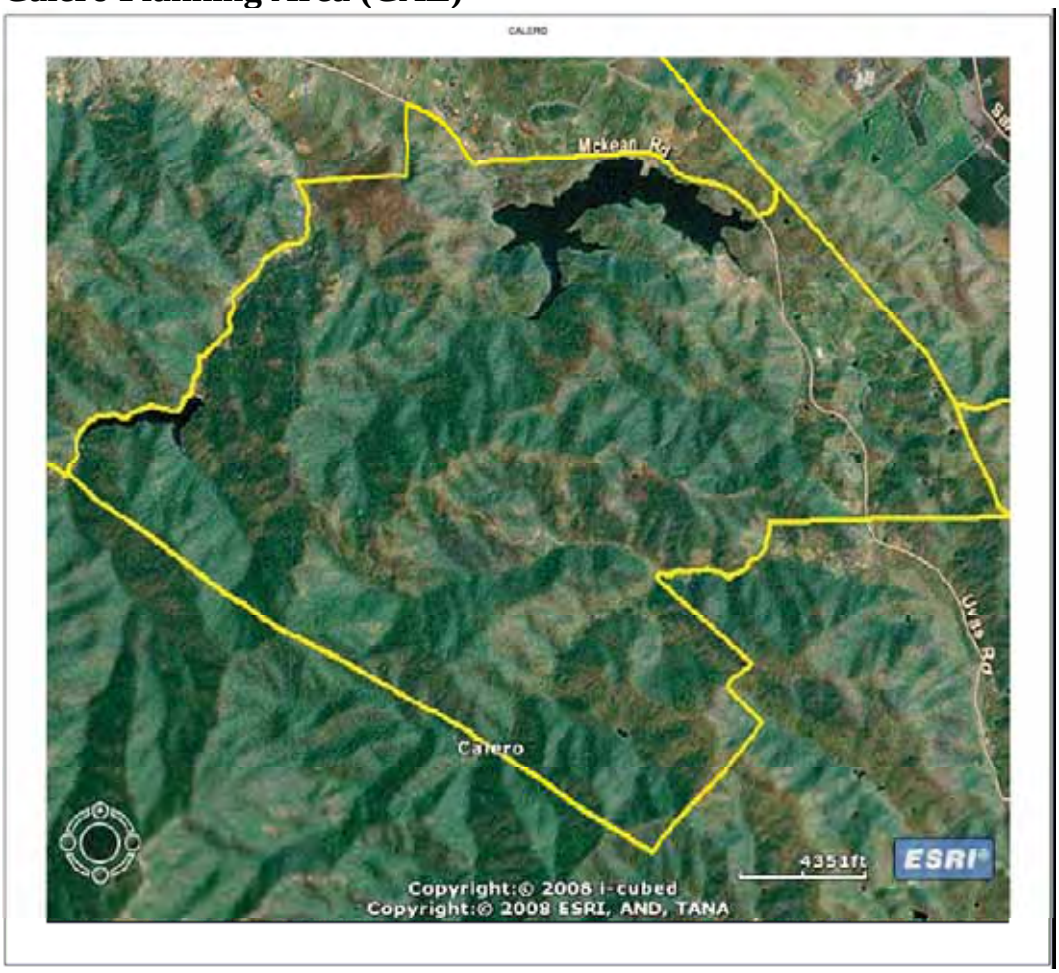
Coyote Planning Area (COY)



San Felipe Planning Area (SF)



Calero Planning Area (CAL)



Noise Data Summary

Alviso Planning Area (ALV)

Measurement	Location	Date	DNL (dBA)
ALV-1	120 feet from the center of the nearest lane of State Route 237, Applied Imaging parking lot.	03/09/09 to 03/11/09	74

North Planning Area (NOR)

Measurement	Location	Date	DNL (dBA)
NOR-1	78 feet from the center of North 1st Street.	04/13/06 to 04/14/06	69
NOR-2	87 feet from the center of Tasman Drive	04/13/06 to 04/14/06	68
NOR-3	54 feet from the center of Vista Montana.	04/13/06 to 04/14/06	67
NOR-4	55 feet from the center of Zanker Road by Henry Ford II Drive intersection.	09/18/06 to 09/20/06	70
NOR-5	150 feet from closest lane of Highway 101, Airport Parkway and Bayshore frontage.	06/27/06 to 06/28/06	60
NOR-6	50 feet from centerline of North First Street, near Century Center Court.	06/27/06 to 06/28/06	69
NOR-7	325 feet from the center of I-880, at North 1st Street.	09/27/07 to 10/02/07	67-69
NOR-8	105 feet from the center of the North 1st Street VTA.	09/27/07 to 10/02/07	70-71

Berryessa Planning Area (BER)

Measurement	Location	Date	DNL (dBA)
BER-1	150 feet to Interstate 680, in Cataldi Park off Bethany Avenue.	03/09/09 to 03/11/09	74
BER-2	900 east of the center of I-880, between Brokaw Road and Ridder Park Drive.	08/29/07 to 08/30/07	65
BER-3	100 feet (reference distance) from trucks in CA Waste Solutions.	02/14/07 to 02/20/07	59

West Valley Planning Area (WV)

Measurement	Location	Date	DNL (dBA)
WV-1	45 feet from the center of Bark Lane, 150 feet West of Weyburn Lane.	01/10/07 to 01/11/07	60
WV-2	(*Outside San Jose Limits*) 1566 Duckett Way, residences closest to Hwy 85.	06/22/06 to 06/27/06	54-55
WV-3	Duvall Drive, 90 feet to center of nearest lane of Hamilton, across from Westfield mall.	02/18/09 to 02/19/09	62
WV-4	30 feet from the center of the nearest lane of Saratoga Avenue, south of Kiely Boulevard between I-280 & Stevens Creek Boulevard.	03/09/09 to 03/11/09	68
WV-5	105 feet to the center of San Tomas Expressway, 525 feet to edge of Hamilton Avenue.	02/18/09 to 02/19/09	67
WV-6	54 feet from the centerline of Campbell Avenue.	08/22/05 to 08/24/05	65-66
WV-7	Campbell Avenue, 140 feet from the center of the nearest Union Pacific Railroad line.	08/22/05 to 08/24/05	62
WV-8	27 feet from centerline of Campbell Avenue.	01/01/04	67

Central Planning Area (CEN)

Measurement	Location	Date	DNL (dBA)
CEN-1	40 feet from centerline of Stockton Avenue near West Julian Street.	07/24/06 to 07/26/06	69-70
CEN-2	60 feet from centerline of West Julian Street near Stockton Avenue.	07/24/06 to 07/26/06	65
CEN-3	Autumn Street near State Route 87	11/09/2006 to 11/10/06	71
CEN-4	56 feet from the center of Coleman Avenue	11/09/2006 to 11/10/06	75
CEN-5	60 feet from the centerline of the Alameda, where Stockton Avenue intersects.	08/03/06 to 08/05/06	73
CEN-6	90 feet from centerline of Auzerais Avenue, South of W. San Carlos Avenue	02/14/07 to 02/20/07	64
CEN-7	65 feet from centerline of W. San Carlos Street.	02/14/07 to 02/20/07	70
CEN-8	50 feet from the center of W. San Carlos Street	03/28/07 to 03/29/07	71
CEN-9	350 feet from the center of SR 87, about 185 feet from the southbound on ramp.	10/02/07 to 10/05/07	68-69
CEN-10	60 feet from the center of East Santa Clara Street.	01/08/07 to 01/10/07	72
CEN-11	San Carlos Street, between Market Street and First Street.	11/16/07 to 11/17/07	72-73
CEN-12	Corner of East Santa Clara Street (40 feet from) and South 23rd Street	03/13/07 to 03/14/07	73
CEN-13	1090 East William Street (80 feet from centerline).	06/26/06	62

Alum Rock Planning Area (AR)

Measurement	Location	Date	DNL (dBA)
AR-1	69 feet from the centerline of North King Road, south of Mabury Road.	03/29/06 to 03/30/06	70
AR-2	200 feet from the centerline of Educational Park Drive, northeast of Schulte Drive.	03/21/08 to 03/26/08	55
AR-3	1936 Alum Rock Avenue (45 feet from centerline)	03/29/06 to 03/30/06	73
AR-4	45 feet from the centerline of McKee Road.	01/08/07 to 01/10/07	74
AR-5	45 feet to center of nearest lane of Story Road, between McGuiness and Capitol Expressway.	02/19/09 to 02/20/09	72

Willow Glen Planning Area (WG)

Measurement	Location	Date	DNL (dBA)
WG-1	Santa Clara Medical Center, 50 feet to the centerline of Enborg Lane.	03/28/07 to 03/29/07	65
WG-2	Santa Clara Medical Center, Thornton Way	03/28/07 to 03/29/07	65
WG-3	Santa Clara Medical Center, Moorpark Avenue.	03/28/07 to 03/29/07	74
WG-4	48 feet to the centerline of Borello Drive, 96 feet to center of RR tracks	02/18/09 to 02/19/09	64
WG-5	123 feet to the center of Bascom Avenue, 27 feet to the center of Curtner Road.	02/18/09 to 02/19/09	70
WG-6	50 feet from the centerline of Bascom Avenue, south of Interstate 280.	03/13/07 to 03/14/07	72
WG-7	3200 Leigh Avenue (45 feet from the centerline).	04/13/06 to 04/14/06	69
WG-8	3231 Ensalmo Avenue, 60 feet to the center of the nearest lane of Hillsdale Avenue.	02/18/09 to 02/19/09	69
WG-9	54 feet to the center of the nearest lane of Celestine, and 62 feet to centerline of Curtner Avenue.	02/19/09 to 02/20/09	68

South Planning Area (SOU)

Measurement	Location	Date	DNL (dBA)
SOU-1	90 feet from the centerline of Tully Road, 15 feet to center of La Ragoine	02/19/09 to 02/20/09	73
SOU-2	150 feet from the centerline of Capitol Expressway, by Seven Trees Boulevard.	08/10/06 to 08/11/06	74

Evergreen Planning Area (EVE)

Measurement	Location	Date	DNL (dBA)
EVE-1	24 feet from the centerline of Glen Hanleigh Drive, 270 feet from Capitol Expressway.	02/19/09 to 02/20/09	66
EVE-2	33 feet from the centerline of Aborn Road, 900 feet from White Road/San Felipe Road	02/19/09 to 02/20/09	77
EVE-3	60 feet from the center of nearest lane of San Felipe Road at Scenic Meadow Lane.	03/09/09 to 03/11/09	62

Cambrian/Pioneer Planning Area (CP)

Measurement	Location	Date	DNL (dBA)
CP-1	5733 Tucson Drive, 100 feet from the center of Almaden Expressway.	02/09/09 to 02/10/09	70

Edenvale Planning Area (EDE)

Measurement	Location	Date	DNL (dBA)
EDE-1	240 feet from the center of Santa Teresa Boulevard on Glenbury Way.	02/09/09 to 02/10/09	70
EDE-2	65 feet from center of Blossom Hill Drive along Farmhouse Court.	02/09/09 to 02/10/09	72
EDE-3	70 feet from the centerline of Santa Teresa Boulevard south of Hwy 85.	08/16/06 to 08/18/06	70
EDE-4	50 feet from the center of Silver Leaf Road.	02/09/09 to 02/10/09	66
EDE-5	115 feet from the center of Santa Teresa Boulevard at Miyuki Drive.	02/09/09 to 02/10/09	66

Almaden Planning Area (ALM)

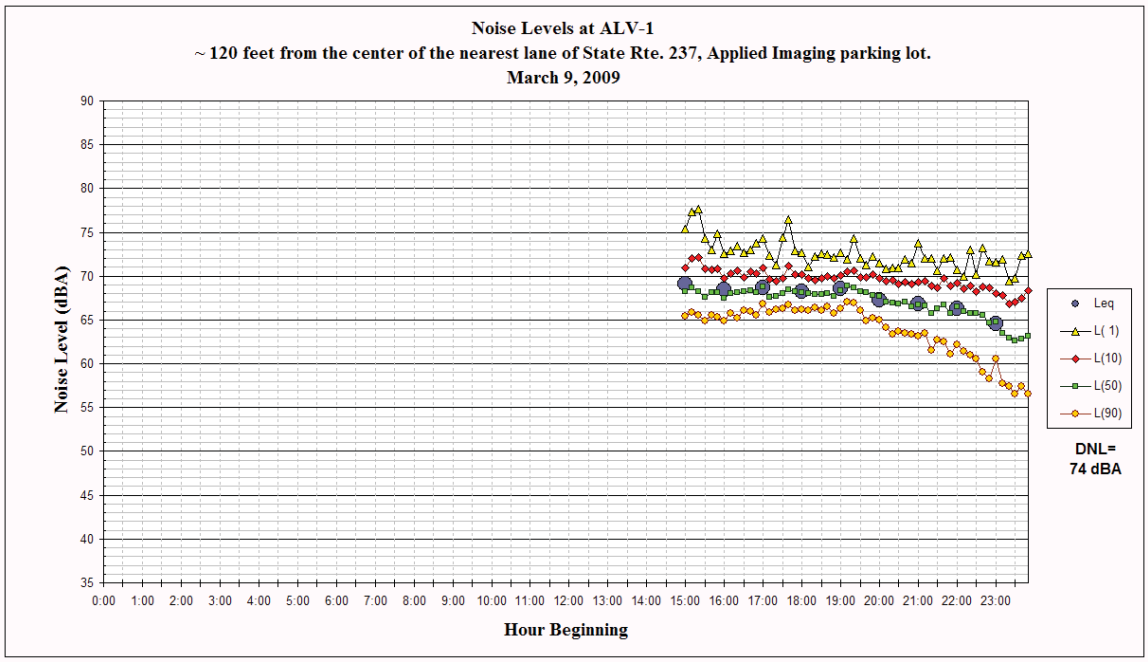
Measurement	Location	Date	DNL (dBA)
ALM-1	110 feet from the center of the nearest lane of Almaden Expressway.	03/09/09 to 03/11/09	56

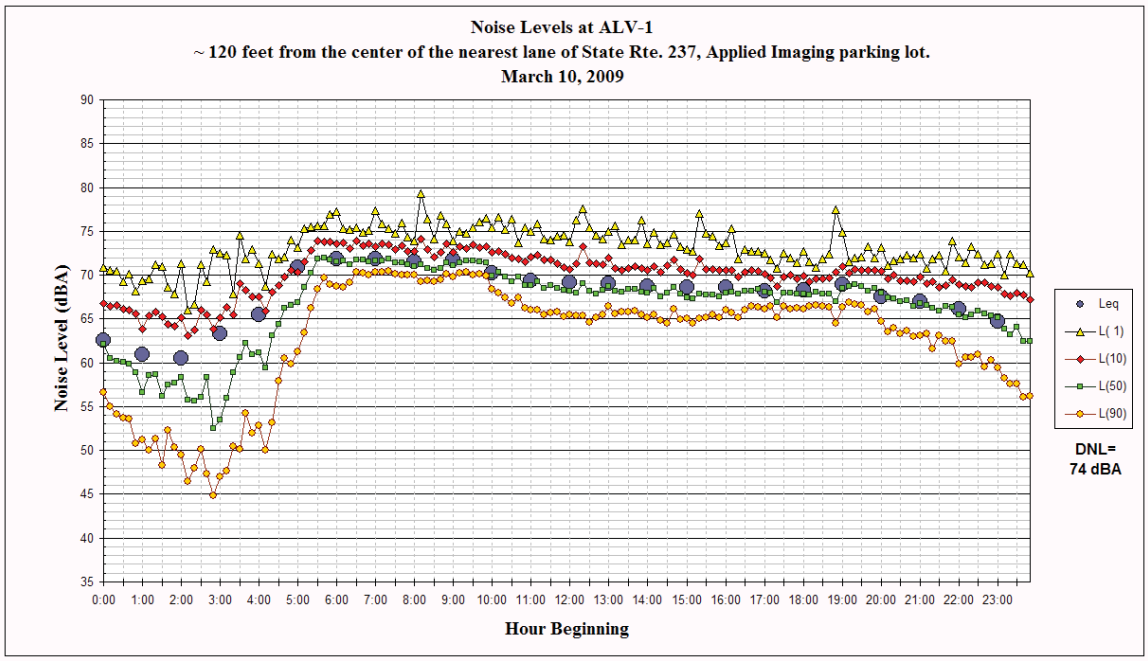
Coyote Planning Area (COY)

Measurement	Location	Date	DNL (dBA)
COY-1	65 feet from the centerline of McKean Road.	7/6/2005 to 07/07/05	66
COY-2	90 feet from the centerline of Bailey Avenue.	7/6/2005 to 07/07/05	66
COY-3	100 feet from the centerline of Santa Teresa Boulevard.	7/12/2005 to 07/14/05	68-69
COY-4	20 feet from the centerline of Santa Teresa Boulevard.	7/12/2005 to 07/14/05	72-73
COY-5	65 feet from the centerline of Palm Avenue.	7/12/2005 to 07/14/05	66

Summary of Short-Term Noise Measurement Data

Noise Measurement	Measurement Location	Date/ Time	Noise Level (dBA)					
			L_{max}	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	L_{eq}
WV-3a	20367 Bollinger Way, 24 feet from the center of the nearest lane.	02/18/09 15:00 to 15:10	79	75	72	67	55	68
WV-4a	855 Saratoga Avenue, 26 feet from the center of the nearest lane.	03/11/09 13:18 to 13:28	82	77	74	69	61	71
WV-5a	51 feet west of the center of the nearest lane of Hamilton Avenue.	02/18/09 12:10 to 12:20	81	79	74	70	60	71
AR-5a	1227 S. White Road, 21 feet from center of nearest lane.	02/19/09 14:50 to 15:00	78	76	74	70	64	71
WG-4a	45 feet from the center of the UPRR at Southwest Expressway.	02/19/09 10:50 to 11:00	80	79	68	57	53	66
WG-5a	48 feet from the center of nearest lane of Camden Avenue at New Jersey Avenue.	02/18/09 13:20 to 13:30	81	80	74	69	60	71
WG-8a	30 feet from the center of Meridian Avenue.	02/18/09 13:50 to 14:00	77	72	66	60	54	63
SOU-1a	42 feet from the center of the nearest lane of Tully Road.	02/20/09 11:45 to 11:55	81	79	75	71	62	72
SOU-1b	2010 Monterey Highway, 45 feet from the centerline.	02/20/09 12:25 to 12:35	81	80	76	70	62	72
SOU-1c	371 Cas Drive, 81 feet from the nearest lane of Capitol Expressway.	02/19/09 15:30 to 15:40	75	73	70	66	61	67
EVE-2a	3484 Keaton Loop, 70 feet to the center of San Felipe Road.	02/20/09 10:40 to 10:50	77	74	72	67	53	69
EVE-2b	55 feet from the center of Aborn Road near Ruby Street.	02/20/09 11:00 to 11:10	75	74	68	59	53	63
EVE-3a	60 feet from the nearest lane of San Felipe Road near Silver Oak Street.	03/11/09 10:50 to 11:00	76	74	65	56	42	61
CP-1a	5501 Camden Avenue, 42 feet from the center of the roadway.	02/10/09 13:20 to 13:30	80	74	70	64	57	67
CP-1b	57 feet from the nearest lane of Meridian Avenue near Helmond Lane.	02/10/09 13:00 to 13:10	66	65	61	54	48	57
CP-1c	78 feet from the center of Almaden Expressway.	02/10/09 12:10 to 12:20	77	74	72	65	59	68
CP-1d	Edge of Almaden Lake Park, 110 ft. to the center of the nearest northbound lane of Almaden Expressway.	02/10/09 12:30 to 12:40	82	77	72	68	61	69
EDE-2a	60 feet from the center of Blossom Hill Road.	02/10/09 11:30 to 11:40	74	74	71	65	56	67
EDE-4a	39 feet from the centerline of Basking Ridge at Danna Court.	02/10/09 10:30 to 10:40	72	70	65	61	58	62
EDE-5a	65 feet from the center of Santa Teresa Boulevard—in front of 6103, 540 ft. to Snell Ave. 72 ft. from Iowa Dr.	02/10/09 11:00 to 11:10	78	77	73	66	55	69
ALM-1a	Almaden Expwy and Old Almaden/O'Grady	03/11/09 12:25 to 12:35	80	76	62	57	51	62


Noise Levels at ALV-1
~ 120 feet from the center of the nearest lane of State Rte. 237, Applied Imaging parking lot.
March 9, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
74 dBA


Noise Levels at ALV-1
~ 120 feet from the center of the nearest lane of State Rte. 237, Applied Imaging parking lot.
March 10, 2009
Noise Level (dBA)
Hour Beginning
Leq
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DNL=
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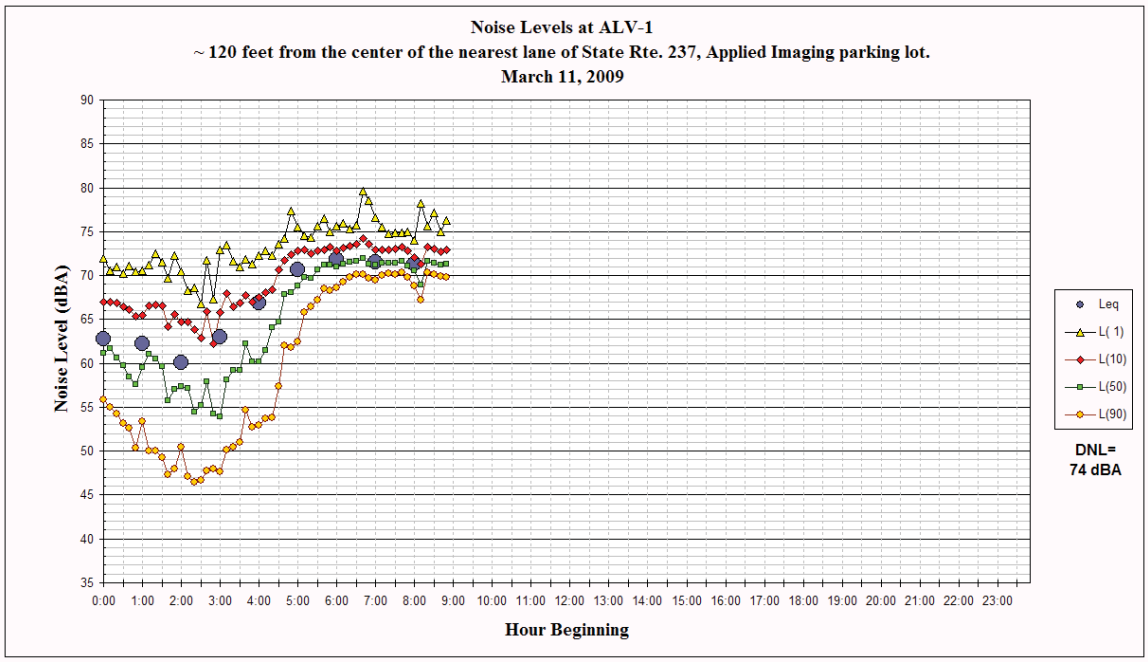
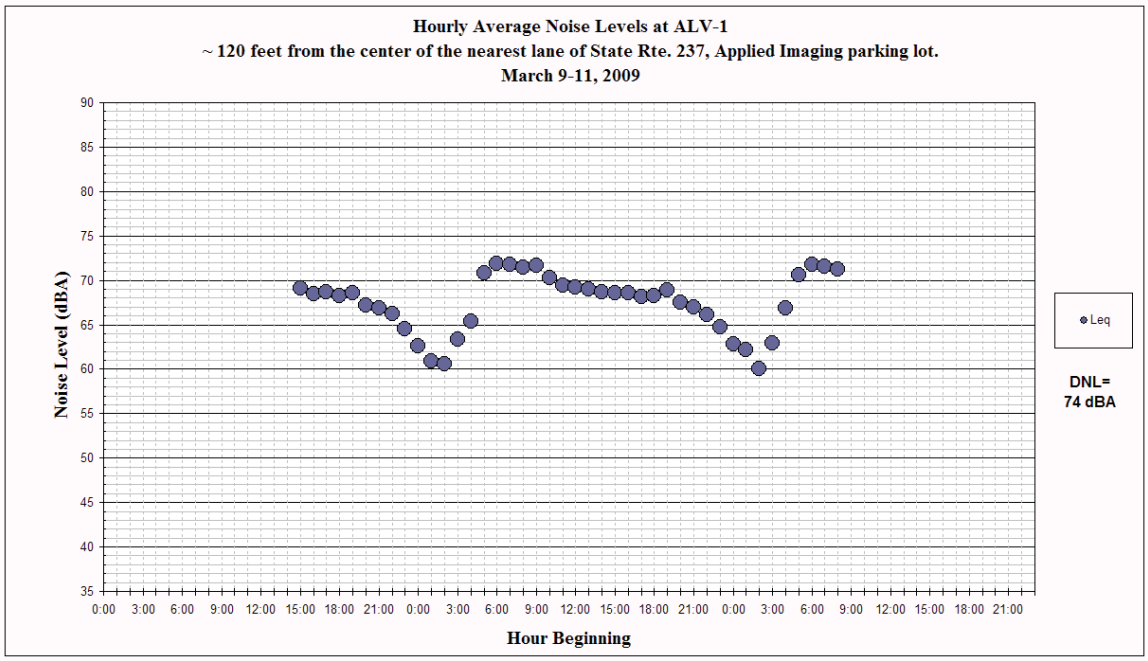
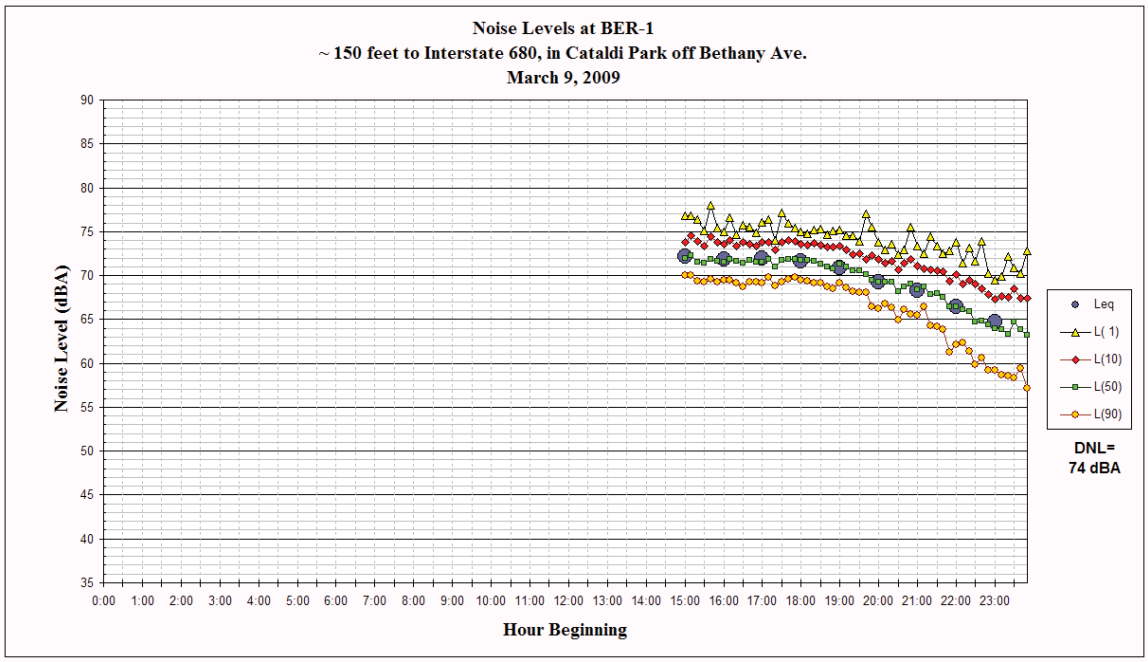
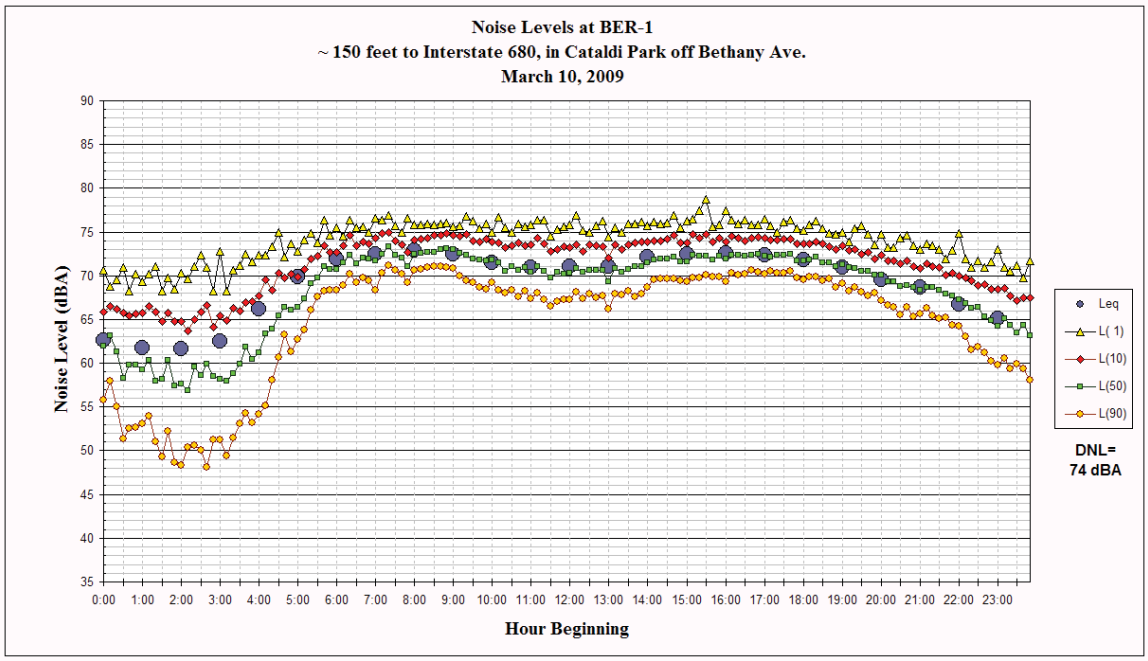
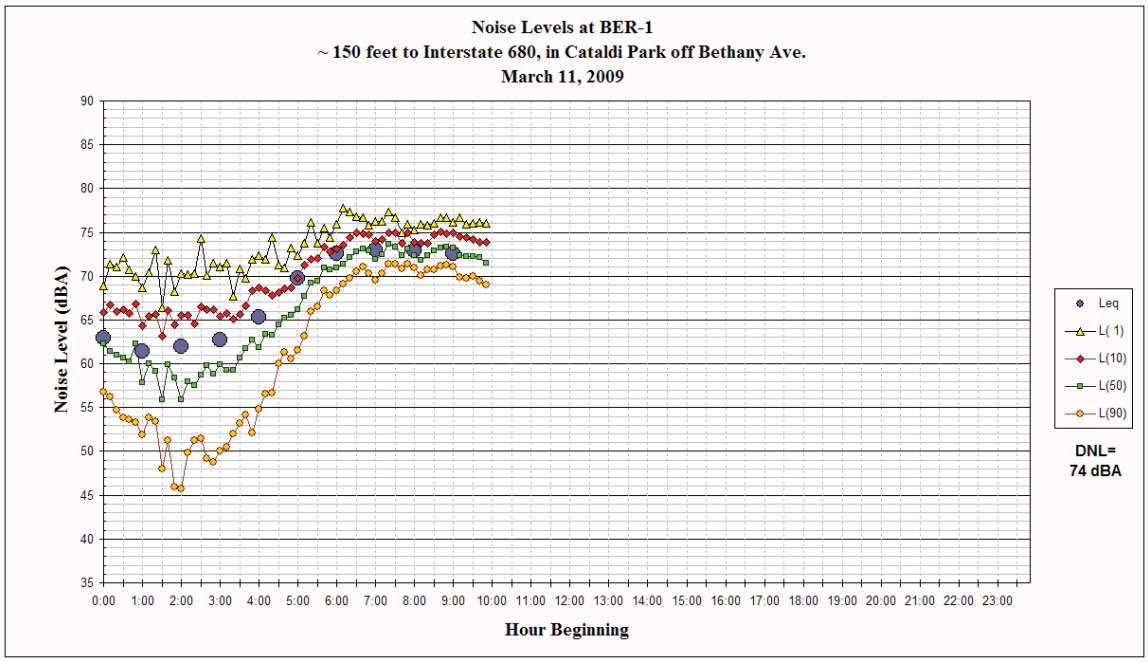
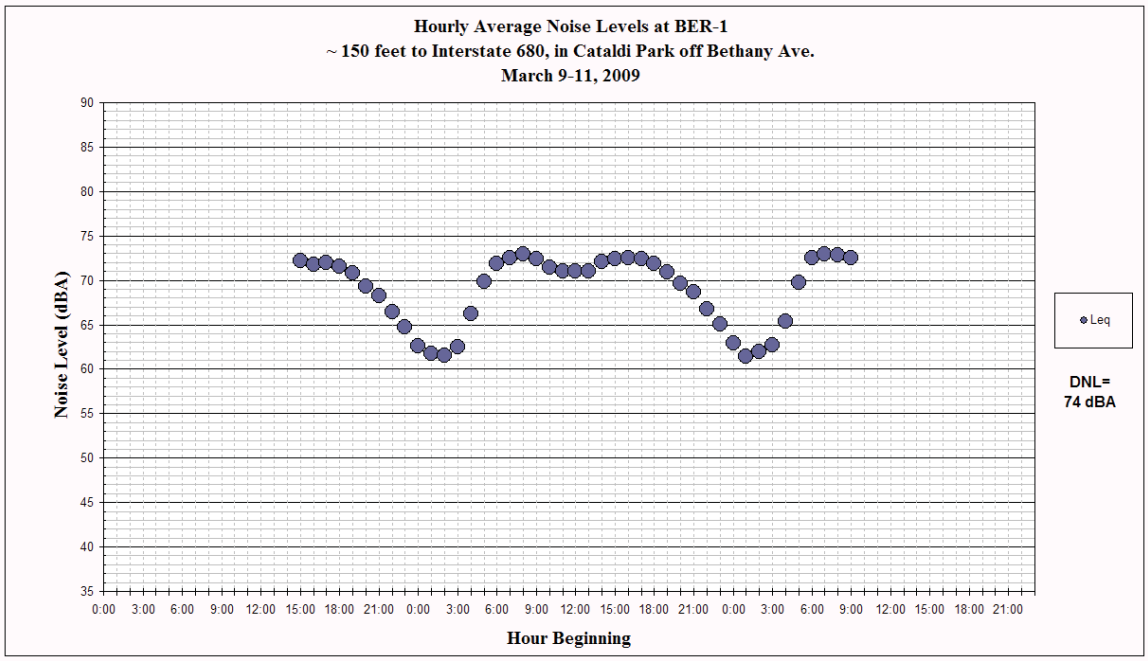

Noise Levels at ALV-1
~ 120 feet from the center of the nearest lane of State Rte. 237, Applied Imaging parking lot.
March 11, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
74 dBA

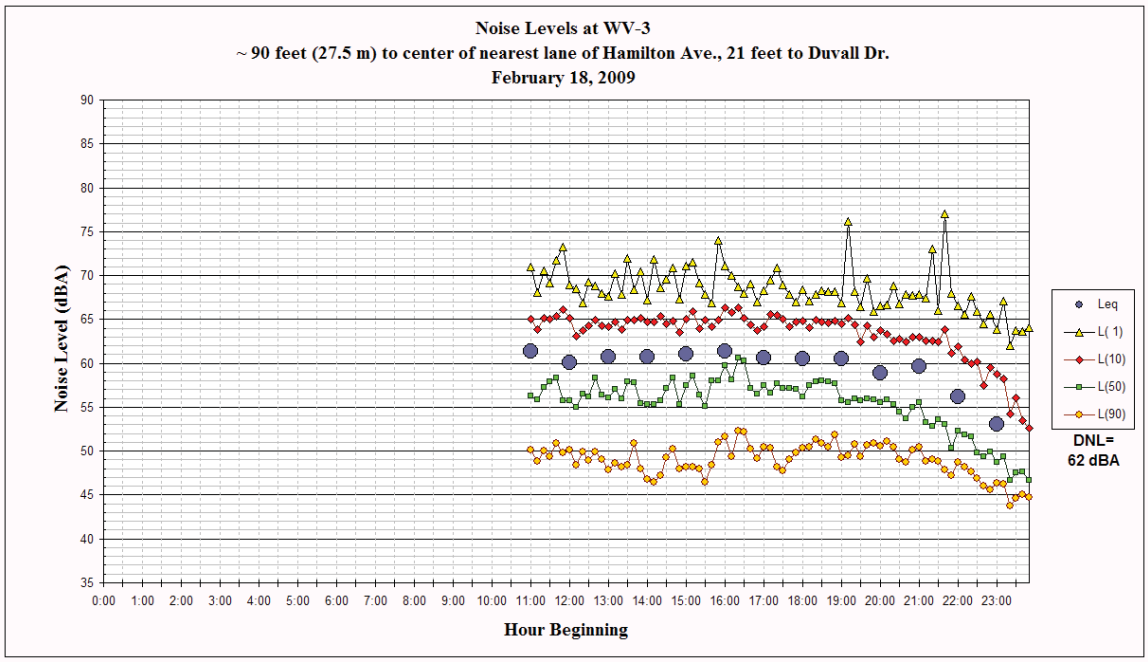

Hourly Average Noise Levels at ALV-1
~ 120 feet from the center of the nearest lane of State Rte. 237, Applied Imaging parking lot.
March 9-11, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
74 dBA

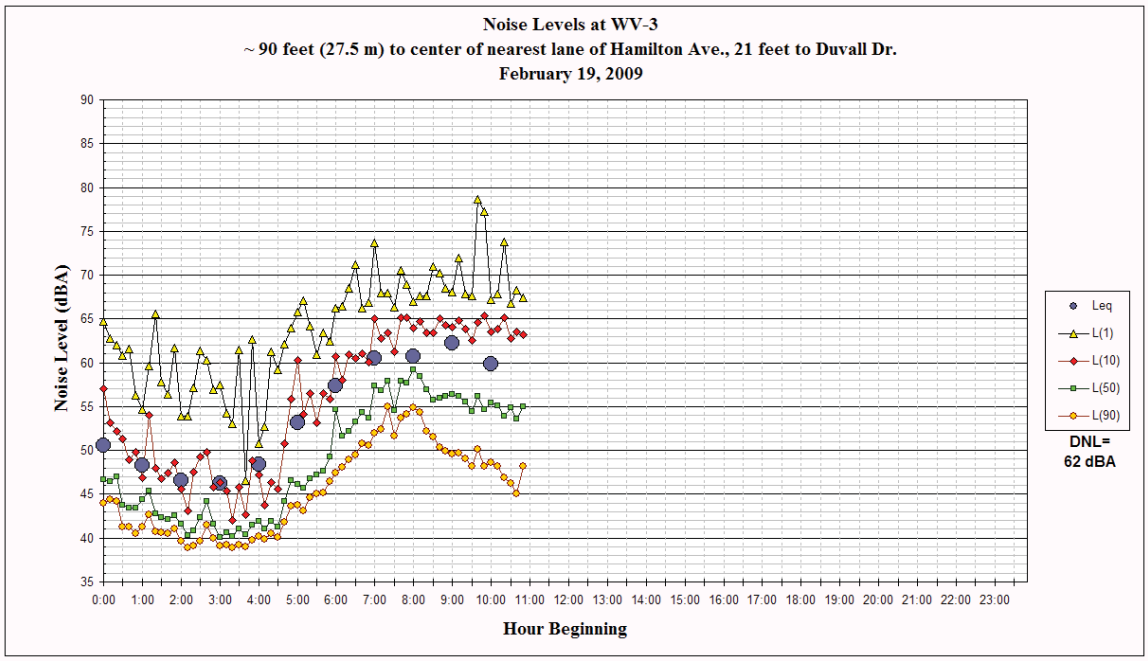

Noise Levels at BER-1
~ 150 feet to Interstate 680, in Cataldi Park off Bethany Ave.
March 9, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
74 dBA

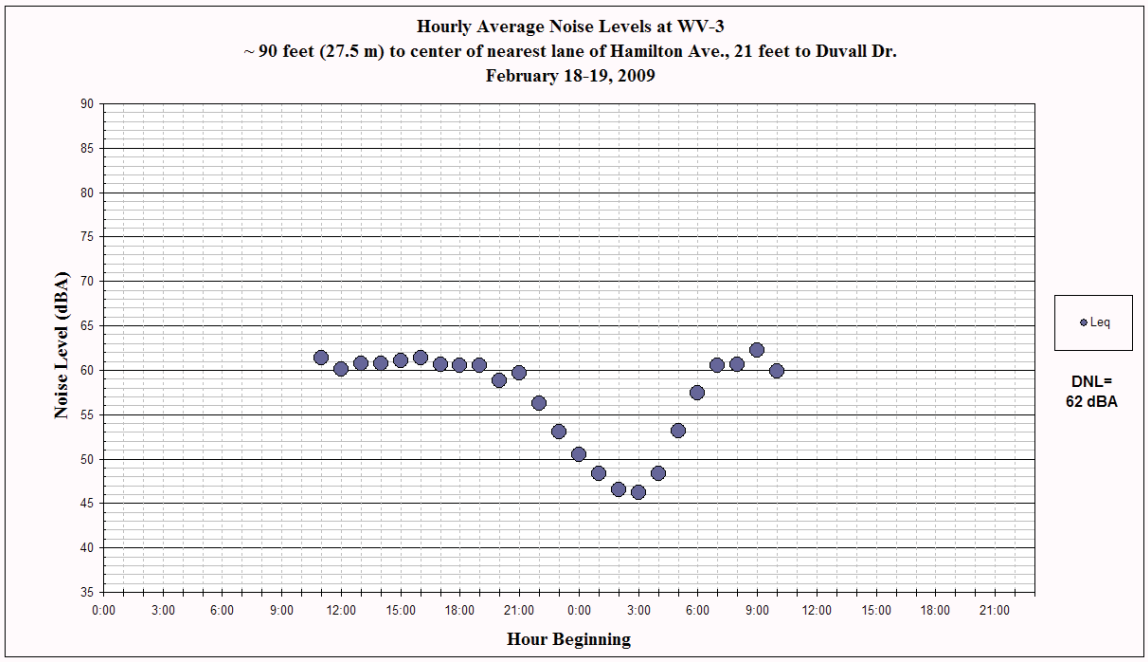

Noise Levels at BER-1
~ 150 feet to Interstate 680, in Cataldi Park off Bethany Ave.
March 10, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
74 dBA

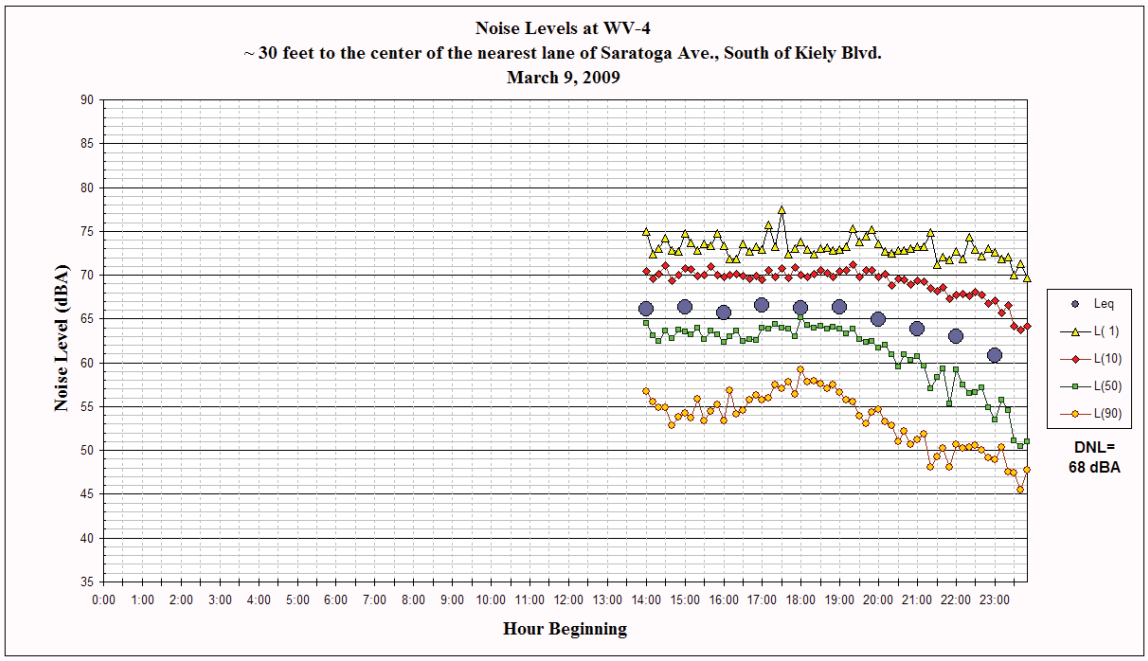

Noise Levels at BER-1
~ 150 feet to Interstate 680, in Cataldi Park off Bethany Ave.
March 11, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
74 dBA

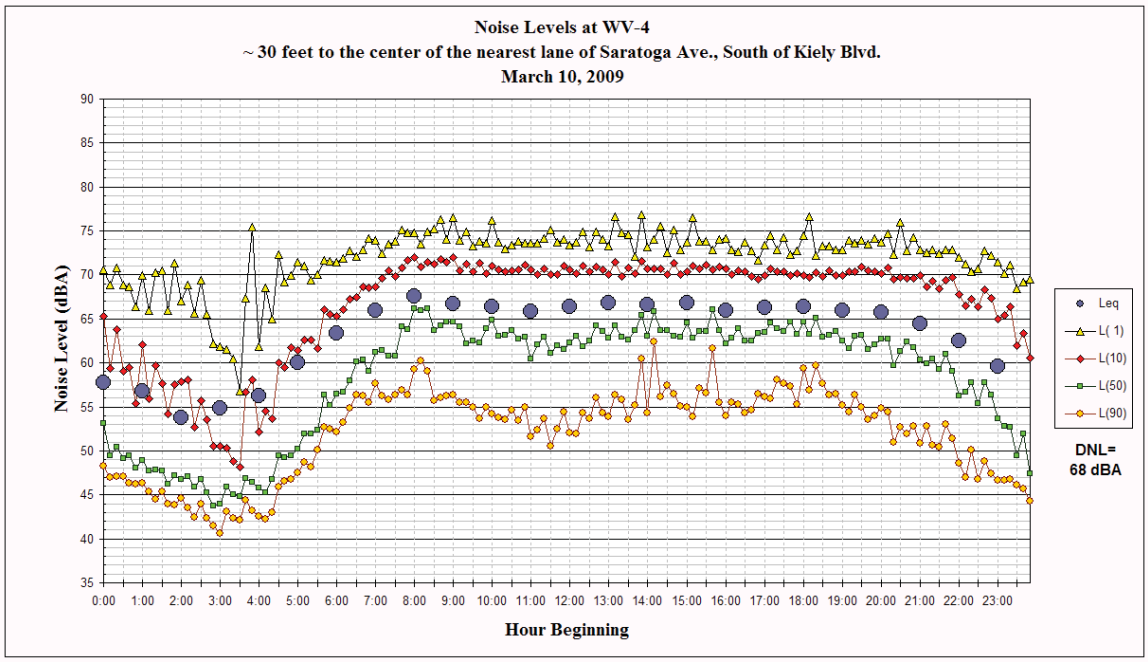

Hourly Average Noise Levels at BER-1
~ 150 feet to Interstate 680, in Cataldi Park off Bethany Ave.
March 9-11, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
74 dBA

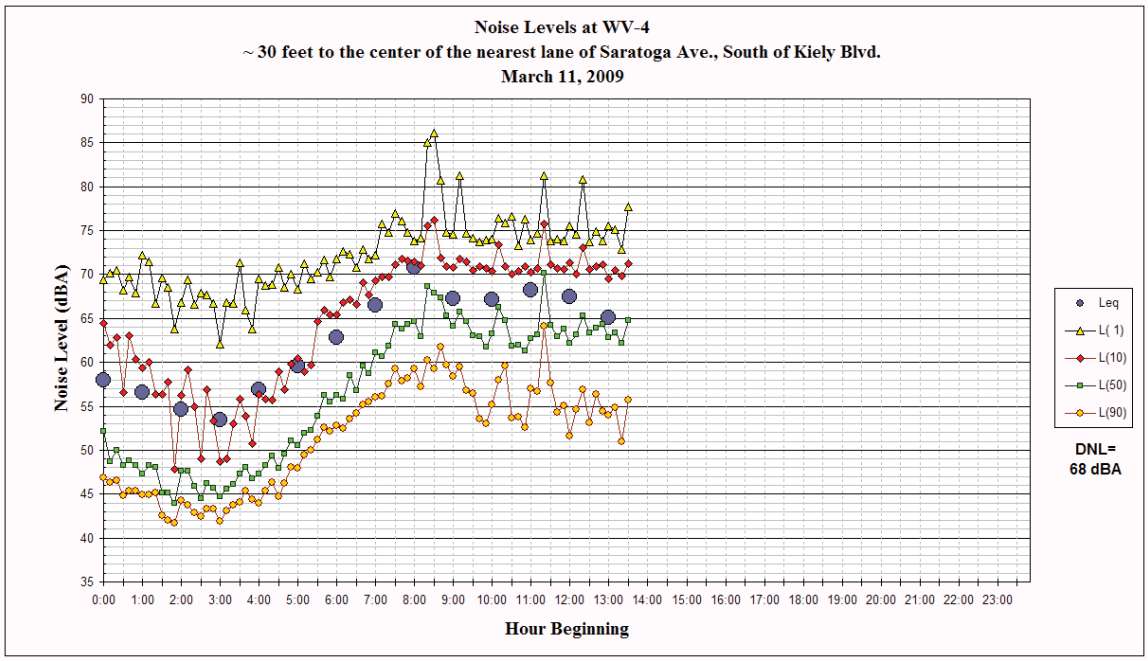

Noise Levels at WV-3
~ 90 feet (27.5 m) to center of nearest lane of Hamilton Ave., 21 feet to Duvall Dr.
February 18, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
62 dBA

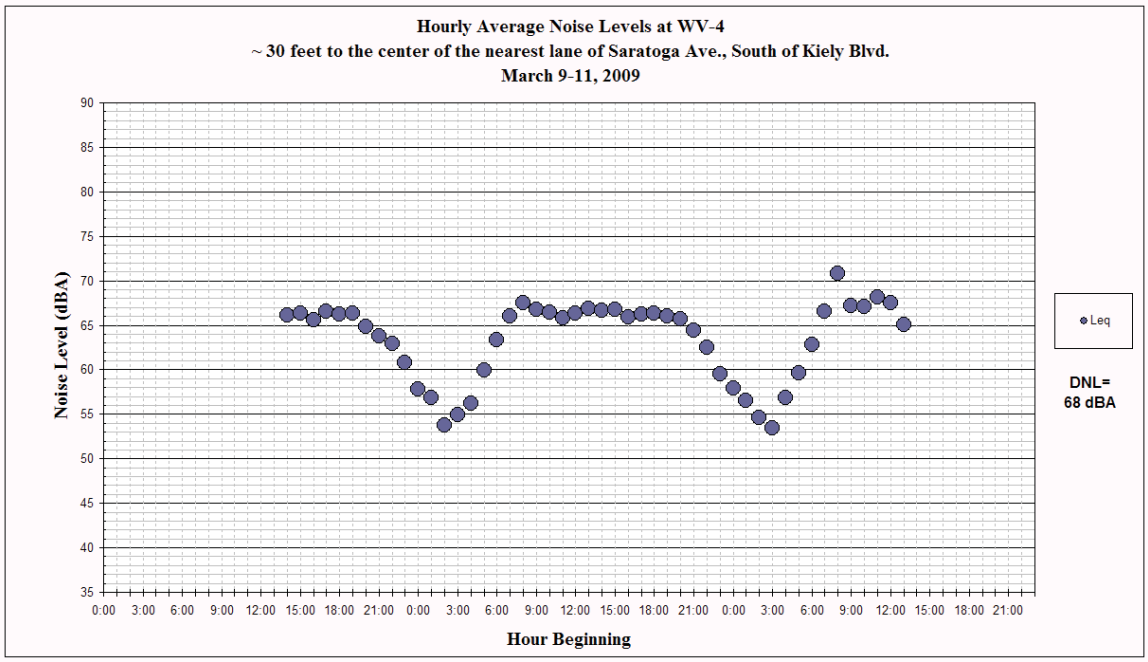

Noise Levels at WV-3
~ 90 feet (27.5 m) to center of nearest lane of Hamilton Ave., 21 feet to Duvall Dr.
February 19, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
62 dBA

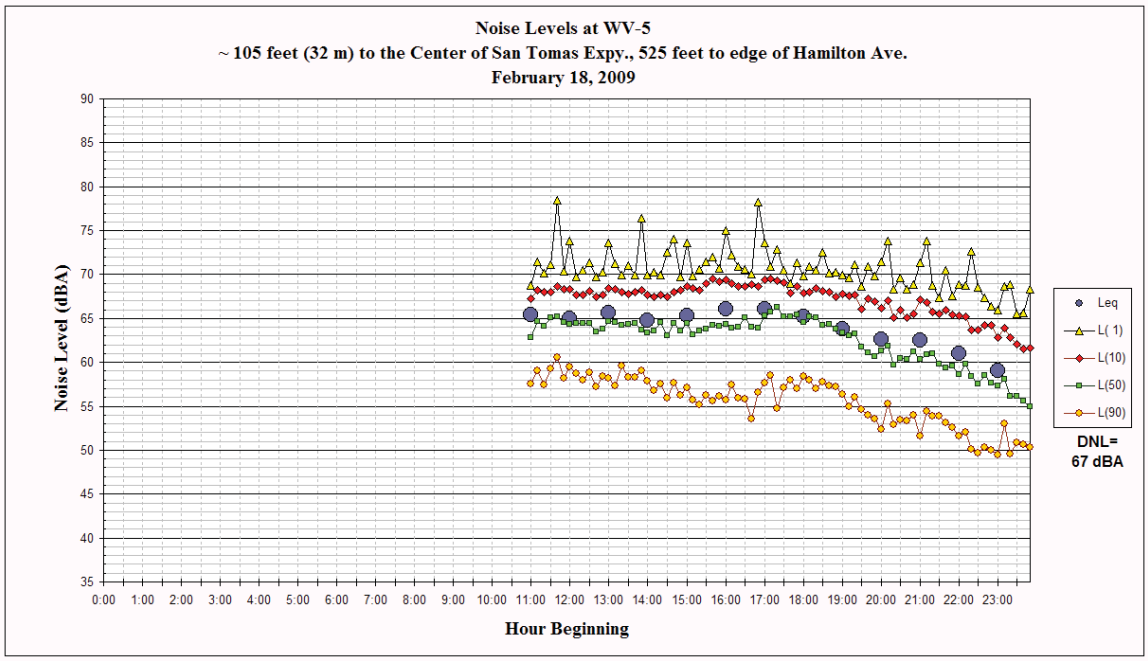

Hourly Average Noise Levels at WV-3
~ 90 feet (27.5 m) to center of nearest lane of Hamilton Ave., 21 feet to Duvall Dr.
February 18-19, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
62 dBA

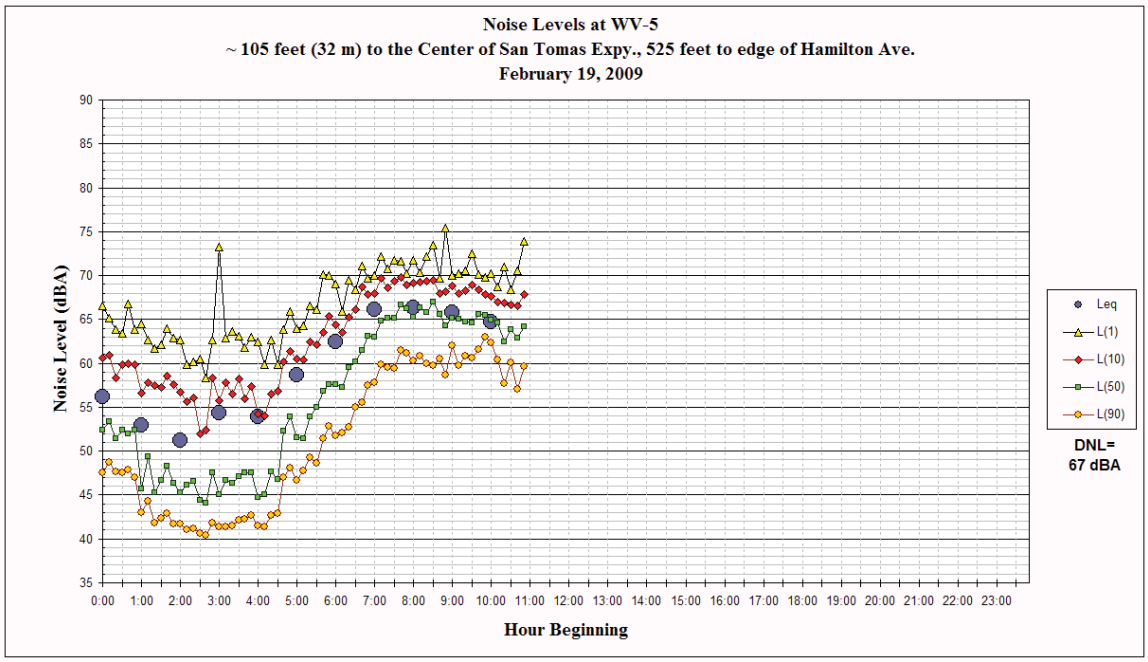

Noise Levels at WV-4
~ 30 feet to the center of the nearest lane of Saratoga Ave., South of Kiely Blvd.
March 9, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
68 dBA

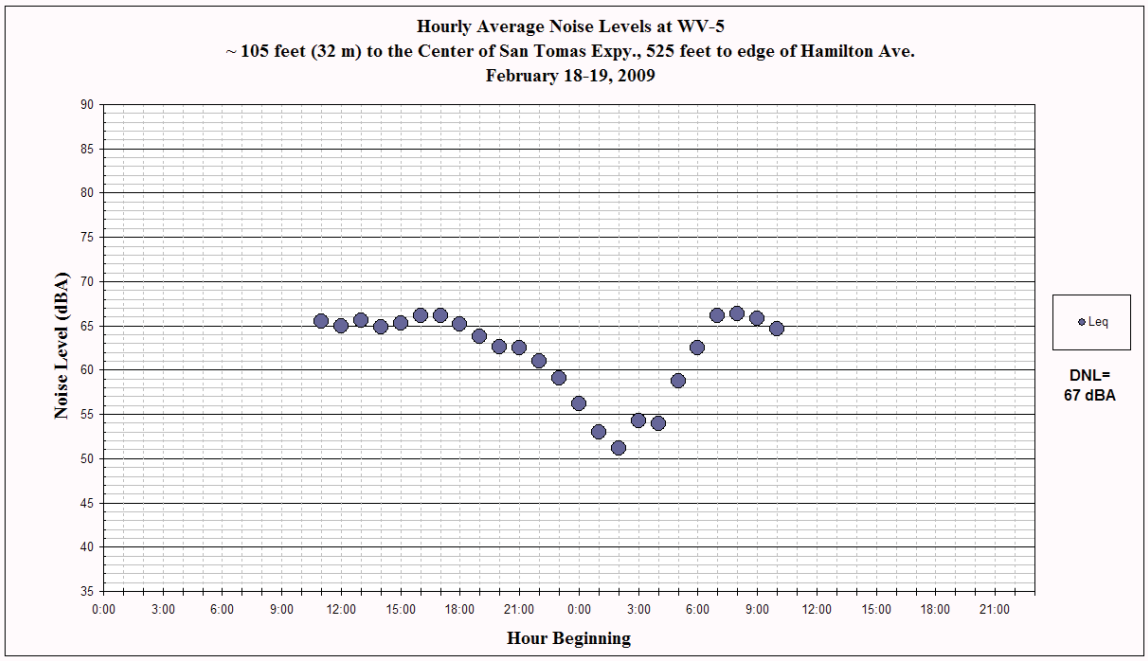

Noise Levels at WV-4
~ 30 feet to the center of the nearest lane of Saratoga Ave., South of Kiely Blvd.
March 10, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
68 dBA

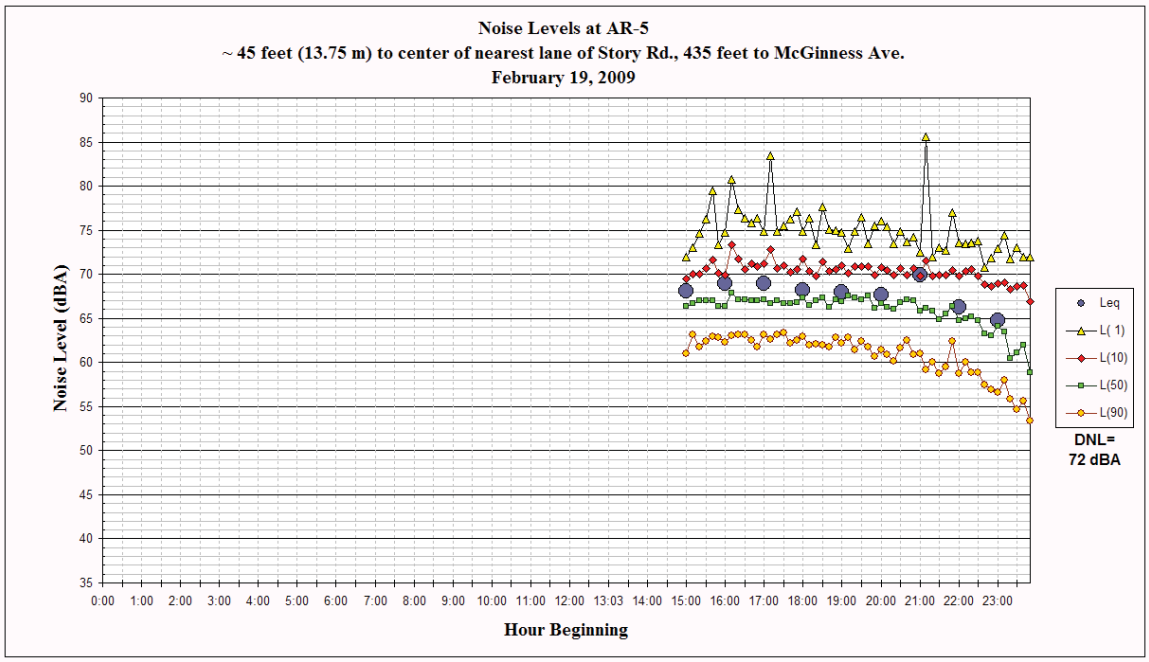

Noise Levels at WV-4
~ 30 feet to the center of the nearest lane of Saratoga Ave., South of Kiely Blvd.
March 11, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
68 dBA

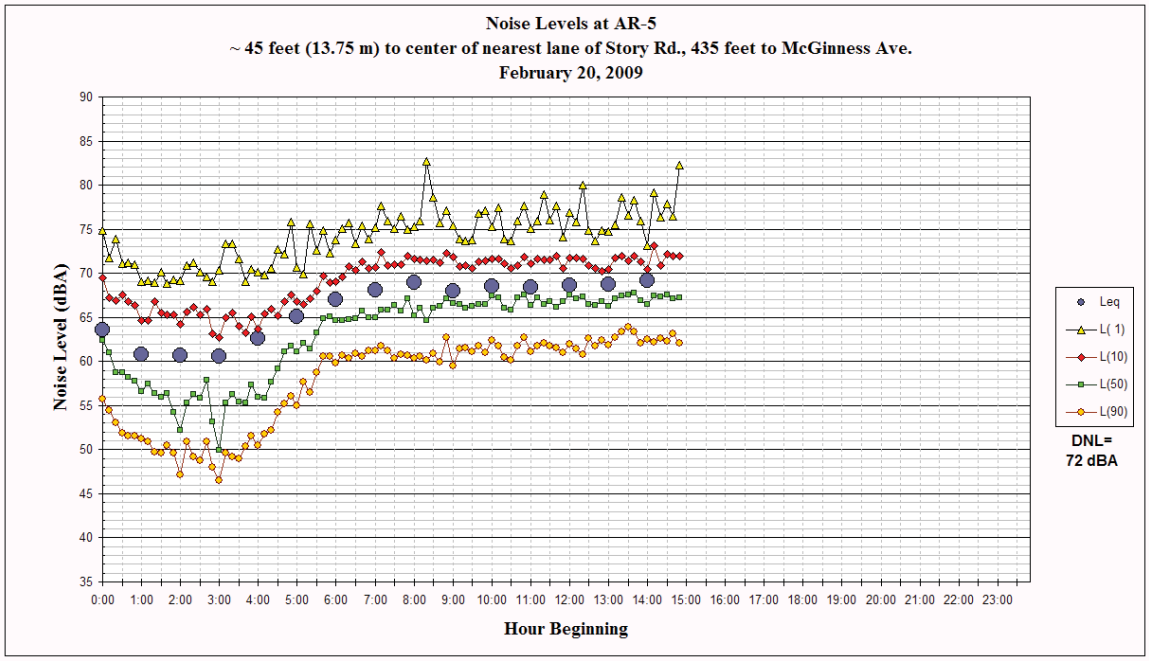

Hourly Average Noise Levels at WV-4
~ 30 feet to the center of the nearest lane of Saratoga Ave., South of Kiely Blvd.
March 9-11, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
68 dBA

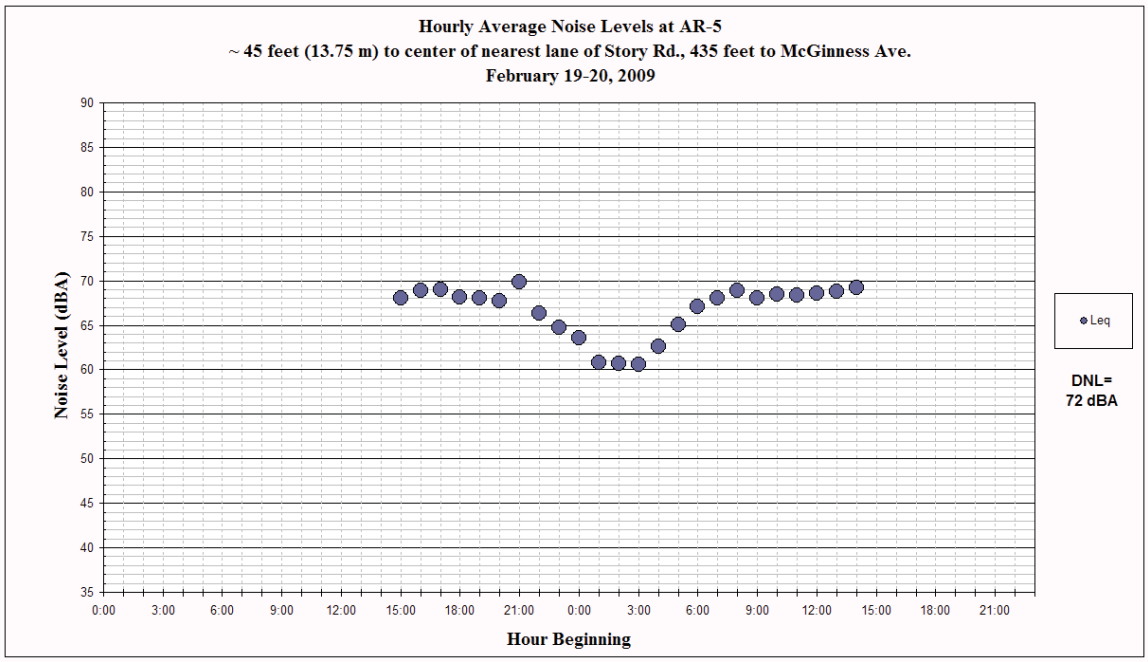

Noise Levels at WV-5
~ 105 feet (32 m) to the Center of San Tomas Expy., 525 feet to edge of Hamilton Ave.
February 18, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
67 dBA

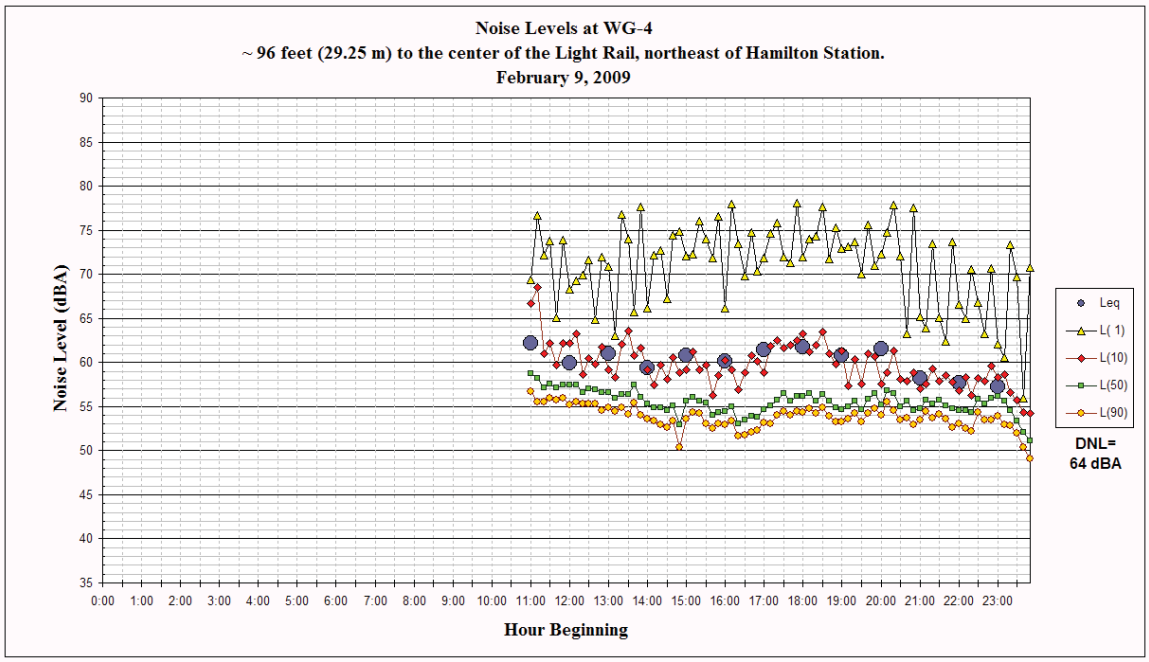

Noise Levels at WV-5
~ 105 feet (32 m) to the Center of San Tomas Expy., 525 feet to edge of Hamilton Ave.
February 19, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
67 dBA

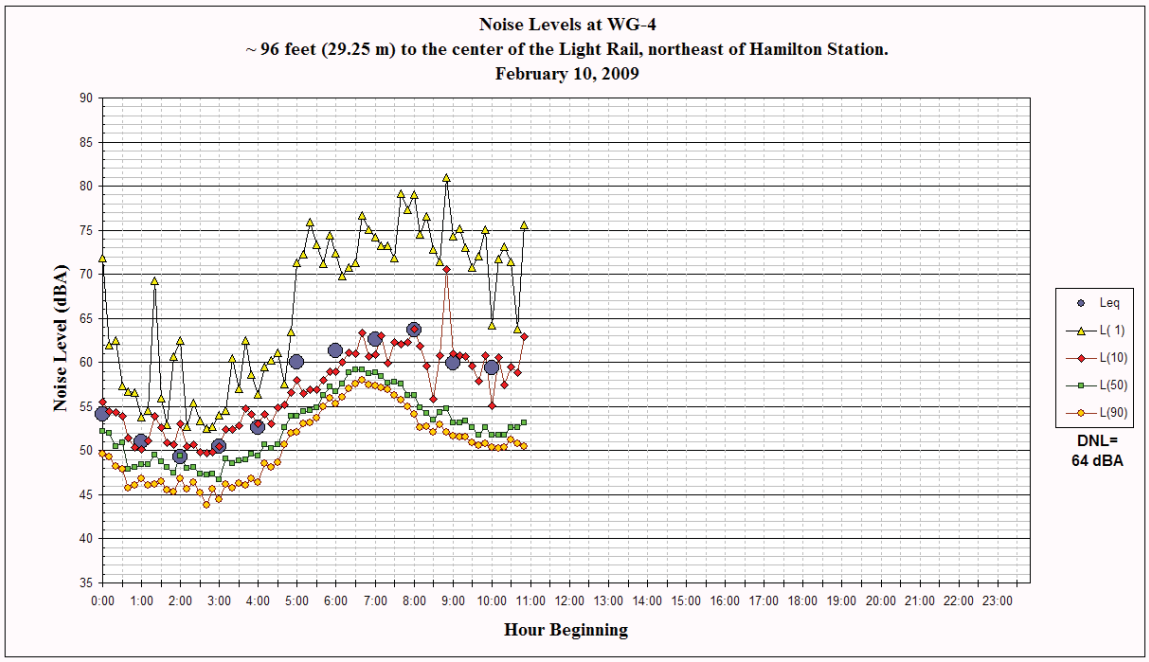

Hourly Average Noise Levels at WV-5
~ 105 feet (32 m) to the Center of San Tomas Expy., 525 feet to edge of Hamilton Ave.
February 18-19, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
67 dBA

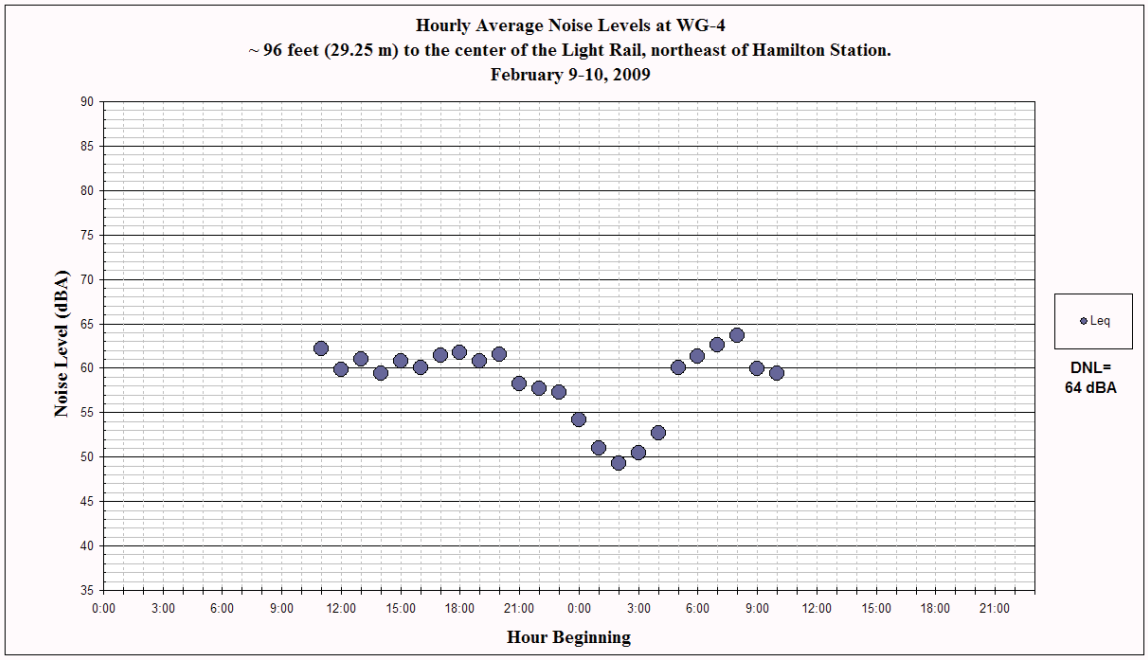

Noise Levels at AR-5
~ 45 feet (13.75 m) to center of nearest lane of Story Rd., 435 feet to McGinness Ave.
February 19, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
72 dBA

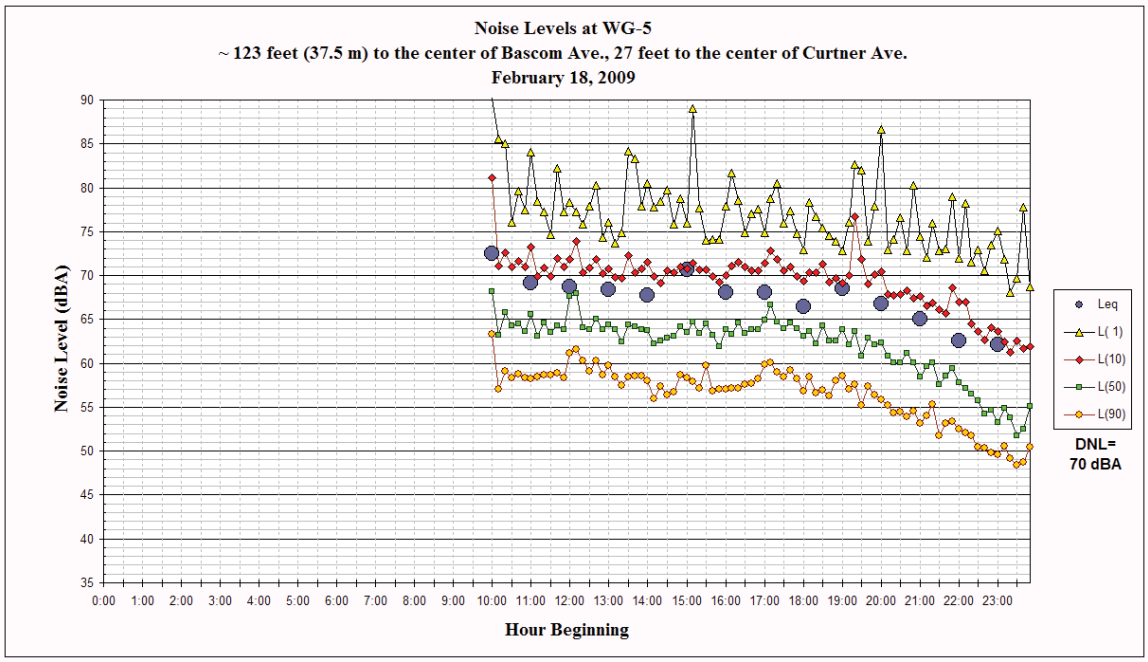

Noise Levels at AR-5
~ 45 feet (13.75 m) to center of nearest lane of Story Rd., 435 feet to McGinness Ave.
February 20, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
72 dBA

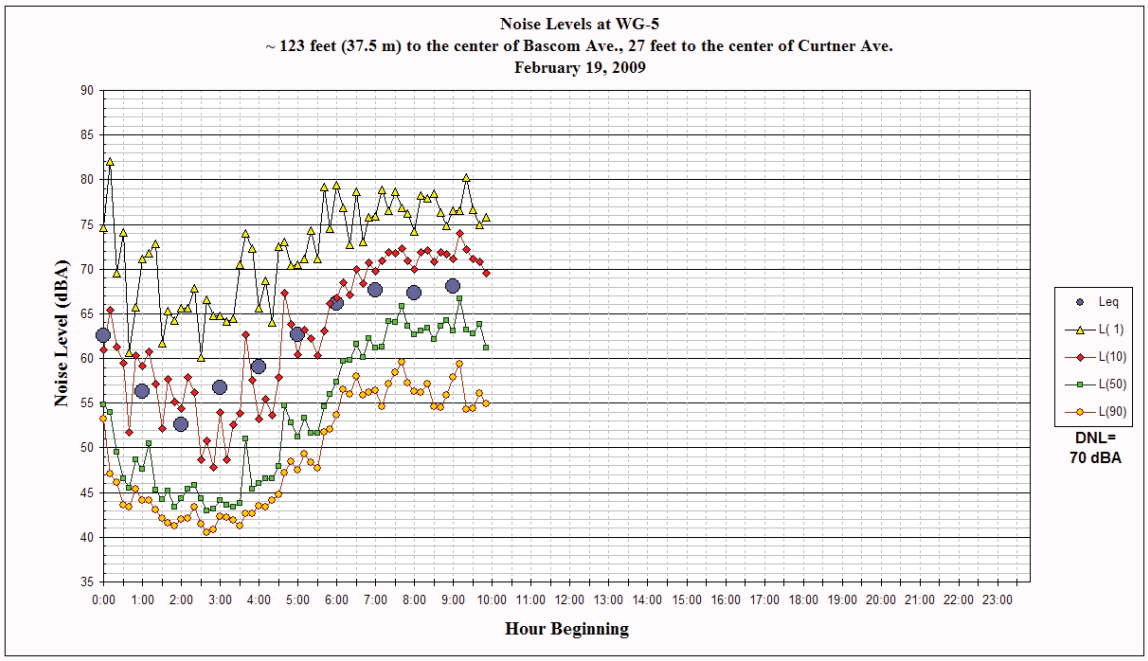

Hourly Average Noise Levels at AR-5
~ 45 feet (13.75 m) to center of nearest lane of Story Rd., 435 feet to McGinness Ave.
February 19-20, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
72 dBA

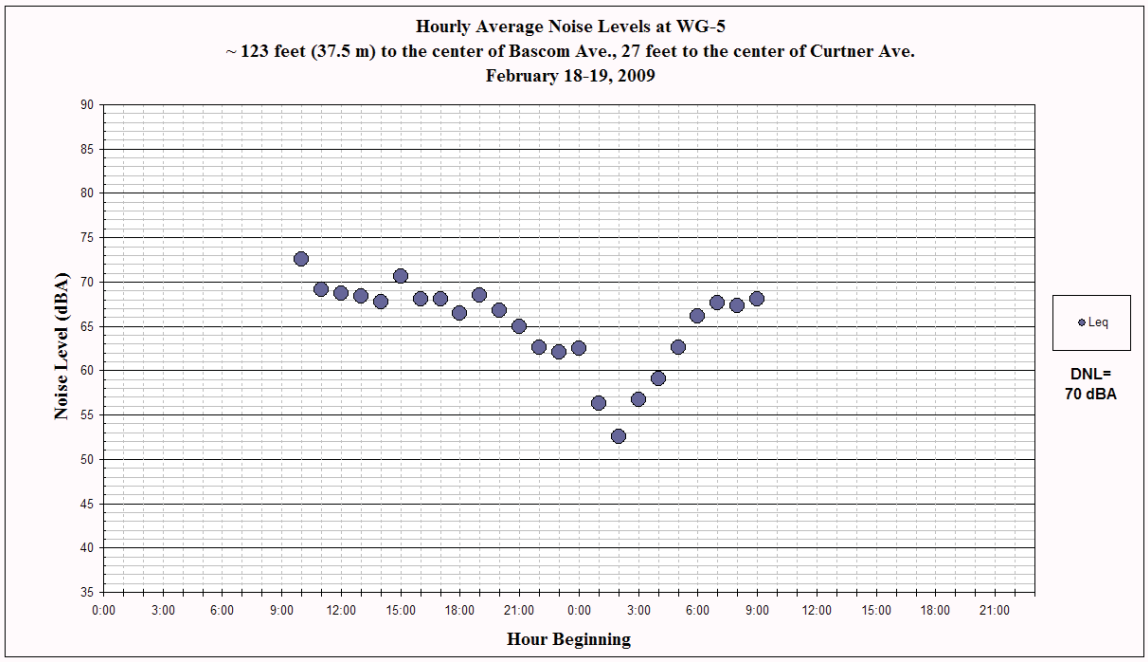

Noise Levels at WG-4
~ 96 feet (29.25 m) to the center of the Light Rail, northeast of Hamilton Station.
February 9, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
64 dBA

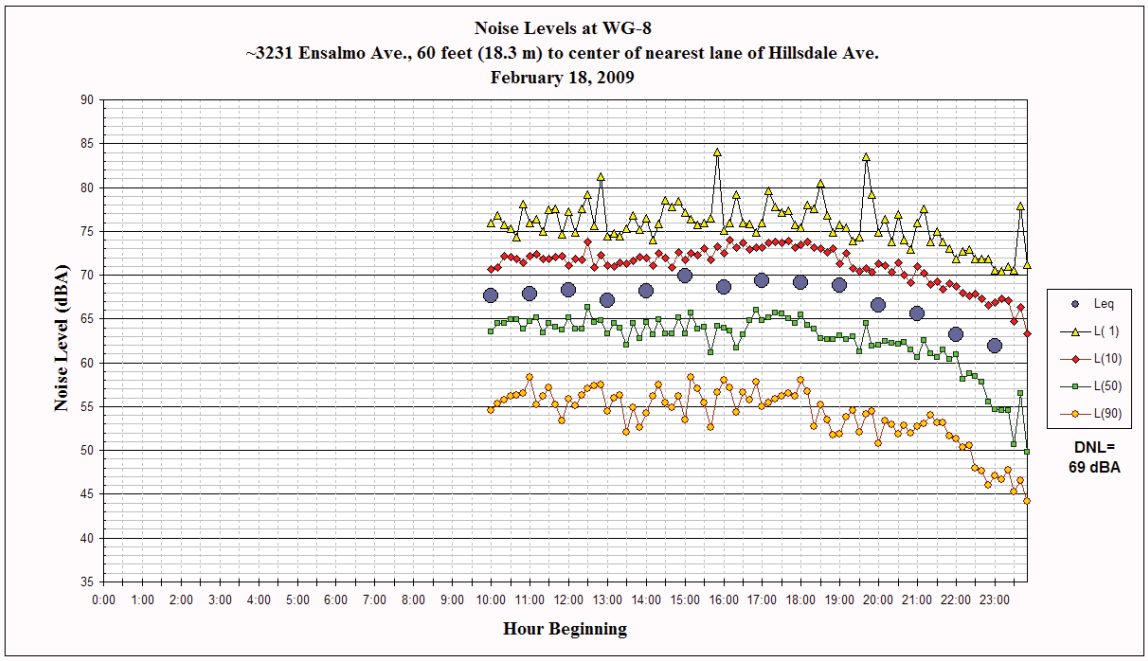

Noise Levels at WG-4
~ 96 feet (29.25 m) to the center of the Light Rail, northeast of Hamilton Station.
February 10, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
64 dBA

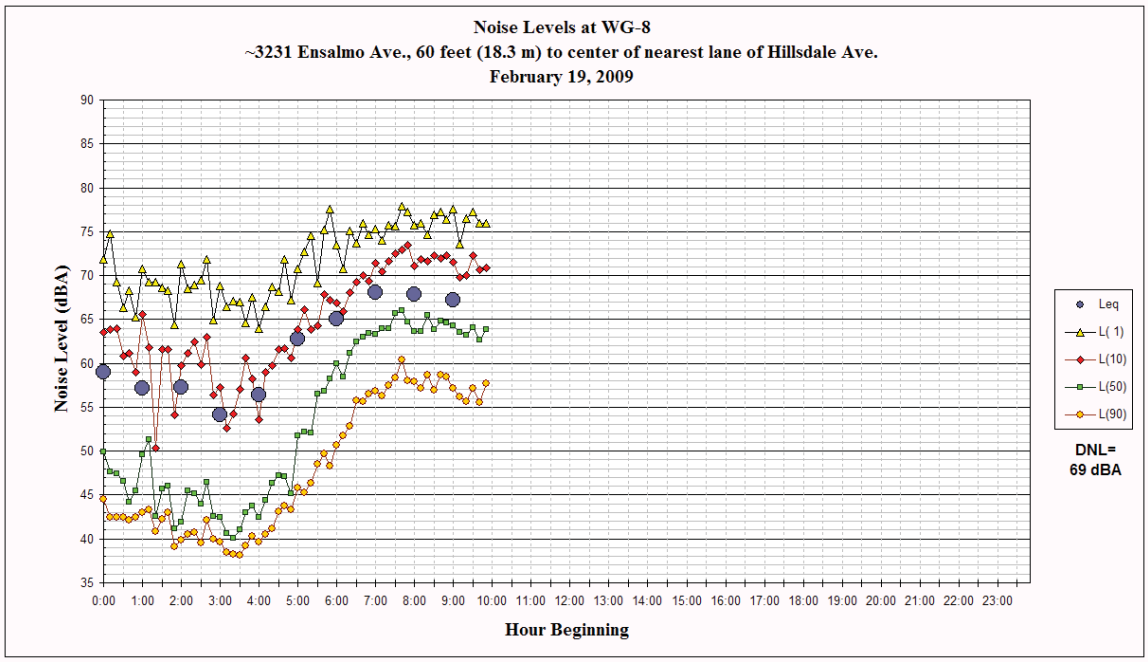

Hourly Average Noise Levels at WG-4
~ 96 feet (29.25 m) to the center of the Light Rail, northeast of Hamilton Station.
February 9-10, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
64 dBA

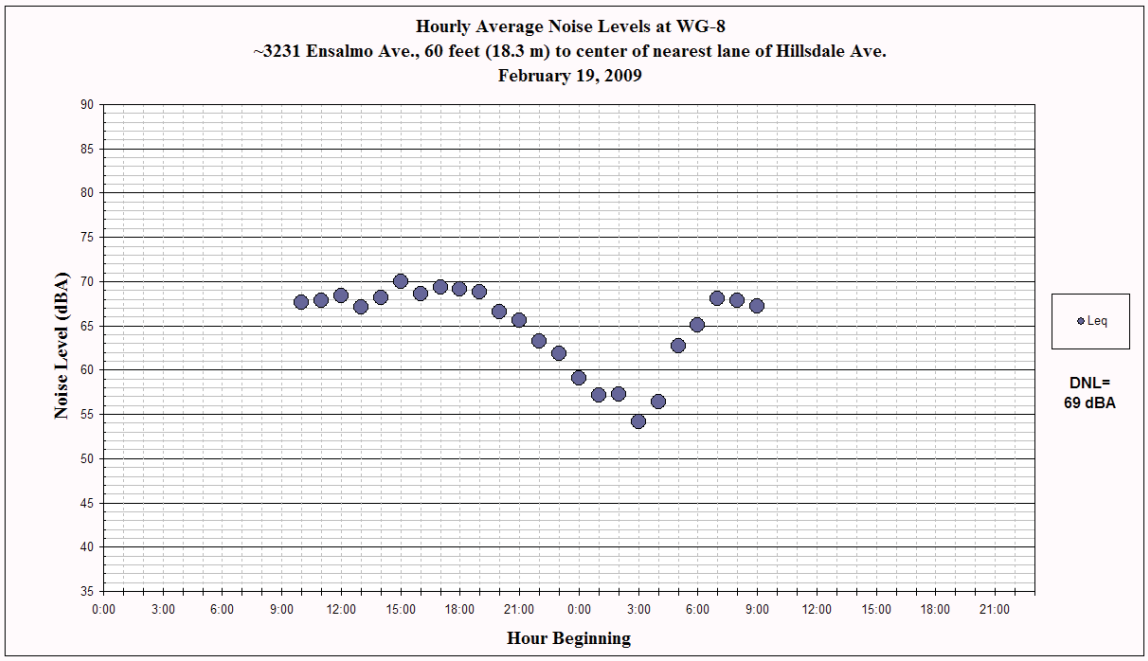

Noise Levels at WG-5
~ 123 feet (37.5 m) to the center of Bascom Ave., 27 feet to the center of Curtner Ave.
February 18, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
70 dBA

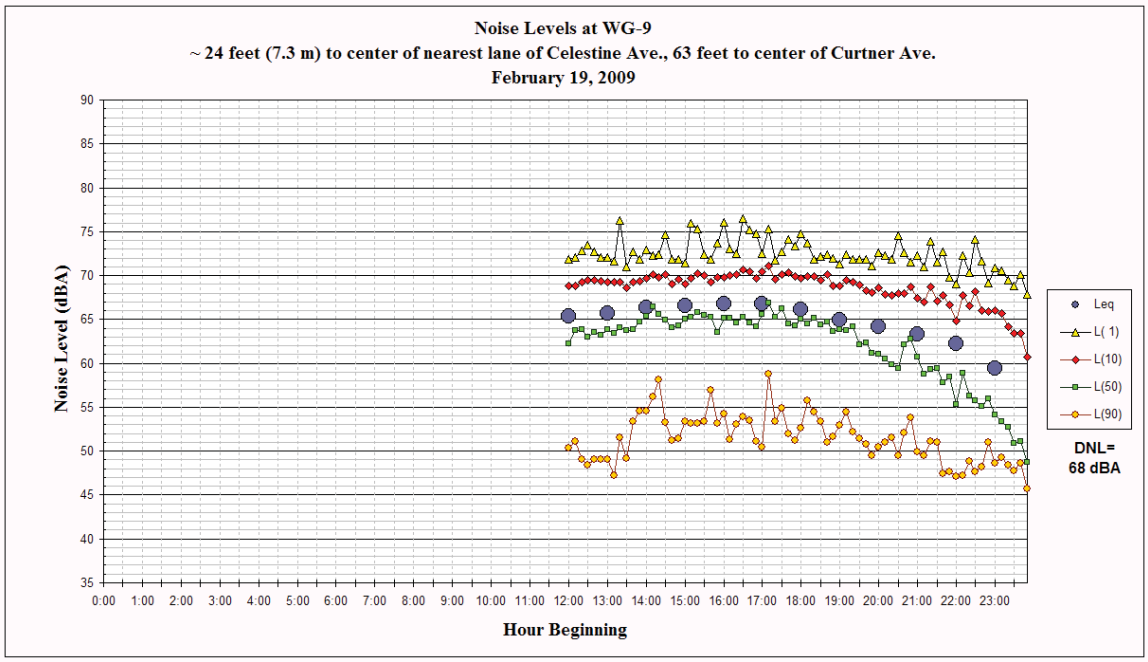

Noise Levels at WG-5
~ 123 feet (37.5 m) to the center of Bascom Ave., 27 feet to the center of Curtner Ave.
February 19, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
70 dBA

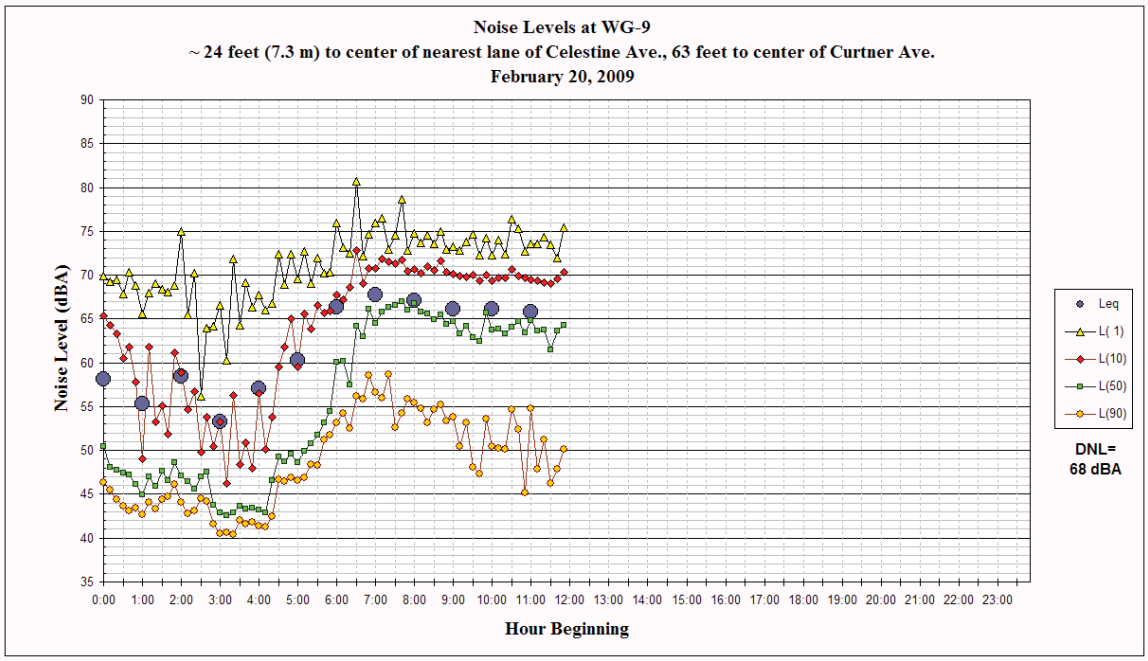

Hourly Average Noise Levels at WG-5
~ 123 feet (37.5 m) to the center of Bascom Ave., 27 feet to the center of Curtner Ave.
February 18-19, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
70 dBA

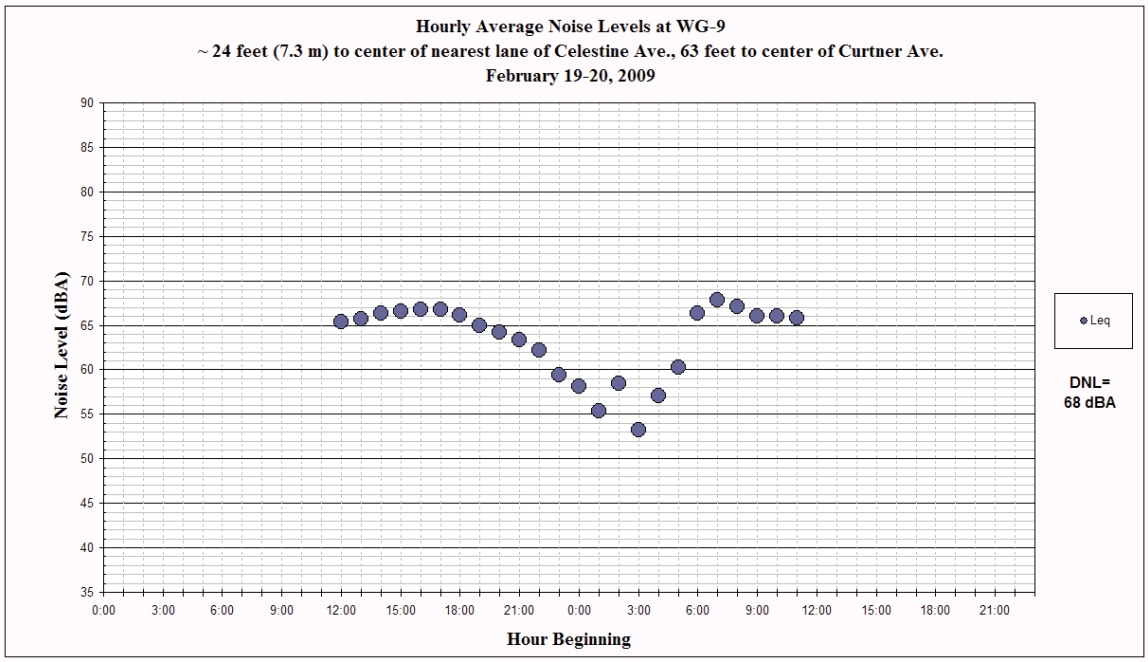

Noise Levels at WG-8
~3231 Ensalmo Ave., 60 feet (18.3 m) to center of nearest lane of Hillsdale Ave.
February 18, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
69 dBA

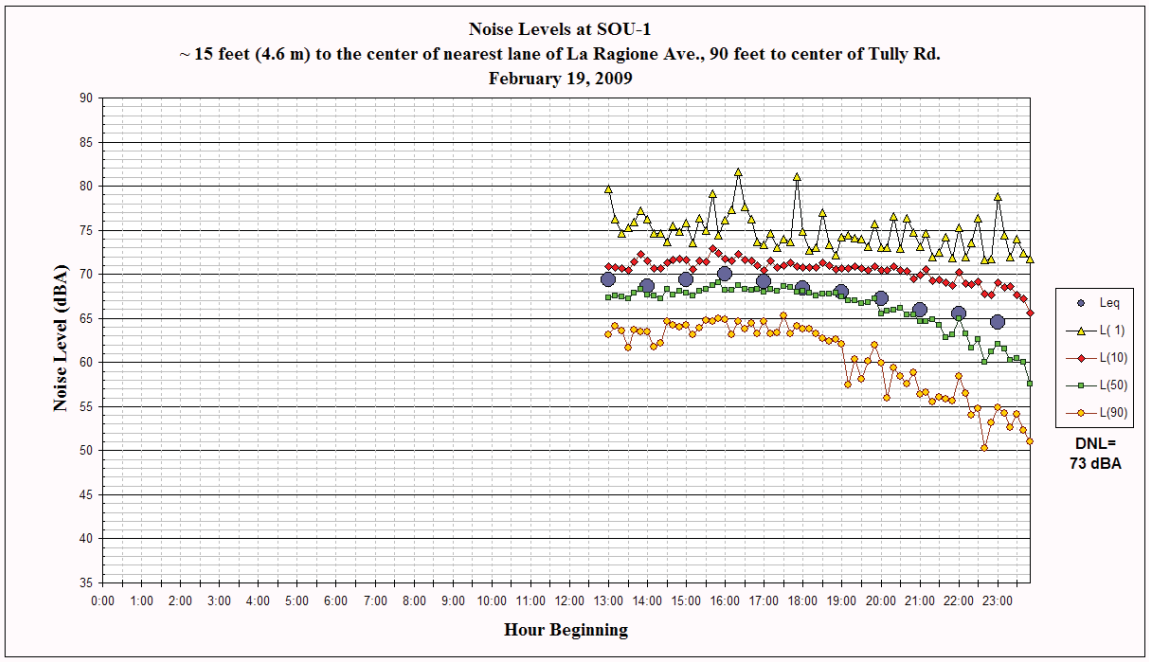

Noise Levels at WG-8
~3231 Ensalmo Ave., 60 feet (18.3 m) to center of nearest lane of Hillsdale Ave.
February 19, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
69 dBA

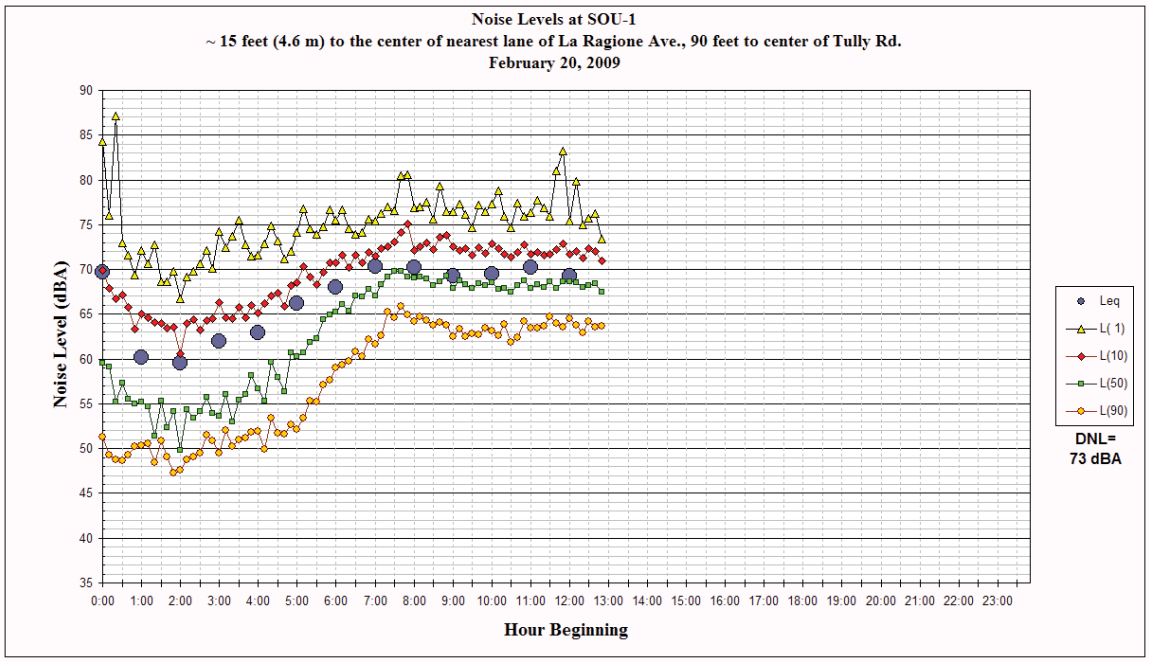

Hourly Average Noise Levels at WG-8
~3231 Ensalmo Ave., 60 feet (18.3 m) to center of nearest lane of Hillsdale Ave.
February 19, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
69 dBA

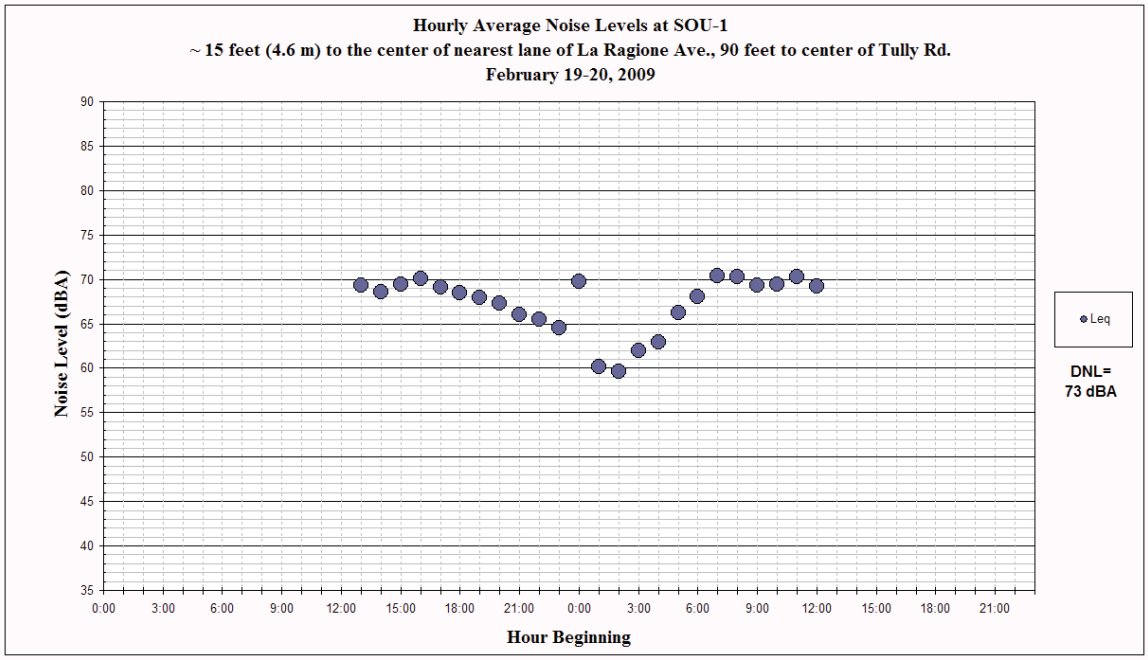

Noise Levels at WG-9
~ 24 feet (7.3 m) to center of nearest lane of Celestine Ave., 63 feet to center of Curtner Ave.
February 19, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
68 dBA

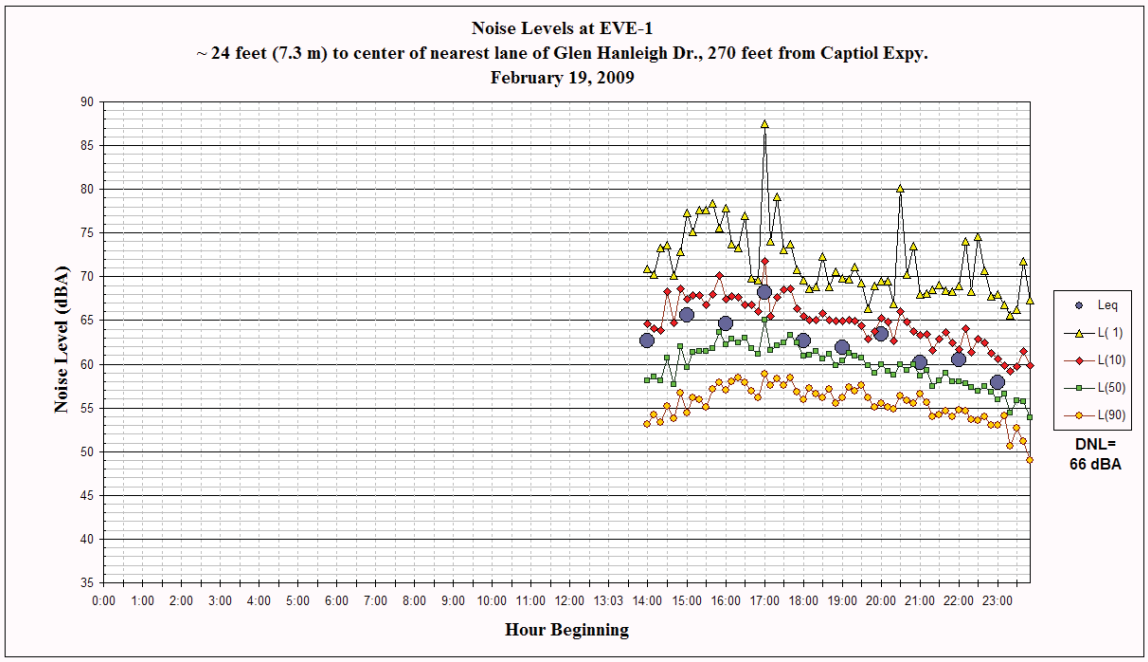

Noise Levels at WG-9
~ 24 feet (7.3 m) to center of nearest lane of Celestine Ave., 63 feet to center of Curtner Ave.
February 20, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
68 dBA

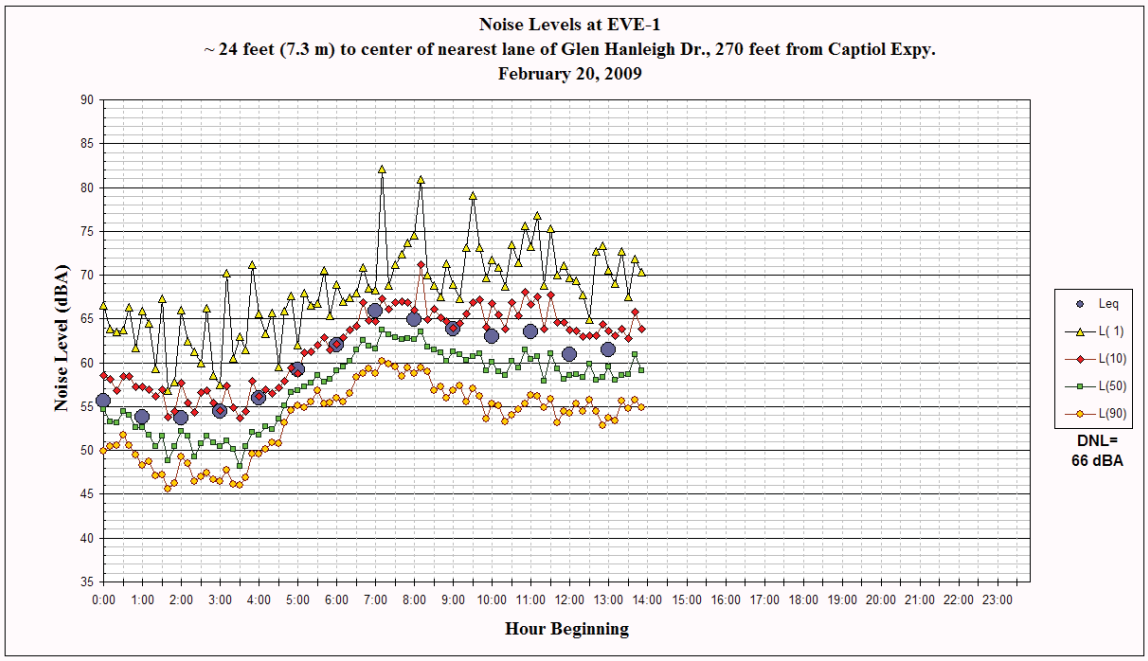

Hourly Average Noise Levels at WG-9
~ 24 feet (7.3 m) to center of nearest lane of Celestine Ave., 63 feet to center of Curtner Ave.
February 19-20, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
68 dBA

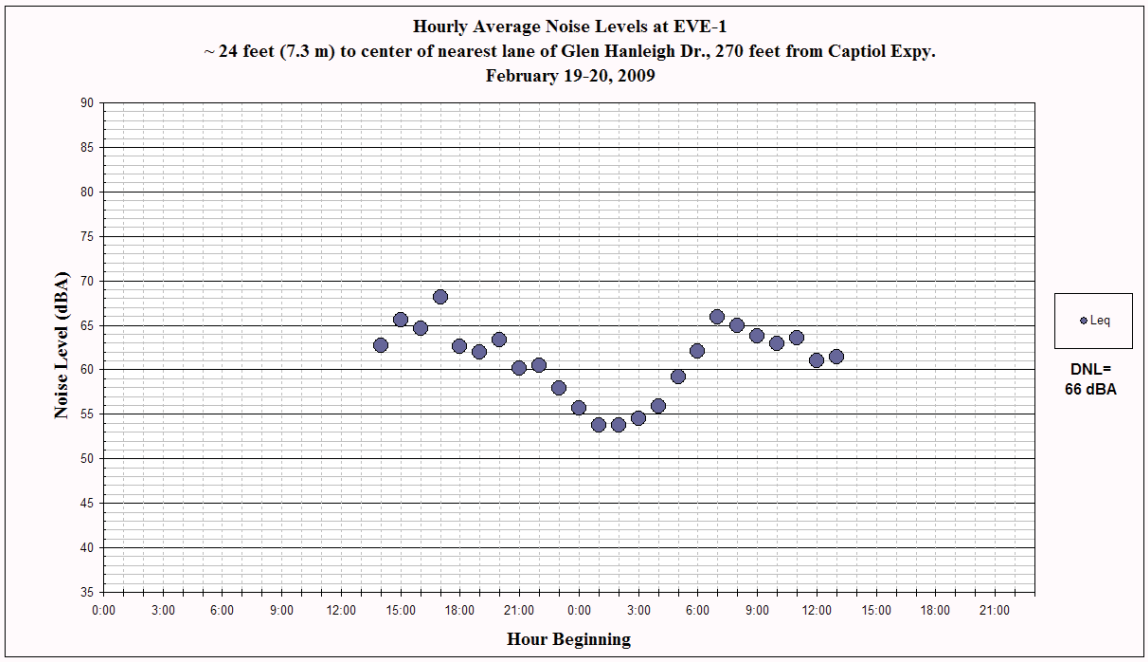

Noise Levels at SOU-1
~ 15 feet (4.6 m) to the center of nearest lane of La Ragione Ave., 90 feet to center of Tully Rd.
February 19, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
73 dBA

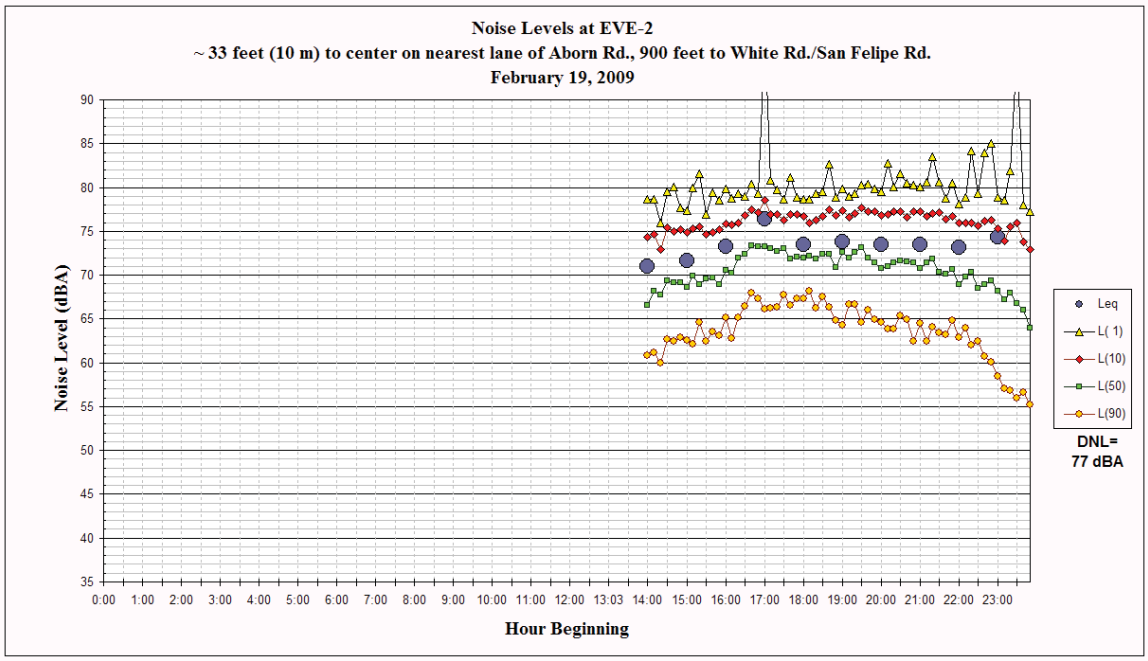

Noise Levels at SOU-1
~ 15 feet (4.6 m) to the center of nearest lane of La Ragione Ave., 90 feet to center of Tully Rd.
February 20, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
73 dBA

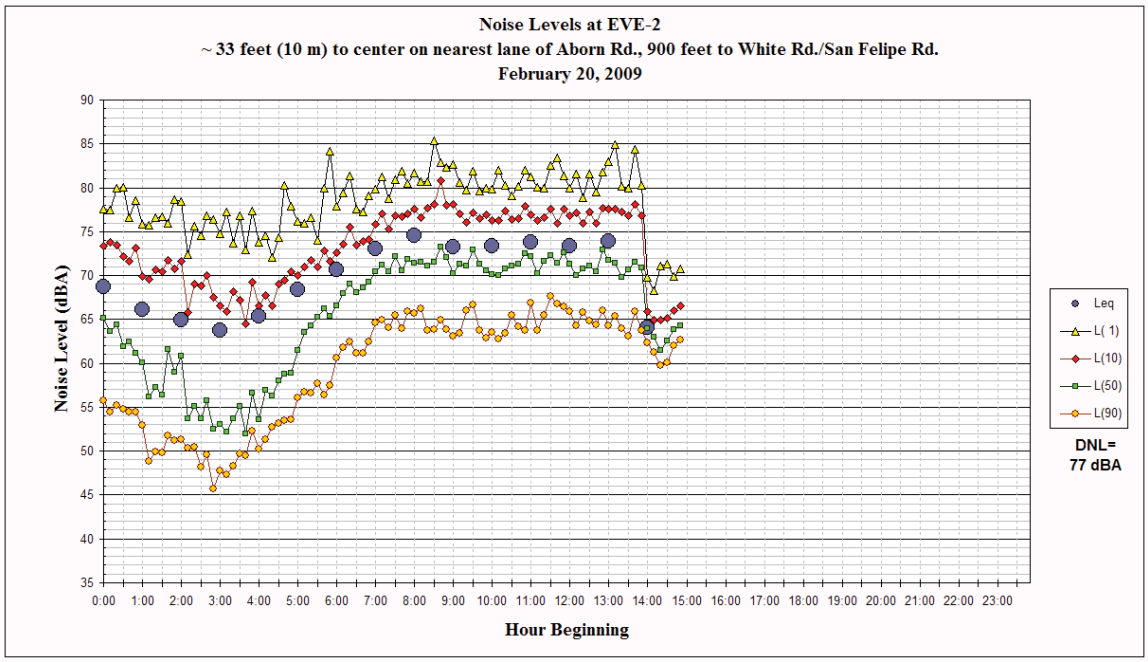

Hourly Average Noise Levels at SOU-1
~ 15 feet (4.6 m) to the center of nearest lane of La Ragione Ave., 90 feet to center of Tully Rd.
February 19-20, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
73 dBA

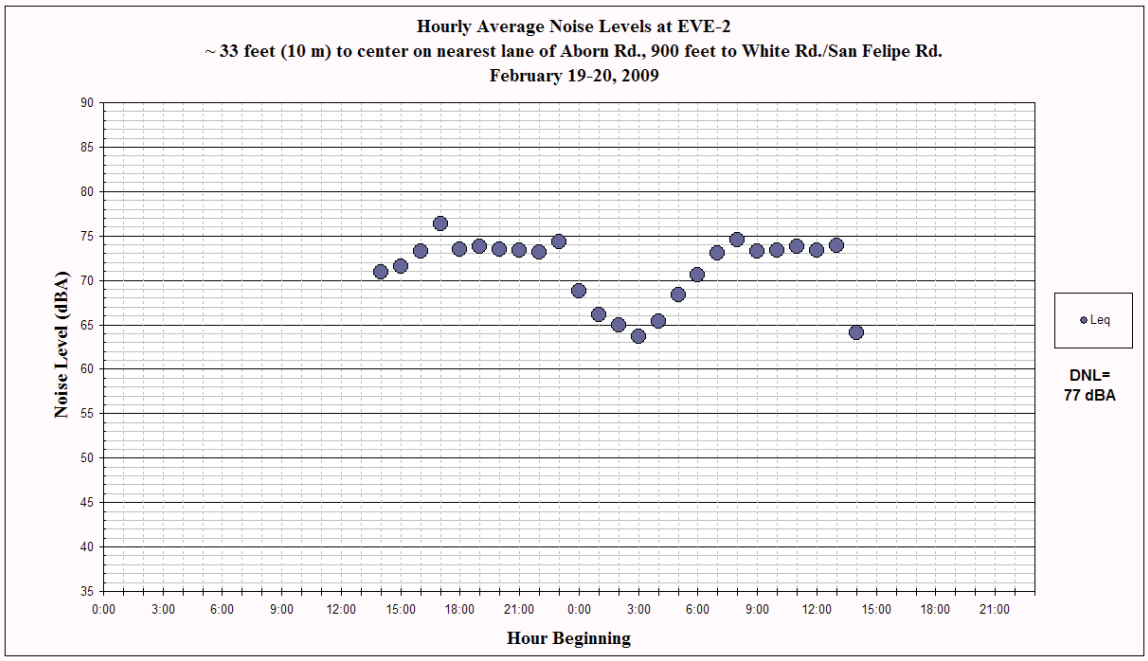

Noise Levels at EVE-1
~ 24 feet (7.3 m) to center of nearest lane of Glen Hanleigh Dr., 270 feet from Captiol Expy.
February 19, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
66 dBA

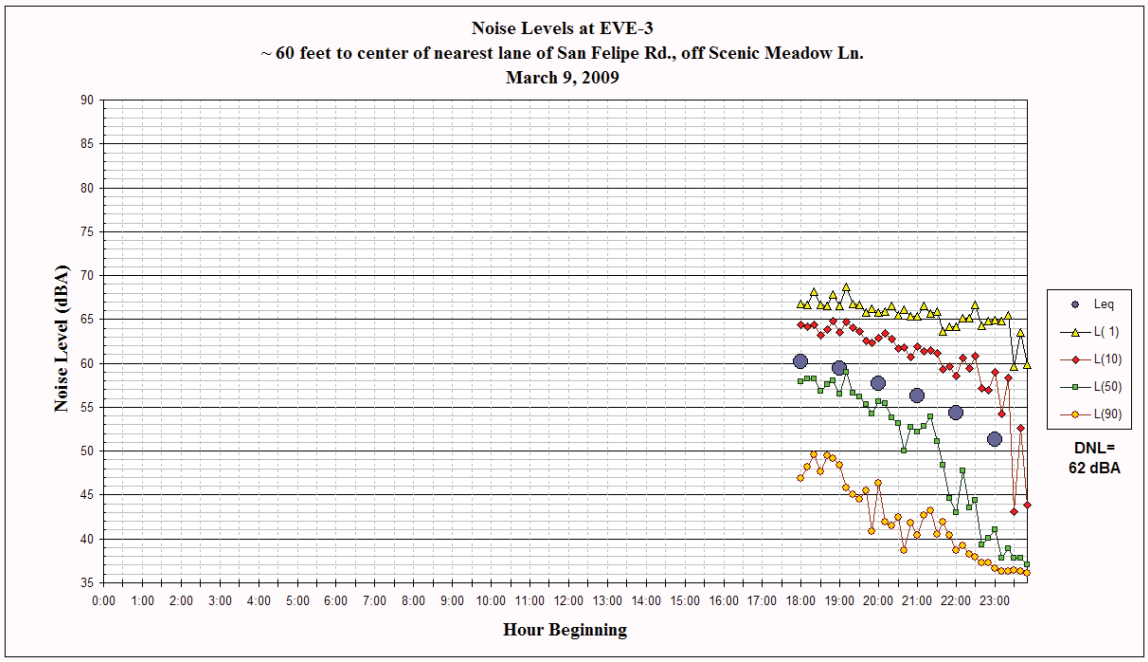

Noise Levels at EVE-1
~ 24 feet (7.3 m) to center of nearest lane of Glen Hanleigh Dr., 270 feet from Captiol Expy.
February 20, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
66 dBA

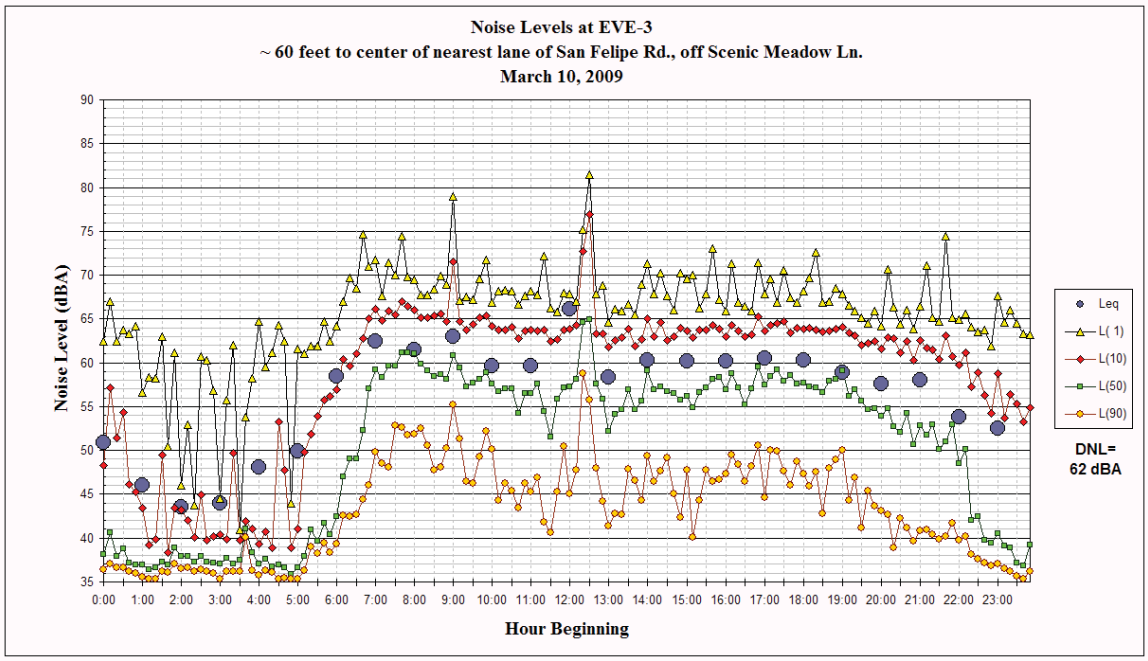

Hourly Average Noise Levels at EVE-1
~ 24 feet (7.3 m) to center of nearest lane of Glen Hanleigh Dr., 270 feet from Captiol Expy.
February 19-20, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
66 dBA

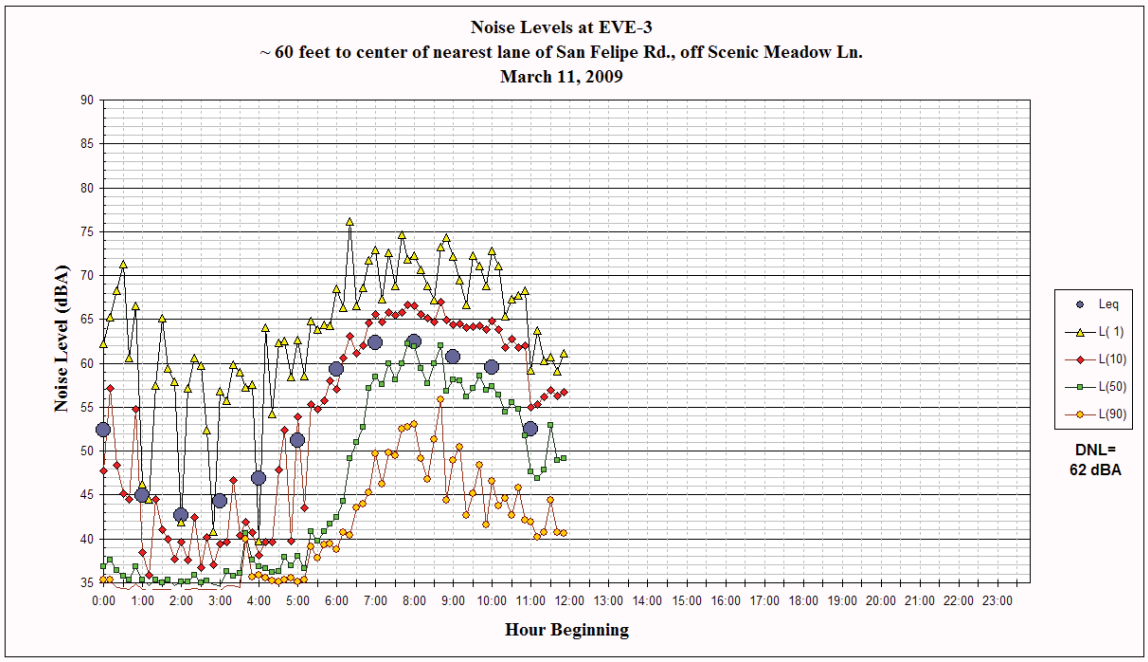

Noise Levels at EVE-2
~ 33 feet (10 m) to center on nearest lane of Aborn Rd., 900 feet to White Rd./San Felipe Rd.
February 19, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
77 dBA

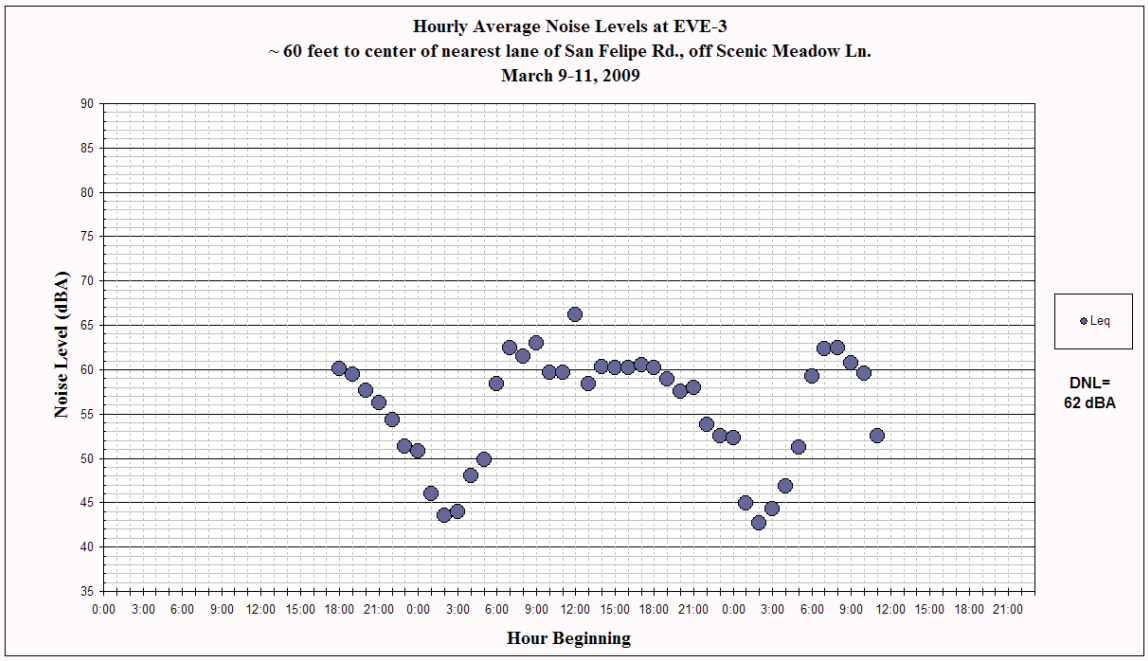

Noise Levels at EVE-2
~ 33 feet (10 m) to center on nearest lane of Aborn Rd., 900 feet to White Rd./San Felipe Rd.
February 20, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
77 dBA

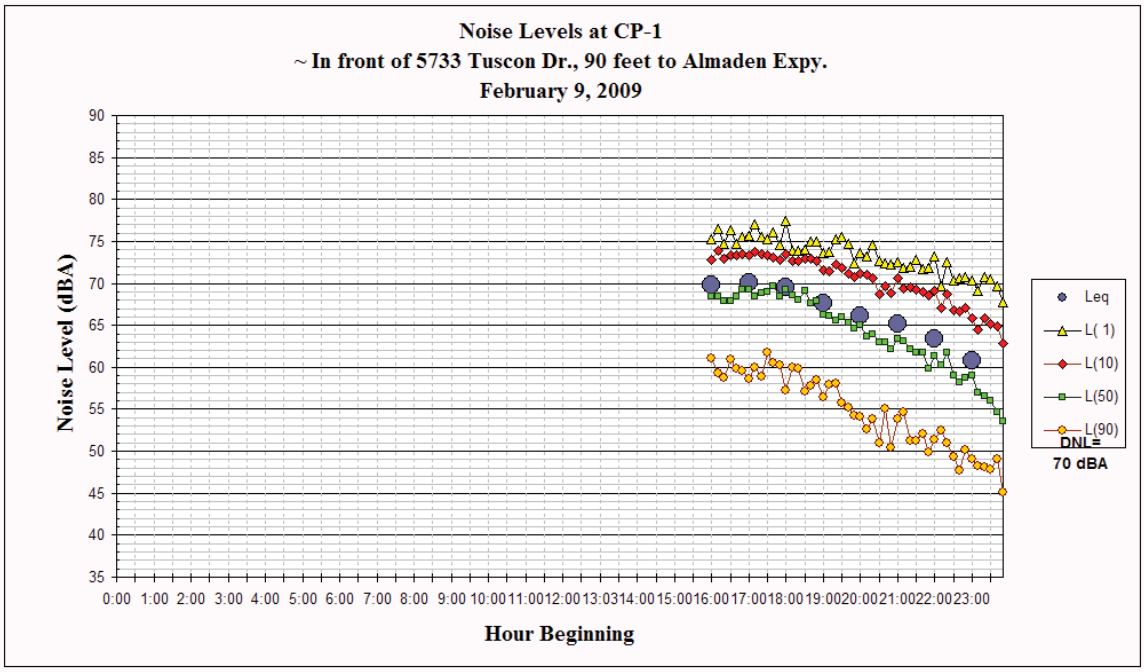

Hourly Average Noise Levels at EVE-2
~ 33 feet (10 m) to center on nearest lane of Aborn Rd., 900 feet to White Rd./San Felipe Rd.
February 19-20, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
77 dBA

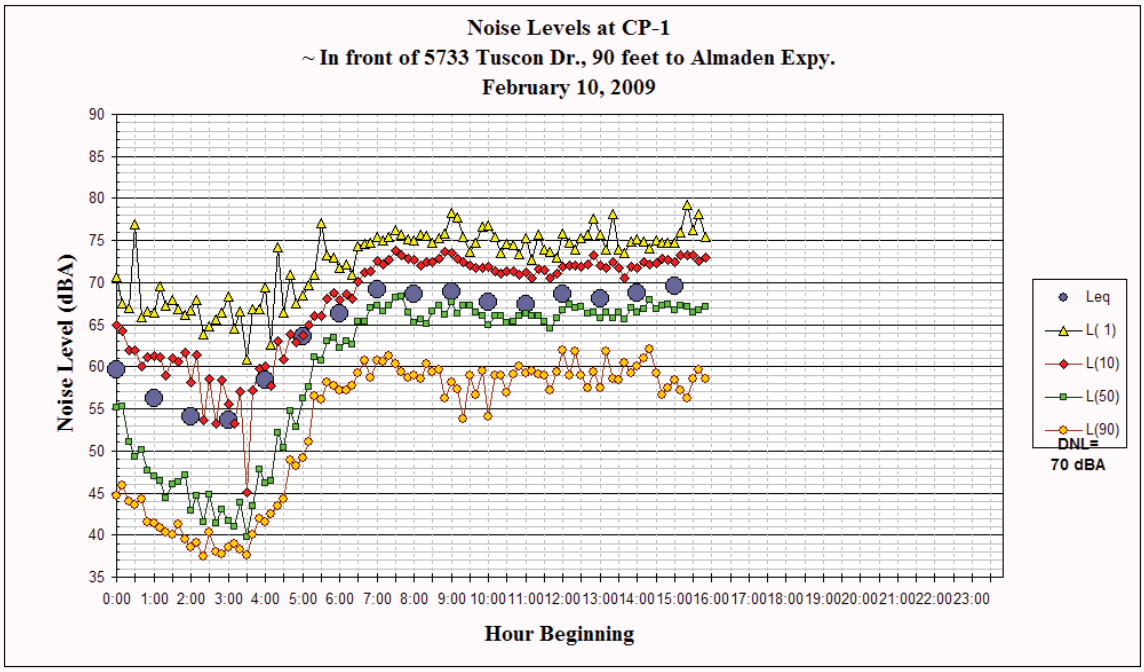

Noise Levels at EVE-3
~ 60 feet to center of nearest lane of San Felipe Rd., off Scenic Meadow Ln.
March 9, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
62 dBA

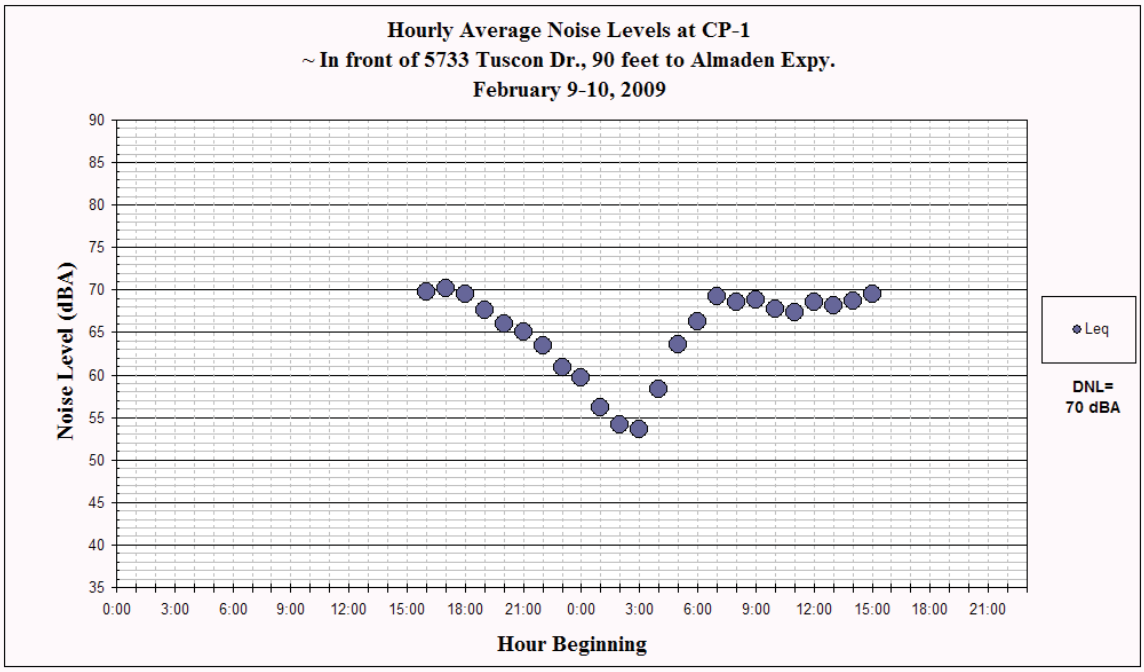

Noise Levels at EVE-3
~ 60 feet to center of nearest lane of San Felipe Rd., off Scenic Meadow Ln.
March 10, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
62 dBA

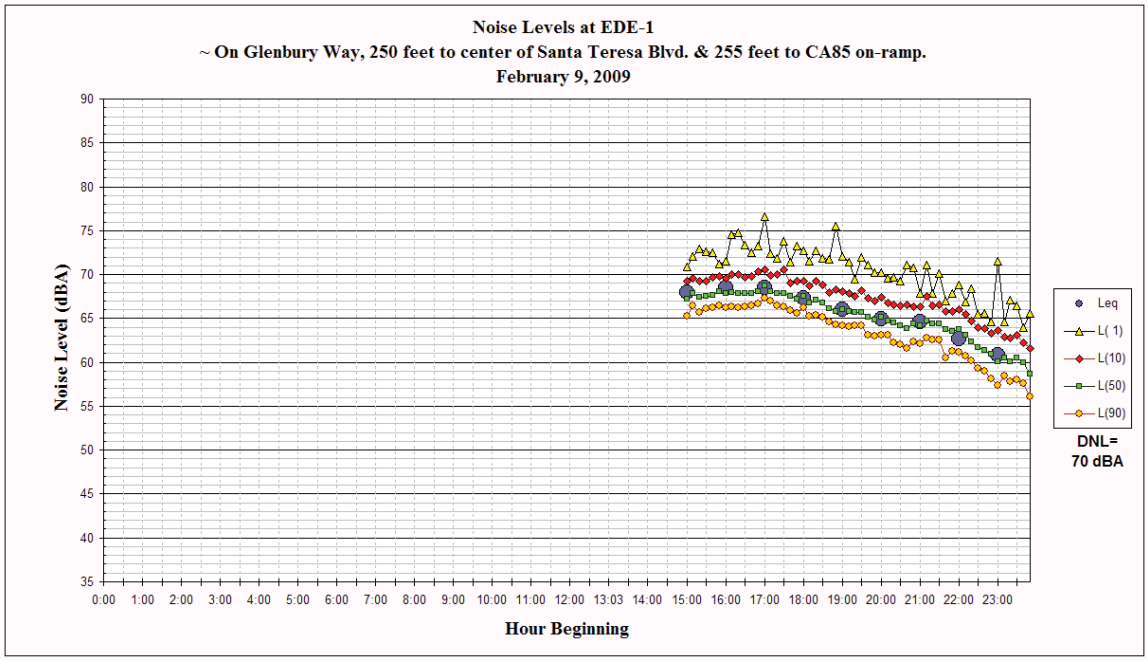

Noise Levels at EVE-3
~ 60 feet to center of nearest lane of San Felipe Rd., off Scenic Meadow Ln.
March 11, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
62 dBA

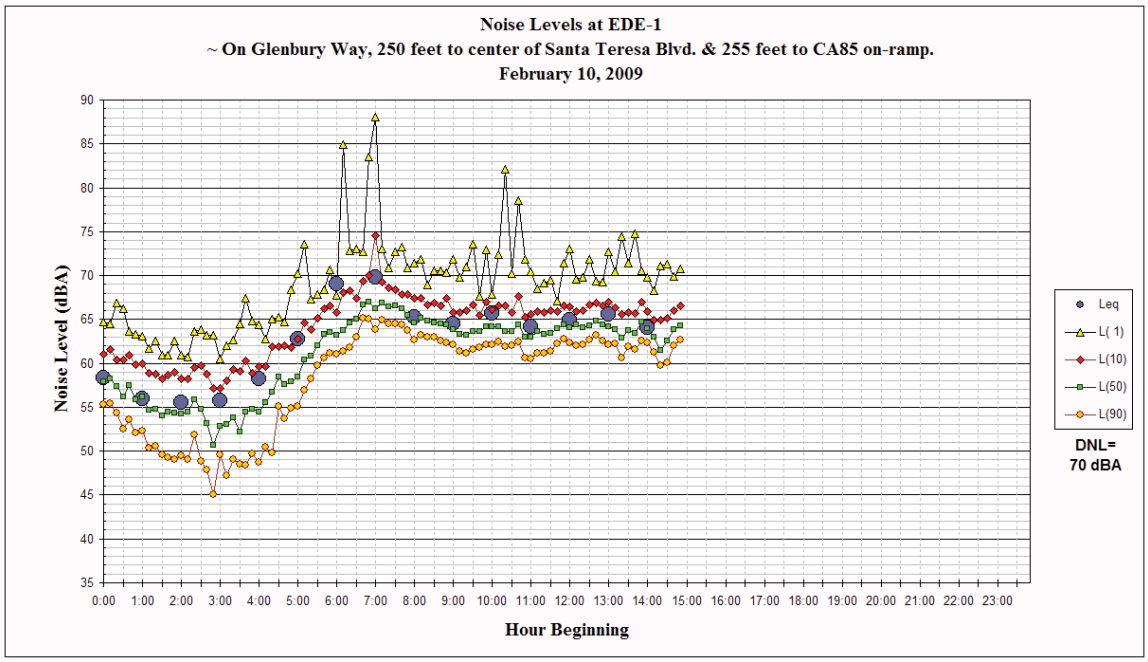

Hourly Average Noise Levels at EVE-3
~ 60 feet to center of nearest lane of San Felipe Rd., off Scenic Meadow Ln.
March 9-11, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
62 dBA

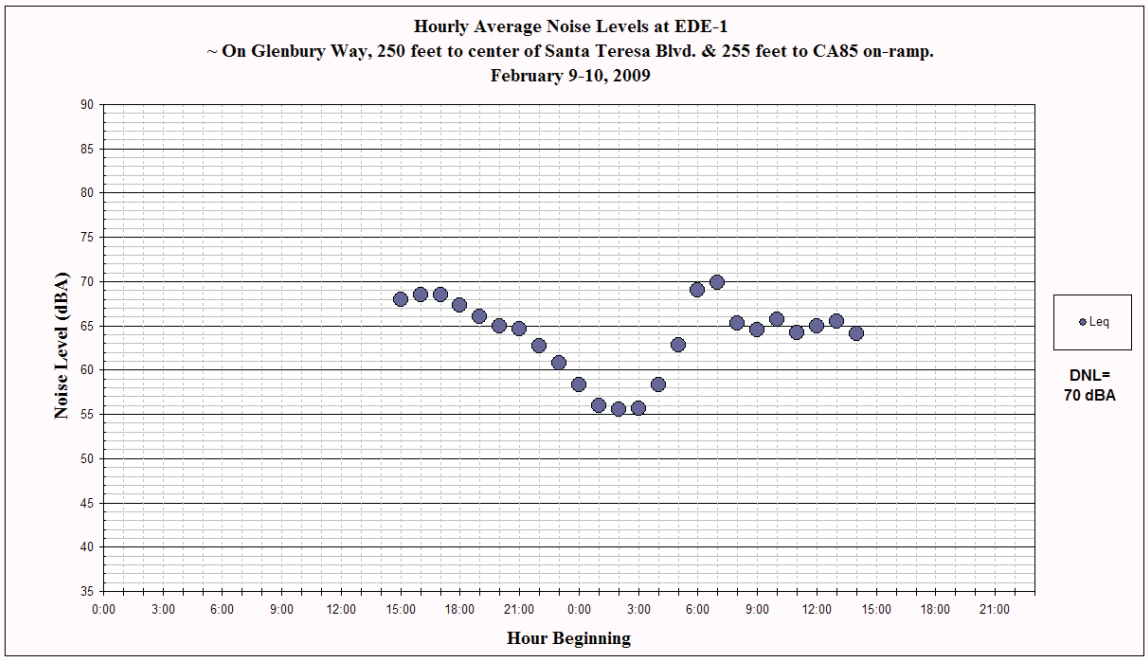

Noise Levels at CP-1
~ In front of 5733 Tuscon Dr., 90 feet to Almaden Expy.
February 9, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
70 dBA

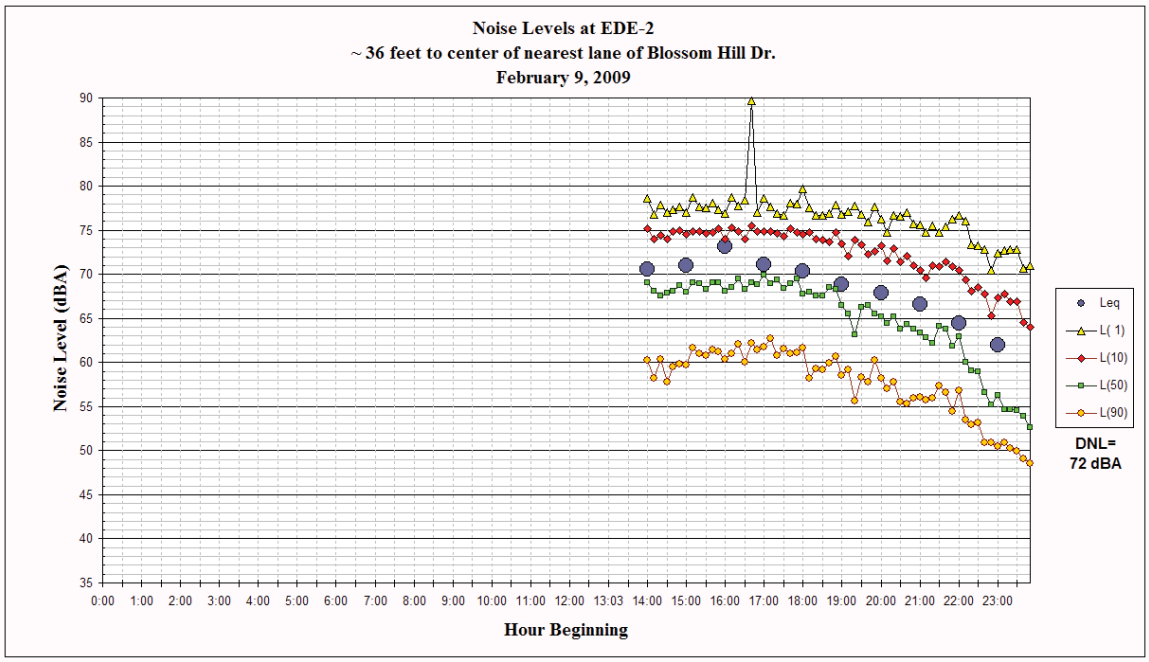

Noise Levels at CP-1
~ In front of 5733 Tuscon Dr., 90 feet to Almaden Expy.
February 10, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
70 dBA

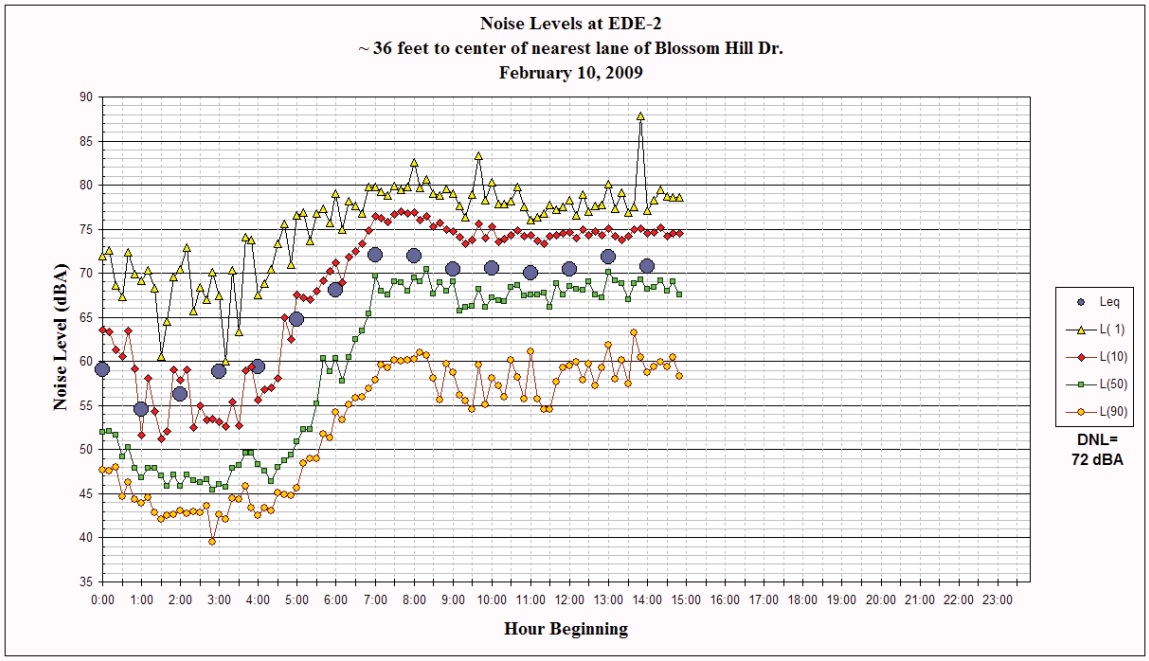

Hourly Average Noise Levels at CP-1
~ In front of 5733 Tuscon Dr., 90 feet to Almaden Expy.
February 9-10, 2009
Noise Level (dBA)
90
85
80
75
70
65
60
55
50
45
40
35
0:00
3:00
6:00
9:00
12:00
15:00
18:00
21:00
0:00
3:00
6:00
9:00
12:00
15:00
18:00
21:00
Hour Beginning
Leq
DNL=
70 dBA

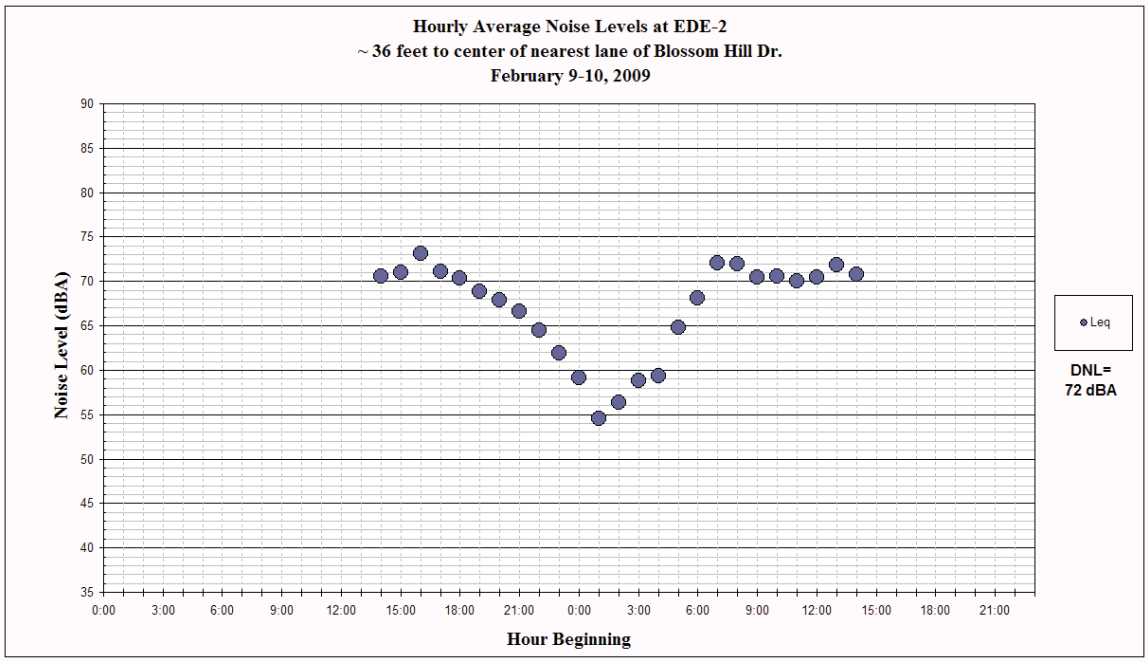

Noise Levels at EDE-1
~ On Glenbury Way, 250 feet to center of Santa Teresa Blvd. & 255 feet to CA85 on-ramp.
February 9, 2009
Noise Level (dBA)
90
85
80
75
70
65
60
55
50
45
40
35
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:03
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
70 dBA

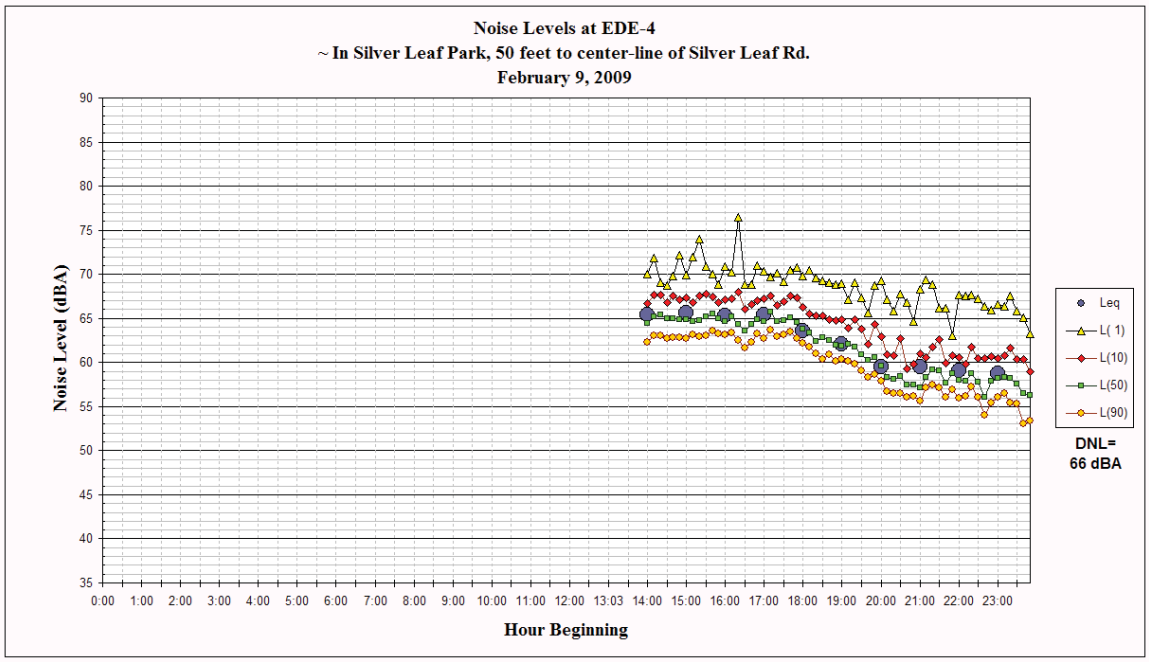

Noise Levels at EDE-1
~ On Glenbury Way, 250 feet to center of Santa Teresa Blvd. & 255 feet to CA85 on-ramp.
February 10, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
70 dBA

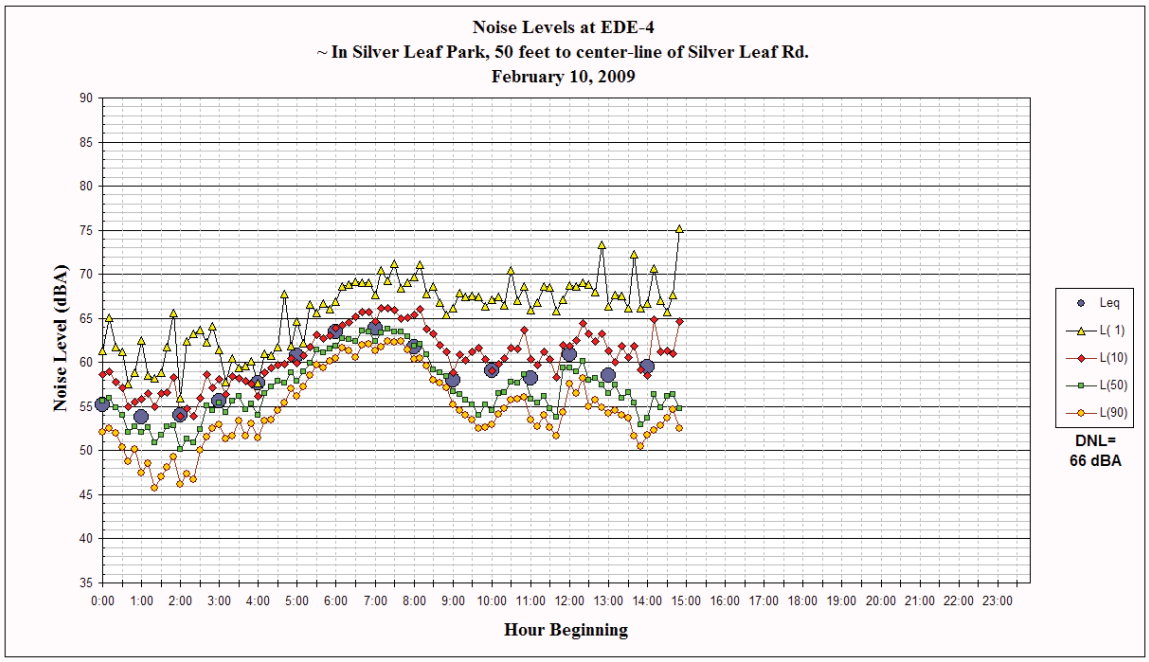

Hourly Average Noise Levels at EDE-1
~ On Glenbury Way, 250 feet to center of Santa Teresa Blvd. & 255 feet to CA85 on-ramp.
February 9-10, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
70 dBA

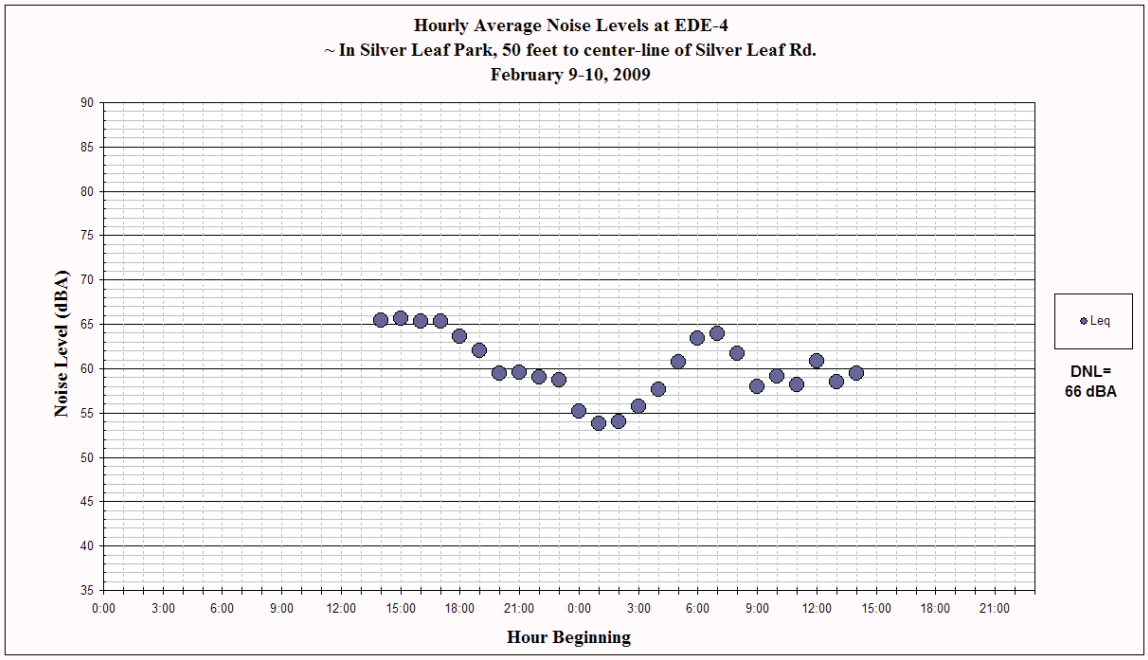

Noise Levels at EDE-2
~ 36 feet to center of nearest lane of Blossom Hill Dr.
February 9, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
72 dBA

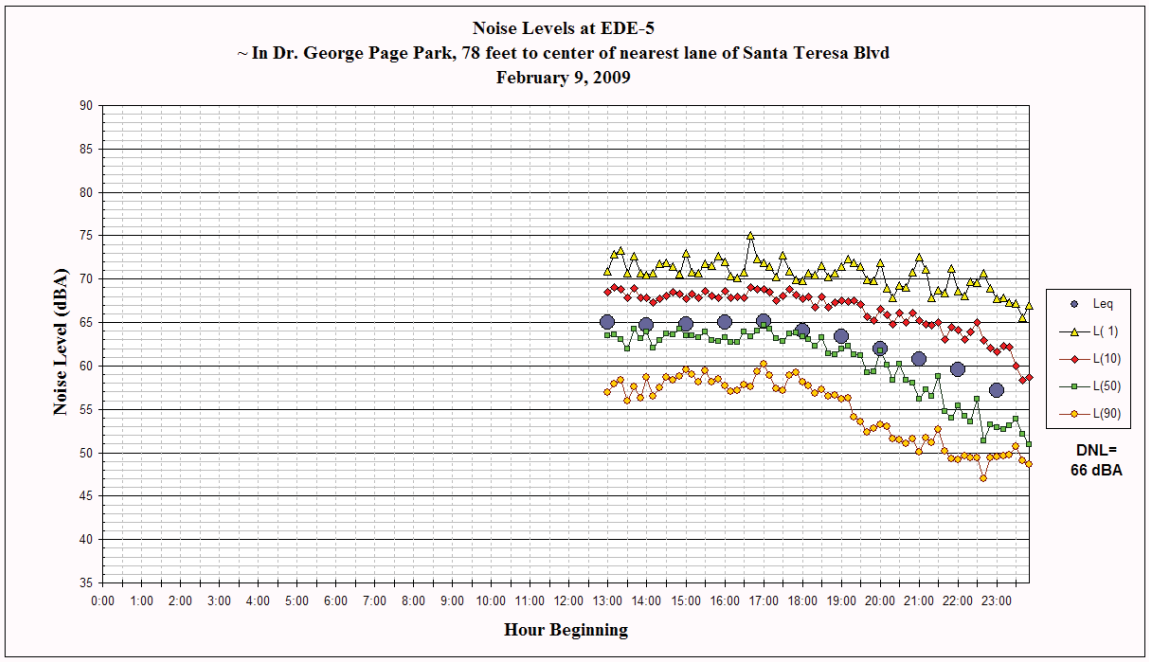

Noise Levels at EDE-2
~ 36 feet to center of nearest lane of Blossom Hill Dr.
February 10, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
72 dBA

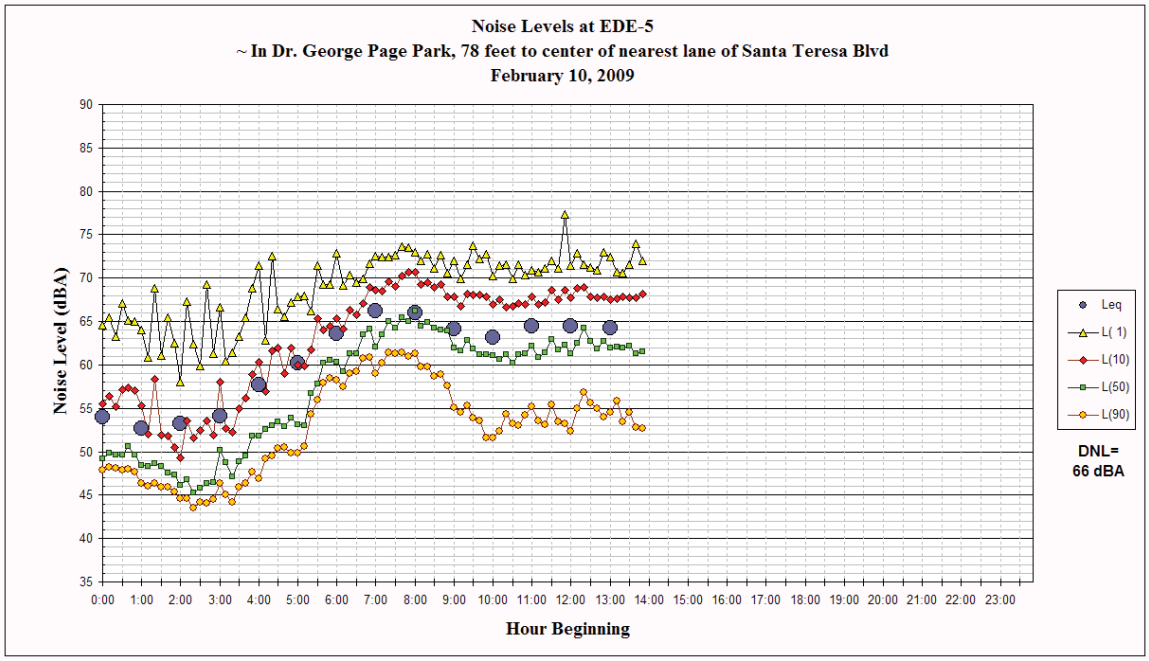

Hourly Average Noise Levels at EDE-2
~ 36 feet to center of nearest lane of Blossom Hill Dr.
February 9-10, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
72 dBA

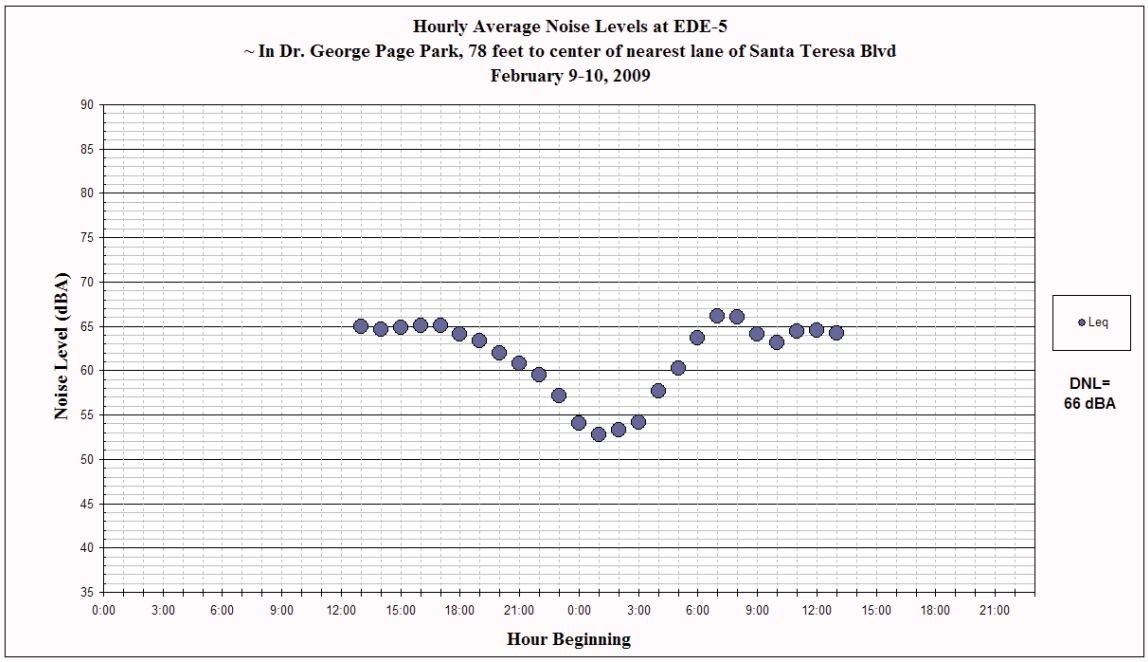

Noise Levels at EDE-4
~ In Silver Leaf Park, 50 feet to center-line of Silver Leaf Rd.
February 9, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
66 dBA

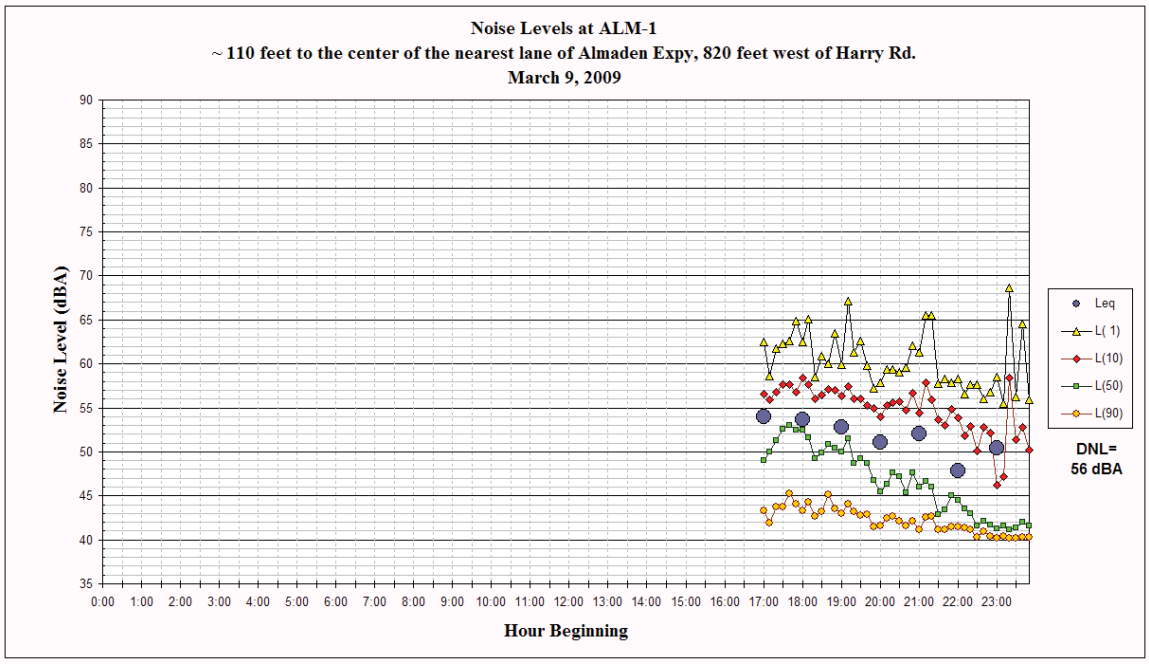

Noise Levels at EDE-4
~ In Silver Leaf Park, 50 feet to center-line of Silver Leaf Rd.
February 10, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
66 dBA

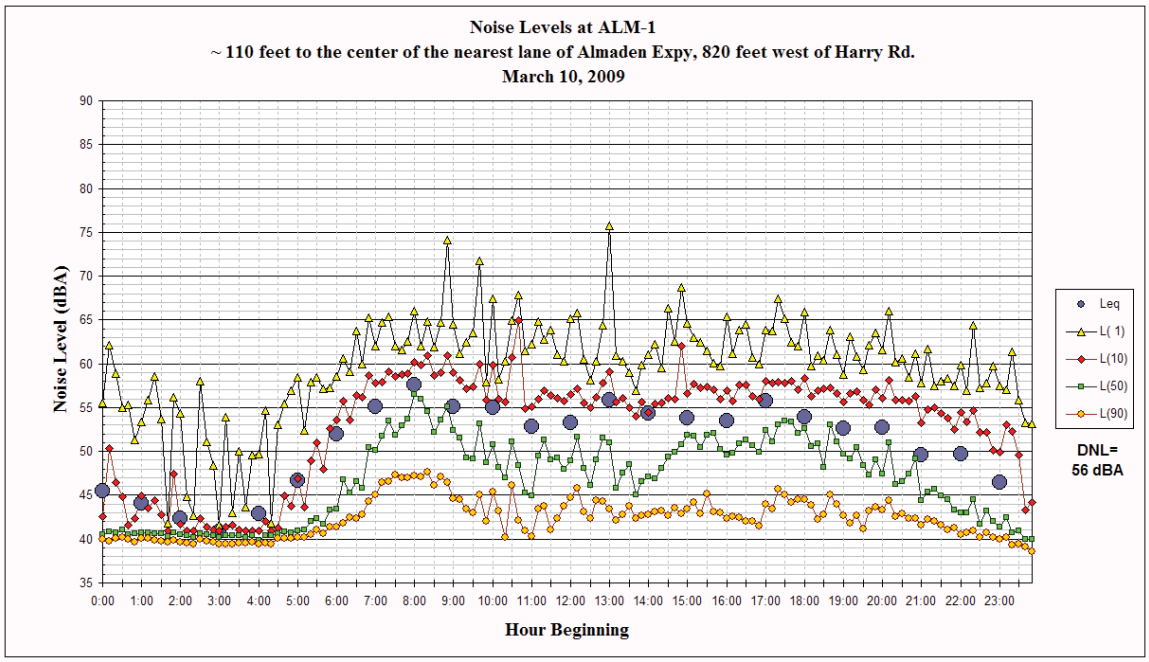

Hourly Average Noise Levels at EDE-4
~ In Silver Leaf Park, 50 feet to center-line of Silver Leaf Rd.
February 9-10, 2009
Noise Level (dBA)
Hour Beginning
Leq
DNL=
66 dBA

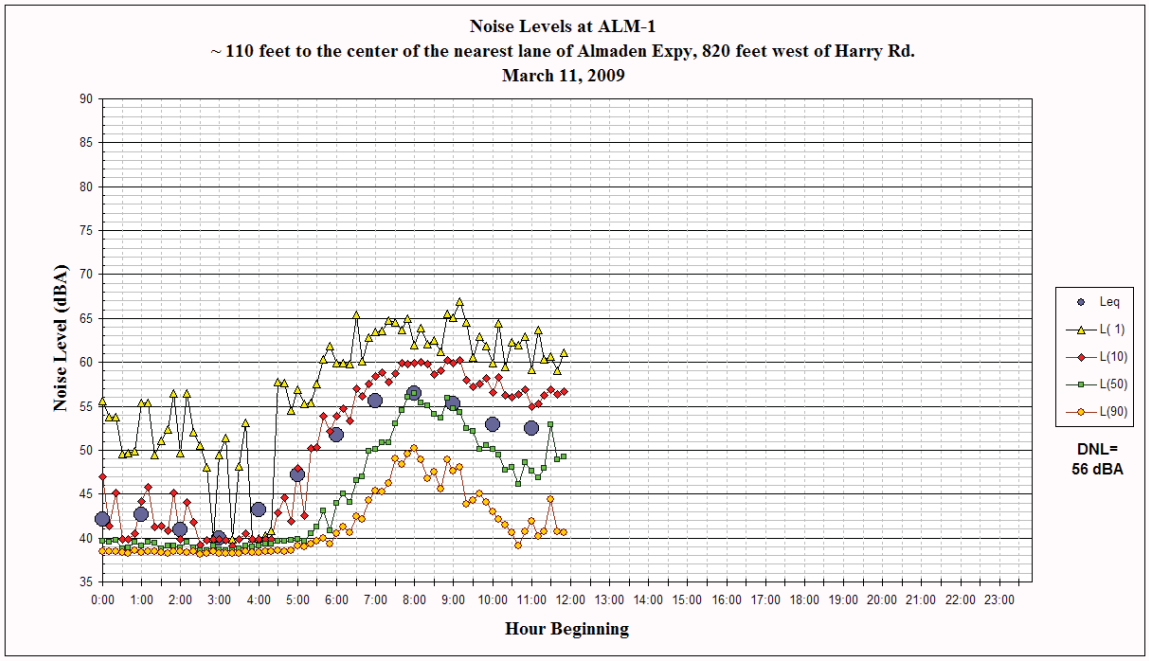

Noise Levels at EDE-5
~ In Dr. George Page Park, 78 feet to center of nearest lane of Santa Teresa Blvd
February 9, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
66 dBA

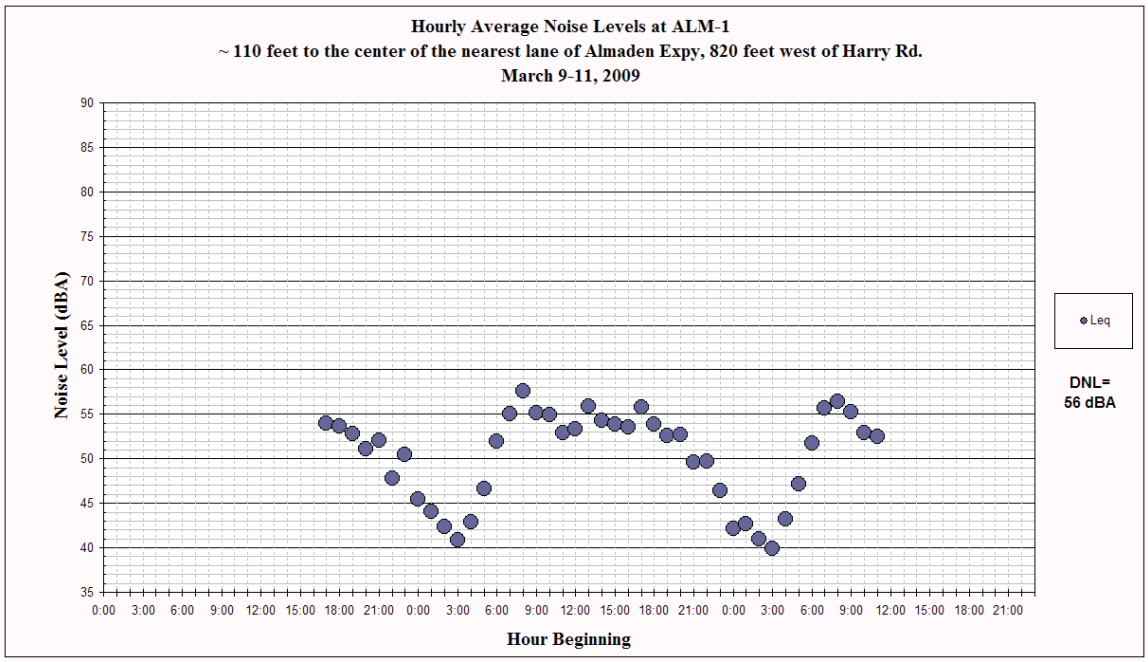

Noise Levels at EDE-5
~ In Dr. George Page Park, 78 feet to center of nearest lane of Santa Teresa Blvd
February 10, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
66 dBA


Hourly Average Noise Levels at EDE-5
~ In Dr. George Page Park, 78 feet to center of nearest lane of Santa Teresa Blvd
February 9-10, 2009
Noise Level (dBA)
90
85
80
75
70
65
60
55
50
45
40
35
0:00
3:00
6:00
9:00
12:00
15:00
18:00
21:00
0:00
3:00
6:00
9:00
12:00
15:00
18:00
21:00
Hour Beginning
Leq
DNL=
66 dBA


Noise Levels at ALM-1
~ 110 feet to the center of the nearest lane of Almaden Expy, 820 feet west of Harry Rd.
March 9, 2009
Noise Level (dBA)
90
85
80
75
70
65
60
55
50
45
40
35
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
56 dBA


Noise Levels at ALM-1
~ 110 feet to the center of the nearest lane of Almaden Expy, 820 feet west of Harry Rd.
March 10, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
56 dBA


Noise Levels at ALM-1
~ 110 feet to the center of the nearest lane of Almaden Expy, 820 feet west of Harry Rd.
March 11, 2009
Noise Level (dBA)
Hour Beginning
Leq
L(1)
L(10)
L(50)
L(90)
DNL=
56 dBA


Hourly Average Noise Levels at ALM-1
~ 110 feet to the center of the nearest lane of Almaden Expy, 820 feet west of Harry Rd.
March 9-11, 2009
Noise Level (dBA)
90
85
80
75
70
65
60
55
50
45
40
35
0:00 3:00 6:00 9:00 12:00 15:00 18:00 21:00 0:00 3:00 6:00 9:00 12:00 15:00 18:00 21:00 0:00 3:00 6:00 9:00 12:00 15:00 18:00 21:00
Hour Beginning
Leq
DNL=
56 dBA

Rancho del Pueblo and iStar Sites – Noise Analysis Memo

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May 18, 2011

Will Burns
David J. Powers & Associates, Inc.
1871 The Alameda, Suite 200
San José, CA 95126
VIA E-Mail: wburns@davidjpowers.com

SUBJECT: Rancho Del Pueblo and iStar General Plan Amendment Sites, San José, CA – Noise Measurement / Noise Modeling Results

Dear Will:

This letter presents the analysis results for Rancho del Pueblo and iStar General Plan Amendment sites. Included in the report are results of noise measurements made at the sites, a summary of SoundPlan noise modeling methods and the resulting noise contour maps, and a review of traffic noise scenarios.

Noise Monitoring at the Rancho Del Pueblo Site

Noise measurements were made on March 8th and March 9th, 2011 to quantify the noise environment at the Rancho del Pueblo Golf Course located north of Interstate 280 between Highway 101 and King Road. Noise measurement locations are shown in Figure 1 and the results of the short-term measurements are summarized in Table 1.

24-hour noise measurement RDP-1 was located near the western edge of the golf course, 245 feet from the center of Highway 101, and twelve feet above ground. Traffic on Highway 101 was the predominant source of noise. Daytime hourly average noise levels typically ranged from 64 to 69 dBA L_{eq}. Hourly average noise levels at night ranged from 59 to 63 dBA L_{eq}. The day-night average noise level was 70 dBA DNL.

24-hour noise measurement RDP-2 was located at the eastern edge of the golf course parking lot, 75 feet from the center of King Road and ten feet above ground. Traffic along King Road was the primary noise source during the measurement. Secondary noise sources included local parking lot traffic and noise from golfing activities. Traffic noise from Highway 101 made a minor contribution to the measured levels. Daytime hourly average noise levels typically ranged from 64 to 67 dBA L_{eq}. Hourly average noise levels at night ranged from 54 to 62 dBA L_{eq}. The day-night average noise level was 68 dBA DNL.

Short-term, 10-minute measurements were made at various locations throughout Rancho del Pueblo Golf Course, all of which were further from the roadways than the respective long-term

measurements. Noise levels at short-term locations were predominantly from traffic along Highway 101 and King Road. Secondary noise sources included aircraft, golfing, and nearby neighborhood activities.

Figure 1: Rancho Del Pueblo Noise Measurement Locations

Table 1: Summary of Short-term Noise Data

Noise Measurement Location	A-weighted Noise Level in dBA					
	L_1	L_{10}	L_{50}	L_{90}	L_{eq}	L_{dn}*
ST-1 ~ 50 feet from Hermocilla Way, near easternmost residences adjacent to golf course.	71	59	54	51	58	62
ST-2 ~ Along eastern façades of residences, 635 feet from King Road.	55	53	51	50	52	55
ST-3 ~ Along northwest façades of residences of Thunderbird neighborhood.	59	57	54	52	55	58
ST-4 ~ Edge of golf course, near residences to the north of Rancho Del Pueblo.	61	55	50	48	52	57
ST-5 ~ At border of golf course and westernmost corner residence of Thunderbird neighborhood.	54	51	49	48	50	54
ST-6 ~ At border of golf course and southernmost residences of Thunderbird neighborhood.	59	58	56	55	56	62

* L_{dn} approximated based on corresponding L_{eq} intervals of Long-Term measurement data.

Noise Monitoring of the iStar Site

The iStar project site is located just north of SR 85 and west of Monterey Highway and the Union Pacific Railroad (UPRR). The Hitachi Campus bounds the site to the northwest and the Equinix co-location facility is located to the southeast.

Ambient noise levels resulting from transportation noise sources were monitored at five locations on the site between February 27, 2008 and February 29, 2008. The survey included three long-term noise measurements and two short-term noise measurements as shown in Figure 2. The predominant sources of noise affecting the site include vehicular traffic along SR 85 and Monterey Highway, trains along the UPRR, and aircraft.

Figure 2: iStar Noise Measurement Locations

Long-term noise measurement iStar-1 was made approximately 235 feet from the center of SR 85 to quantify the hourly distribution of noise levels at the southernmost portion of the project site. SR 85 is elevated with respect to the project site and the roadway edge of shoulder provides some acoustical shielding. Daytime hourly average noise levels typically ranged from 63 to 70 dBA L_{eq}. Hourly average noise levels at night ranged from 55 to 70 dBA L_{eq}. The day-night average noise level was 70 dBA DNL.

Noise measurement iStar-2 was located at the north end of the site adjacent to Great Oaks Boulevard. The noise measurement was made approximately 50 feet from the centerline of Great Oaks Boulevard, 140 feet from the center of the UPRR right-of-way, and 250 feet from the centerline of Monterey Highway. Freight and passenger trains traveling along the UPRR and traffic along Monterey Highway were the predominant sources of environmental noise at measurement location iStar-2. Maximum noise levels generated by trains and loud vehicles normally ranged from about 75 to 85 dBA L_{max}. In the absence of railroad trains, traffic noise levels typically ranged from 57 to 63 dBA during the day and from 50 to 62 dBA at night. The day-night average noise level at this location was 69 dBA DNL.

A third noise measurement location was selected along the west property boundary of the site adjacent to the Hitachi Campus (iStar-3). This noise measurement location was selected to quantify noise levels away from major transportation noise sources. Field observations made prior to retrieving the sound-level meter indicated that construction activities at the police station north of the site contributed to measured noise levels. The DNL measured at this site ranged from 62 to 64 dBA. Day-night average noise levels without construction activities are estimated to be 61 to 62 dBA DNL.

Short-term observed noise measurements were made at locations south and west of the Equinix data co-location facility on the afternoon of February 27, 2008. Average noise levels measured on the south side of the facility (ST-7) were 63 dBA L_{eq} and were primarily the result of traffic

along SR 85. On the north side of the facility, measured noise levels were about 7 dBA lower at Site ST-8 (56 dBA L_{eq}) because of increased distance from SR 85 and the shielding afforded by the co-location facility. There were no audible sounds generated by the co-location facility during the noise measurements.

Table 2: Summary of Short-Term Noise Measurement Data

Measurement ID	*Location*	**Noise Levels (dBA, L_{eq})**	**Noise Source**
ST-7	50 feet from southwest façade of SV1 building	63	Traffic
ST-8	100 feet from southwest façade of SV1 building	56	Traffic
GT-1	50 feet from exhaust stacks and intake louvers	90	Equipment/Generators
GT-2	100 feet from exhaust stacks and intake louvers	84	Equipment/Generators
GT-3	130 feet west of generators	77	Equipment/Traffic
GT-4	Western corner of Equinix facility	62	Equipment/Traffic
GT-5	Northwest side of Equinix facility	55	SR 85 Traffic
GT-6	Northeast side of Equinix facility	54	Traffic
GT-7	East corner of Equinix facility	62	Cooling Towers/Traffic
GT-8	30 feet from cooling towers	69	Cooling Towers
GT-9	30 feet from cooling towers	69	Cooling Towers
GT-10	40 feet from exhaust stacks for cooling towers	88	Exhaust Stacks
GT-11	Southern corner of Equinix facility	78	Exhaust Stacks/Traffic

An additional noise monitoring survey was conducted on the morning of July 19, 2008 to quantify noise levels resulting from mechanical equipment located at the adjacent Equinix SV1 co-location facility and to determine at what locations noise from the standby diesel engine generators and cooling towers were audible. Noise measurements were made at several locations on the Equinix site as well as at the nearest property lines of the Great Oaks Place site as indicated on Figure 3 during the regular testing of standby diesel engine generators. The SV1 facility houses seven generators that are tested twice per month; once under no load conditions for a period of ten minutes and once under full load for a period of thirty minutes. These generators provide power to the Equinix SV1 facility during power outages.

Table 2 summarizes the results of the short-term noise measurements made during the generator testing. Average noise levels measured directly in front of the generator exhaust stacks and intake louvers (GT-1 and GT-2) were about 86 to 90 dBA L_{eq} at 50 feet and 83 to 84 dBA L_{eq} at 100 feet. Noise levels at approximately 130 feet west of the generators (GT-3) ranged from about 76 to 77 dBA L_{eq}. At the western corner of the facility (GT-4), measured noise levels were about 61 to 62 dBA L_{eq}, resulting primarily from generator noise and occasional large trucks on SR 85. At the northwest side of the facility (GT-5), measured noise levels ranged from about 54 to 55 dBA L_{eq}, resulting primarily from distant traffic on SR 85. Noise measurement location GT-6 was located on the northeast side of the facility and average noise levels ranged from about 53 to 54 dBA L_{eq}, resulting primarily from distant traffic along SR 85 and Monterey Highway. Noise levels at the east corner of the facility (GT-7) ranged from 61 to 62 dBA L_{eq} and were

primarily generated from the operation of the cooling towers to the southwest. Average noise levels measured in front of the cooling towers (GT-8 and GT-9) ranged from about 68 to 69 dBA L_{eq}. Average noise levels measured directly in front of an exhaust system (GT-10) for the cooling towers were about 88 dBA L_{eq}. At the southern corner of the facility (GT-11), noise levels were about 78 dBA L_{eq}.

Figure 3 Noise Measurement Locations during Equinix SV1 Emergency Generator Testing

SoundPlan Modeling

Traffic noise contours were modeled using SoundPlan version 7.0. Existing traffic volumes from the San José General Plan model were used to calculate existing noise contours at each site. These volumes were adjusted upward at a rate of 2% per year out to 2035, which is a noise level increase of approximately 2 dB. Buildings throughout the Rancho Del Pueblo site and a sound-wall along Highway 101 were inserted into the model to more closely represent the noise environment on a site-specific scale. Since there are no barriers present along roadways adjacent to the iStar site, barriers were not needed in the iStar SoundPlan model to calibrate noise contours. Noise contour maps are shown in the Appendix, Figures 3 through 6. As indicated on these maps, future noise levels are calculated to be 60 to 70 dBA L_{dn} at the Rancho Del Pueblo site and 65 to 75 dBA L_{dn} at the iStar site.

Scenarios of Traffic Data

Calculations were made comparing three scenarios of daily traffic volumes throughout San José. The Preferred Land Use Scenario (Scenario 7) and the scenario incorporating pending General Plan Amendments (Scenario 7A) were compared to the 2010 analysis of the Preferred Land Use Scenario (Scenario 6). Calculations for all roadway segments assessed resulted in noise level increases of less than 1 dB, which is not a significant noise increase. Each scenario was then compared to Existing (Baseline 2008) traffic volumes. Since DNL noise levels were rounded to whole integers, noise levels along major roadways increased by 1 dB along twelve roadway segments, as presented in Table 3 of the Appendix. One roadway segment, Hedding Street from Coleman Avenue to SR 87, resulted in an increase of less than 3 dB under Scenario 6 conditions and an increase of 3 dB or more under Scenarios 7 and 7A. This increase in traffic noise would not be significant since the segment is directly south of Norman Y. Mineta San José International Airport runways and there are no residential land uses in the vicinity.

Please feel free to contact us, should you have any questions.

Sincerely,

Jordan L. Roberts
Staff Consultant
Illingworth & Rodkin, Inc.

Appendix

Figure 3

Figure 4

2035 Traffic Noise Contours
at Rancho Del Pueblo
Traffic Noise Level
DNL, dB(A)
= 75
= 70
= 65
= 60
Merlon Dr
Sawgrass Dr
Los Sueños
Virginia Pl
Hwy 101
King Road
N

Figure 5

Existing Traffic Noise Contours
at iStar site
Traffic Noise Level
DNL, dB(A)
= 75
= 70
= 65
= 60
Monterey Road
W Valley Fwy
85
San Ignacio Ave
N
0 125 250 500
feet
© 2011 Google

Figure 6

2035 Traffic Noise Contours
at iStar site
Traffic Noise Level
DNL, dB(A)
= 75
= 70
= 65
= 60
Monterey Road
W Valley Fwy
85
San Ignacio Ave
0 125 250 500
feet
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Table 3 Increase in Noise Levels along Major Roadways in San José

Planning Area	Roadway Segment	DNL at 75 ft. (dBA)[1]						
		2008 Existing	Scenario 6	DNL Increase (dBA)[2]	Scenario 7	DNL Increase (dBA)[2]	Scenario 7A	DNL Increase (dBA)[2]
Central/Downtown	10th St – Hedding to US 101	67	68	1	69	2	69	2
Cambrian/Pioneer	Branham Ln – Almaden to Pearl	68	68	0	69	1	69	1
Willow Glen	Camden Ave – Leigh to Hillsdale	70	70	0	71	1	70	0
Alum Rock	McKee Rd – Capitol to I-680	70	70	0	71	1	71	1
Coyote	Monterey Rd – Bernal to Bailey	67	74	7	75	8	75	8
Berryessa	Capitol Ave – Hostetter to Berryessa	72	73	1	74	2	74	2
Central/Downtown	Santa Clara St – 19th to 17th	67	70	3	71	4	71	4
Alum Rock	Story Rd – Capitol to White	68	68	0	69	1	69	1
Alum Rock	Story Rd – US 101 to King	71	72	1	73	2	73	2
North San José	Tasman Dr – McCarthy to Zanker	67	67	0	68	1	68	1
Central/Downtown	Hedding St – Coleman to SR 87	67	69	2	70	**3**	70	**3**
Central/Downtown	San Carlos St – SR 87 to Almaden	71	72	1	73	2	73	2

[1]Noise levels for major roadways are given at a distance of 75 feet from the center of the near direction of travel.
[2]Substantial noise level increases (i.e., 3 dBA DNL or greater) are indicated in bold font; such increases that would result in a significant impact are shaded.