V. ENVIRONMENTAL IMPACT ANALYSIS
G. NOISE

ENVIRONMENTAL SETTING

Fundamentals of Sound and Environmental Noise

Sound is technically described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The decibel scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Since the human ear is not equally sensitive to a given sound level at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) provides this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Noise, on the other hand, is typically defined as unwanted sound. A typical noise environment consists of a base of steady ambient noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from, for example, traffic on a major highway. Table V.G-1, Representative Environmental Noise Levels, illustrates representative noise levels in the environment.

Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise upon people is largely dependent upon the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The L_{eq} is a measure of ambient noise, while the L_{dn} and CNEL are measures of community noise. Each is applicable to this analysis and defined as follows:

- L_{eq}, the equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the Leq of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.

- L_{dn}, the Day-Night Average Level, is a 24-hour average Leq with a 10 dBA "weighting" added to noise during the hours of 10:00 P.M. to 7:00 A.M. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24 hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.

- CNEL, the Community Noise Equivalent Level, is a 24-hour average L_{eq} with a 5 dBA "weighting" during the hours of 7:00 P.M. to 10:00 P.M. and a 10 dBA "weighting" added to

noise during the hours of 10:00 P.M. to 7:00 A.M. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24 hour L_{eq} would result in a measurement of 66.7 dBA CNEL.

Table V.G-1
Representative Environmental Noise Levels

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

Source: California Department of Transportation, 1998.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day, night, or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60–70 dBA range, and high above 70 dBA. Noise levels greater than 85 dBA can cause temporary or permanent hearing loss. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet suburban residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate level noise environments are urban residential or semi-commercial areas (typically 55–60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with more noisy urban residential or residential-commercial areas (60–75 dBA) or dense urban or industrial areas (65–80 dBA).

When evaluating changes in 24-hour community noise levels, a difference of 3 dBA is a barely perceptible increase to most people. A 5 dBA increase is readily noticeable, while a difference of 10 dBA would be perceived as a doubling of loudness.

Noise levels from a particular source decline as distance to the receptor increases. Other factors, such as the weather and reflecting or shielding, also help intensify or reduce the noise level at any given location. A commonly used rule of thumb for roadway noise is that for every doubling of distance from the source, the noise level is reduced by about 3 dBA at acoustically "hard" locations (i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-packed soil, or other solid materials) and 4.5 dBA at acoustically "soft" locations (i.e., the area between the source and receptor is earth or has vegetation, including grass). Noise from stationary or point sources is reduced by about 6 to 7.5 dBA for every doubling of distance at acoustically hard and soft locations, respectively. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer homes is generally 30 dBA or more.

Fundamentals of Environmental Groundborne Vibration

Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. The ground motion caused by vibration is measured as particle velocity in inches per second and, in the U.S., is referenced as vibration decibels (VdB).

The background vibration velocity level in residential and educational areas is usually around 50 VdB. The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings.

The general human response to different levels of groundborne vibration velocity levels is described in Table V.G-2, Human Response to Different Levels of Groundborne Vibration.

Table V.G-2
Human Response to Different Levels of Groundborne Vibration

Vibration Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception for many people.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Source: Federal Railroad Administration, 1998.

Existing Ambient Daytime Noise Levels

The general surrounding area of the project site is characterized by suburban development consisting of mostly residential land uses. The irregularly-shaped project site is bounded by San Feliciano Drive to the west and north, Mulholland Drive to the south and east, the Girard Reservoir to the northeast, and single-family residences to the west. Consisting of a single parcel of land, the project site is currently surrounded by a chain link fence and is occupied by a vacant, two-story single-family residence, sheds, and an aged kennel at the east-central portion of the property along Mulholland Drive. The remaining portions of the site consist of undeveloped, open space that is occupied by various trees, shrubs, low-lying weeds, and grasses.

Land uses surrounding the 6.19-acre project site include one- and two-story single-family homes to the north, east, and west, the Girard Reservoir and the City of Los Angeles Department of Water and Power Pumping Station to the northeast, a private parochial high school and convent to the southeast, and a two-story commercial office building with a surface parking lot and a small shopping center to the southwest. The City of Calabasas begins approximately 365 feet south of the project site, along Mulholland Highway. The private parochial high school, called Louisville High School, and convent property houses multiple structures and contains a surface parking lot that parallels Mulholland Drive. The two-story commercial office building, called Mulholland Plaza, is located at the southwest corner of the intersection between Mulholland Drive and Mulholland Highway. The shopping center, called Gelson's Village Calabasas, is located in the jurisdiction of the City of Calabasas adjacent to Mulholland Plaza, and consists of retail and commercial stores, including a Gelson's Supermarket, yoga studio, Washington Mutual Bank, and dry cleaners. Adjacent to Gelson's Village Calabasas is a Shell gas station. Although other noise sources typical of a suburban environment occur in the vicinity, vehicular traffic on the surrounding roadways is the primary sources of noise at, and around, the project site.

Existing daytime noise levels were monitored at three offsite locations, two of which were taken at noise-sensitive receptors located along the project site's boundary, in order to identify representative noise levels in various areas. The noise survey was conducted using the Larson-Davis 820 precision noise meter, which meets and exceeds the minimum industry standard performance requirements for "Type 1" standard instruments as defined in the American National Standard Institute (ANSI) S1.4. Furthermore, this noise meter meets and exceeds the requirement specified in Section 111.01(l) of the City of Los Angeles

Municipal Code (LAMC) that the instruments be "Type S2A" standard instruments or better. This instrument was calibrated and operated according to the manufacturer's written specifications. At the measurement sites, the microphone was placed at a height of five feet above the local grade.

At the noise measurement locations, listed in Table V.G-3, Existing Daytime Noise Levels at Selected Offsite Locations, the sound level meter was programmed to record the average sound level (L_{eq}) over a cumulative period of 15 minutes, in accordance with Section 111.01(a) of the LAMC. Existing daytime noise levels were monitored at three offsite locations in order to identify representative noise levels in various areas. The average noise levels and sources of noise monitored at each location are shown in Table IV.G-3, with the locations identified in Figure IV.G-1, Noise Monitoring Locations. The daytime noise levels listed in Table IV.G-3 are characteristic of a typical suburban residential environment.

Table V.G-3
Existing Daytime Noise Levels at Selected Offsite Locations

Noise Measurement Location	Primary Noise Sources	Noise Level Statistics		
		L_{eq}	L_{min}	L_{max}
1. In front of nearest classroom building to the project site within the Louisville High School, which is located southwest of the project site across Mulholland Drive. Approximately 261 feet southeast of project site boundary.	Vehicular traffic on Mulholland Drive	55.7	46.2	65.2
2. Southwest corner of project site, approximately northwest of the intersection of Mulholland Drive and Mulholland Highway. Approximately 40 feet west of the project site boundary.	Vehicular traffic on Mulholland Drive and Mulholland Highway.	61.1	49.2	70.2
3. Western boundary of project site along San Feliciano Drive, between the project site boundary and nearest residential use.	Vehicular traffic on San Feliciano Drive.	58.4	43.4	70.1

Source: Christopher A Joseph and Associates, 2005.

INSERT FIGURE V.G-1, NOISE MONITORING LOCATIONS

Existing Roadway Noise Levels Offsite

Existing roadway noise levels were calculated for the roadway segments surrounding the project site that have noise-sensitive uses facing the roadways. This task was accomplished using the Federal Highway Administration Highway Noise Prediction Model (FHWA-RD-77-108). The model calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site environmental conditions. The average vehicle noise rates (energy rates) utilized in the FHWA Model has been modified to reflect average vehicle noise rates identified for California by the California Department of Transportation (Caltrans). The Caltrans data show that California automobile noise is 0.8 to 1.0 dBA higher than national levels and that medium and heavy truck noise is 0.3 to 3.0 dBA lower than national levels. Traffic volumes utilized as data inputs in the noise prediction model were provided by the project traffic engineer. The average daily noise levels along these roadway segments are presented in V.G-4, Existing Roadway Noise Levels Offsite.

Table V.G-4
Existing Roadway Noise Levels Offsite

Roadway	Roadway Segment	Existing Noise-Sensitive Land Uses	dBA CNEL
Mulholland Drive	Between San Feliciano Drive and Mulholland Highway	Residential	62.3
Mulholland Drive	East of Mulholland Highway	School	60.9
San Feliciano Drive	North of Mulholland Drive	Residential	54.0

Source: Christopher A Joseph and Associates, 2005. Calculation data and results are provided in Technical Appendix I.

Existing Groundborne Vibration Levels

Aside from seismic events, the greatest regular source of groundborne vibration at the project site and immediate vicinity is from roadway truck traffic on Mulholland Drive and Mulholland Highway. These trucks typically generate groundborne vibration velocity levels of around 63 VdB. These levels could reach 72 VdB where trucks and buses pass over bumps in the road.[1]

Regulatory Framework

Federal

The City of Los Angeles has not adopted any thresholds for groundborne vibration impacts. Therefore, this analysis uses the Federal Railway Administration's vibration impact thresholds during construction and operation for sensitive buildings. The Federal Railway Administration has developed vibration

[1] *Federal Railroad Administration, 1998.*

impact thresholds for noise-sensitive buildings, residences, and institutional land uses. These thresholds are 80 VdB at residences and buildings where people normally sleep (e.g., nearby residences and daycare facility) and 83 VdB at institutional buildings (e.g., schools and churches). These thresholds apply to conditions where there are an infrequent number of events per day.[2]

State

Title 24 of the California Code of Regulations codifies Sound Transmission Control requirements, which establishes uniform minimum noise insulation performance standards for new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family dwellings. Specifically, Title 24 states that interior noise levels attributable to exterior sources shall not exceed 45 dBA CNEL in any habitable room of new multi-family dwellings. Dwellings are to be designed so that interior noise levels will meet this standard for at least 10 years from the time of building permit application.

Local

City of Los Angeles

The City of Los Angeles is the local agency responsible for adopting and implementing policies as they relate to noise levels and its affect on land uses within its jurisdiction. Both acceptable and unacceptable noise levels associated with construction activities, roadway noise levels and ambient noise levels must all be defined and quantified. The City of Los Angeles has numerous ordinances and enforcement practices that apply to intrusive noise as well as ones that guide new construction. The City's comprehensive noise ordinance (Section 111 et seq. of the LAMC) sets forth sound measurement and criteria, maximum ambient noise levels for different land use zoning classifications, sound emission levels for specific uses, hours of operation for certain uses, standards for determining when noise is deemed to be a disturbance to the peace, and legal remedies for violations. The standards are correlated with land use zoning classifications in order to maintain identified ambient noise levels and to limit, mitigate, or eliminate intrusive noise that exceeds the ambient noise levels within a specified zone. Table V.G-5, Community Noise Exposure (CNEL), lists the noise/land use compatibility guidelines for land uses within the City of Los Angeles.

[2] *"Infrequent events" is defined by the Federal Railroad Administration as being fewer than 70 vibration events per day*.

Table V.G-5
Community Noise Exposure (CNEL)

Land Use	Normally Acceptable[a]	Conditionally Acceptable[b]	Normally Unacceptable[c]	Clearly Unacceptable[d]
Single-family, Duplex, Mobile Homes	50 - 60	55 - 70	70 - 75	above 70
Multi-Family Homes	50 - 65	60 - 70	70 - 75	above 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	above 80
Transient Lodging – Motels, Hotels	50 - 65	60 - 70	70 - 80	above 80
Auditoriums, Concert Halls, Amphitheaters	---	50 - 70	---	above 65
Sports Arena, Outdoor Spectator Sports	---	50 - 75	---	above 70
Playgrounds, Neighborhood Parks	50 - 70	---	67 - 75	above 72
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 75	---	70 - 80	above 80
Office Buildings, Business and Professional Commercial	50 - 70	67 - 77	above 75	---
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	above 75	---

[a] 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.
[b] Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
[c] Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
[d] Clearly Unacceptable: New construction or development should generally not be undertaken.

Source: Office of Noise Control, California Department of Health Services (DHS).

In accordance with the Noise Element of the City of Los Angeles General Plan, a 60 dB CNEL exposure is considered to be the most desirable target for the exterior of noise-sensitive land uses, or sensitive receptors, such as homes, schools, churches, libraries, etc. It is also recognized that such a level may not always be possible in areas of substantial traffic noise intrusion. Exposures up to 70 dB CNEL for noise-sensitive uses are considered conditionally acceptable if all measures to reduce such exposure have been taken. Noise levels above 70 dB CNEL are normally unacceptable for sensitive receptors except in unusual circumstances.

ENVIRONMENTAL IMPACTS

Methodology

Implementation of the proposed project could result in the introduction of noise levels that may exceed permitted City noise levels. The primary sources of noise associated with the proposed project would be construction activities at the project site and project-related traffic volumes associated with operation of the proposed single-family homes. Secondary sources of noise would include new stationary sources (such as heating, ventilation, and air conditioning units) used in the new homes. The net increase in project site noise levels generated by these activities and other sources have been quantitatively estimated and compared to the applicable noise standards and thresholds of significance.

Aside from noise levels, groundborne vibration would also be generated during the construction phase of the proposed project by various construction equipment. Thus, the groundborne vibration levels generated by this source have also been quantitatively estimated and compared to applicable thresholds of significance.

Construction Noise Levels

Construction noise levels were estimated by data published by the U.S. Environmental Protection Agency (U.S. EPA). Potential noise levels are identified for offsite locations that are sensitive to noise, including existing residences as well as the private parochial high school and convent located to the southeast of the project site.

Roadway Noise Levels

Roadway noise levels have been calculated for various locations around the project site. The noise levels were calculated using the FHWA-RD-77-108 model and traffic volumes from the project traffic analysis. The average vehicle noise rates (energy rates) utilized in the FHWA Model have been modified to reflect average vehicle noise rates identified for California by Caltrans.

Groundborne Vibration Associated with Construction Equipment and Existing Railways

Groundborne vibration levels resulting from construction activities occurring within the project site were estimated by data published by Harris Miller Miller & Hanson Inc. for the Federal Transit Administration. Potential vibration levels resulting from construction of the proposed project are identified for offsite locations that are sensitive to vibration, including existing residences and the private parochial high school and convent.

Thresholds of Significance

In accordance with Appendix G to the State CEQA Guidelines, a significant noise impact may occur if the proposed project would result in any of the following conditions:

(a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

(b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;

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

(d) 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 airstrip, expose people residing or working in the project area to excessive noise levels; and

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

As discussed in the Initial Study (see Appendix A to this Draft EIR), the proposed project would have no impact with respect to Thresholds (e) and (f) listed above. As such, no further analysis of these topics is required (see also Section IV.A of this Draft EIR).

The State CEQA Guidelines do not define the levels at which groundborne vibration or groundborne noises are considered "excessive." This analysis uses the Federal Railway Administration's vibration impact thresholds for sensitive buildings, residences, and institutional land uses under conditions where there are an infrequent number of events per day. These thresholds are 65 VdB at buildings where vibration would interfere with interior operations, 80 VdB at residences and buildings where people normally sleep, and 83 VdB at other institutional buildings.[3]

The State CEQA Guidelines also do not define the levels at which temporary increases in ambient noise are considered "substantial." Therefore, for the purposes of this analysis, noise impacts are subject to the

[3] *Federal Railroad Administration, 1998.*

Draft L.A. CEQA Thresholds Guide,[4] which states that a project would normally have a significant impact on noise from construction if:

(a) Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA L_{eq} or more at a noise sensitive use;

(b) Construction activities lasting more than 10 days in a three month period would exceed existing ambient exterior noise levels by 5 dBA L_{eq} or more at a noise sensitive use; or

(c) Construction activities would exceed the ambient noise level by 5 dBA L_{eq} at a noise sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or anytime on Sunday.

In the Draft L.A. CEQA Thresholds Guide, CNEL is utilized as a noise descriptor for quantifying the noise impact from construction activities. However, construction typically occurs during the daytime hours, while CNEL describes the overall ambient sound levels over a 24-hour period, including nighttime hours. As supported by the LAMC Section 112.05,[5] the L_{eq} metric is more applicable when describing the potential noise impact from construction activities, and is likely to be a more conservative criteria than CNEL. Therefore, in this study, the three construction significance thresholds listed above are described in terms of L_{eq}.

Section 112.05 of the LAMC specifies the maximum noise level for powered equipment or powered hand tools. Any powered equipment or powered hand tool that produces a maximum noise level exceeding 75 dBA within 500 feet of a residential zone, when measured at a distance of 50 feet from the source, is prohibited. However, the above noise limitation does not apply where compliance is technically infeasible (Section 112.05 of the LAMC). Technically infeasible means that the above noise limitation cannot be complied with despite the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of the equipment. An inability to reduce construction equipment noise exposure to 75 dBA or less at any offsite, noise-sensitive use would be considered a significant temporary noise impact.

With respect to operational noise, the Draft L.A. CEQA Thresholds Guide states the following:

A project would normally have a significant impact on noise levels from project operations if the project causes the ambient noise level measured at the property line of affected uses to increase by 3 dBA in

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[4] *City of Los Angeles Draft L.A. CEQA Thresholds Guide, May 14, 1998, pages I.2-3 and I.2-4.*

[5] *City of Los Angeles Municipal Code, Chapter XI Noise Regulation, Article 1 General Provisions, Section 112.05, Rev. No. 63 – 1996.*

CNEL to or within the "normally unacceptable" of "clearly unacceptable" category, or any 5 dBA or greater noise increase (see Table V.G-5, Community Noise Exposure CNEL).

Project Impacts

Construction Noise

Project development would require the use of heavy equipment for site grading and excavation, installation of utilities, paving, and building fabrication. Development activities would also involve the use of smaller power tools, generators, and other sources of noise. During each stage of development, there would be a different mix of equipment operating and noise levels would vary based on the amount of equipment in operation and the location of the activity.

The U.S. EPA has compiled data regarding the noise generating characteristics of specific types of construction equipment and typical construction activities. These data are presented Table V.G-6, Noise Range of Typical Construction Equipment, and V.G-7, Typical Outdoor Construction Noise Levels. These noise levels would diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 84 dBA L_{eq} measured at 50 feet from the noise source to the receptor would reduce to 78 dBA L_{eq} at 100 feet from the source to the receptor, and reduce by another 6 dBA L_{eq} to 72 dBA L_{eq} at 200 feet from the source to the receptor.

During construction, three basic types of activities would be expected to occur and generate noise. The first activity would involve the demolition of existing onsite structures that are planned for removal with the implementation of the proposed project. These structures include the vacant and two-story single-family residence, sheds, and an aged kennel. The second activity would involve the preparation, excavation, and grading of portions of the project site to accommodate the building foundations for the new buildings that are being proposed. Overall, an estimated 10,700 cubic yards of soil would be excavated on the project site. The third activity that would generate noise during construction would involve the physical construction and finishing of the new residential buildings. A total of 37 detached, single-family homes would be constructed, consisting of a total building coverage of 50,950 square feet (sf).

Table V.G-6
Noise Range of Typical Construction Equipment

Construction Equipment	Noise Levels in dBA L_{eq} at 50 feet[a]
Front Loader	73–86
Trucks	82–95
Cranes (moveable)	75–88
Cranes (derrick)	86–89
Vibrator	68–82
Saws	72–82
Pneumatic Impact Equipment	83–88
Jackhammers	81–98
Pumps	68–72
Generators	71–83
Compressors	75–87
Concrete Mixers	75–88
Concrete Pumps	81–85
Back Hoe	73–95
Pile Driving (peaks)	95–107
Tractor	77–98
Scraper/Grader	80–93
Paver	85–88

[a] *Machinery equipped with noise control devices or other noise-reducing design features does not generate the same level of noise emissions as that shown in this table.*
Source: U.S. EPA, 1971.

Table V.G-7
Typical Outdoor Construction Noise Levels

Construction Phase	Noise Levels at 50 Feet with Mufflers (dBA L_{eq})	Noise Levels at 60 Feet with Mufflers (dBA L_{eq})	Noise Levels at 100 Feet with Mufflers (dBA L_{eq})	Noise Levels at 200 Feet with Mufflers (dBA L_{eq})
Ground Clearing	82	80	76	70
Excavation, Grading	86	84	80	74
Foundations	77	75	71	65
Structural	83	81	77	71
Finishing	86	84	80	74

Source: U.S. EPA, 1971.

The nearest and most notable offsite sensitive receptors to the project site are the existing residential uses bordering the project site boundary along San Feliciano Drive and Mulholland Drive. Along San Feliciano, the nearest offsite residential structure to the project site is located adjacent to the project site's western boundary. Given this distance, project construction-related noise levels during excavation and

grading at the project site may reach approximately 103 dBA L_{eq} at this offsite residential property.[6] Along Mulholland Drive, the nearest offsite residential structure to the project site is located approximately 40 feet from the project site's southwestern boundary. Based on this distance, project construction-related noise levels during excavation and grading at the project site may reach approximately 88 dBA L_{eq} at this offsite residential property.[7] Therefore, the construction-related noise levels experienced at these off-site, noise-sensitive uses would exceed the City's "conditionally acceptable" exterior noise standard for single-family homes. Furthermore, the construction noise levels associated with the Proposed Project would also exceed the City's noise standard of 75 dBA at 50 feet for powered equipment or powered hand tools within 500 feet of a residential zone, as stated in Section 112.05 of the LAMC.

In addition, a private parochial high school (Louisville High School) and convent is also located southeast of the project site, across Mulholland Drive. The nearest classroom building in Louisville High School to the project site is located approximately 261 feet to the southeast. Given this distance from the boundary of the project site, construction-related noise levels may reach approximately 72 dBA L_{eq} at this classroom building.[8] Therefore, the construction-related noise levels experienced at these off-site, noise-sensitive uses would exceed the City's "conditionally acceptable" exterior noise standard for schools.

Section 41.40 of the LAMC regulates noise from demolition and construction activities. Exterior demolition and construction activities that generate noise are prohibited between the hours of 9:00 P.M. and 7:00 A.M. Monday through Friday, and between 6:00 P.M. and 8:00 A.M. on Saturday. Demolition and construction are prohibited on Sundays and all federal holidays. In terms of construction noise, Section 112.02 of the LAMC limits the operation of powered equipment and powered hand tools to between the hours of 7:00 A.M. to 10:00 P.M., and prohibits the noise levels generated by construction machinery from exceeding 75 dBA at 50 feet from residential uses. However, according to Section 112.02 of the LAMC, the noise limitation of 75 dBA at 50 feet for powered equipment or powered hand tools within 500 feet of a residential zone does not apply where compliance is technically infeasible. As construction activities associated with the proposed project would be required to comply with the noise regulations established in Section 41.40 of the LAMC, the potential construction noise impacts on the existing off-site sensitive receptors would be less than significant. Furthermore, implementation of Mitigation Measures G-1 through G-9, which includes the implementation of noise reduction devices and techniques during construction at the Project Site, would further serve to reduce the noise levels associated with construction of the Proposed Project.

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[6] *The noise level was determined with the following equation from Harris Miller Miller & Hanson Inc.'s (HMMH) Transit Noise and Vibration Impact Assessment, Final Report: $L_{eq} = L_{eq}$ at 50 ft. – 20 Log(D/50), where L_{eq} = noise level of noise source, D = distance from the noise source to the receiver, L_{eq} at 50 ft. = noise level of source at 50 feet.*

[7] *Ibid.*

[8] *Ibid.*

As discussed above, construction activities associated with the proposed project during the daytime could result in noise levels as high as 103 dBA L_{eq} at the residential property bordering the project site on San Feliciano Drive, 88 dBA L_{eq} at the residential property located along Mulholland Drive bordering the project site's southwestern-most boundary, and 72 dBA L_{eq} at the classroom building in the Louisville High School. These construction activities could potentially represent a substantial temporary or periodic increase in ambient noise levels at these offsite noise sensitive locations. Nearby residents have expressed a concern that home-occupations could be impacted by construction noise during the daytime.

Based on criteria established in the Draft L.A. CEQA Threshold Guide, construction activities lasting more than one day, which would increase ambient exterior noise levels by 10 dBA or more at a noise sensitive use, may result in a significant impact. As shown in Table V.G-3, the existing daytime ambient noise level at the residential property bordering the project site on San Feliciano Drive is 58.4 dBA L_{eq}; the existing daytime ambient noise level at the residential property located along Mulholland Drive bordering the project site's southwestern-most boundary is 61.1 dBA L_{eq}; and the existing daytime ambient noise level at the classroom in the Louisville High School is 55.7 dBA L_{eq}. Consequently, the construction activities associated with the proposed project would result in an increase in ambient exterior noise levels at these three offsite locations by more than 10 dBA. It should be noted, however, that the increase in noise levels at these offsite locations during construction at the project site would be temporary in nature, and would not generate continuously high noise levels, although occasional single-event disturbances from grading and construction are possible. Furthermore, construction activities associated with the proposed project would only occur during the permitted hours designated in Section 41.40 of the LAMC and, thus, would not occur during recognized sleep hours for residences or on days that residents are most sensitive to exterior noise. Implementation of Mitigation Measures G-1 through G-9 would serve to reduce the noise levels associated with construction at the Project Site. Nevertheless, because construction noise levels associated with the Proposed Project are likely to exceed existing ambient noise levels by more than 5 dBA for more than 10 days in a three month period or by more than 10 dBA for more than one day, construction noise impacts would be significant and unavoidable.

Operational Noise

Offsite Vehicular Noise

Long-term noise concerns from the development of the proposed project have the potential to affect offsite locations, resulting primarily from vehicular traffic utilizing the local roadways along affected roadway segments analyzed in the project traffic study. These concerns were addressed using the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108) which calculates the CNEL noise level for a particular reference set of input conditions, based on site-specific traffic volumes, distances, speeds and/or noise barriers. Based on the traffic report prepared for the proposed project in combination with an analysis of the surrounding land uses, roadway noise levels were forecasted to determine if the proposed project's vehicular traffic would result in a significant impact at offsite, noise-sensitive receptor locations.

Offsite noise-sensitive locations surrounding the project site could experience a slight increase in noise resulting from the additional traffic generated by the proposed project. The increases in noise levels at noise-sensitive locations along the study-area roadway segments surrounding the project site are identified in Table V.G-8, Project Traffic Noise Impacts Offsite. As shown, the proposed project would increase local noise levels by a maximum of 0.1 dBA CNEL for the roadway segment of San Feliciano Drive, north of Mulholland Drive, while the rest of the analyzed roadway segments would not experience any increases in noise levels. Because the increase in local noise levels at these analyzed roadway segments resulting from implementation of the proposed project would not exceed the 5 dBA CNEL threshold established under the Draft L.A. CEQA Thresholds Guide, they would not represent a substantial permanent increase in ambient noise levels. Therefore, offsite noise impacts from operational mobile sources would be less than significant.

Table V.G-8
Project Traffic Noise Impacts Offsite

Roadway Segment	Existing Sensitive Uses Located Along Roadway Segment	Noise Levels in dBA CNEL				
		Existing	Existing Plus Project	Increase	Significance Threshold	Significant?
Mulholland Drive, between San Feliciano Drive and Mulholland Highway	Residential	62.3	62.3	0.0	3.0	No
Mulholland Drive, east of Mulholland Highway	School	60.9	60.9	0.0	3.0	No
San Feliciano Drive, north of Mulholland Drive	Residential	54.0	54.1	0.1	3.0	No

Traffic Information Source: Crain & Associates of Southern California, November 2004.
Table Source: Christopher A. Joseph and Associates, 2005.

Onsite Operational Noise

HVAC Systems

Upon completion of the proposed project, new sources of noise would include stationary sources (such as, rooftop heating, ventilation, and air conditioning [HVAC] systems for the residential and retail uses). The HVAC systems that would be installed for the new residential buildings would typically result in noise levels that average between 40 and 50 dBA L_{eq} at 50 feet from the equipment. As discussed previously, 24-hour CNEL noise levels are about 6.7 dBA greater than 24-hour L_{eq} measurements. As such, the HVAC equipment associated with the proposed residences could generate noise levels that average between 47 to 57 dBA CNEL at 50 feet from the source when the equipment is operating continuously over 24-hour period. However, many of the proposed new homes would be located within 50 feet of each other, with some as close as 12 feet. Thus, noise levels associated with the HVAC systems of the proposed new homes could exceed the City's exterior noise level standard of 60 dBA CNEL for single-family residential uses; therefore, this impact would be potentially significant. Implementation of Mitigation Measure G-10 recommended below would require the provision of proper shielding for all new HVAC systems used by the proposed residential uses such that the interior noise levels at each proposed new home would be below 45 dBA CNEL.

Construction-Related Groundborne Vibration

Construction activities that would occur within the project site would include demolition and excavation, which would have the potential to generate low levels of groundborne vibration. Table V.G-9, Vibration Source Levels for Construction Equipment, identifies various vibration velocity levels for the types of construction equipment that would operate during the construction of the proposed project.

Table V.G-9
Vibration Source Levels for Construction Equipment

Construction Equipment	Approximate VdB at 25 feet
Large Bulldozer	87
Caisson Drilling	87
Loaded Trucks	86
Jackhammer	79
Small Bulldozer	58
Source: Harris Miller Miller Hanson, 1995.	

Based on the information presented in Table V.G-9, vibration levels could reach as high as approximately 87 VdB within 25 feet of the project site from the operation of construction equipment.

Construction activities would have the potential to impact the nearest offsite sensitive receptors to the project site, which includes the existing residential properties bordering the project site along San Feliciano Drive and Mulholland Drive. In addition, the Louisville High School and convent located southeast of the project site across Mulholland Drive may also be adversely affected by construction activities on the project site. As discussed under Thresholds of Significance above, the Federal Railway Administration has established vibration impact thresholds for sensitive buildings, residences, and institutional land uses. These thresholds are 65 VdB at buildings where vibration would interfere with interior operations, 80 VdB at residences and buildings where people normally sleep and 83 VdB at other institutional buildings.

As mentioned previously, the nearest offsite residential property to the project site is located along San Feliciano Drive, adjacent to the western boundary of the project site. Consequently, the vibration level that would be experienced by the residences in this complex would be approximately 98 VdB.[9] In addition, the nearest offsite residential property to the project site located along Mulholland Drive is approximately 40 feet from the project site's southwestern boundary. Based on this distance, project construction-related vibration levels may reach approximately 83 dBA L_{eq} at this offsite residential property.[10] Because the vibration levels experienced at both of these offsite properties would exceed the Federal Railway Administration's vibration impact threshold of 80 VdB at residences, this impact would be potentially significant.

As for the Louisville High School, the nearest classroom is located approximately 261 feet from the southeastern boundary of the project site. Consequently, the vibration level that would be experienced by the Louisville High School classroom would be approximately 67 VdB.[11] As this vibration level would not exceed the Federal Railway Administration's vibration impact threshold of 83 VdB for institutional buildings, this impact would be less than significant.

The construction activities associated with the proposed project would be required to comply with Section 41.40 of the LAMC, which prohibits exterior demolition and construction activities between the hours of 9:00 P.M. and 7:00 A.M. Monday through Friday, and between 6:00 P.M. and 8:00 A.M. on Saturday. As such, demolition and construction would not occur during recognized sleep hours. Nevertheless, because sensitive noise receptors may be in close proximity to active construction during early evening hours, a potentially significant impact could occur. Implementation of Mitigation Measures G-10 and G-11 would serve to reduce the amount of vibration experienced at offsite noise-sensitive uses by requiring

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[9] *The vibration levels at the off-site sensitive uses are determined with the following equation from Harris Miller Miller & Hanson Inc.'s (HMMH) Transit Noise and Vibration Impact Assessment, Final Report: Lv(D)=Lv(25 ft) – 20log(D/25), where Lv = vibration level of equipment, D = distance from the equipment to the receiver, Lv(25 ft) = vibration level of equipment at 25 feet.*

[10] *Ibid.*

[11] *Ibid.*

the location of construction staging and the operation of earthmoving equipment to be located as far away from vibration-sensitive receptors as possible, and for heavily loaded trucks to be routed away from the surrounding residential streets to the extent possible.

CUMULATIVE IMPACTS

This cumulative impact analysis considers development of the proposed project in combination with ambient growth and other development within the vicinity of the proposed project. As noise is a localized phenomenon, and drastically reduces in magnitude as distance from the source increases, only projects and growth in the nearby area could combine with the proposed project to result in cumulative noise impacts.

Development of the proposed project in combination with the related projects would result in an increase in construction-related and traffic-related noise in this area of the City. However, each of the related projects would be subject to LAMC Section 41.40, which limits the hours of allowable construction activities. In addition, each of the related projects would also be subject to Section 112.05 of the LAMC, which prohibits any powered equipment or powered hand tool within 500 feet from a residential zone from producing noise levels that exceed 75 dBA at a distance of 50 feet from the noise source. Noise levels are only allowed to exceed this noise limitation under conditions where compliance is technically infeasible. With conformance with LAMC Sections 41.40 and 112.05, the cumulative construction noise impact would be less than significant.

Future construction associated with the related projects could result in a cumulatively significant impact with respect to temporary or periodic increases in ambient noise levels. Construction noise is localized in nature and decreases substantially with distance. Consequently, in order to achieve a substantial cumulative increase in construction noise levels, more than one source emitting high levels of construction noise would need to be in close proximity to the proposed project. The nearest related project to the proposed project site is the proposed 6,744-square-feet office development occurring at 22231 Mulholland Highway, which is located approximately within 500 feet south of the project site, across Mulholland Drive. Due to the close proximity of this related project to the project site, a significant cumulative impact associated with a temporary or periodic increase in ambient noise levels could occur if construction activities at both these sites occur at the same time. Although it is not known at this time whether or not construction activities would overlap at these two sites, this potential scenario is assumed for the purpose of a conservative analysis. Thus, this could be a potentially significant and unavoidable cumulative impact. As discussed previously, construction activities associated with the proposed project would only occur during the permitted hours designated in Section 41.40 of the LAMC and, thus, would not occur during recognized sleep hours for residences or on days that residents are most sensitive to exterior noise. While implementation of Mitigation Measures G-1 through G-9 would serve to reduce the noise levels associated with construction at the project site, construction noise levels exceeding the thresholds in the L.A. CEQA Threshold Guide can still be expected. Therefore, the cumulative

impact of the proposed project associated with a temporary or periodic increase in ambient noise levels caused by the construction activities would be significant and unavoidable.

Cumulative development in the City may result in the exposure of people to or the generation of excessive groundborne vibration. As mentioned above, the nearest related project to the proposed project is the proposed 6,774-square-feet office development located at 22231 Mulholland Highway. Due to the close proximity of this related project to the project site, construction-related activities at both of these development sites could expose nearby sensitive receptors to excessive groundborne vibration levels if construction occurs at the same time at these two sites. Although it is not known at this time whether or not construction activities would occur at the same time at these two sites, this potential scenario is assumed for the purpose of a conservative analysis. Thus, this could be a potentially significant and unavoidable cumulative impact. While implementation of Mitigation Measures G-10 and G-11 would serve to reduce the vibration levels associated with construction at the project site to the maximum extent feasible, vibration levels exceeding the Federal Railway Administration's threshold for residences at the nearest off-site residential properties can still be expected. Therefore, the cumulative impact of the proposed project would be significant and unavoidable.

Cumulative mobile source noise impacts would occur primarily as a result of increased traffic on local roadways due to the proposed project and other projects within the study area. Therefore, cumulative traffic-generated noise impacts have been assessed based on the contribution of the proposed project to the future cumulative base traffic volumes in the project vicinity. The cumulative noise levels at the surrounding sensitive noise receptors associated with traffic generated by the proposed project in combination with the traffic generated by the related projects are identified in Table V.G-10.

Table V.G-10

Cumulative Future Project Traffic Noise Impacts

Roadway Segment	Noise Levels in dBA CNEL				
	Existing Traffic	Future Without Project	Future With Project	Cumulative Increase	Significant?
Mulholland Drive, between San Feliciano Drive and Mulholland Highway	62.3	63.0	63.0	0.7	No
Mulholland Drive, east of Mulholland Highway	60.9	61.6	61.7	0.8	No
San Feliciano Drive, north of Mulholland Drive	54.0	55.3	55.4	1.4	No

Source: Christopher A. Joseph and Associates, 2005.
Traffic Information Source: Crain & Associates of Southern California, November 2005.

As shown in Table V.G-10, cumulative development would increase local noise levels by a maximum of 1.4 dBA CNEL along the segment of San Feliciano Drive north of Mulholland Drive. Because none of

the roadway segments would experience an increase in local noise levels by more than 3.0 dBA CNEL, the resulting cumulative impact would be less than significant.

With respect to stationary sources, the major stationary source of noise that would be introduced by the related projects would likely be HVAC equipment associated with the new developments. As discussed previously, the HVAC systems that are installed for new residential buildings would typically result in noise levels that average between 40 and 50 dBA L_{eq} at 50 feet from the equipment, while those for new commercial developments would generally produces noise levels of around 57 to 72 dBA CNEL at a distance of 50 feet. Depending on the distance these HVAC systems may be located from potential noise-sensitive uses at, or surrounding, these project sites, noise impacts at individual sites could be potentially significant. However, given the distances these related projects are from the proposed project, and the fact that noise is a localized phenomenon, a significant increase in ambient noise from the operation of the HVAC systems associated with the new developments would not occur. Thus, the cumulative stationary noise impact would be less than significant.

MITIGATION MEASURES

Construction

The following mitigation measures are recommended to address construction-related noise and vibration impacts:

G-1 The project shall comply with the City of Los Angeles Noise Ordinance No. 144,331 and 161,574, and any subsequent ordinances, which prohibit the emission or creation of noise beyond certain levels at adjacent uses unless technically infeasible.

G-2 Construction and demolition shall be restricted to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday, and 8:00 a.m. to 6:00 p.m. on Saturday.

G-3 Construction and demolition activities shall be scheduled to avoid operating several pieces of equipment simultaneously, which causes high noise levels.

G-4 The use of those pieces of construction equipment or construction methods with the greatest peak noise generation potential shall be minimized. Examples include the use of drills, jackhammers, and pile drivers.

G-5 Noise construction activities whose specific location on the site may be flexible (e.g., operation of compressors and generators, cement mixing, general truck idling) shall be conducted as far as possible from the nearest noise-sensitive land uses, and natural and/or manmade barriers (e.g., intervening construction trailers) shall be used to screen propagation of noise from such activities towards these land uses to the maximum extent possible.

G-6 Equipment warm-up areas, water tanks, and equipment storage areas shall be located a minimum of 150 feet from the adjacent, offsite residential buildings.

G-7 The project contractor shall use power construction equipment with state-of-the-art noise shielding and muffling devices.

G-8 Flexible sound control curtains shall be placed around drilling apparatuses and drill rigs used within the project site, if sensitive receptors are located at, or within, 50 feet.

G-9 Two weeks prior to the commencement of construction at the project site, notification must be provided to the offsite residential uses located along Mulholland Drive and San Feliciano Drive, and to Louisville High School, disclosing the construction schedule, including the various types of activities and equipment that would be occurring throughout the duration of the construction period.

G-10 The project developer shall locate construction staging areas and the operation of earthmoving equipment as far away from vibration-sensitive receptors as possible.

G-11 The project developer shall ensure that heavily loaded trucks used during construction shall be restricted to Mulholland Drive and Topanga Canyon Road, and shall be routed away from residential streets surrounding the project site.

Operational

G-12 The project developer shall ensure that proper shielding will be provided for all new HVAC systems used by each proposed new home such that the interior noise levels at each new home and at existing nearby homes would be below 45 dBA CNEL.

G-13 The project sponsor must comply with the Noise Insulation Standards of Title 24 of the California Code Regulations, which ensure an acceptable interior noise environment.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

With compliance with Section 41.40 of the LAMC and the implementation of the Mitigation Measures G-1 through G-11 listed above, which includes the implementation of noise reduction devices and techniques during construction at the project site, construction-related noise impacts associated with the Proposed Project would be reduced to the maximum extent feasible. Nevertheless, because construction noise levels are likely to exceed existing ambient noise levels by more than 5 dBA for more than 10 days in a three month period or by more than 10 dBA for more than one day, short-term construction noise impacts would remain significant and unavoidable.

With implementation of Mitigation Measures G-10 and G-11, which serve to locate vibration-generating equipment and vehicles as far away from vibration-sensitive sites as possible, the onsite construction-related vibration impacts associated with the proposed project would be reduced to the extent possible. However, because the groundborne vibration levels experienced by these offsite sensitive receptors would exceed the Federal Railway Administration's vibration impact threshold of 80 VdB at residences, this short-term impact would remain significant and unavoidable.

With implementation of Mitigation Measures G-12 and G-13, the installation of proper shielding for all new HVAC systems, the interior noise levels at each new home and neighboring sensitive receptors would be below 45 dBA CNEL. Thus, noise impacts associated with HVAC systems would be reduced to a less-than-significant level.