3.6 NOISE

This section examines potential noise and vibration impacts from the construction and operation of the proposed project.

3.6.1 ENVIRONMENTAL SETTING

NOISE CHARACTERISTICS AND EFFECTS

Comprehensive Environmental Response, Compensation, and Liability Act

Sound is technically described in terms of the loudness (amplitude) and frequency (pitch) of the sound. The standard unit of measurement for sound is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The "A-weighted scale," abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA.

Noise Definitions

This noise analysis discusses sound levels in terms of Community Noise Equivalent Level (CNEL), Equivalent Noise Level (L_{eq}), and Day-Night Sound Level (L_{dn}).

Community Noise Equivalent Level. CNEL is an average sound level during a 24-hour period. CNEL is a noise measurement scale, which accounts for noise source, distance, single event duration, single event occurrence, frequency, and time of day. Human reaction to sound between 7:00 p.m. and 10:00 p.m. is as if the sound were actually 5 dBA higher than if it occurred from 7:00 a.m. to 7:00 p.m. From 10:00 p.m. to 7:00 a.m., humans perceive sound as if it were 10 dBA higher due to the lower background level. Hence, the CNEL is obtained by adding an additional 5 dBA to sound levels in the evening from 7:00 p.m. to 10:00 p.m., and 10 dBA to sound levels in the night before 7:00 a.m. and after 10:00 p.m. Because CNEL accounts for human sensitivity to sound, the CNEL 24-hour figure is always a higher number than the actual 24-hour average.

Equivalent Noise Level. L_{eq} is the average noise level on an energy basis for any specific time period. The L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA.

Day-Night Sound Level. L_{dn} is a 24-hour L_{eq} with an adjustment to reflect the greater sensitivity of most people to nighttime noise. The adjustment is a 10-dBA penalty for all sound that occurs during the nighttime hours of 10:00 p.m. and 7:00 a.m. The effect of the penalty is that in the calculation of L_{dn}, any event that occurs during the nighttime hours is equivalent to 10 of the same event during the daytime hours.

Effects of Noise

Noise is generally defined as unwanted sound. The degree to which noise can impact the human environment ranges from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise, the amount of background noise present before the intruding noise, and the nature of work or human activity that is exposed to the noise source.

Audible Noise Changes

Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. A change of at least 5 dBA would be noticeable and would likely evoke a community reaction. A 10-dBA increase is subjectively heard as a doubling in loudness and would cause a community response.

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or "point source," would decrease by approximately 6 dBA over hard surfaces and 7.5 dBA over soft surfaces for each doubling of the distance. For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level would be 83 dBA at a distance of 100 feet from the noise source, 77 dBA at a distance of 200 feet, and so on. Noise generated by a mobile source would decrease by approximately 3 dBA over hard surfaces and 4.5 dBA over soft surfaces for each doubling of the distance.

Generally, noise is most audible when traveling by direct line-of-sight.[1] Barriers, such as walls, berms, or buildings that break the line-of-sight between the source and the receiver greatly reduce noise levels from the source since sound can only reach the receiver by bending over the top of the barrier (diffraction). Sound barriers can reduce sound levels by up to 20 dBA. However, if a barrier is not high or long enough to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced.

VIBRATION CHARACTERISTICS AND EFFECTS

Characteristics of Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earth-moving equipment.

[1] Line-of-sight is an unobstructed visual path between the noise source and the noise receptor.

Vibration Definitions

There are several different methods that are used to quantify vibration. The peak particle velocity is defined as the maximum instantaneous peak of the vibration signal. The peak particle velocity is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The root mean square amplitude is most frequently used to describe the effect of vibration on the human body. The root mean square amplitude is defined as the average of the squared amplitude of the signal. Vibration decibel notation (VdB) is commonly used to measure root mean square. The decibel notation acts to compress the range of numbers required to describe vibration (Federal Transit Administration 2006).

Effects of Vibration

High levels of vibration may cause physical personal injury or damage to buildings. However, ground-borne vibration levels rarely affect human health. Instead, most people consider ground-borne vibration to be an annoyance that may affect concentration or disturb sleep. In addition, high levels of ground-borne vibration may damage fragile buildings or interfere with equipment that is highly sensitive to ground-borne vibration (e.g., electron microscopes).

To counter the effects of ground-borne vibration, the Federal Railway Administration and the Federal Transit Administration have published guidance relative to vibration impacts. According to the Federal Railway Administration, fragile buildings can be exposed to ground-borne vibration levels of 0.5 inches per second peak particle velocity without experiencing structural damage (Federal Railway Administration 2005). Table 3.6-1 shows Federal Transit Administration thresholds for vibration annoyance.

TABLE 3.6-1 FEDERAL TRANSIT ADMINISTRATION VIBRATION IMPACT CRITERIA

Land Use Category	Vibration Impact Level for Frequent Events (VdB) [1]	Vibration Impact Level for Occasional Events (VdB) [2]	Vibration Impact Level for Infrequent Events (VdB) [3]
Category 1: Buildings where low ambient vibration is essential for interior operations	65	65	65
Category 2: Residences and buildings where people normally sleep	72	75	80
Category 3: Institutional land uses with primarily daytime uses	75	78	83

[1] Frequent events are defined as more than 70 vibration events of the same source per day.
[2] Occasional events are defined as between 30 and 70 vibration events of the same source per day.
[3] Infrequent events are defined as fewer than 30 vibration events of the same source per day.
Source: Federal Transit Administration 2006.

Perceptible Vibration Changes

In contrast to noise, ground-borne vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually 50 root mean square or lower, well

below the threshold of perception for humans, which is around 65 root mean square (Federal Transit Administration 2006). Most perceptible indoor vibration is caused by sources within buildings, such as the operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

SENSITIVE NOISE RECEPTORS

Noise-sensitive receptors are generally considered humans engaged in activities, or utilizing land uses, that may be subject to the stress of significant interference from noise. Land uses often associated with sensitive receptors include residential dwellings, mobile homes, education facilities, hotels, motels, hospitals, nursing homes, concert halls, houses of worship, and libraries. Refer to Chapter 3.3 Biological Resources for a discussion of noise impacts to wildlife during construction and operation of the proposed project.

The visitors and staff currently within the lease boundary are considered sensitive receptors. In addition to on-site sensitive receptors, other sensitive receptors within the vicinity of the lease boundary include the following:

- Residents of the multi-family homes and employees of the commercial uses located west of the lease boundary along Durfee Avenue.
- Employees of the commercial uses and visitors of the church located east of the lease boundary along Durfee Avenue.
- Students and staff of South El Monte High School located across from the lease boundary on the north side of Durfee Avenue.
- Visitors to and wildlife within adjacent portions of the Natural Area.

EXISTING SOURCES OF NOISE

Traffic on Durfee Avenue is the predominant source of noise in the vicinity. Secondary sources of noise audible within the lease boundary include nature sounds of birds and squirrels, and voices, whistles, and similar sounds from South El Monte High School, typical of school activities. The background noise is from traffic on Interstate 605 (I-605) and State Route 60 (SR 60) north and south of the lease boundary, respectively. Due to the distance from the lease boundary, recreational activities occurring in other parts of the Whittier Narrows Recreation Area (Recreation Area), including Pico Rivera Sports Arena, Pico Rivera Bicentennial Park, and Pico Rivera Golf Course, contribute to background noise levels.

EXISTING NOISE LEVELS

Noise level measurements were taken on March 22, 2007, between 2:30 p.m. and 4:00 p.m. The dominant noise source in the project vicinity is vehicle noise on nearby streets and freeways. This condition did not change between August 2006 and March 2007. No new construction occurred or other

projects that substantially increased vehicle trips in the vicinity. As such, these noise measurement results accurately reflect baseline conditions. Results from the noise monitoring, show that the existing average noise levels ranged from 51 to 55 dBA L_{eq} within the lease boundary. The results of the field noise measurements are summarized in Table 3.6-2 and the noise measurement locations are shown in Figure 3.6-1.

TABLE 3.6-2 EXISTING NOISE LEVELS AT SELECTED LOCATIONS NEAR THE PROJECT SITE[1]

Location, Description, and Time		Noise Level		Notes
		L_{eq}	L_{max}	
A	Lease boundary, approximately 50 feet from Durfee Avenue. Site elevation is approximately 5 feet below grade of the roadway.	55	71	Dominant noise was traffic on Durfee Avenue. 178 cars and 1 heavy truck in 15 minutes. Other noises from birds and squirrels and from athletic field.
B	Lease boundary interior, at location of planned wetland/riparian area. Approximately 350 south of Durfee Avenue.	51	68	Noise sources same as for Location A.
C	West lease boundary near the rear of adjacent residences.	52	60	Noise sources same as for Location A.

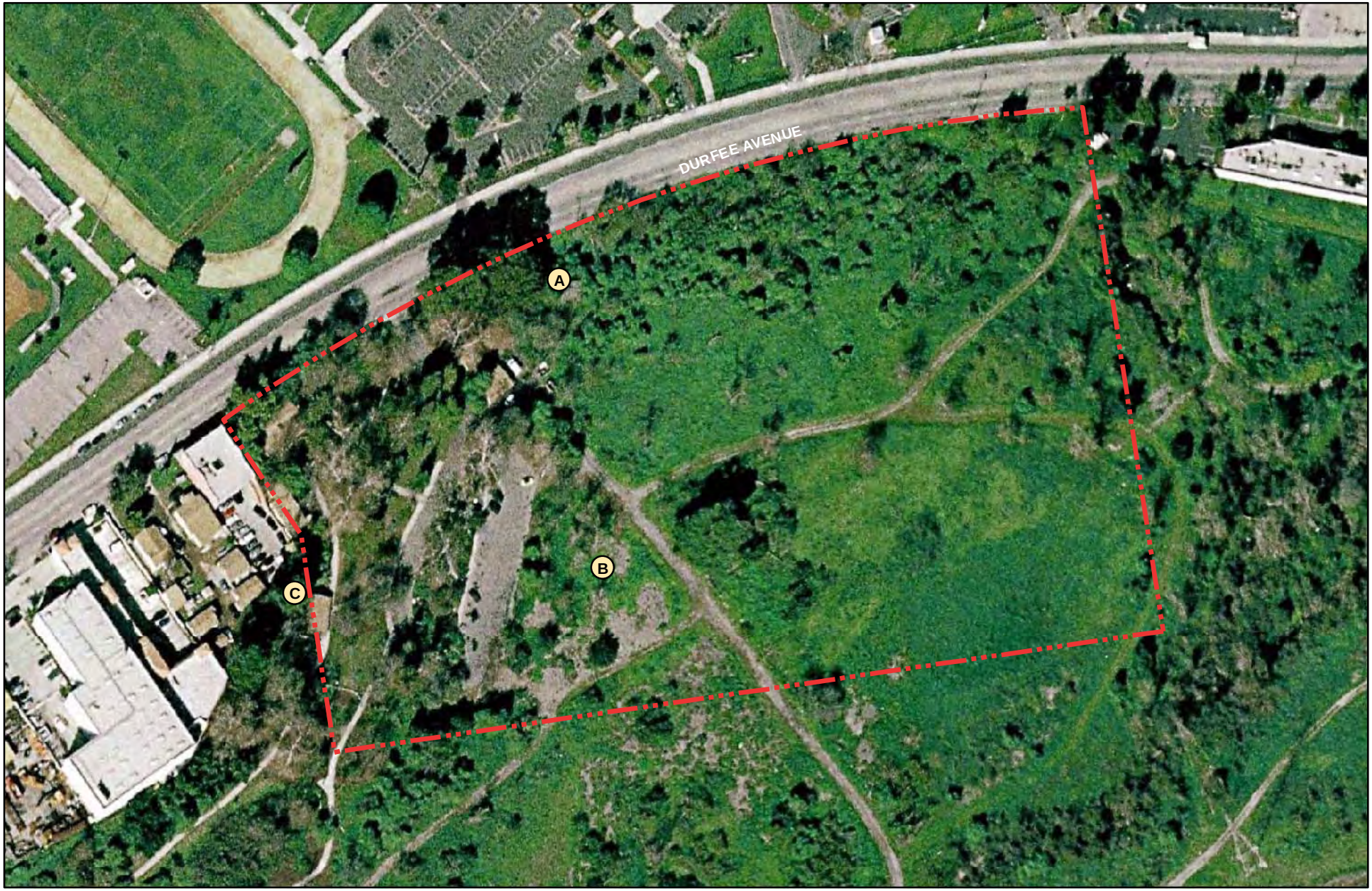
1 Noise levels were measured using a Metrosonics dB-306A Metrologger, which was calibrated before and after the measurements.

Source: EDAW 2007.

The noise measurement locations were chosen based on the likelihood of experiencing higher noise volumes during proposed project construction and operation. For example, measurement location C is adjacent to the multi-family residences located west of the lease boundary and measurement location A is near the boundary of South El Monte High School. These are the two closest off-site sensitive receptor locations. On-site visitors and staff would also experience increased noise levels during project construction and operation. As such, measurement location B is in the site's interior.

Existing Vibration Environment

Similar to the environmental setting for noise, the vibration environment is dominated by traffic from nearby roadways. Heavy trucks can generate ground-borne vibration that varies depending on vehicle type, weight, and pavement conditions. Field observations indicated that heavy-duty truck travel is minimal along Durfee Avenue. Vibration levels from adjacent roadways are not perceptible within the lease boundary.



Source: EDAW Site Visit, March 22, 2007; GlobeXplorer, 2006

Figure 3.6-1
Noise Measurement Locations

3.6.2 REGULATORY SETTING

COUNTY OF LOS ANGELES

Noise-Land Use Compatibility

The County General Plan Noise Element does not contain noise-land use compatibility standards. The City of Los Angeles General Plan Noise Element noise-land use compatibility guidelines for playgrounds and neighborhood parks state that a noise level of 65 dBA CNEL is on the borderline of "normally acceptable" and "normally unacceptable," and that a noise level of 70 dBA CNEL is "normally unacceptable." The City guideline is based on the State of California 1990 General Plan Guidelines, and is similar to many other jurisdictions. CNEL is a 24-hour weighted average with sensitivity for evening and nighttime noise levels. As such, CNEL is not an appropriate standard for land uses that are daytime only or that have very limited evening activities that do not occur on a daily basis, such as parks and schools.

A more appropriate standard is that used by the Federal Highway Administration and the California Department of Transportation (Caltrans). The standard is based on the loudest typical daily hour and is described in the Caltrans Traffic Noise Protocol (Caltrans 2006). The standard, called the Noise Abatement Criterion for parks is 67 dBA L_{eq}. If noise levels approach or exceed the standard, then there is a traffic noise impact. "Approach" is defined as one dBA. Further, Caltrans does not consider abatement for areas that are not characterized by frequent human use, which has been interpreted as where persons would be likely to stay for one hour or more.

Construction Noise

Construction noise in the County is governed by Section 12.08.440 of the County Code, Construction Noise, identified as the Noise Control Ordinance.

Hours of Construction

Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays or holidays, such that the sound there from creates a noise disturbance across a residential or commercial real-property line, except for emergency work of public service utilities or by variance issued by the health officer is prohibited.

Noise Levels

The Noise Control Ordinance includes noise level standards for both short-term, defined as less than 10 days, and relatively long-term construction, which is 10 days or more.

The contractor shall conduct construction activities in such a manner that the maximum noise levels at the affected buildings will not exceed those listed in the following schedule:

1. At Residential Structures.

   a. Mobile Equipment. Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment:

	Single-family Residential	Multi-family Residential	Semi-residential/ Commercial
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	75 dBA	80 dBA	85 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	60 dBA	64 dBA	70 dBA

   b. Stationary Equipment. Maximum noise level for repetitively scheduled and relatively long-term operation (periods of 10 days or more) of stationary equipment:

	Single-family Residential	Multi-family Residential	Semi-residential/ Commercial
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA

2. At Business Structures.

   Mobile equipment. Maximum noise levels for nonscheduled, intermittent, short-term operation of mobile equipment: Daily, including Sunday and legal holidays, all hours: maximum of 85 dBA)\.

General Requirements

All mobile or stationary internal-combustion-engine powered equipment or machinery shall be equipped with suitable exhaust and air-intake silencers in proper working order.

Operations Noise

Title 12, Chapter 12.08 of the Los Angeles County Code also specifies limits for noise generated from one property to another (see Table 3.6-3). The Noise Ordinance provides measures for protecting different land uses which are assigned noise zones and corresponding noise limits (exterior and interior).

TABLE 3.6-3 LOS ANGELES COUNTY NOISE ZONE DESIGNATIONS AND LIMITS

Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level Limit (dBA, L_{eq})
Noise-sensitive area (e.g., schools, parks, hospitals)	Anytime	45
Residential properties	10:00 p.m. to 7:00 a.m. (nighttime)	45
	7:00 a.m. to 10:00 p.m. (daytime)	50
Commercial properties	10:00 p.m. to 7:00 a.m. (nighttime)	55
	7:00 a.m. to 10:00 p.m. (daytime)	60
Industrial properties	Anytime	70

VIBRATION

The County of Los Angeles Noise Ordinance prohibits the operation of any device that creates vibration above the vibration perception threshold of any individual at the property boundary of the source. The County defines the vibration perception threshold as 0.01 peak particle velocity in inches per second. Caltrans and the Federal Transit Administration recommend a 0.2 in/sec level for assessment of impact (Caltrans 2002; Federal Transit Administration 2006).

3.6.3 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

As part of the Initial Study (see Appendix A), it was determined that the proposed project would not expose people residing or working in the proposed project area to excessive noise levels associated with a public airport or a private airstrip. Accordingly, these issues are not further analyzed in the EIR.

The proposed project would have a significant effect on noise if it would:

- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Expose persons to or generate excessive groundborne vibration or groundborne noise levels;
- Create a substantial permanent increase in ambient noise levels in the vicinity of the proposed project above levels without the proposed project; or

- Create a substantial temporary or periodic increase in ambient noise levels in the vicinity of the proposed project, in excess of noise levels existing without the proposed project.

IMPACT ANALYSIS

NOISE-1 *The proposed project would not expose people to noise levels in excess of standards established in applicable plans, policies, or ordinances.*

Construction

As stated in the project description, the construction is assumed to start in October 2011, and demolition, site preparation, and grading are assumed to occur in the first 6 months. The construction of the interpretive center, open air classroom, and covered outdoor classroom would follow and take approximately one year to complete. LADPR would continue to operate a temporary office within the project site during construction. Limited outdoor programs would be offered. The Natural Area adjacent to the lease boundary would not be closed or restricted. Recreationalists would continue to walk nearby trails during proposed project construction.

Because the WNNC would be closed and limited programming would be offered during project construction, traffic volumes in the project vicinity would decrease from existing conditions. Construction noise generated by on-site activities would be the dominant noise source during the construction phase both on-site and off-site. Noise impacts from construction are a function of the noise generated by equipment, the location and sensitivity of nearby land uses, and the timing and duration of the noise-generating activities. Noise levels within and adjacent to the specific construction sites would increase during the construction period. Construction noise levels at and near the project site would fluctuate depending on the particular type, number, and duration of use of various pieces of construction equipment. Table 3.6-4 shows noise levels associated with various types of construction related equipment when measured at a distance of 50 feet from the noise source. Fencing around the lease boundary would prevent access by non-construction personnel within 50 feet of construction activities, at a minimum. The list was used in this analysis to estimate construction noise. The list in Table 3.6-4 accounts for equipment that would be used during all phases of construction, demolition through site finishing.

TABLE 3.6-4 TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVELS

Equipment	Typical Noise Level 50 feet from source (dBA)
Air Compressor	81
Backhoe	80
Compactor	82
Crane, Mobile	83
Dozer	85
Generator	81
Grader	85
Loader	85
Paver	89
Truck	88

Source: Federal Transit Administration 2006.

Typical construction projects, with equipment moving from one point to another, work breaks, and idle time, have long-term noise averages that are lower than louder, short-term noise events. For purposes of providing a worst-case conservative impact analysis, a maximum 1-hour average noise level of 90 dBA at a distance of 50 feet from the edge of the construction impact area is assumed to occur. Noise levels from construction activities are considered as point sources and would drop off at a rate of 6 dBA per doubling of distance over hard sites, such as streets and parking lots; the drop-off rate would increase up to 7.5 dBA per doubling of distance over soft sites, such as grass fields and open terrain with vegetation. Peak noise events would occur during the 6-month site preparation and grading phases of the proposed project, when there may be a combination of noise from several pieces of equipment in proximity, including the noise of backup alarms, haul trucks, cranes, small bulldozers, etc. Noise levels of other activities, such as erecting structures or paving, would be less because fewer pieces of equipment would be used at any one time.

Proposed project grading activities would directly impact approximately 7 acres of the lease boundary, referred to as the construction impact area. The proposed project would result in approximately 6,000 cubic yards of earthwork movement. Standard diesel-powered earth-moving equipment such as scrapers, bulldozers, backhoes, graders, and water trucks would be used during earthwork and grading activities. Hours of construction would be limited to 7:00 a.m. and 7:00 p.m, Monday through Friday. No construction activities would occur in the evenings or on Saturdays or Sundays.

The nearest sensitive noise receptors to the lease boundary are the commercial uses and multi-family residences to the west; South El Monte High School to the north; and site visitors recreational users within adjacent portions of the Natural Area. Some grading work may occur within 50 to 100 feet of the commercial uses directly adjacent to the lease boundary. Assuming that the two loudest pieces of construction equipment would be operating simultaneously, and short-term noise events could have a maximum noise level of 85 to 90 dBA. In order to reduce construction noise levels experienced by these sensitive receptors, the proposed project would implement the following construction best management practices (see Section 2.8 in the Project Description):

- Project construction would comply with the County of Los Angeles Noise Ordinance.

- All mobile construction equipment would be equipped with properly operating mufflers or other noise reduction devices.
- Prior to the start of construction, the construction contractor would install temporary sound walls, noise curtains, or other temporary sound barriers.
- The construction contractor shall limit noise-generating construction activities, such as grading and paving, on the east parcel to periods of 10 days duration, with at least 10 days break between each period of grading. Alternatively, the contractor may have a grading duration longer than 10 days only if it can be demonstrated that average hourly construction noise levels at adjacent sensitive receptors would not exceed the ambient noise level for the entire period. For example, if the ambient traffic noise level is 64 dBA L_{eq}, then the construction noise level can not exceed 64 dBA L_{eq}, and the total noise level would not exceed 67 dBA L_{eq}, for a maximum noise increase of 3 dBA.
- Businesses and residences immediately adjacent to the construction site would be notified prior to the start of construction (e.g., via flyers). The notices would include a telephone number for noise complaints.

With implementation of these construction best management practices, noise levels experienced by the closest sensitive receptors (commercial uses directly adjacent to the project site western boundary) would be reduced to below the daytime construction noise limits at 85 dBA L_{eq}. Therefore, the impact would be less than significant.

The average distance from construction equipment to the sensitive receptors (residential uses, site visitors, and recreationalists) would be 200 feet or greater and hourly average noise levels would not be likely to exceed 78 dBA L_{eq}. This value is less than the noise ordinance limit of 80 dBA L_{eq} (see Table 3.6-4); therefore, these sensitive receptors would not be exposed to noise greater than the standard. The closest point of construction to the nearest building at South El Monte High School is approximately 350 feet. The average distance from construction equipment to the nearest school building would be 500 feet or greater and hourly average noise levels over hard ground and without shielding would not be likely to exceed 70 dBA L_{eq}. Noise levels to the school would be further reduced by the trees and other vegetation outside of the construction impact area located in the northern part of the site. The noise ordinance does not address construction noise levels to schools; however, the construction noise levels would be less than 70 dBA L_{eq}, which is less than the most restrictive of the daytime construction noise limits at 75 dBA L_{eq}. As such, noise levels at nearby sensitive receptors would not exceed the construction noise limits. The construction noise impacts would be less than significant.

Operations – Noise-Land Use Compatibility

As described in Section 3.6.2, the County has no noise-land use compatibility standards. As the dominant noise impact at the site is traffic noise, a reasonable standard for the proposed project is that used by Caltrans: the loudest hour should not exceed 67 dBA L_{eq}. Existing noise levels on-site were measured at 51 to 55 dBA L_{eq} during the mid-afternoon. With noisiest hour traffic, at a morning or evening peak hour, the existing loudest hour noise level would not be expected to exceed 57 dBA L_{eq}. Future traffic volumes

on Durfee Avenue would increase by 83 weekday morning peak hour trips and 29 weekday evening peak hour trips compared to the existing WNNC trip generation in June 2012 (see Appendix E). The increased traffic volumes generated by the proposed project were added to the projected future traffic volumes without the proposed project (ambient growth and related project traffic volumes) to determine future traffic-generated noise volumes. The increased volume would increase the loudest hour noise level to 58 dBA L_{eq}. This future noise level would be less than 67 dBA L_{eq} standard of Caltrans for park uses. As such, site visitors and staff would experience noise levels at acceptable levels for park uses. The impact would be less than significant for on-site noise-land use compatibility.

Future noise levels in the vicinity would also be consistent with state and County land use compatibility guidelines, in which 60 dBA is appropriate for single-family uses and other sensitive uses. As such, the proposed project would not increase vehicle noise in the proposed project vicinity above acceptable levels for the surrounding commercial uses, multi-family residential units, and South El Monte High School. The impact would be less than significant.

Operations – On-site noise

During operation of the proposed project, on-site noise sources would include vehicles entering and leaving, voices of staff and visitors to the interpretive center, large school groups in the covered outdoor classroom or open air classroom, landscape maintenance machinery, and mechanical equipment for the interpretive center. The noise from the first three sources would occur intermittently and at various locations throughout the lease boundary. The fourth noise source, mechanical equipment for the interpretive center, would be located on the west end of the building, less than 25 feet from the western property line. The equipment would likely include heating, ventilation, and air conditioning (HVAC) units that could run continuously for periods of a few hours or more. Mechanical equipment would be located within an enclosure that would act as a sound barrier. The maximum on-site daytime noise environment would be 57 dBA L_{eq} resulting from all four noise sources. Noise levels would expect to drop by approximately 5 dBA during the evening hours to a maximum nighttime noise environment of 52 dBA L_{eq}. According to the noise ordinance, noise must not exceed 60 dBA L_{eq} during the daytime and 55 dBA L_{eq} at night. Thus, on-site noise levels would not exceed County standards. Further, on-site noise sources would be buffered by vehicular noise on Durfee Avenue and the nearby freeways such that it would barely be audible in the background noise environment. The operational noise impact would be less than significant, and no mitigation measures are required.

Operations – Off-site noise

As stated above, operation of the proposed project would create noise from vehicles entering and leaving, voices of staff and visitors to the interpretive center, large school groups in the covered outdoor classroom or open air classroom, landscape maintenance machinery, and mechanical equipment for the interpretive center. The property adjacent to the project site is commercial. The property west of the commercial property is residential, and there would not be a clear line-of-sight from the residential property to the interpretive center, approximately 80 feet away. Noise-producing activities, such as vehicles entering and leaving, voices of staff and visitors to the interpretive center, large school groups in the covered outdoor

classroom, and mechanical equipment for the interpretive center, would rarely occur near the western boundary of the project site. However, the abutting uses would be subject to noise created by school groups in the open air classroom and landscape maintenance machinery. The maximum on-site daytime noise environment would be 57 dBA L_{eq} and during the evening hours to a maximum nighttime noise environment of 52 dBA $L_{eq.}$ Due to the distance from the source, maximum noise levels experienced at the adjacent commercial structure would be 52 L_{eq} during the daytime and 47 dBA $L_{eq.}$ These noise levels would not exceed the daytime noise level of 60 dBA L_{eq} and 55 dBA L_{eq} for nighttime. The residences west of the commercial structure would experience daytime noise levels of 50 dBA L_{eq} and nighttime noise levels of 45 dBA L_{eq}. These noise levels would not exceed the limits for residential uses. The impacts of project-generated noise on off-site uses would be less than significant.

NOISE-2 *The proposed project could expose people to excessive groundborne vibration.*

Construction operations have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effects of ground vibration may be imperceptible at the lowest levels. At moderate levels the effects may be experienced as low rumbling sounds and detectable vibrations. Damage to nearby structures may result at the highest levels.

To assess the potential for structural damage associated with vibration from construction activities, the vibratory ground motion in the vicinity of an affected structure is measured in terms of peak particle velocity, typically in units of inches per second. The ground vibration levels associated with various types of construction equipment are summarized in Table 3.6-5.

TABLE 3.6-5 REPRESENTATIVE VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment		ppv at 25 feet (in/sec)
Pile Driver (impact)	upper range	1.518
	Typical	0.644
Pile Driver (sonic)	upper range	0.734
	Typical	0.170
Large Bulldozer		0.089
Loaded Trucks		0.076
Jackhammer		0.035
Small Bulldozer		0.003

Source: Federal Transit Administration 2006.

No pile driving would occur during construction of the proposed project, nor would large bulldozers be used. It may be seen from Table 3.6-5 that, at a distance of 25 feet, the vibration from loaded trucks, would have a 0.076 peak particle velocity in inches per second. The effects of vibration diminish with distance. Parts of the construction impact area for proposed project are within 50 feet of the commercial uses and 150 of the multi-family residential uses located to the west. As such, vibration levels would be no higher than 0.01 peak particle velocity in inches per second, which is well below the Caltrans standard of 0.2 peak particle velocity and at the County threshold of 0.01 peak particle velocity. The impact would be less than significant.

NOISE-3 *Operation of the proposed project would not result in a substantial permanent increase in ambient noise levels in the vicinity of the project area.*

On-Site Noise

As described in NOISE-1 above, there would be no substantial permanent increase in the on-site noise levels when the proposed project is operational.

Off-Site Noise

The development of the proposed project would result in an increase of visitors and the generation of additional traffic on Durfee Avenue. Existing average daily traffic volumes on Durfee Avenue are 8,913 west of the site and 10,055 east of the lease boundary (City of South El Monte 2007). The proposed project would generate an estimated 1,096 trips per day, in addition to the existing trips (see Appendix E). Adding these trips to the existing volume and projected future traffic volumes would increase noise levels less than 0.5 dBA. The increased roadway noise would be imperceptible, and would not be a substantial increase in the ambient noise. The impact would be less than significant.

NOISE-4 *Construction of the proposed project would not result in a substantial temporary increase in ambient noise levels in the vicinity of the project area.*

Noise resulting from construction would increase the ambient noise levels in the vicinity of the proposed project area. The magnitude of these increases is discussed in NOISE-1 above. Construction would be limited to the daytime hours permitted by the County, and the anticipated noise levels would be less than the limits of the County noise ordinance. Therefore, the increases would not be substantial, and the impact would be less than significant.

3.6.4 MITIGATION MEASURES

No mitigation measures are required.

3.6.5 SIGNIFICANCE AFTER MITIGATION

The impact would be less than significant.

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