5.7 NOISE

This section evaluates the potential for the San Joaquin Apartments project to result in significant short- and long-term noise impacts. The evaluation includes an assessment of potential construction-related noise impacts, long-term average and peak noise impacts, and traffic-related noise impacts.

5.7.1 Setting

Noise Characteristics

Noise is generally defined as unwanted sound. Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz). One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time. Typically, Leq is summed over a one-hour period.

Because of the nature of the human ear, a sound must be about 10 dB greater than the reference sound to be judged as twice as loud. In general, a 3 dBA change in community noise levels is noticeable, while 1-2 dBA changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40 to 50 dBA, while those along arterial streets are in the 50 to 60+ dBA range. Normal conversational levels are in the 60-65 dBA range, and ambient noise levels greater than that can interrupt conversations.

Noise levels typically attenuate (or drop off) at a rate of 6 dBA per doubling of distance from point sources (such as industrial machinery). Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dBA per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance. 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 (approximately 30 years old or older) 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 residential units and office buildings is generally 30 dBA or more (HMMH, 2006).

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than noise that occurs during the day. The Community Noise Equivalent Level (CNEL) is a measure of the cumulative noise exposure in a community, and consists of a weighted average of the hourly Leqs over a 24-hour period. The weighting includes a 5 dB penalty added to evening (7 p.m. to 10 p.m.) and a 10 dB addition to nocturnal (10 p.m. to 7 a.m.) noise levels to account for the greater disturbance associated with noise.
during these periods. The Day-Night Average Sound Level, $L_{dn}$, is essentially the same as $C_{NEL}$, with the exception that all occurrences during the 3-hour evening time period are grouped into the day-time period with no dB penalty.

**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 areas is usually 50 VdB or lower, well below the threshold of perception for humans, which is around 65 VdB (Federal Railroad Administration [FRA], 2005). Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by 5 to 10 decibels. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people, or the slamming of doors. The primary 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 vibration level that may result in damage threshold to normal buildings is approximately 100 VdB (FRA, 2005). The general human response to different levels of groundborne vibration velocity levels is described in Table 5.7-1.

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

Source: Federal Railroad Administration, 2005.

**Noise Sensitive Receptors**

Land uses generally regarded as being “sensitive” to elevated noise levels include facilities such as residences, hospitals, schools, guest lodging and classrooms. The project site is developed with the Santa Catalina Residence Hall, therefore, existing project site residents would be a noise-sensitive receptor. The off-site noise-sensitive receptors closest to the project site are the Storke Ranch residences located adjacent to the northern project site boundary. These residences are a minimum of approximately 40 feet north of the nearest proposed new residential building, and approximately five feet north of the proposed on-site Class I bicycle lane. The West Campus Family Apartments are located on the west side of Storke Road and are a minimum of 35 feet west of the proposed parking lot on the west side of Stork Road. The Isla Vista Elementary School is south of the San Joaquin project site on the south side of El Colegio.
Road. The nearest school building is a minimum of 160 feet from the proposed project site and 280 feet from the proposed southern Storke Gateway building. Existing land to the east of the project site is open space and not considered to be a noise sensitive receptor.

**Existing Noise Sources**

Existing noise sources on and near the project site are described below.

**Santa Catalina Residence Hall.** The majority of the project site is developed with the Santa Catalina Residence Hall and associated student parking. Typical noise sources include student and other pedestrian activities, and vehicle operations within the existing parking lot. Residents of the Storke Ranch residential community have reported that activities associated with the Santa Catalina Residence Hall periodically result in noise levels substantially in excess of average noise levels at the site. These types of noise sources include: small groups of students that gather near the northern boundary of the project site, often late at night; recreation activities, such as the use of the existing volleyball court; and in general, loud conversations and shouting that occurs from various locations. In addition to the reported noise sources, other existing activities that result in noise levels above average conditions were observed and measured while conducting noise measurements at the site. The observed noise sources included: typical parking lot noise, such as alarms, conversations, radios, tire squeals, etc.; conversations by groups of people walking along Storke Road; and the use of empty parking lot areas for various recreation activities.

**Traffic Noise Levels.** El Colegio Road and Storke Road are arterial roadways and the major traffic noise sources in the project area. Noise-sensitive residential uses are located adjacent to each roadway. The 2010 Long Range Development Plan (LRDP) Final EIR identified traffic noise levels in excess of 65 dBA CNEL at residential receptors along El Colegio Road. Since the LRDP EIR was prepared, El Colegio road has been widened from a two-lane road to a four-lane road. In addition, recent traffic counts in the project area have documented a reduction in overall traffic volumes. Please refer to Section 5.7.3 (Impact Evaluation) for additional information regarding existing traffic noise conditions along roadways in the project area.

**Groundborne Vibration.** Aside from seismic events, the greatest regular sources of groundborne vibration at the UCSB campus and within the project vicinity are construction activities and roadway truck traffic. At the time that this analysis was prepared, no construction activities likely to generate high groundborne vibration velocity levels (e.g., demolition, pile driving, or blasting) were occurring in the vicinity of the proposed project site.

Heavy trucks currently transport materials to and from the University campus and surrounding land uses. These trucks typically generate groundborne vibration velocity levels of around 63 VdB. These levels could reach 72 VdB where trucks pass over bumps in the road.

**Other Noise Sources.** The primary sources of noise in the project area are automobile traffic and activities that occur in and near the community of Isla Vista. Other regional sources
of noise include aircraft, trains, and construction projects. The primary noise sources of concern at UCSB are arterial roadway and highway traffic, and aircraft operations associated with the Santa Barbara Municipal Airport. The San Joaquin Apartments project would be located approximately 1,600 feet south of the 60 dBA CN EL contour line for aircraft operations and 2,500 feet south of the 65 dBA CNEL contour line for aircraft operations at the Santa Barbara Airport (2010 LRDP Final EIR). Therefore, airport-related noise does not substantially contribute to ambient noise levels at the proposed housing project site.

### Noise Measurements

Two 24-hour ambient noise measurements were taken at the northern boundary of the San Joaquin project site and at the nearby San Clemente student housing project using an ANSI Type II integrating sound level meter in accordance with standard protocols. Noise measurements at the project site were taken on May 23 through 25, and at San Clemente May 30 through June 1, 2013. Noise measurements were taken at the project site to obtain information regarding average noise conditions associated with the Santa Catalina Residence Hall. Noise measurements were taken at the San Clemente student housing facility to obtain information regarding average noise conditions likely to result from the proposed project. Noise measurements at San Clemente were taken near an interior courtyard and near apartment units occupied by undergraduate students, similar to conditions that would exist on the project site in the North Village precinct. Table 5.7-2 provides the noise measurement locations and measured noise levels.

**Average Noise Conditions.** The 24-hour noise measurements taken at the project site indicate average noise levels (Leq) ranged between 50.9 dB on a weekday to 57.7 dB on a Friday. 24-hour measurements at the San Clemente student housing facility were in the low-50 dB range. To supplement the 24-hour noise measurements, additional noise measurements were taken at Santa Catalina and San Clemente on May 17, 2013 between 2:30 and 10:30 pm. Those measurements indicated average noise levels at the Santa Catalina/proposed project site were in the mid-50 dB range in the afternoon, dropping to about 50 dB at night. Measurements at San Clemente were in the mid-40 to low-50 dB range. Both the 24-hour measurements and afternoon/evening measurements were in reasonable agreement in regard to average noise conditions that exist at the proposed project site and at the San Clemente housing site.

**Transient Noise Conditions.** Sounds resulting from brief and intermittent noise sources such as people shouting, vehicles operating in a parking lot, noise from recreation areas, etc., are referred to as “transient” noises, and these types of sounds can substantially exceed average noise conditions that are expressed by noise reporting metrics such as Ldn, Leq or CNEL. Sudden or episodic noises that substantially exceed background or ambient noise levels are often considered to be more disturbing than constant average noise levels. The disturbing effects of transient noises resulting from activities conducted at the San Clemente Residence Hall have been identified by residents of the Storke Ranch community as a noise-related concern.
Table 5.7-2
Noise Measurement Results

<table>
<thead>
<tr>
<th>Measurement Location</th>
<th>Noise Sources</th>
<th>Sample Time</th>
<th>dBA (Leq)</th>
<th>dBA (Ldn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project site northern</td>
<td>Sources associated with existing Santa Catalina</td>
<td>5:00 p.m. 5/23/2013 – 5:00 p.m. 5/24/2013</td>
<td>50.9</td>
<td>56.0</td>
</tr>
<tr>
<td>boundary – Weekday</td>
<td>housing and parking lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project site northern</td>
<td>Sources associated with existing Santa Catalina</td>
<td>5:00 p.m. 5/24/2013 – 5:00 p.m. 5/25/2013</td>
<td>57.7</td>
<td>58.6</td>
</tr>
<tr>
<td>boundary – Friday</td>
<td>housing and parking lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Clemente Housing – Weekday</td>
<td>Sources associated with existing San Clemente</td>
<td>7:00 p.m. 5/30/2013 – 7:00 p.m. 5/31/2013</td>
<td>51.2(1)</td>
<td>54.6 (1)</td>
</tr>
<tr>
<td></td>
<td>housing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Clemente Housing – Friday</td>
<td>Sources associated with existing San Clemente</td>
<td>7:00 p.m. 5/31/2013 – 7:00 p.m. 6/1/2013</td>
<td>51.7</td>
<td>55.4</td>
</tr>
<tr>
<td></td>
<td>housing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field visit using ANSI Type II Integrating sound level meters.
See Appendix F for noise measurement data sheets

(1) This measurement included an anomalous noise peak of short duration. This peak is likely to be the result of a physical impact with the microphone, resulting from either tampering, or wind, and has been excluded from the calculated Ldn to provide a more accurate assessment of 24-hour noise on the project site.

As described above, multiple noise measurements were taken at the project site, and those measurements were used to quantify on-site transient noise levels and to evaluate how transient noises affect residences in Storke Ranch adjacent to the project site. The information regarding the effects of existing transient noises also provides a basis for determining how the San Joaquin Apartments project would affect existing noise conditions at nearby residences. Methods used to measure and interpret transient noise conditions at the project site are summarized below. More detailed information is provided in EIR Appendix F.

Data regarding existing transient noise characteristics was obtained from a series of on-site observations and 11 acoustic measurements ranging from 20 to 40 minutes in duration taken between 2:30 and 10:30 p.m on Friday May 17, 2013. The measurements were taken from a position near the center of the property line that separates the project site from the Storke Ranch community. Transient sound source levels estimated from measured conditions were applied to a computer program (SoundPlan 7.2) that complies with International Organization of Standardization (ISO) standards for computing sound propagation in complex environments. The computer program computes sound propagation between two points by accounting for sound wave spreading losses, atmospheric and ground attenuation and shielding, and reflection by structures and terrain features. The SoundPlan program computes noise levels at specified reception points, which can be locations of known sound receptors or a grid of points spread over a defined calculation area. When the grid sound levels are computed, SoundPlan prepares
contour maps of constant noise level by interpolation. For the purpose of this analysis, specific receptor points were defined for the southerly row of residences in Storke Ranch. In addition, ten foot square computation grids were defined for the entire project area at five and 15 feet above ground level to represent sounds experienced by a ground-level receptor and at a second story level. For this analysis, resulting sound levels at the five and 15-foot heights were generally found to be similar.

It must be emphasized that the noise level conditions computed by the SoundPlan model and presented below represent transient and reasonably expected maximum conditions from individual sound-producing events such as people shouting, etc. The computed noise levels and contours do not depict average or ambient noise conditions (i.e., Ldn, Leq or CNEL). A summary of the transient noise modeling results is provided below.

**Vehicles in the Parking Lot.** As depicted on Figures 5.7-1, 2 and 3, a variety of transient sounds may result from vehicle operations in the parking lot on the northern portion of the project site. Sounds such as the a car horn “chirp” made when locking a door can result in an instantaneous sound of 70-75 dBA, which results in a sound level of 55-60 dBA at the nearest Storke Ranch residence. A car driving by slowly results in an on-site sound level of 70-75 dBA, and can result in a sound level of 45-50 at the nearest residence. Instantaneous sounds, such tires squealing, resulted in an on-site sound level above 90 dBA and 75-85 dBA at the closest residences.

**Recreation Uses in the Parking Lot.** The northern portion of the parking lot adjacent to Storke Ranch is typically vacant. This “open space” is used by residents of the Santa Catalina Residence Hall for a variety of recreational activities. For example, while noise monitoring was being conducted, a lacrosse game was played in the parking lot. Residents of Storke Ranch have also reported that groups of people sometimes congregate along the project site’s northern property line, often late at night, and make a substantial amount of noise.

Noise contours resulting from recreation activities in the vacant portion of the parking lot are represented on Figure 5.7-4 as a strip with equal probability of relatively intense, brief sound emission. The resulting noise contours are, therefore, potential sound levels that could occur depending upon the noise source location, and do not depict an overall sound radiation pattern from a uniformly distributed or continuous source. As depicted on Figure 5.7-4, recreation activities in the parking lot may result in peak noise levels between 85 and 90 dBA, which can result in noise levels at adjacent Storke Ranch residences between 75-85 dBA.

**Volleyball Court.** The existing volleyball court is located near the northeast corner of the project site. Figure 5.7-5 indicates that peak noise at the court can be between 85 and 90 dBA, which results in peak noise levels of 70-75 dBA at the nearest Storke Ranch residence. Noise levels at other residences in Storke Ranch are somewhat to substantially less depending on their distance from the court.

**Swimming Pool.** Figure 5.7-6 indicates that peak noise levels at the existing swimming pool could be in the 85-90 dBA range. Due to substantial noise shielding provided by the
northern Santa Catalina building, resulting peak noise levels at the nearest Storke Ranch residences are between 50 and 55 dBA.

**Tennis Courts.** Figure 5.7-7 indicates that peak transient noise levels at the existing tennis courts are in the 80-85 dBA range. Resulting peak noise levels at the nearby Storke Ranch residences are between 55 and 65 dBA.

**Person Shouting from the Third Floor.** Figure 5.7-8 depicts recorded noise conditions that resulted from a person shouting from a north-facing window on the third floor of the northern Santa Catalina building. The peak on-site sound level was 80-90 dBA (depending on receptor height) and resulting peak noise at adjacent Storke Ranch residences was between 60 and 65 dBA.

**Person Shouting from the 11th Floor.** Figure 5.7-9 depicts noise conditions that would result from a person shouting from a north-facing window on the 11th floor of the northern Santa Catalina building. Peak on-site noise would be 70-75 dBA, and resulting peak noise at most adjacent residences would be between 55 and 60 dBA.

### 5.7.2 Impact Identification and Significance Thresholds

#### Initial Study Evaluation of Potential Noise Impacts

**Less Than Significant Impacts.** The San Joaquin Apartments Initial Study determined that project-related use of the existing structure at Parking Lot 50 would have a less than significant impact at nearby residences, and the potential future use of interior floor space within the existing podium building would have no impact to existing noise conditions in the project area.

The Initial Study also determined that the proposed residences would be located approximately 1,600 feet south of the 60 dBA CNEL contour line for aircraft operations at the Santa Barbara Airport. Therefore, the project would not be subject to significant aircraft-related noise. The proposed housing project would also not be located in the vicinity of a private airstrip; therefore, there would be no impact to the proposed project from noise generated by aircraft operations at a private airstrip.

**Potentially Significant Impacts.** The Initial Study determined that potentially significant noise impacts could result from temporary construction activities, including construction-related traffic and groundborne vibration or groundborne noise, an increase in the on-site resident population and associated outdoor recreation facilities, proposed new parking facilities, and traffic-related noise levels at the proposed residences or existing nearby residences. These potentially significant impacts are evaluated in this EIR.
Figure 5.7-1
Instantaneous Noise Contours
Car Horn in Northern Parking Lot

Source: Channel Islands Acoustics, 2013
Figure 5.7-2

Instantaneous Noise Contours

Source: Channel Islands Acoustics, 2013
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Figure 5.7-3
Instantaneous Noise Contours
Tire Squeal in Northern Parking Lot

Source: Channel Islands Acoustics, 2013
Figure 5.7-4

Instantaneous Noise Contours

Recreation Activities in Northern Parking Lot

Source: Channel Islands Acoustics, 2013
Figure 5.7-5
Instantaneous Noise Contours
Existing Volleyball Court

Source: Channel Islands Acoustics, 2013
Figure 5.7-6
Instantaneous Noise Contours
Existing Swimming Pool

Source: Channel Islands Acoustics, 2013
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Source: Channel Islands Acoustics, 2013

University of California, Santa Barbara
San Joaquin Apartments and Precinct Improvements Project

Figure 5.7-7
Instantaneous Noise Contours
Existing Tennis Courts
Figure 5.7-8
Instantaneous Noise Contours
Person Shouting from Santa Catalina Third Floor

Source: Channel Islands Acoustics, 2013
Figure 5.7-9
Instantaneous Noise Contours
Person Shouting from Santa Catalina 11th Floor

Source: Channel Islands Acoustics, 2013

University of California, Santa Barbara
San Joaquin Apartments and Precinct Improvements Project
Impact Evaluation Significance Thresholds

Appendix G of the CEQA Guidelines indicates that a project would have the potential to result in a significant noise impact if it would result in:

1. Exposure of persons to or generation of noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies;

2. Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;

3. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or

4. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing levels without the project.

Noise impacts of the proposed project would be considered significant if noise from construction or operation occurs above the specified noise levels and/or time frames established by UCSB. A project would result in a significant impact if it would:

5. Generate outdoor noise levels in excess of 65 dBA CNEL and could affect existing sensitive noise receptors.

6. Expose noise-sensitive uses to 65 dBA CNEL or greater in outdoor living areas or if indoor noise levels cannot be reduced to at least 45 dBA CNEL.

7. Increase ambient noise levels at noise-sensitive receptors by 3 dBA or more when ambient noise levels are at or already exceed the 65 dBA outdoor CNEL.

8. Place active construction sites within 1,000 feet of noise-sensitive uses.

The CEQA Guidelines do not define the levels at which groundborne vibration or groundborne noise is considered “excessive.” This analysis uses the Federal Railway Administration’s 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 (e.g., sensitive on-campus research buildings), 80 VdB at residences and buildings where people normally sleep (e.g., student housing buildings and nearby residences), and 83 VdB at other institutional buildings (FRA, 2005).
5.7.3 Impact Evaluation

Short-Term Construction Noise Impacts

On-Site Construction Equipment. Various construction activities would occur on the project site throughout the project’s two-year construction period, however, the highest potential for noise impacts is likely to occur during the project’s one month long site grading phase when several pieces of equipment may be in operation simultaneously. For the proposed project, the site grading phase would include the removal of asphalt paving and excavation of soil for building foundations and underground utilities. The proposed structures would use spread footings or concrete mat foundations, therefore, no pile driving would be required. Table 5.7-3 depicts the typical noise levels associated with heavy construction equipment. Maximum noise levels associated with the use of heavy equipment can range from about 74 to 85 dBA at 50 feet from the source.

Table 5.7-3
Typical Construction Equipment Noise Levels

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Acoustical Usage Factor (%)(^1)</th>
<th>Measured Lmax (dB at 50 feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backhoe</td>
<td>40</td>
<td>78</td>
</tr>
<tr>
<td>Compactor (ground)</td>
<td>20</td>
<td>83</td>
</tr>
<tr>
<td>Dozer</td>
<td>40</td>
<td>82</td>
</tr>
<tr>
<td>Dump Truck</td>
<td>40</td>
<td>76</td>
</tr>
<tr>
<td>Excavator</td>
<td>40</td>
<td>81</td>
</tr>
<tr>
<td>Flat Bed Truck</td>
<td>40</td>
<td>74</td>
</tr>
<tr>
<td>Front End Loader</td>
<td>40</td>
<td>79</td>
</tr>
<tr>
<td>Generator</td>
<td>50</td>
<td>81</td>
</tr>
<tr>
<td>Grader</td>
<td>40</td>
<td>83</td>
</tr>
<tr>
<td>Pickup Truck</td>
<td>40</td>
<td>75</td>
</tr>
<tr>
<td>Pneumatic Tools</td>
<td>50</td>
<td>85</td>
</tr>
<tr>
<td>Roller</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>Scraper</td>
<td>40</td>
<td>84</td>
</tr>
<tr>
<td>Warning Horn</td>
<td>5</td>
<td>83</td>
</tr>
<tr>
<td>Welder/Torch</td>
<td>40</td>
<td>74</td>
</tr>
</tbody>
</table>

1. The fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation. Source: FHWA, 2006.
Noise-sensitive uses near the project site include the Santa Catalina Residence Hall, Storke Ranch residences, West Campus Family Apartments, and Isla Vista Elementary School. These land uses would experience a temporary increase in noise during construction of the proposed project, which is scheduled to start in the fall 2014 and extend through the fall 2016. Table 5.7-4 shows typical maximum construction noise levels at various distances from construction activity, based on the loudest piece of construction equipment anticipated to operate during the construction period, based on a standard noise attenuation rate of six dBA per doubling of distance for point sources.

**Table 5.7-4**

Typical Maximum Construction Noise Levels at Various Distances from Project Construction

<table>
<thead>
<tr>
<th>Distance from Construction</th>
<th>Maximum Exterior Noise Level (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 feet</td>
<td>91</td>
</tr>
<tr>
<td>50 feet</td>
<td>85</td>
</tr>
<tr>
<td>100 feet</td>
<td>79</td>
</tr>
<tr>
<td>250 feet</td>
<td>71</td>
</tr>
<tr>
<td>500 feet</td>
<td>65</td>
</tr>
<tr>
<td>1,000 feet</td>
<td>59</td>
</tr>
<tr>
<td>2,500 feet</td>
<td>51</td>
</tr>
</tbody>
</table>

**San Joaquin Apartments Construction.** The noise sensitive receptors that would be located closest to proposed construction activities would be the residents of the Santa Catalina Residence Hall, and the Storke Ranch residences adjacent to the northern project site boundary. The use of multiple pieces of heavy equipment would have the potential to generate a maximum noise level of approximately 91 dBA Leq at 25 feet from the construction activities. Typical contemporary residential building materials can provide approximately 30 dB of noise attenuation, therefore, short-term, maximum interior noise levels within the adjacent residences would be approximately 61 dBA.

The majority of building construction activities would occur substantially further from adjacent receptors, but noise levels at 25 feet from construction activities are the maximum noise levels that would result from construction activities on the project site. Based on the typical maximum construction noise levels shown in Table 5.7-4, and a 30 db exterior-to-interior noise attenuation rate for contemporary construction, short-term noise levels during the construction period could exceed 45 dB in the interior of sensitive receptors located within approximately 200 feet of construction activity. This impact would primarily affect on-site residents of the Santa Catalina Residence Hall and the Storke Ranch community. Construction
Noise levels from heavy equipment use and other construction operations will fluctuate throughout the workday and will be dependent upon the type of equipment, the number of pieces of equipment in operation, and their location on the project site, however, short-term construction noise impacts would be a significant impact to nearby receptors. This short-term impact can be reduced to a less than significant level with the implementation of proposed mitigation measures N-1a.1 through 1a.11, which require the implementation of various construction site noise reduction measures.

Other nearby sensitive receptors, including the West Campus Family Apartments and the Isla Vista Elementary School, are located further from the proposed building construction activities and would experience lower construction noise levels than the maximum noise levels described above. These noise sensitive receptors are further than 200 feet from proposed building construction, and would not be exposed to interior noise levels in excess of 45 dB from construction operations at the project site. Therefore, construction noise from the project would result in a less than significant impact to other nearby sensitive receptors.

New Parking Lot Construction. Sensitive receptors located closest to the proposed parking are the West Campus Family Apartments, adjacent to the western parking lot site boundary; and the Isla Vista Elementary School, located to the southeast. The West Campus Family Apartment units closest to the parking lot site are a minimum of approximately 25 feet to the west. Based on the typical maximum construction noise levels shown in Table 5.7-4, peak exterior construction noise at the West Campus Family Apartments would be up to 90 dBA. With anticipated exterior-to-interior attenuation from contemporary construction, this exterior noise level would result in interior noise levels of approximately 60 dBA. Peak construction-related exterior noise levels at the nearest building at the Isla Vista Elementary School would be approximately 75 dBA, resulting in interior noise levels of approximately 45 dBA.

The majority of parking lot construction activities would occur substantially further from adjacent receptors, but noise levels at 25 feet from construction activities are the maximum noise levels that would result from construction of the parking lot. Based on the typical maximum construction noise levels shown in Table 5.7-4, and a 30 db exterior-to-interior noise attenuation rate for contemporary construction, short-term noise levels during the construction period could exceed 45 dB in the interior of sensitive receptors within approximately 200 feet of construction activity. Construction noise impacts to residents of the West Campus Family Apartments would be a significant short-term impact that can be reduced to a less than significant level with the implementation of proposed mitigation measures N-1a.1 through 1a.11, which require the implementation of various construction site noise reduction measures. These measures would also minimize potential construction noise-related impacts to the Isla Vista Elementary School.

Groundborne Vibration. Construction activities such as ground clearance and excavation have the potential to generate groundborne noise and vibration that may affect adjacent residential land uses. Table 5.7-5 identifies various vibration velocity levels for the types of construction equipment that could operate at the project site.
Table 5.7-5
Vibration Source Levels for Construction Equipment

<table>
<thead>
<tr>
<th>Construction Equipment</th>
<th>Approximate VdB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25 Feet</td>
</tr>
<tr>
<td>Large Bulldozer</td>
<td>87</td>
</tr>
<tr>
<td>Loaded Trucks</td>
<td>86</td>
</tr>
<tr>
<td>Jackhammer</td>
<td>79</td>
</tr>
<tr>
<td>Small Bulldozer</td>
<td>58</td>
</tr>
</tbody>
</table>


Construction activities would primarily affect residences in the Santa Catalina Residence Hall, Storke Ranch residences, and the West Campus Family Apartments. Some of these residences are located within 25 feet from the edge of the proposed construction sites. The majority of project construction activities would occur substantially further from adjacent receptors, but vibration levels at 25 feet from construction activities are the maximum vibration levels that would result from proposed construction. Based on the information presented in Table 5.7-5, vibration levels could reach up to 87 VdB at adjacent properties. This would exceed the 80 VdB threshold for residences and buildings where people normally sleep. This impact would be reduced to a less than significant level by proposed mitigation measure N-1a.6, which establishes construction site activity time limits.

Heavy trucks would transport materials to and from the project site during the project’s construction period. These types of trucks can generate groundborne vibration velocity levels of around 63 VdB, although these levels could reach 72 VdB where trucks pass over bumps in the road. These levels would not exceed the identified thresholds of significance for sensitive uses.

Short-Term Noise from Mobile Sources. Construction of the proposed student residences would require that soil material be exported from the project site. In total, the apartments and parking lot construction would result in 16,640 cubic yards of cut, 8,420 cubic yards of fill, and the export of 8,220 cubic yards of soil. At approximately 12 cubic yards of soil per truck load, soil export from the project site could require up to 685 truck trips throughout the site preparation and grading phases of project construction. The short-term and intermittent truck traffic generated by the project would not substantially increase ambient noise levels along roadways that are used as haul-routes, and would not result in a significant noise impact. Other construction-related traffic (i.e., workers and material deliveries) would be limited on a daily basis, and would not result in a significant short-term increase in traffic noise levels along project-area roadways.

Long-Term Noise Impacts

Occupancy of the San Joaquin Apartments project would have the potential to affect existing average noise conditions on and near the project site. The project would also have the potential to affect existing transient (peak) noise characteristics associated with the project site. Long-term noise impacts of the San Joaquin project related to both average and transient noise conditions are evaluated below.
Average Noise Impacts. Average noise conditions at the project site were measured on several occasions and determined to generally be in the low- to mid-50 dB range. Based on measurements of average noise conditions at the San Clemente student housing project, which has occupancy characteristics similar to those that would be associated with the San Joaquin Apartments project, average noise conditions resulting from typical project-related occupancy and other activities would typically be in the high-40 dB to mid-50 dB range. Therefore, the average noise conditions that would be associated with the San Joaquin project would be somewhat lower or similar to existing noise conditions at the project site. As a result, long-term average noise conditions that would result from the proposed project would not substantially increase average noise conditions that exist at the project site. Assuming that average project site noise levels after the implementation of the proposed project would be in the mid- to upper-50 dB range, estimated CNEL noise levels on and adjacent to the project site would be in the low 60 dB range, which would be below the UCSB long-term exterior noise threshold of 65 dBA CNEL. Therefore, the San Joaquin Apartments project would have a less than significant average noise impact.

Transient Noise Impacts. Transient sounds likely to be emitted by noise sources associated with the proposed project, together with the effect of noise shielding and reflection by proposed structures, were computed using noise source levels obtained from measurements at the project site. The analysis of potential impacts from transient sounds has emphasized the potential for long-term activities in the North Village precinct to result in impacts to residences in the Storke Ranch residential community due to their proximity to the project site. The transient noise events evaluated by this analysis and that are depicted on sound level contour maps are evaluated as individual noise events because maximum sound levels for sporadic transient events, such as were observed in the measurement program, would generally not be additive (i.e., would not occur simultaneously). Transient noise conditions associated with the proposed project are described below.

North Village Building Cluster Interior Courtyards. Peak sound levels that could result from the use of North Village building courtyard areas would be a new source of noise on the project site. Figure 5.7-10 indicates that peak noise levels in the courtyard area would be in the 80-85 dBA range. Resulting peak noise levels at the nearest Storke Ranch residences would be between 60-65 dBA, however peak noise conditions at most nearby residences would be between 45-65 dBA.

Person Shouting from the Third Floor of a North Village Building. Figure 5.7-11 depicts noise conditions that would result from a person shouting from a north-facing window on the third floor of a residential building in the North Village precinct. Peak on-site noise would be 80-55 dBA, and resulting peak noise at the residence closest to the noise source would be between 75 and 80 dBA. Noise at most other nearby residences would generally range between 55-75 dBA, depending on distance from the noise source.

Proposed Bike Path. It is expected that at some times of day when a continuous stream of cyclists are riding to or from the Main Campus, the proposed bikepath could be a relatively
steady sound source. Figure 5.7-12 depicts this condition as a continuous line, with sound source levels determined from a measured bicycle pass-by in the existing project site parking lot. It was assumed that this condition would result in a bicycle speed of 10-15 mph and a peak-hour volume of 150 bicycles. Another scenario was also modeled that put individual bicycle trips approximately 340-500 feet apart at a speed of 10 mph (Figure 5.7-13).

As depicted on Figures 5.7-12, the peak average noise resulting from bicycles on the path would be 45-50 at the adjacent residences. As shown on Figure 5.7-13, peak on-site bicycle operation noise would be 55-60 dBA, resulting in 50-55 dBA at the nearest residences.

**Volleyball Courts.** Figure 5.7-14 depicts peak noise conditions that would result from the use of the proposed volleyball courts. Peak on-site noise would be 85-90 dBA, and resulting peak noise levels at Storke Ranch residences would range between 40 and 65 dBA. The proposed location of the volleyball courts would result in peak noise levels in Storke Ranch that are somewhat to substantially lower than peak noise conditions associated with the existing volleyball court.

**Multi-Purpose Turf Area.** Figure 5.7-15 indicates that peak noise levels at the proposed multi-purpose turf area would be in the 80-85 dBA range. Resulting peak noise levels at the nearest Storke Ranch residence would generally be between 40-60 dBA. Overall, noise from the multi-purpose turf area would be reduced when compared to noise generated by the existing tennis courts that are currently in the same location. The reduction in noise levels is a result of noise shielding provided by the proposed North Village buildings.

**Person Shouting from the Third Floor of the Northern Santa Catalina Building.** Figure 5.7-16 indicates that peak noise levels at Storke Ranch residences resulting from a shouting person would range between 60 and 65 dBA at the nearest residence, however, the resulting noise at most residences would be between 35-45 dBA. This would be a substantial noise reduction when compared to existing conditions and results from noise shielding provided by proposed North Village residences.

**Person Shouting from the 11th Floor of the Northern Santa Catalina Building.** Figure 5.7-17 indicates that peak noise levels at Storke Ranch residences resulting from a shouting person would range between 60 and 65 dBA at the maximally exposed residence, however, the resulting noise at most nearby residences would be between 45-55 dBA. This would be a noise reduction when compared to existing conditions and results from noise shielding provided by proposed North Village residences.

**Sundeck Areas.** Several of the proposed North Village buildings would be provided with roof-top sundeck areas that could also be used for passive recreation uses. Figure 5.7-18 depicts a peak roof-top noise source between 80-85 dBA at each of the four North Village building clusters to account for passive recreation and vegetation maintenance noise associated with proposed green roofs. Resulting peak noise levels at the nearest Storke Ranch residences would range between 55-65 dBA.
Figure 5.7-10
Instantaneous Noise Contours
North Village Building Courtyards

Source: Channel Islands Acoustics, 2013
Figure 5.7-11
Instantaneous Noise Contours Person
Shouting from North Village Building Third Floor

Source: Channel Islands Acoustics, 2013
Figure 5.7-12
Instantaneous Noise Contours
Proposed Bicycle Path – Line Source

Source: Channel Islands Acoustics, 2013
Instantaneous Noise Contours

Figure 5.7-13

Source: Channel Islands Acoustics, 2013

University of California, Santa Barbara
San Joaquin Apartments and Precinct Improvements Project

Proposed Bicycle Path – Individual Sources
Source: Channel Islands Acoustics, 2013

Figure 5.7-14
Instantaneous Noise Contours
Proposed Volleyball Courts
Noise

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Figure 5.7-15
Instantaneous Noise Contours
Proposed Multi-Purpose Turf Area
Figure 5.7-16
Instantaneous Noise Contours
Post-Project Shouting from Santa Catalina Third Floor

Source: Channel Islands Acoustics, 2013
Figure 5.7-17
Instantaneous Noise Contours
Post-Project Shouting from Santa Catalina 11th Floor

Source: Channel Islands Acoustics, 2013
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Source: Channel Islands Acoustics, 2013
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A summary of existing transient noise sources and their effect, along with a summary of transient noise sources associated with the proposed project, is provided on Table 5.7-6.

### Table 5.7-6
Transient Noise Conditions at Storke Ranch Residences Adjacent to the Project Site

<table>
<thead>
<tr>
<th>Transient Noise Source</th>
<th>Existing Peak Noise Conditions in Storke Ranch (dBA) (1)</th>
<th>Post-Project Peak Noise Conditions in Storke Ranch (dBA) (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing Noise Sources</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parking Lot – Vehicle Operation (2)</td>
<td>75-85</td>
<td>0</td>
</tr>
<tr>
<td>Parking Lot – Recreation Activities</td>
<td>75-85</td>
<td>0</td>
</tr>
<tr>
<td>Volleyball Court</td>
<td>70-75</td>
<td>40-65</td>
</tr>
<tr>
<td>Swimming Pool</td>
<td>50-55</td>
<td>50-55</td>
</tr>
<tr>
<td>Tennis Courts</td>
<td>55-65</td>
<td>See “Turf Area” below</td>
</tr>
<tr>
<td>Shouting from 3rd Floor of Santa Catalina Building</td>
<td>60-65</td>
<td>35-45</td>
</tr>
<tr>
<td>Shouting from 11th Floor of Santa Catalina Building</td>
<td>55-65</td>
<td>45-55</td>
</tr>
<tr>
<td><strong>Proposed Project Noise Sources</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Village Building Cluster Courtyard</td>
<td>0</td>
<td>60-65</td>
</tr>
<tr>
<td>Shouting from 3rd Floor of a North Village Building</td>
<td>0</td>
<td>75-80</td>
</tr>
<tr>
<td>Bike Path</td>
<td>0</td>
<td>50-55</td>
</tr>
<tr>
<td>Roof Areas</td>
<td>0</td>
<td>55-65</td>
</tr>
<tr>
<td>Multi-Purpose Turf Area</td>
<td>See “Tennis Courts” above</td>
<td>40-60</td>
</tr>
</tbody>
</table>

(1) Reported transient noise conditions in Storke Ranch are generally at the residence(s) located closest to the noise source. Peak noise conditions at more distant residences would be less. Please refer to Figures 5.7-1 through 5.7-18 for more detailed information on noise conditions in Storke Ranch resulting from transient noise sources generated at the project site.

(2) This noise source was a recorded incident of a car squealing its tires. Other recorded peak vehicle operation sounds were less. Please refer to Figure 5.7-1, 2 and 3.

As shown by the noise measurements and contour mapping of transient sounds that are currently produced at the project site, and the evaluation of transient sounds likely to result from the proposed project, there can be a great deal of variation in noise-related effects in the Storke Ranch area adjacent to the project site. Variations in the effects of transient noises results from a variety of factors, but is primarily influenced by the intensity and characteristics of the noise source and distance from the noise source. Other factors, such as how often the noise occurs, the duration of the noise, the time it occurs and personal sensitivities and tolerances will also influence an individual’s perception of a particular noise and how disturbing or annoying the noise is perceived to be. Due to this wide array of variables, it is difficult to definitively indicate that one type of noise source is more or less objectionable than another noise source. However, based solely on the results of the monitoring data and analysis, the following conclusions can be reached:
Transient noises are produced by residents of the Santa Catalina Residence Hall that adversely affect Storke Ranch residences located adjacent to the project site. Seven predominant sources of transient noise were identified based on on-site observations and input from nearby residents. Other sources of transient sounds on the project site may exist, however, a representative sample of noise sources and their effects have been included in this analysis.

The proposed project would eliminate two existing sources of transient sounds from the project site: vehicle operations in the parking lot, and the use of the parking lot for recreational activities. Some activities conducted in the parking lot substantially exceed ambient noise conditions.

The proposed North Village structures would provide noise shielding for Storke Ranch residences that would reduce the effects of some project-site generated transient noises. The proposed buildings would reduce the effects of existing noise sources such as: persons shouting from north-facing windows in the Santa Catalina buildings, and noise from the proposed multi-purpose turf area when compared to noise from the existing tennis courts located on the same area of the project site.

The proposed project would relocate the on-site volleyball court. Increased separation distance and noise shielding by proposed North Village buildings would reduce recreation-related transient sounds in Storke Ranch.

The proposed project would introduce new noise sources to the project site that would periodically produce transient sounds that have the potential to exceed ambient noise conditions. These proposed uses include:

- Transient noises from the proposed North Village buildings would occur primarily in the interior courtyard areas. Modeling of the courtyards as a noise source indicates that resulting transient noise levels at nearby Storke Ranch residences would not exceed 65 dBA.

- Similar to conditions that periodically occur at the Santa Catalina buildings, North Village residents may occasionally shout from north-facing windows. Such an occurrence would result in transient sound levels of 75-80 dBA at the closest Storke Ranch residence, although the effect at more distant residences would generally range between 55-75 dBA.

- Roof areas that would be used for passive recreation and would require maintenance activities that could result in peak noise level of 55-65 dBA at adjacent Storke Ranch residences.

- The proposed bike path along the northern project site property line could result in peak noise levels of approximately 50 dBA at adjacent Storke Ranch residences.
As summarized above, incidents of persons shouting from North Village building north-facing windows would be the peak transient noise source most likely to result in noise conditions that may be considered disturbing to adjacent residents in Storke Ranch. The frequency at which such events may occur cannot be predicted, however, it would be reasonable to assume that the resulting potential effect of this noise source would at least be partially “offset” by noise reductions that would result from the removal of the existing parking lot, which includes both vehicle operation noise and recreation activity noise.

Other potential transient noise sources, such activities on the proposed roof-top sundeck and maintenance of green roof areas, would generally not exceed 65 dBA in Storke Ranch. The potential for noise impacts associated with roof areas would be further reduced by proposed mitigation measure AES-4a, which requires that only emergency lighting be provided on sundeck roof areas. This measure would eliminate the use of the roof areas by project residents during nighttime hours when potential noise impacts would be most disturbing. Potential peak noise levels from sources such as the proposed bike path and activities conducted within the North Village building courtyards would not exceed 65 dBA at nearby Storke Ranch residences.

In conclusion, transient sounds likely to be produced by the proposed project and the occupancy of the North Village residences would not result in a substantial change (i.e., increase) to existing transient noise conditions. It is also possible, that due primarily to the elimination of parking lot-related noise and noise shielding provided by the proposed North Village buildings, incidents of disturbing transient noise events in Storke Ranch may be decreased. Therefore, the potential for significant noise impacts resulting from transient noises resulting from the proposed project is considered to be less than significant and no additional mitigation measures are required.

To minimize potential noise-related conflicts that may result from noise sources such as residents shouting from open windows, recommended mitigation measure N-2a would require that signs be posted indicating that complaints regarding the creation of excessive noise may be reported to the UCSB Police Department. The phone number of the Police Department should be provided on the signs, and the signs should be posted on the wall that separates the project site from Storke Ranch.

**Traffic Noise.** According to the project traffic study, the San Joaquin Apartments project would generate an average of 2,214 vehicle trips per day (Fehr & Peers, 2013). In addition, due to the removal of existing parking spaces from the project site, the project would result in approximately 389 shifted trips from the Santa Catalina Residence Hall to Parking Structure 50, located east of the project site near the Main Campus. The shifting of vehicle trips only changes the local traffic patterns in the project area and does not result in new vehicles trips. The new and shifted vehicle trips would be distributed among area roadways, and would predominantly affect traffic volumes along Hollister Avenue, Storke Road, Los Carneros Road, and El Colegio Road. Refer to Section 5.8, Transportation and Traffic, for additional information regarding daily traffic volumes and project-related vehicle trip distribution.
The potential for traffic generated by the San Joaquin project to result in significant noise impacts to existing and proposed residences and other uses located adjacent to roadways in the project area is evaluated below. Existing and future noise levels were modeled based on traffic volumes as reported in the project traffic study using the Traffic Noise Model (TNM) Version 2.5 Look-Up Tables (U.S. Department of Transportation, Federal Highway Administration [FHWA], April 2004). Using a standard assumption, daily peak-hour vehicle trips were estimated to be approximately 10% of the average daily vehicle trips from the project traffic study. Noise calculation worksheets are provided in Appendix F.

Hollister Avenue. The San Joaquin Apartments project would add approximately 120 average daily trips to Hollister Avenue between Storke Road and Los Carneros Road. There are no residences or other noise-sensitive receptors located along this segment of Hollister Avenue that would be affected by noise resulting from the addition of project-generated traffic. Therefore, the project would have no impact to sensitive noise receptors along Hollister Avenue.

Storke Road. The project would add approximately 114 average daily trips to Storke Road between Hollister Avenue and El Colegio Road. Table 5.7-7 summarizes the noise levels at noise-sensitive receptors located closest to Storke Road resulting from the addition of project-generated traffic.

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Average Daily Trips: Existing/Existing + Project</th>
<th>Receptor</th>
<th>Minimum Distance Between Receptor and Roadway Centerline (feet)</th>
<th>Average Vehicle Speed (mph)</th>
<th>Exterior Noise Level at Receptor Existing/Existing + Project (peak hour dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hollister Avenue: Phelps Road to Courtyard Hotel, various other commercial uses 125 35 65.2 / 65.3</td>
<td>Storke Road: Phelps Road to Hollister Avenue 15,885 / 15,999</td>
<td>125 35 65.2 / 65.3</td>
<td>Various Residences 60 35 67.5 / 67.5</td>
<td>Table 5.7-7</td>
<td></td>
</tr>
</tbody>
</table>

The exterior peak-hour traffic noise at existing residential receptors located closest to Storke Road is approximately 67.5 dBA, and would not increase as a result of project-generated traffic. The exterior peak-hour traffic noise levels at the Courtyard Hotel are approximately 65.2 dBA, and would increase by 0.1 dBA as a result of project-generated traffic. Peak-hour traffic noise levels represent the highest noise levels that would result from vehicle traffic throughout the day. CNEL noise levels, on which the UCSB noise guidelines are based, are a weighted average of noise levels over a 24-hour period. While peak-hour traffic noise levels exceed 65 dBA, 24-hour CNEL noise levels associated with existing roadway traffic would be lower than peak hour noise levels, and are not anticipated to exceed 65 dBA CNEL. As shown in Table
5.7-7, project-generated traffic would not substantially increase (i.e., an increase of three dBA or more) roadway noise levels along Storke Road. Therefore, traffic noise levels resulting from project-generated traffic along Storke Road would be less than significant.

Los Carneros Road. The project would add approximately 1,334 average daily vehicle trips to the segment of Los Carneros Road that is north of Mesa Road and south of Hollister Avenue, and approximately 240 average daily trips to the segment of Los Carneros Road that is north of El Colegio Road and south of Mesa Road. There are no residences or other noise-sensitive receptors located along the segment of Los Carneros Road that is north of Mesa Road and south of Hollister Avenue that would be affected by noise resulting from the addition of project-generated traffic. Table 5.7-8 summarizes the noise levels at noise-sensitive receptors located closest to the segment of Los Carneros Road that is north of El Colegio Road and south of Mesa Road resulting from the addition of project-generated traffic.

Table 5.7-8

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Average Daily Trips: Existing/Existing +Project</th>
<th>Receptor</th>
<th>Minimum Distance Between Receptor and Roadway Centerline (feet)</th>
<th>Average Vehicle Speed (mph)</th>
<th>Exterior Noise Level at Receptor Existing/Existing +Project (peak hour dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Los Carneros: El Colegio Road to Mesa Road</td>
<td>13,993 / 14,233</td>
<td>Santa Ynez Apartments</td>
<td>120</td>
<td>35</td>
<td>64.9 / 64.9</td>
</tr>
</tbody>
</table>


The existing peak-hour traffic noise level at residential receptors located closest to Los Carneros Road is approximately 64.9 dBA. As shown in Table 5.7-8, project-generated traffic would not increase roadway noise levels along Los Carneros Road. Therefore, exterior traffic noise levels resulting from project-generated traffic along Los Carneros Road would be less than significant.

El Colegio Road. The project would add approximately 278 average daily trips to the segment of El Colegio Road that is west of Los Carneros Road and east of Storke Road; approximately 617 average daily trips to the segment of El Colegio Road that is west of Embarcadero Del Norte and east of Los Carneros Road; and approximately 647 average daily trips to the segment of El Colegio Road that is west of Stadium Road and east of Embarcadero Del Norte. Table 5.7-9 summarizes the noise levels at noise-sensitive receptors located closest to each of these three segments of Los Carneros Road resulting from the addition of project-generated traffic.
Table 5.7-9
El Colegio Road Existing Plus Proposed Housing Project Traffic Noise Levels

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Average Daily Trips: Existing/Existing +Project</th>
<th>Receptor</th>
<th>Minimum Distance Between Receptor and Roadway Centerline (feet)</th>
<th>Average Vehicle Speed (mph)</th>
<th>Exterior Noise Level at Receptor Existing/Existing +Project (peak hour dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Colegio Road: Storke Road to Los Carneros Road</td>
<td>11,016 / 11,294</td>
<td>Proposed Project</td>
<td>70</td>
<td>35</td>
<td>66.1 / 66.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Santa Catalina</td>
<td>120</td>
<td>35</td>
<td>63.8 / 63.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Isla Vista Elementary School</td>
<td>120</td>
<td>35</td>
<td>63.8 / 63.9</td>
</tr>
<tr>
<td>El Colegio Road: Los Carneros Road to Embarcadero Del Norte</td>
<td>11,181 / 11,798</td>
<td>Residences in Isla Vista</td>
<td>60</td>
<td>35</td>
<td>66.9 / 67.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Clemente Apartments</td>
<td>110</td>
<td>35</td>
<td>64.3 / 64.4</td>
</tr>
<tr>
<td>El Colegio Road: Embarcadero Del Norte to Stadium Road</td>
<td>9,871 / 10,518</td>
<td>Residences in Isla Vista</td>
<td>60</td>
<td>35</td>
<td>66.3 / 66.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Clemente Apartments</td>
<td>110</td>
<td>35</td>
<td>63.7 / 64.0</td>
</tr>
</tbody>
</table>


The exterior peak-hour traffic noise level at the Santa Catalina Residence Hall and the Isla Vista Elementary School is approximately 63.8 dBA, and would increase by 0.1 dBA as a result of project-generated traffic. The exterior peak-hour traffic noise levels at the San Clemente housing project is approximately 64.3 dBA between Los Carneros Road and Embarcadero Del Norte and 63.7 dBA between Embarcadero Del Norte and Stadium Road, and would increase by up to 0.3 dBA as a result of project-generated traffic. The exterior peak-hour traffic noise levels at the nearest residences in Isla Vista is approximately 66.9 dBA between Los Carneros Road and Embarcadero Del Norte and 66.3 dBA between Embarcadero Del Norte and Stadium Road, and would increase by up to 0.3 dBA as a result of project-generated traffic. Project-generated traffic would not substantially increase roadway noise levels along El Colegio Road, and traffic noise levels resulting from project-generated traffic along El Colegio Road would be less than significant.

Peak-hour traffic noise at the proposed Portola Dining Commons building would be approximately 66.2 dBA. While this peak-hour traffic noise exceeds 65 dBA, 24-hour CNEL noise levels associated with roadway traffic are estimated to be approximately 63.4 dBA, which would not exceed the UCSB threshold of 65 dBA CNEL. In addition, the exterior-to-interior noise reduction of new residential units is generally 30 dBA or more, therefore, interior traffic-
related noise levels resulting from project-generated traffic along El Colegio Road would not exceed 45 dBA and would be less than significant.

**Proposed Parking Lot.** The surface parking lot proposed to be located on the west side of Storke Road would serve residents of the San Joaquin Apartments and Santa Catalina Residence Hall. The new parking lot would be located south of Elkus Walk, between Storke Road and the West Campus Family Apartments. Other nearby noise sensitive receptors include the Santa Catalina Residence Hall, Storke Ranch, and the Isla Vista Elementary School.

Noise from the proposed surface parking lot would typically consist of sources such as vehicle engines starting, doors closing, radios, conversations, car alarms, etc. Those types of noise sources are common throughout the project area and Isla Vista community, and would not typically have an adverse effect on ambient noise levels at nearby sensitive receptors. Parking lot noise levels at the nearest units of the West Campus Family Apartments would be similar to noise levels from the existing parking lot located south of and adjacent to the proposed parking lot. Noise impacts from parking lot noise at the West Campus Family Apartments would be less than significant.

The minimum separation distance between the proposed parking lot and the nearest residences in Storke Ranch is approximately 110 feet. As depicted on Figure 5.7-1, a typical parking lot sound such as a car horn “chirp” can result in a peak noise level of approximately 75 dBA, which would result in a noise level in Storke Ranch of less than 65 dBA. Therefore, the proposed parking lot would have a less than significant noise impact to residences in Storke Ranch.

**Other Noise Sources.** Other noise sources associated with the proposed project would include items such as heating, ventilation and air conditioning (HVAC) mechanical equipment; periodic trips by medium- and heavy-duty vehicle delivery trips; waste and recycling collection, and operation of shuttle buses.

**HVAC Equipment.** Noise levels from commercial-scale ventilation and air conditioning equipment can reach 100 dBA at a distance of three feet (USEPA, 1971). These units are generally equipped with noise shielding cabinets, placed on the roof or mechanical equipment rooms and are not usually significant sources of noise impacts. Typically, the shielding and location of these units reduces noise levels to no greater than 55 dBA at 50 feet from the source. Based on the proposed site plan, HVAC equipment located on the North Village structures would be a minimum of approximately 50 feet from the nearest Storke Ranch residences adjacent to the northern boundary of the project site, resulting in a maximum noise exposure at these uses of approximately 55 dBA. This would not exceed UCSB’s 65 dBA CNEL guideline. Noise from HVAC equipment on proposed structures would be less than significant.

**Delivery Trucks.** Operation of the proposed project would include trips to the site by delivery trucks and waste hauling vehicles. Delivery and waste hauling trucks would access the site from El Colegio Road. The California Motor Vehicle Code establishes maximum sound levels for trucks operating at speeds less than 35 miles per hour (Section 23130). The maximum
sound level established by the code is 86 dBA at 50 feet. However, average noise levels for single idling trucks generally range from 60 to 65 dB at a distance of 100 feet, and maximum noise levels associated with medium duty delivery trucks generally range from 55 to 65 dB at a distance of 100 feet, depending on whether or not the driver is accelerating.

The primary loading dock on the project site would be enclosed and located below-grade on the east side of the Portola Dining Commons building, and would be accessed from a driveway near the southeast corner of the site. This loading dock would be a minimum of 450 feet south of Storke Ranch, and 550 feet northeast of the Isla Vista Elementary School. Another loading area would be located on the east side of the northern Storke Gateway building and would serve the on-site convenience store. This at-grade loading area would be a minimum of 250 feet south of Storke Ranch, and 550 feet north of the Isla Vista Elementary School. Based on an attenuation rate of six dB per doubling of distance, the sound level at the nearest sensitive receptor from idling delivery trucks would be approximately 57 dB. The maximum sound level at the nearest sensitive receptor from delivery trucks (assuming heavy-duty trucks) would be approximately 57 dB. These noise estimates do not include the substantial noise shielding that would be provided by on-site buildings. This would not exceed UCSB’s 65 dBA CNEL guideline. In addition, delivery truck trips to the project site would be an intermittent source of noise, and would not substantially increase 24-hour CNEL levels. Operational noise impacts from delivery and waste hauling vehicles would be less than significant.

Waste and Recycling Collection. The project would include a waste compactor located at the below-grade loading dock, as well as smaller waste and recycling collection stations located throughout the project site. The waste compactor would be surrounded within the below-grade loading dock, which would substantially attenuate noise generated from this equipment, such that it would not be a substantial source of noise outside of the below-grade loading dock. The waste and recycling collection stations located throughout the site would be a potential source of noise, as waste (especially metal and glass waste such as bottles and cans) is placed into these receptacles, and as they are periodically emptied. Noise associated with waste and recycling collection stations would be periodic, such that it would not result in a substantial increase in the average noise levels on the project site, or otherwise result in an exceedance of UCSB’s 65 dBA CNEL standard. However, the periodic nature of noise from these sources may be disruptive, and it is recommended that waste and recycling collection stations be designed and located to minimize their noise impact to on-site and off-site receptors. This recommendation is included in EIR Section 5.6.5 as measure N-3a. This is a recommended measure and its implementation is not required to reduce any noise-related impacts to less than significant level.

Shuttle Buses. Project site serving shuttle buses would operate along Storke Road and El Colegio Road. Bus turn-outs would be provided along Storke Road and El Colegio Road. Shuttle bus service would incrementally increase traffic along Storke and El Colegio Roads, however, the increases would be very minor compared to existing traffic levels and the additional bus traffic would not substantially affect traffic noise levels reported on Tables 5.7-7, 8 and 9 provided above. Therefore, noise resulting from the operation of shuttle buses would be less than significant.
5.7.4 Cumulative Impacts

Short-Term Construction Noise

If heavy construction equipment were to be in simultaneous operation for the development of the San Joaquin Apartments project as well as other construction projects within audible distance, cumulative construction noise level would be up to 3 dBA higher than construction noise levels associated with each individual project. An increase in construction noise levels of 3 dBA may not be perceptible to residents located close to the construction sites. Conducting major grading operations for the proposed project simultaneously with other nearby construction projects would incrementally increase construction noise levels, but would have the advantage of minimizing the total duration of construction noise impacts on area residents.

The approved Sierra Madre housing project is located on the west side of Storke Road, north of the proposed parking lot location. Construction of the Sierra Madre project is planned to begin in Fall 2013 and will require 18 months to two years to complete. Grading operations for the Sierra Madre housing project would be completed before grading at San Joaquin begins; however, there would be some overlap in construction schedules. If the construction operations were to occur simultaneously, the proposed project-specific construction noise mitigation measures would also be adequate to reduce short-term construction noise impacts to a less than significant level.

Long-Term Cumulative Noise Impacts

The approved Sierra Madre housing project site is located on the west side of Storke Road north of the proposed parking lot, and would provide 151 housing units for students, faculty and staff. In general, the Sierra Madre residential project would be similar in character to the proposed project and to other adjacent residential developments at and around the UCSB campus. The Sierra Madre units would be separated from residences in Storke Ranch by Storke Road, which substantially reduces the potential for the Sierra Madre project to result in significant long-term noise impacts to nearby off-campus residences.

Other cumulative development identified by the 2010 LRDP that may occur on the UCSB campus near the San Joaquin Apartments project site includes the addition of 231 residential units to the 250 residential units currently provided by the West Campus Family Apartments. These additional units could incrementally increase existing long-term ambient noise levels, although the new residential units would not be located adjacent to Storke Ranch or the Isla Vista Elementary School, which would substantially reduce the potential for noise-related impacts and conflicts. Development in the project area that may occur in Goleta and in Isla Vista would likely consist of minor residential infill or redevelopment projects. This type of development would not result in new land uses that would substantially increase long-term ambient noise levels in the project area. Therefore, it is unlikely that other approved, proposed or anticipated development projects in the project area would substantially increase existing ambient noise conditions. As described in Section 5.7.3 above, the San Joaquin Apartments
project would not result in a substantial increase in average noise conditions at or near the project site. Therefore, the project’s contribution to cumulative noise impacts would not be considerable and the project’s cumulative impacts to ambient noise conditions in the project area would be less than significant.

Traffic noise levels from cumulative development and resulting vehicle trips along roadways in the project area are shown in Table 5.7-10, based on cumulative traffic volumes developed in the project traffic study. As shown in Table 5.7-10, the exterior peak-hour traffic noise level would exceed 65 dBA at several locations; however, 24-hour CNEL noise levels associated with roadway traffic would not be anticipated to exceed 65 dBA CNEL. Project development would not result in an increase in traffic noise levels greater than 0.1 dBA at any location. Therefore, the proposed project’s traffic noise impacts would not cumulatively considerable and the project’s cumulative traffic noise impacts would be less than significant.

Table 5.7-10
Cumulative Traffic Noise

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Average Daily Trips: Cumulative/ Cumulative + Project</th>
<th>Receptor</th>
<th>Minimum Distance Between Receptor and Roadway Centerline (feet)</th>
<th>Average Vehicle Speed (mph)</th>
<th>Exterior Noise Level at Receptor Cumulative/ Cumulative + Project (peak hour dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storke Road: Phelps Road to Hollister Avenue</td>
<td>25,000 / 24,129</td>
<td>Courtyard Hotel</td>
<td>125</td>
<td>35</td>
<td>67.2 / 67.0</td>
</tr>
<tr>
<td>Storke Road: El Colegio Road to Phelps Road</td>
<td>21,500 / 20,529</td>
<td>Various Residences</td>
<td>60</td>
<td>35</td>
<td>69.7 / 69.5</td>
</tr>
<tr>
<td>Los Carneros: El Colegio Road to Mesa Road</td>
<td>22,400 / 22,488</td>
<td>Santa Ynez Apartments</td>
<td>120</td>
<td>35</td>
<td>66.9 / 66.9</td>
</tr>
<tr>
<td>El Colegio Road: Storke Road to Los Carneros Road</td>
<td>24,400 / 24,157</td>
<td>Proposed Project</td>
<td>70</td>
<td>35</td>
<td>69.5 / 69.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Santa Catalina</td>
<td>120</td>
<td>35</td>
<td>67.3 / 67.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Isla Vista Elementary School</td>
<td>120</td>
<td>35</td>
<td>67.3 / 67.2</td>
</tr>
<tr>
<td>El Colegio Road: Los Carneros Road to Embarcadero Del Norte</td>
<td>19,900 / 19,987</td>
<td>Residences in Isla Vista</td>
<td>60</td>
<td>35</td>
<td>69.4 / 69.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Clemente Apartments</td>
<td>110</td>
<td>35</td>
<td>66.8 / 66.8</td>
</tr>
<tr>
<td>El Colegio Road: Embarcadero Del Norte to Stadium Road</td>
<td>18,900 / 19,022</td>
<td>Residences in Isla Vista</td>
<td>60</td>
<td>35</td>
<td>69.2 / 69.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Clemente Apartments</td>
<td>110</td>
<td>35</td>
<td>66.5 / 66.6</td>
</tr>
</tbody>
</table>

5.7.5 Mitigation Measures and Residual Impacts

Impacts That Can Be Reduced To a Less Than Significant Level

N-1. Construction of the proposed apartments and parking lot has the potential to result in significant short-term noise and vibration impacts to adjacent residences, including on-site residents of the Santa Catalina Residence Hall, Storke Ranch, and the West Campus Family Apartments.

N-1a. The following mitigation measures are to be implemented throughout the proposed project’s construction period.

The following mitigation measures were identified by the 2010 LRDP EIR.

1. Construction equipment used on campus shall be properly maintained and outfitted with feasible noise-reduction devices to minimize construction-generated noise.

2. Stationary noise sources such as generators or pumps shall be located at least 100 feet away from noise-sensitive land uses as feasible.

3. Laydown and construction vehicle staging areas shall be located at least 100 feet away from noise-sensitive land uses.

4. Residential areas that will be subject to construction noise will be informed in writing at least one week before the start of construction activities.

5. Loud construction activity (i.e., construction activity such as jackhammering, concrete sawing, asphalt removal, and large-scale grading operations) within 100 feet of a residential building shall not be scheduled during finals week.

6. Loud construction activity within 100 feet of a residential building shall be restricted to the hours between 7:30 AM and 6:00 PM, Monday through Saturday. Non-noise generating construction activities such as the application of interior finishes are not subject to these time restrictions.

The proposed project shall also implement the following construction site reduction mitigation measures.

7. Deliveries of construction material and equipment shall occur on the project site and only during construction site operation hours specific by mitigation measure N-1a.6. Construction vehicles shall not be allowed to queue outside the project site before the specified hours.
8. No radios or music playback equipment shall be permitted on the project site.

9. The simultaneous use of multiple pieces of equipment for demolition, grading and construction activities conducted within 200 feet of the project site perimeter shall be minimized to the extent possible.

10. If required to minimize potential noise conflicts, noise-producing equipment shall be shielded from noise sensitive receptors by using temporary walls, sound blankets, sound curtains or other similar devices.

11. Signage shall be posted along El Colegio Road and Storke Road that identifies the permitted construction hours and that provides a phone number to call to receive information about the construction project or to report complaints regarding excessive noise levels.

Implementation of the mitigation measures listed above would reduce, but not eliminate, the effects of short-term construction noise and groundborne vibration from the San Joaquin Apartments project. Due to the short-term and intermittent nature of the construction noise, the proposed mitigation measures are adequate to reduce project-specific and cumulative construction noise impacts to nearby residences to a less than significant level.

**Additional Recommended Measures**

The following measures would reduce the potential for project-related noise conflicts with nearby residences but are not required to reduce noise impacts of the project to a less than significant level.

**N-2** Project-related activities that occur on the project site, primarily in the North Village area, have the potential to result in transient sounds that may be considered disturbing by nearby residents.

**N-2a** Signs shall be posted indicating that complaints regarding the creation of excessive noise may be reported to the UCSB Police Department. The phone number of the Police Department shall be provided on the signs, and the signs shall be posted on the wall that separates the project site from Storke Ranch.

**N-3** The use of on-site waste and recycling facilities has the potential to result in the creation of intermittent noises that may be disturbing to on-site residents and residences located adjacent to the project site.

**N-3a** Waste and recycling collection stations shall be located on the project site interior sides of new structures and/or designed to minimize noise impacts to on- and off-site locations.