

### 4.13.1 ENVIRONMENTAL SETTING

#### IN THIS SECTION:

- Regulatory Setting
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- Existing Noise Sources & Noise Levels
- Noise Compatibility Standards & Noise Attenuation

This section summarizes the noise background that was prepared for the City by Rosen, Goldberg, Der & Lewitz (November 2007) as part of the General Plan update process. The report provides background information on noise sources within the City, noise measurements that were made to document noise levels throughout the City, and development of noise contours for existing conditions. The firm also prepared a report identifying future noise conditions along key roadways (November 2010) based on the outcome of the traffic analysis, the results of which are also included in this chapter. The technical reports are included in Technical Appendix F-3, which is available for review at the City of Santa Cruz Planning Department<sup>1</sup> and is also included on the Draft EIR CD and on the online version of the Draft EIR on the City's website at [www.cityofsantacruz.com](http://www.cityofsantacruz.com), Planning Department.

### REGULATORY SETTING

There are no federal noise requirements or regulations applicable to local actions of the City of Santa Cruz. However, there are federal regulations that influence the audible landscape, where federal funding is involved. The Federal Highway Administration (FHWA) requires abatement of highway traffic noise for highway projects through rules in the Code of Federal Regulations (23 CFR Part 772), and the Federal Transit Administration (FTA) and Federal Railroad Administration (FRA) each recommend thorough noise and vibration assessments through comprehensive guidelines for any mass transit or high-speed railroad projects that would pass by residential areas. For housing constructed with assistance from U.S. Department of Housing and Urban Development, minimum noise insulation standards must be achieved (24 CFR Part 51, Subpart B).

California Government Code Section 65302(f) requires that each city and county general plan include a "noise element" that: "shall identify and appraise noise problems in the community"; "shall recognize the guidelines established by the Office of Noise Control"; and "shall analyze

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<sup>1</sup> Located at 809 Center Street, Room 107, Santa Cruz, California during business hours: Monday through Thursday, 8 AM to 12 PM and 1-4 PM.

and quantify, to the extent practicable, as determined by the [city or county] legislative body, current and projected noise levels for all of the following sources:

- ☐ Highways and freeways,
- ☐ Primary arterials and major local streets,
- ☐ Passenger and freight on-line railroad operations and ground rapid transit systems,
- ☐ Commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation,
- ☐ Local industrial plants, including, but not limited to, railroad classification yards, [and]
- ☐ Other ground stationary noise sources, including, but not limited to, military installations, identified by local agencies as contributing to the community noise environment.”

“Noise contours shall be shown for all of these sources and stated in terms of community noise equivalent level (CNEL) or day-night average level (Ldn). The noise contours shall be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified in paragraphs (1) to (6), inclusive.” These “noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise.”

Finally, “[t]he noise element shall include implementation measures and possible solutions that address existing and foreseeable noise problems, if any. The adopted noise element shall serve as a guideline for compliance with the state’s noise insulation standards.”

The State of California Office of Planning and Research Noise Element Guidelines (Governor’s Office of Planning and Research, October 2003) include recommended exterior noise level standards for different land uses to assure compatibility with ambient noise levels. The City of Santa Cruz’ existing General Plan includes the state’s standards that were recommended at the time the existing General Plan was prepared in 1990.

The State of California establishes minimum noise insulation performance standards for hotels, motels, dormitories, apartment houses and dwellings other than detached single-family dwellings. Interior noise levels attributable to exterior sources shall not exceed 45 db in any habitable room, measured in either the day-night average sound level (Ldn) or the community noise equivalent level (CNEL), consistent with the General Plan, although Ldn is preferred as set forth in the California Building Code (Title 24, Chapter 12 Appendix Section 1207.11.2). The Day-Night Average Sound Level (DNL) is a descriptor established by the U.S. Environmental Protection Agency to represent a 24-hour average noise level with a penalty applied to noise occurring during the nighttime hours (10 p.m. - 7 a.m.) to account for the increased sensitivity of people during sleeping hours. Where exterior noise levels exceed 60 dBA Ldn, a report must be submitted with the building plans describing the noise control measures that have been incorporated into the design of the project to meet the noise limit.

Regulations within the City of Santa Cruz Municipal Code include performance standards regarding noise and vibration. Section 24.14 includes performance standards for the control of land uses to enable potential nuisance factors to be measured factually and objectively where possible and to protect the community as a whole from hazards and nuisances which can be prevented by methods of control and elimination. Sections 24.14.220 indicate that no land or

building in any district shall be used or occupied in any manner so as to create noise or vibration in such a manner or in an amount as to adversely affect the surrounding area or adjoining premises. Section 24.14.260 establishes the maximum sound level that shall not be exceeded as more than five dBA above the local ambient for residential uses and six dBA for commercial uses. Section 24.14.262 indicates that no vibration (other than from transportation facilities or temporary construction work) shall be permitted which is discernible without instruments at the points of measurement specified in the regulations. Chapter 9.36 regulates “offensive” and disturbing noise, which generally prohibits loud noise between the hours of 10 PM and 8 AM.

## **NOISE FUNDAMENTALS**

### **Definitions of Noise and Effects of Noise**

“Sound” is mechanical energy transmitted by pressure waves in a compressible medium such as air. “Noise” is generally defined as “unwanted or disturbing sound.” Sound becomes unwanted when it either interferes with normal activities such as sleeping, conversation or disrupts or diminishes one’s quality of life (U.S. EPA “Noise Pollution” website). For some people, the persistent and escalating sources of sound can often be considered an annoyance. Annoyance is the common issue regarding community noise. Studies have also shown that there are direct links between noise and health. Problems related to noise include stress-related illnesses, high blood pressure, speech interference, hearing loss, sleep disruption, and lost productivity (Ibid.).

Unlike many other environmental factors, noise is a subjective. Its effects often depend on the source, its loudness, and duration. Which sounds are considered noise varies from person to person and with the time of day and setting. Many factors influence people’s response to noise, such as the character of the noise, sound level, and duration of the sound. When the noise level of an activity rises above 70 dBA, the chance of receiving a complaint is possible. The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure.

Loudness is measured in decibels (dB) and is typically expressed in dBA, which approximates human hearing. The human ear can generally perceive noise from 0 to 140 decibels. Sounds as faint as 0 decibels are barely audible, and then only when there are no other sounds. Ordinary conversation is about 60 dB. People can tolerate some noise, but brief exposure to intense sounds of 120 to 140 dB can threaten physical or psychological well-being.

### **Measuring Noise**

Noise levels are commonly measured with an instrument called a sound level meter. The sound level meter captures the sound with a microphone and converts it into a number called a sound level. Sound levels are expressed in units of decibels. To correlate the microphone signal to a level that corresponds to the way humans perceive noise, the A-weighting filter is used. A-weighting de-emphasizes low-frequency and very high-frequency sound in a manner similar to human hearing. The use of A-weighting is required by most local General Plans as well as federal and state noise regulations (e.g. Caltrans, EPA, OSHA and HUD). The abbreviation dBA

is sometimes used when the A-weighted sound level is reported (Rosen Goldberg Der & Lewitz, Inc., November 2007).

Because of the time-varying nature of environmental sound, there are many descriptors that are used to quantify the sound level. Although one individual descriptor alone does not fully describe a particular noise environment, taken together, they can more accurately represent the noise environment. The maximum instantaneous noise level (Lmax) is often used to identify the loudness of a single event such as a car passby or airplane flyover. To express the average noise level the Leq (equivalent noise level) is used. The Leq can be measured over any length of time but is typically reported for periods of 15 minutes to 1 hour. The background noise level (or residual noise level) is the sound level during the quietest moments. It is usually generated by steady sources such as distant highway traffic. It can be quantified with a descriptor called the L90 which is the sound level exceeded 90 percent of the time (Rosen Goldberg Der & Lewitz, Inc., November 2007).

To quantify the noise level over a 24-hour period, the Day/Night Average Sound Level (DNL or Ldn) or Community Noise Equivalent Level (CNEL) is used. These descriptors are averages like the Leq except they include a 10 dB penalty during nighttime hours (and a 5 dB penalty during evening hours in the CNEL) to account for peoples increased sensitivity during these hours (Rosen Goldberg Der & Lewitz, Inc., November 2007).

In environmental noise, a change in noise level of 3 dB is considered just a noticeable difference. A 5 dB change is clearly noticeable, but not dramatic. A 10 dB change is perceived as a halving or doubling in loudness (Rosen Goldberg Der & Lewitz, Inc., November 2007).

## EXISTING NOISE SOURCES & NOISE LEVELS

The most widespread and dominant noise source in Santa Cruz is traffic. Other noise sources such as railroads, industry and the Boardwalk tend to be localized and limited to certain locations and times of the day or year. The following is a discussion of the most common noise sources in Santa Cruz.

### Existing Sources of Noise

#### ROADWAY-TRAFFIC NOISE

The noisiest roadways are those with the greatest traffic volumes and highest travel speeds. For example, the highways (State Route 1 and State Route 17) generate noise which affects large areas. The noise from arterials affects the development that is directly adjacent but the affects are significantly reduced beyond the first row of buildings. Examples are Mission Street (State Route 1), Water Street, Soquel Avenue, Ocean Street, Broadway, River Street, Bay Street and Laurel Street.

Soundwalls along freeways and highways reduce noise levels at the land uses behind them. Typical noise reductions are in the 5 to 15 dBA range depending on the location of the noise receptor. Soundwalls have been installed along much of the length of the Highway 1 in Santa Cruz as part of the State Route 1/17 Widening of Merge Lanes project.

## RAILROAD NOISE

The railroad tracks that cross the southern portion of the City in an east/west direction are used for limited freight transport and generally during daytime hours. During the summer (and limited days during the winter holidays) recreational trains access the Boardwalk along the tracks that cross the City in a north/south direction along Chestnut Street. There are generally two round trip excursions per day. The trains travel at relatively low speeds through the City and the major noises are the rumble from the locomotive and the whistles that must be sounded before and during each at-grade roadway crossing.

Locomotives typically produce maximum noise levels ( $L_{max}$ ) of 88 dBA at a distance of 50 feet and whistles produce an  $L_{max}$  of 105 dBA at 50 feet<sup>2</sup>. If there are two round trips a day, this corresponds to an  $L_{dn}$  of 49 dBA. The  $L_{dn}$  would increase to 65 dBA near grade crossings since the train would be required to sound its warning horn (whistle).

## AIRCRAFT NOISE

There are no airfields or airports in Santa Cruz and, therefore, airplane noise is limited to overflights. There is an emergency helipad at Dominican Hospital just outside of the northeast corner of the City Limits.

## INDUSTRIAL NOISE

Much of the industrial land use in the City is located north of Highway 1 and west of River Street (State Route 9). Concrete production and distribution is a common noise source in this area. Measurements along Coral Street indicate that the steady noise level from machinery at the Graniterock facility is 65 to 67 dBA at a distance of 185 feet (Rosen Goldberg Der & Lewitz, Inc., November 30, 2007).

## OTHER SOURCES – THE BOARDWALK

The Santa Cruz Beach Boardwalk is the predominant noise source in the beach area during the summer months. Major noise sources include roller coasters, people screaming and outdoor concerts. Noise measurements conducted for the Beach Area/South of Laurel Master Plan EIR3 indicated that roller coasters generate maximum noise levels ( $L_{max}$ ) of 69 to 78 dBA at the residences and businesses across Beach Street. The DNL along Leibbrandt Street was 68 dBA. Along East Cliff Drive, homes on the bluff overlooking the boardwalk, were exposed to an  $L_{max}$  of 60 to 65 dBA from music at the bandstand and 65 to 70 dBA from the screams of people on the wooden roller coaster (Giant Dipper) (Rosen Goldberg Der & Lewitz, Inc., November 30, 2007).

### Existing Noise Levels

As part of preparation of the General Plan, a noise measurement program was conducted to quantify noise levels throughout the City. The program included measurements along the busiest roads in the city in November 2006. One continuous “long term” 24-hour noise measurement and one “short-term” 15-minute measurement were conducted at each of ten locations. The short-term noise measurement was conducted at the typical setback of the nearby land uses (typically residences) while the long-term noise monitor was mounted to an existing utility pole

or tree. The short-term measurement results were correlated with simultaneous measurements at the long-term monitoring location to determine the DNL at the typical setback of land uses in the vicinity of the long-term noise monitor. Table 4.13-1 shows the results of the short-term noise measurements and the correlated DNL.

**TABLE 4.13-1**  
**Short-Term Noise Measurement Results**

| LOCATION                                                                                                                                                     |                                      | Short-Term Noise Measurement Results |                 |                 |                 |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|-----------------|-----------------|-----------------|------|
|                                                                                                                                                              |                                      | L <sub>eq</sub>                      | L <sub>10</sub> | L <sub>50</sub> | L <sub>90</sub> | DNL* |
| 1                                                                                                                                                            | Swift Street at Jeter St.            | 65                                   | 69              | 62              | 51              | 66   |
| 2                                                                                                                                                            | West Cliff Drive at Woodrow Avenue   | 56                                   | 48              | 47              | 46              | 56   |
| 3                                                                                                                                                            | Barson Street at Canfield Avenue     | 60                                   | 65              | 54              | 48              | 62   |
| 4                                                                                                                                                            | Ocean Street south of Hubbard Street | 71                                   | 74              | 69              | 62              | 73   |
| 5                                                                                                                                                            | Mission Street at Van Ness Avenue    | 70                                   | 69              | 67              | 84              | 75   |
| 6                                                                                                                                                            | Seabright Avenue at Windsor Street   | 63                                   | 67              | 60              | 48              | 66   |
| 7                                                                                                                                                            | Water Street at Benito Avenue        | 67                                   | 69              | 64              | 58              | 69   |
| 8                                                                                                                                                            | Morrissey Blvd. at Hammond Avenue    | 66                                   | 69              | 65              | 56              | 67   |
| 9                                                                                                                                                            | Highway 1 at High Street             | 70                                   | 73              | 69              | 59              | 73   |
| 10                                                                                                                                                           | Center Street at New Street          | 63                                   | 64              | 56              | 48              | 63   |
| * DNL calculated by correlating with simultaneous measurement at 24-hour noise monitor.<br><b>SOURCE:</b> Rosen, Goldberg, Der & Levitz, Inc., November 2007 |                                      |                                      |                 |                 |                 |      |

An existing noise contour map was developed and the contours are shown on Figure 4.13-1.<sup>2</sup> The contours are shown for DNL values of 60 and 65 dBA. Although some segments experienced noise levels above 70 dBA as shown on Table 4.13-1, these areas are quite limited and were not mapped due to the limited visibility with the scale of mapping. The traffic noise contours are based on calculations using the Federal Highway Administration's Traffic Noise Model (TNM 2.5), which includes inputs such as traffic volume, truck percentage and travel speeds. Traffic volume data developed by the City of Santa Cruz for the General Plan Update was supplemented by observations made in the field. The traffic data for the highways is based on counts published by Caltrans. The traffic noise contours do not take into account the acoustical shielding provided by buildings or fences along the roadways. However, along

<sup>2</sup> All EIR figures are included in Chapter 7.0 at the end of the EIR (before appendices) for ease of reference as some figures are referenced in several sections.

portions of Highway 1, the effects of recently constructed soundwalls are included. The soundwall locations are based on the environmental document for the highway widening project. The soundwalls are assumed to reduce the noise levels by 5 dBA (Rosen Goldberg Der & Lewitz, Inc., November 30, 2007).

## NOISE COMPATIBILITY STANDARDS & NOISE ATTENUATION

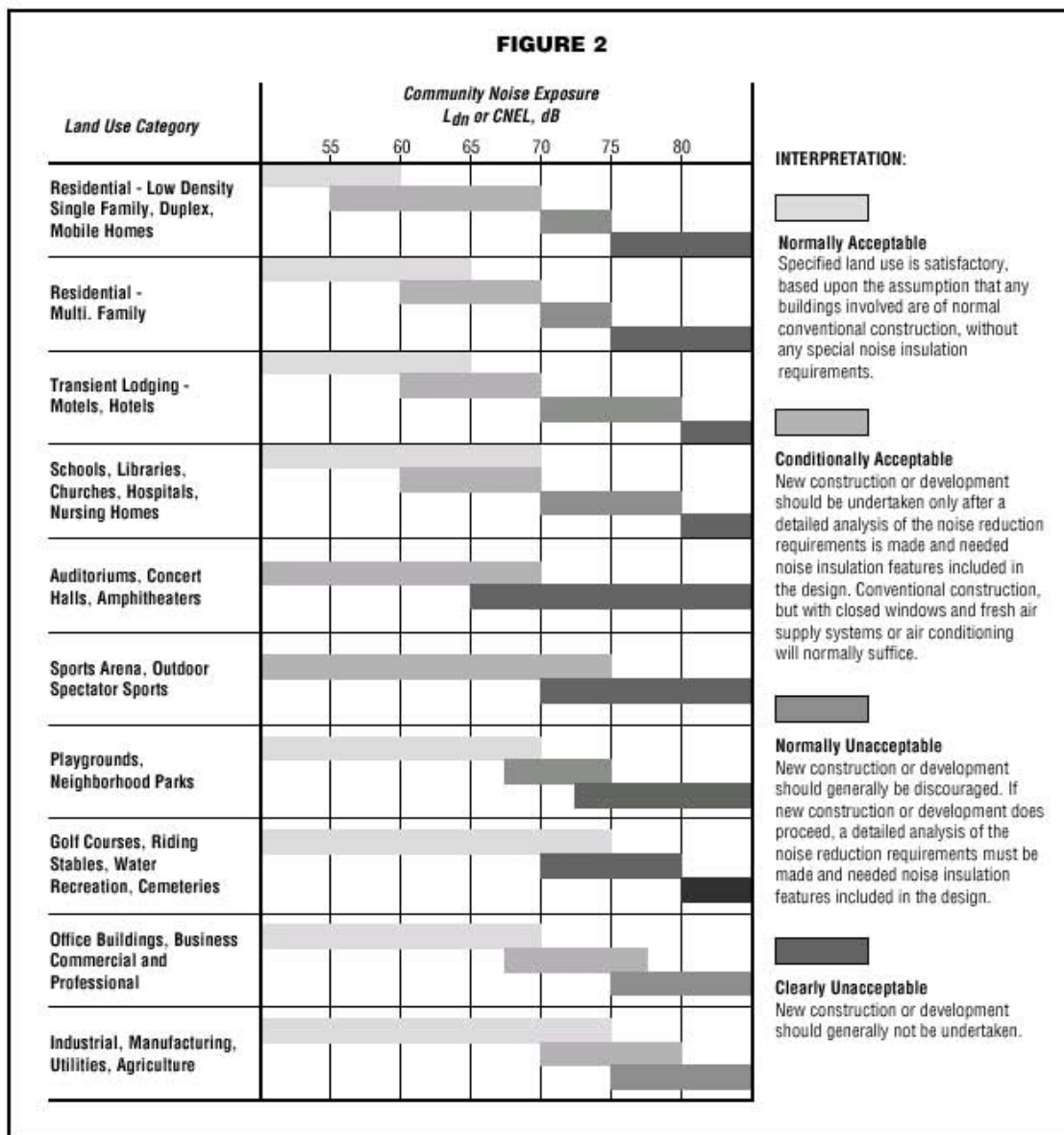
As previously indicated, the State of California Office of Planning and Research Noise Element Guidelines (Governor's Office of Planning and Research, October 2003) include recommended exterior noise level standards for different land uses to assure compatibility with ambient noise levels. These Guidelines describe the compatibility of various land uses with a range of environmental noise levels in terms of dBA CNEL. According to the State, a noise environment of 60 dBA or less CNEL is considered to be "normally acceptable" for residential uses. Additionally, more restrictive standards for quiet suburban and rural communities may be reduced by 5 to 10 dBA to reflect their lower existing outdoor noise levels in comparison with urban environments. Table 4.13-2 illustrates the State guidelines, which were originally established by the State Department of Health Services, for acceptable noise levels for each jurisdiction.

An interior CNEL of 45 dBA is mandated by the State of California Noise Insulation Standards (California Code of Regulations, Title 24, Part 6, Section T25.28) for multiple-family dwellings and hotel and motel rooms. Since normal noise attenuation within residential structures with closed windows is about 20 dBA, an exterior noise exposure of 65 dBA Ldn allows the interior standard to be met without any specialized structural attenuation (e.g., dual paned windows). A noise level of 65 dBA is also the level at which ambient noise begins to interfere with one's ability to carry on a normal conversation at reasonable separation without raising one's voice.

For typical residential construction (i.e., light frame construction with ordinary sash windows), the minimum amount of exterior to interior noise reduction is at least 20 dBA with exterior doors and windows closed and approximately 15 dBA with windows partially open for ventilation. Buildings constructed of stucco or masonry with dual-glazed windows and solid core exterior doors can be expected to achieve an exterior to interior noise reduction of approximately 25-30 dBA.

A solid barrier, such as a concrete masonry wall, located between a noise source and a receiver will typically provide about 5 dBA of noise reduction; additional reduction may be achieved by increasing the length and/or height of the barrier. A row of buildings located between a source and a receiver may provide 3 dBA of noise reduction with up to a 1.5-dBA reduction for each additional row up to a maximum reduction of approximately 10 dBA (California Department of Transportation, November 2009). The exact degree of noise attenuation depends on the nature and orientation of the structure and intervening barriers. Sound levels from a localized point source typically are reduced by 6 dBA for each doubling in distance, and sound levels from roadway traffic noise may be reduced by 3 dBA for each doubling in distance (Ibid). Ordinary landscaping along a highway accounts for less than 1 dBA of noise reduction, while dense landscaping (i.e., 100 feet wide) could attenuate traffic noise by 5 dBA (Ibid.).

**TABLE 4.13-2**  
**Land Use – Noise Compatibility Standards**



**SOURCE:** California Governor's Office of Planning and Research

## 4.13.2 RELEVANT PROJECT ELEMENTS

### PROPOSED GOALS, POLICIES & ACTIONS

The draft *General Plan 2030* includes a **HAZARDS, SAFETY & NOISE** chapter that sets forth one goal with two policies and 14 accompanying actions that address noise issues. The following goal HZ3 and its two policies seek to maintain or reduce existing noise levels and control excessive noise and ensure that noise standards are met in the siting of noise-sensitive uses.

**GOAL HZ3**     *Noise levels compatible with occupancy and use.*

### FUTURE DEVELOPMENT POTENTIAL

The *General Plan 2030* Land Use Map and land use designations are largely unchanged from the 1990-2005 General Plan / Local Coastal Program, except for three new mixed use land designations have been developed and applied to the following major transportation corridors: Mission Street, Ocean Street, Soquel, Avenue, and Water Street. Land Use policies LU1.1.4 and LU1.1.5 address development for specific sites: the Swenson property and the Golf Club Drive property, respectively.

Some of the draft *General Plan 2030* policies and actions support certain types of land uses and/or development, including new mixed-use use districts and/or intensified redevelopment. The *General Plan 2030* continues to include an industrial land use designation in the same areas currently designated industrial (Westside and Harvey West). Light industrial and “creative” industrial uses are encouraged in the Harvey West area (LU3.2.3), and “incubator” uses are specified for the Westside industrial area (LU3.2.3). Policy ED6.1.1 supports the establishment of industries and “lifestyle businesses” that draw on Santa Cruz’s natural assets and environment. In addition, the proposed *General Plan 2030* supports development of a desalination plant (Policy CC3.1.3), but a specific site is not identified.

## 4.13.3 IMPACTS AND MITIGATION MEASURES

### CRITERIA FOR DETERMINING SIGNIFICANCE

In accordance with the California Environmental Quality Act (CEQA), State CEQA Guidelines (including Appendix G), City of Santa Cruz plans, policies and/or guidelines, and agency and professional standards, a project impact would be considered significant if the project would:

- 13a Expose persons to noise levels in excess of “normally acceptable” standards established in the State of California *General Plan Guidelines*’ (2003) “Noise Element Guidelines” for compatible community noise levels;
- 13b Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project if it will expose outdoor activity areas of noise-sensitive land uses to:

- A 5 dB increase in noise where existing noise levels are below 60 dBA  $L_{dn}$ , or
  - a 3 dB increase in noise where existing noise levels are above 60 dBA  $L_{dn}$ .
- 13c Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; or
- 13d Expose persons to or generate excessive groundborne vibration.

## IMPACT ANALYSIS

The following impact analyses address potential impacts related to exposure to noise levels that exceed standards (13a), permanent increases in ambient noise levels (13b), and temporary increases in noise due to construction (13c). There are no planned land uses that would be expected to result in generation of groundborne vibration. The potential for vibration (13d) is mostly associated with construction-related impacts, and is addressed in that impact discussion below (13c). There are no airports or airfields within the City or in the immediate vicinity that would cause noise-related impacts related to aviation.

### Potential Future Development & Buildout

The proposed General Plan would accommodate future development. As described in the PROJECT DESCRIPTION and LAND USE sections of this EIR (Chapters 3.0 and 4.1, respectively), buildout projections were estimated for the draft General Plan to provide an estimate of the amount of development that is expected to occur by the year 2030. The projected development includes 3,350 additional residential dwelling units with an associated population increase of 8,040 residents (based on 2.4 persons per household). The buildout projections estimate 3,140,000 additional square feet of commercial, office and industrial uses by the year 2030. According to the traffic analysis, this potential development would generate an estimated 78,260 new daily trips with approximately 7,180 trips occurring during the PM peak hour.

#### **Impact 4.13-1: Exposure to Noise**

Implementation of the proposed *General Plan 2030* would accommodate future development that could be exposed to noise levels that exceed state standards for compatible noise levels for residential uses. With implementation of the proposed General Plan policies and actions for noise, this is considered a *less-than-significant impact*.

Adoption and implementation of the proposed *General Plan 2030* would not directly result in new development. However, the draft General Plan includes policies and a land use map that support additional development. This potential development, as summarized in subsection 4.13.2 above, could result in increased vehicular noise as discussed below, as well as project-level construction-related noise, which is discussed below under Impact 4.13-3.

The proposed *General Plan 2030* would accommodate future development pursuant to planned land use designations contained in the Plan. Development under the proposed General Plan would primarily occur on vacant infill sites, on underutilized properties that could be redeveloped at higher densities and/or land use intensities, and in the new mixed-use districts along the City's four major street corridors: Mission Street, Ocean Street, Soquel Avenue, and Water Street. Based on the estimated development occurring under the proposed plan, approximately 55 percent of all new housing, 45 percent of new commercial development and 52 percent of new office development would be located along these corridors.<sup>3</sup> Although the City of Santa Cruz is primarily developed, except for a few remaining vacant lots located within developed areas, the following three areas within the planning area are primarily undeveloped or underdeveloped that would be subject to potential future development: the Swenson site adjacent to Antonelli Pond; the Golf Club Drive area adjacent to Pogonip Creek, and the area along Seventh Avenue that is within the City's Sphere of Influence, but outside city limits.

Future noise levels adjacent to roadways were modeled by Rosen, Goldberg, Der & Lewitz, Inc. for this EIR, based on traffic data developed for the EIR, which was used as input to the Federal Highway Administration's TNM 2.5 model. This model calculates the traffic noise level based on input such as traffic volume, truck percentage and travel speeds. (See Appendix F-3 for further details). The resulting noise levels are shown on Table 4.13-3.

Based on the projected future noise levels, a future noise contour map was developed, which is shown on Figure 4.13-2. The noise contours are shown for DNL values of 60 and 65 dBA. Although some segments experienced noise levels above 70 dBA as shown on Table 4.13-3, these areas are quite limited and were not mapped due to the limited visibility with the scale of mapping. The traffic noise contours do not take into account the acoustical shielding provided by buildings or fences along the roadways. However, along the portions of Highway 1, the effects of recently constructed soundwalls are included; the soundwalls are assumed to reduce the noise levels by 5 dBA.

As shown on Table 4.13-3, land uses along a number of City streets would experience future noise levels in excess of 65 dBA at distances of 50 or more feet. As previously indicated, 65 dBA is the typical exterior noise level at which the state-mandated interior sound level of 45 dBA could be achieved without specialized structural noise attenuation. The streets include segments along:

- Bay Street
- Front Street
- King Street / Union
- Laurel Street / Broadway
- High Street
- Mission Street / Water Street
- Morrissey Blvd.
- Ocean Street
- River Street
- Riverside Avenue
- San Lorenzo/East Cliff/Murray
- Soquel Avenue
- Swift Street
- Seventh Avenue
- Highway 1

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<sup>3</sup> See Table 3-3 in the PROJECT DESCRIPTION (Chapter 3.0) section of this EIR and Figure 2-3 for estimated distribution of new development per specific areas in the City.

Some future development accommodated by the proposed *General Plan 2030* would be located along some of these roadways, especially along the proposed intensified mixed-use corridors along, Mission Street, Soquel Avenue, Water Street, and Ocean Street. The two major vacant properties – the Swenson site adjacent to Antonelli Pond and the Golf Club Drive area – would not be located in areas where future noise levels may exceed standards for noise-land use compatibility standards. However, some of the area along Seventh Avenue that is within the City’s existing Sphere of Influence, but outside city limits, may experience unacceptable noise levels.

Certain land uses are particularly sensitive to noise, such as schools, hospitals, and rest homes. Residential areas are also considered noise sensitive, especially during the nighttime hours. There are no major hospitals within city limits. The City is predominantly residential with 12 public and private schools distributed throughout the City. Residential uses within new mixed-use developments along the major transportation corridors would be potentially exposed to noise levels that exceed noise-land use compatibility standards as future noise levels along Mission Street, Ocean Street, Soquel Avenue and Water Street would be at or near 70 decibels. The unincorporated area along Seventh Avenue that is within the City’s existing Sphere of Influence is projected to experience a noise level of 65 decibels  $L_{dn}$  as a result of General Plan-related traffic. New residential development along segments of Bay Street, High Street, and Morrissey Blvd., as well as adjacent to Highways 1 and 17, could also be exposed to exterior noise levels above 65 dBA  $L_{dn}$ .

The Draft *General Plan 2030* includes goals, policies and actions that set forth measures to avoid and minimize adverse impacts on noise. In particular, noise-land use compatibility standards will be applied to all new residential, commercial and mixed-use projects (HZ3.2.1), and the proposed General Plan seeks to ensure that noise standards are met in the siting of noise-sensitive uses (HZ3.2). The policies also establish an interior noise level of 45 dBA for all residential uses, consistent with state law, and a target outdoor level of 65 dBA for activity areas associated with new multi-family development. However, the draft plan does not contain a table or graphic depicting what noise compatibility standards are for different land uses as exists in the City’s current General Plan. Table 4.13-2 presents such standards as recommended by the state of California and currently included in the City’s existing General Plan. Denotation of a land use as “normally acceptable” implies that the highest noise level in that band is the maximum desirable for existing or conventional construction that does not incorporate any special acoustic treatment. In general, evaluation of land use that falls into the “normally acceptable” or “normally unacceptable” noise environments should include consideration of the type of noise source, the sensitivity of the noise receptor, the noise reduction likely to be provided by structures, and the degree to which the noise source may interfere with speech, sleep, or other activities characteristic of the land use. The objective of the noise compatibility guidelines is to provide the community with a means of judging the noise environment it deems to be generally acceptable (California Governor’s Office of Planning and Research, October 2003). In instances where new development may be exposed to unacceptable noise levels, acoustical studies would necessary to ensure that the building construction can meet state-required noise levels, as well as acceptable outdoor noise levels.

**TABLE 4.13-3**  
**Existing and Future Noise Levels Adjacent to Roadways**

| Roadway Segment                       | Existing Condition                                    | Future Condition                                      |                                   |                                          |        |        |
|---------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-----------------------------------|------------------------------------------|--------|--------|
|                                       | L <sub>dn</sub> at 50 ft from Center of Roadway (dBA) | L <sub>dn</sub> at 50 ft from Center of Roadway (dBA) | Increase in L <sub>dn</sub> (dBA) | L <sub>dn</sub> Contour Distances (feet) |        |        |
|                                       |                                                       |                                                       |                                   | 60 dBA                                   | 65 dBA | 70 dBA |
| Noise Levels Adjacent to City Streets |                                                       |                                                       |                                   |                                          |        |        |
| Bay Street (Bay Dr.)                  |                                                       |                                                       |                                   |                                          |        |        |
| -High to Nobel-lowa                   | 67                                                    | 67                                                    | 0.1                               | 240                                      | 85     | --     |
| -Nobel-lowa to Escalona               | 67                                                    | 67                                                    | 0.4                               | 260                                      | 95     | --     |
| -Escalona to King                     | 67                                                    | 67                                                    | 0.4                               | 260                                      | 90     | --     |
| -King to Mission                      | 65                                                    | 67                                                    | 1.5                               | 240                                      | 85     | --     |
| -Mission to California St             | 65                                                    | 65                                                    | 0.2                               | 160                                      | 50     | --     |
| -California St to California Ave      | 66                                                    | 67                                                    | 0.9                               | 240                                      | 85     | --     |
| -California Ave to West Cliff         | 65                                                    | 66                                                    | 0.9                               | 200                                      | 70     | --     |
| Branciforte Avenue                    |                                                       |                                                       |                                   |                                          |        |        |
| -Goss to Water                        | 64                                                    | 65                                                    | 1.0                               | 160                                      | 50     | --     |
| -Water to Soquel                      | 64                                                    | 65                                                    | 0.8                               | 160                                      | 50     | --     |
| -Soquel to Broadway                   | 61                                                    | 62                                                    | 0.8                               | 90                                       | --     | --     |
| California Street                     |                                                       |                                                       |                                   |                                          |        |        |
| -Laurel to Bay                        | 63                                                    | 63                                                    | 0.4                               | 110                                      | --     | --     |
| Front Street                          |                                                       |                                                       |                                   |                                          |        |        |
| -Mission/Water to Cooper of           | 63                                                    | 65                                                    | 1.5                               | 160                                      | 50     | --     |
| -Soquel to Cathcart                   | 66                                                    | 67                                                    | 1.3                               | 260                                      | 90     | --     |
| -Cathcart to Metro Center             | 65                                                    | 66                                                    | 1.2                               | 220                                      | 70     | --     |
| -Metro Center to Laurel               | 65                                                    | 66                                                    | 1.2                               | 200                                      | 70     | --     |
| Center Street                         |                                                       |                                                       |                                   |                                          |        |        |
| -Mission to Laurel                    | 63                                                    | 64                                                    | 0.7                               | 140                                      | --     | --     |
| -Laurel to Pacific                    | 60                                                    | 60                                                    | 0.7                               | 55                                       | --     | --     |
| Seabright Avenue                      |                                                       |                                                       |                                   |                                          |        |        |
| -Water to Soquel                      | 60                                                    | 60                                                    | -0.4                              | 50                                       | --     | --     |
| -Soquel to Broadway                   | 63                                                    | 64                                                    | 0.7                               | 140                                      | --     | --     |
| -Broadway to Murray                   | 63                                                    | 64                                                    | 0.8                               | 130                                      | --     | --     |
| Ocean Street                          |                                                       |                                                       |                                   |                                          |        |        |
| -Ocean/Plymouth to Kennan/Washburn    | 68                                                    | 70                                                    | 1.4                               | 320                                      | 160    | 50     |
| -Kennan/Washburn to Water             | 69                                                    | 71                                                    | 1.3                               | 360                                      | 190    | 60     |
| -Water to Soquel                      | 68                                                    | 69                                                    | 1.3                               | 320                                      | 150    | --     |
| -Soquel to Broadway                   | 66                                                    | 68                                                    | 1.8                               | 280                                      | 120    | --     |
| -Broadway to San Lorenzo/East Cliff   | 65                                                    | 66                                                    | 1.4                               | 220                                      | 70     | --     |
| Riverside Avenue                      |                                                       |                                                       |                                   |                                          |        |        |
| -San Lorenzo to Third                 | 66                                                    | 67                                                    | 1.1                               | 240                                      | 85     | --     |
| -Third to Second                      | 62                                                    | 63                                                    | 0.7                               | 100                                      | --     | --     |

**TABLE 4.13-3**  
**Existing and Future Noise Levels Adjacent to Roadways**

| Roadway Segment                                             | Existing Condition                                    | Future Condition                                      |                                   |                                          |        |        |
|-------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-----------------------------------|------------------------------------------|--------|--------|
|                                                             | L <sub>dn</sub> at 50 ft from Center of Roadway (dBA) | L <sub>dn</sub> at 50 ft from Center of Roadway (dBA) | Increase in L <sub>dn</sub> (dBA) | L <sub>dn</sub> Contour Distances (feet) |        |        |
|                                                             |                                                       |                                                       |                                   | 60 dBA                                   | 65 dBA | 70 dBA |
| <b>Chestnut Street</b><br>-Laurel to Mission                | 62                                                    | 63                                                    | 0.9                               | 110                                      | --     | --     |
| <b>River Street</b><br>-Encinal to Fern                     | 66                                                    | 69                                                    | 2.6                               | 300                                      | 140    | --     |
| -Fern to Rte 1                                              | 67                                                    | 70                                                    | 2.6                               | 340                                      | 170    | 50     |
| -Rte 1 to Potrero                                           | 66                                                    | 68                                                    | 2.1                               | 280                                      | 120    | --     |
| -Potrero to N Pacific River                                 | 65                                                    | 68                                                    | 2.6                               | 260                                      | 110    | --     |
| -N Pacific River to Water                                   | 64                                                    | 67                                                    | 2.3                               | 240                                      | 75     | --     |
| -Water to Soquel                                            | 64                                                    | 65                                                    | 1.1                               | 180                                      | 55     | --     |
| <b>Pacific Avenue</b><br>Mission to Laurel                  | 60                                                    | 62                                                    | 1.5                               | 80                                       | --     | --     |
| -Laurel to Center                                           | 59                                                    | 60                                                    | 0.8                               | 50                                       | --     | --     |
| -Center to Beach                                            | 64                                                    | 65                                                    | 1.0                               | 160                                      | 50     | --     |
| <b>Market Street</b><br>-Isbel-Goss to Water                | 62                                                    | 64                                                    | 1.5                               | 140                                      | --     | --     |
| <b>High Street</b><br>-Western to Bay                       | 65                                                    | 66                                                    | 0.2                               | 190                                      | 60     | --     |
| -Bay to Moore                                               | 66                                                    | 66                                                    | 0.3                               | 200                                      | 70     | --     |
| -Moore to Laurent                                           | 66                                                    | 66                                                    | 0.3                               | 200                                      | 70     | --     |
| <b>Mission Street / Water Street</b><br>-Shaffer to Western | 65                                                    | 65                                                    | 0.4                               | 180                                      | 55     | --     |
| -Western to Swift                                           | 65                                                    | 66                                                    | 0.9                               | 200                                      | 70     | --     |
| -Swift to Miramar                                           | 67                                                    | 69                                                    | 2.0                               | 320                                      | 150    | --     |
| -Miramar to Younglove                                       | 67                                                    | 70                                                    | 2.4                               | 340                                      | 170    | 50     |
| -Younglove to Bay                                           | 68                                                    | 70                                                    | 2.2                               | 340                                      | 180    | 60     |
| -Bay to Laurel                                              | 69                                                    | 71                                                    | 2.8                               | 400                                      | 240    | 75     |
| -Laurel to Walnut                                           | 68                                                    | 71                                                    | 2.9                               | 360                                      | 190    | 60     |
| -Walnut to King-Union                                       | 68                                                    | 71                                                    | 2.3                               | 360                                      | 190    | 60     |
| -King-Union to Chestnut-Hwy 1                               | 70                                                    | 72                                                    | 1.8                               | 400                                      | 240    | 80     |
| -Chestnut-Hwy 1 to Center                                   | 65                                                    | 67                                                    | 2.2                               | 260                                      | 90     | --     |
| -Center to N. Pacific                                       | 67                                                    | 69                                                    | 1.9                               | 300                                      | 130    | --     |
| -N.Pacific to River                                         | 66                                                    | 68                                                    | 2.1                               | 280                                      | 120    | --     |
| -River to Ocean                                             | 68                                                    | 70                                                    | 2.1                               | 340                                      | 170    | 50     |
| -Ocean to Market                                            | 68                                                    | 70                                                    | 1.7                               | 340                                      | 180    | 55     |
| -Market to N.Branciforte                                    | 69                                                    | 70                                                    | 1.4                               | 340                                      | 180    | 55     |
| -N.Branciforte to Seabright                                 | 68                                                    | 69                                                    | 1.1                               | 300                                      | 130    | --     |
| -Seabright to Morrissey                                     | 69                                                    | 70                                                    | 0.7                               | 320                                      | 160    | 50     |

**TABLE 4.13-3**  
**Existing and Future Noise Levels Adjacent to Roadways**

| Roadway Segment                       | Existing Condition                                    | Future Condition                                      |                                   |                                          |        |        |
|---------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-----------------------------------|------------------------------------------|--------|--------|
|                                       | L <sub>dn</sub> at 50 ft from Center of Roadway (dBA) | L <sub>dn</sub> at 50 ft from Center of Roadway (dBA) | Increase in L <sub>dn</sub> (dBA) | L <sub>dn</sub> Contour Distances (feet) |        |        |
|                                       |                                                       |                                                       |                                   | 60 dBA                                   | 65 dBA | 70 dBA |
| <b>Walnut / Soquel Avenue</b>         |                                                       |                                                       |                                   |                                          |        |        |
| -Mission to Front                     | 63                                                    | 63                                                    | -0.1                              | 120                                      | --     | --     |
| -Front to River                       | 65                                                    | 66                                                    | 1.3                               | 220                                      | 70     | --     |
| -River to Riverside-Dakota            | 66                                                    | 67                                                    | 1.4                               | 260                                      | 95     | --     |
| <b>Walnut / Soquel Avenue (con't)</b> |                                                       |                                                       |                                   |                                          |        |        |
| -Riverside-Dakota to Ocean            | 66                                                    | 67                                                    | 1.3                               | 260                                      | 95     | --     |
| -Ocean to Branciforte                 | 66                                                    | 68                                                    | 1.6                               | 260                                      | 100    | --     |
| -Branciforte to Seabright             | 67                                                    | 68                                                    | 1.0                               | 260                                      | 100    | --     |
| -Seabright to Morrissey               | 69                                                    | 69                                                    | 0.7                               | 320                                      | 150    | --     |
| -Morrissey to Frederick               | 69                                                    | 70                                                    | 1.0                               | 340                                      | 180    | 55     |
| Frederick to Trevtham-Hagemann        | 70                                                    | 71                                                    | 1.0                               | 360                                      | 190    | 60     |
| Trevtham-Hagemann to Park             | 70                                                    | 70                                                    | 0.8                               | 340                                      | 180    | 60     |
| -Park to Capitola                     | 69                                                    | 70                                                    | 0.8                               | 340                                      | 180    | 55     |
| -Capitola to La Fonda                 | 66                                                    | 67                                                    | 0.5                               | 240                                      | 85     | --     |
| <b>Laurel Street / Broadway</b>       |                                                       |                                                       |                                   |                                          |        |        |
| -King to Mission                      | 60                                                    | 62                                                    | 1.8                               | 90                                       | --     | --     |
| -Mission to California                | 67                                                    | 67                                                    | 0.0                               | 240                                      | 75     | --     |
| -California to Chestnut               | 66                                                    | 68                                                    | 1.5                               | 260                                      | 110    | --     |
| -Chestnut to Center                   | 66                                                    | 68                                                    | 1.5                               | 260                                      | 100    | --     |
| -Center to Cedar                      | 66                                                    | 68                                                    | 1.6                               | 260                                      | 110    | --     |
| -Cedar to Pacific                     | 66                                                    | 68                                                    | 1.3                               | 260                                      | 110    | --     |
| -Pacific to Front                     | 67                                                    | 68                                                    | 1.3                               | 260                                      | 110    | --     |
| -Front to San Lorenzo                 | 67                                                    | 69                                                    | 1.3                               | 300                                      | 130    | --     |
| -San Lorenzo to Ocean                 | 65                                                    | 67                                                    | 1.6                               | 240                                      | 75     | --     |
| -Ocean to S.Branciforte               | 65                                                    | 66                                                    | 1.3                               | 220                                      | 70     | --     |
| -S.Branciforte to Seabright           | 65                                                    | 66                                                    | 1.0                               | 200                                      | 70     | --     |
| <b>San Lorenzo/East Cliff/Murray</b>  |                                                       |                                                       |                                   |                                          |        |        |
| -Laurel-Broadway to Riverside         | 64                                                    | 65                                                    | 0.9                               | 160                                      | 50     | --     |
| -Riverside to Ocean                   | 66                                                    | 68                                                    | 1.1                               | 260                                      | 100    | --     |
| -Ocean to Seabright                   | 67                                                    | 68                                                    | 0.6                               | 260                                      | 100    | --     |
| <b>West Cliff Dr. / Beach Street</b>  |                                                       |                                                       |                                   |                                          |        |        |
| Swanton to Bay                        | 62                                                    | 63                                                    | 0.3                               | 100                                      | --     | --     |
| -Bay to Pacific                       | 64                                                    | 65                                                    | 0.8                               | 160                                      | 50     | --     |
| -Pacific to Cliff                     | 60                                                    | 61                                                    | 1.2                               | 70                                       | --     | --     |
| -Cliff to Riverside                   | 59                                                    | 61                                                    | 1.9                               | 70                                       | --     | --     |
| <b>King Street / Union</b>            |                                                       |                                                       |                                   |                                          |        |        |
| -Bay to Laurel                        | 63                                                    | 63                                                    | 0.6                               | 120                                      | --     | --     |
| -Laurel to Storey                     | 62                                                    | 63                                                    | 0.8                               | 120                                      | --     | --     |
| -Storey to Mission                    | 64                                                    | 65                                                    | 1.1                               | 180                                      | 55     | --     |

**TABLE 4.13-3**  
**Existing and Future Noise Levels Adjacent to Roadways**

| Roadway Segment                                                                                                                  | Existing Condition                                     | Future Condition                                       |                                   |                                          |                                 |                                 |
|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|-----------------------------------|------------------------------------------|---------------------------------|---------------------------------|
|                                                                                                                                  | L <sub>dn</sub> at 50 ft from Center of Roadway (dBA)  | L <sub>dn</sub> at 50 ft from Center of Roadway (dBA)  | Increase in L <sub>dn</sub> (dBA) | L <sub>dn</sub> Contour Distances (feet) |                                 |                                 |
|                                                                                                                                  |                                                        |                                                        |                                   | 60 dBA                                   | 65 dBA                          | 70 dBA                          |
| <b>Western Drive</b><br>-High to Hwy1                                                                                            | 60                                                     | 62                                                     | 1.3                               | 80                                       | --                              | --                              |
| <b>Swift Street</b><br>-Mission to Delaware                                                                                      | 62                                                     | 65                                                     | 3.0                               | 180                                      | 55                              | --                              |
| <b>Morrissey Blvd.</b><br>-Fairmount to Soquel                                                                                   | 66                                                     | 67                                                     | 0.5                               | 240                                      | 85                              | --                              |
| <b>Third Street</b><br>Front to Riverside<br>Riverside to Beach                                                                  | 64<br>63                                               | 64<br>64                                               | 0.3<br>1.2                        | 140<br>150                               | --<br>--                        | --<br>--                        |
| <b>Seventh Avenue</b><br>- Soquel to Capitola<br>- Capitola to Brommer<br>- Brommer to Eaton<br>- Eaton to Cliff                 |                                                        | 64<br>65<br>65<br>65                                   | NA<br>NA<br>NA<br>NA              | 130<br>160<br>160<br>180                 | --<br>50<br>50<br>55            | --<br>--<br>--<br>--            |
| <b>Noise Levels Adjacent to Highways</b>                                                                                         |                                                        |                                                        |                                   |                                          |                                 |                                 |
| Roadway Segment                                                                                                                  | Existing Condition                                     | Future Condition                                       |                                   |                                          |                                 |                                 |
|                                                                                                                                  | L <sub>dn</sub> at 100 ft from Center of Roadway (dBA) | L <sub>dn</sub> at 100 ft from Center of Roadway (dBA) | Increase in L <sub>dn</sub> (dBA) | L <sub>dn</sub> Contour Distances (feet) |                                 |                                 |
|                                                                                                                                  |                                                        |                                                        |                                   | 60 dBA                                   | 65 dBA                          | 70 dBA                          |
| <b>Highway 1</b><br>-Soquel to Morrissey<br>-Morrissey to Emeline<br>-Emeline to Hwy 17<br>-Hwy 17 to Hwy 9<br>-Hwy 9 to Mission | 79<br>74<br>74<br>77<br>76                             | 80<br>75<br>75<br>77<br>76                             | 0.4<br>0.4<br>0.4<br>0.4<br>0.4   | 1050<br>650<br>650<br>850<br>750         | 650<br>400<br>400<br>550<br>480 | 400<br>240<br>240<br>320<br>300 |
| <b>Highway 17</b><br>-Begin Freeway to Pasatiempo                                                                                | 78                                                     | 78                                                     | 0.4                               | 900                                      | 550                             | 340                             |
| <b>SOURCE:</b> Rosen, Goldberg, Der & Levitz, Inc., November 2007                                                                |                                                        |                                                        |                                   |                                          |                                 |                                 |

As previously indicated, typical residential construction (i.e., light frame construction with sash windows) with closed windows and doors can result in an exterior-to-interior noise reduction of at least 20 dBA and approximately 15 dBA with windows partially open for ventilation. Buildings constructed of stucco or masonry with dual-glazed windows and solid core exterior doors can be expected to achieve an exterior to interior noise reduction of approximately 25-30 dBA. Further noise reduction could be achieved with mechanical air systems and/or other window designs for areas where the ambient noise level exceeds 65 dBA.

The draft General Plan also includes support of measures to attenuate noise exposure, such as soundwalls, berms and setbacks (HZ3.1.11) and includes policies to minimize and mitigate new sources of vehicular and stationary noise (HZ3.1, HZ3.1.1, HZ3.1.6, HZ3.1.8, HZ 3.1.9). In addition to these policies, numerous proposed policies address specific alternative transportation modes, and serve to encourage a reduction in vehicle traffic as discussed in the TRANSPORTATION & TRAFFIC (Chapter 4.4) section of this EIR. A summary of the proposed *General Plan 2030* policies that serve to reduce/mitigate impacts related to exposure to unacceptable noise levels are summarized in Table 4.13-4.

The *General Plan 2030* also encourages passenger rail transit or other alternative transportation options (M2.2) and continued transport of goods by rail (M2.2.2). At such time that passenger rail may be proposed, project-level environmental review would be required, including an assessment of noise as the existing rail right-of-way travels through residential neighborhoods.

**TABLE 4.13-4**  
**Proposed General Plan Policies & Actions that Avoid or Reduce Noise Impacts**

| Type of Measure / Action                                         | Policies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AVOID OR MITIGATE EXPOSURE TO NOISE LEVELS THAT EXCEED STANDARDS | <ul style="list-style-type: none"> <li>▪ Protect residents from excessive road noise: HZ3.1.7</li> <li>▪ Mitigate noise impacts from roadways through setbacks, landscaping and other measures: M3.3.4</li> <li>▪ Apply noise compatibility standards: HZ3.2, HZ3.2.1</li> <li>▪ Require residential interior noise levels of 45 dBA: HZ3.2.3</li> <li>▪ Establish outdoor noise targets of 65 dBA for activity areas in new mutli-family developments: HZ3.2.2</li> <li>▪ Require soundwalls, berms, setbacks or other noise reduction techniques when necessary: HZ3.1.11</li> <li>▪ Reduce auto dependence, vehicle trips and peak hour trip &amp; increase vehicle occupancy: M1.1, M3.1, M3.1.1, M3.1.2 – See also Table 4.4-4 in the TRANSPORTATION &amp; TRAFFIC (Chapter 4.4) section of this EIR</li> <li>▪ Minimize impacts of intermittent urban noise: HZ3.1.4</li> <li>▪ Limit truck traffic in residential and commercial areas to designated truck routes: HZ3.1.9</li> </ul> |
| RESULT IN SUBSTANTIAL PERMANENT NOISE INCREASE                   | <ul style="list-style-type: none"> <li>▪ Maintain or reduce existing noise levels and control excessive noise: HZ3.1</li> <li>▪ Require land uses at noise levels that do not significantly increase ambient noise and minimize noise from new uses: HZ3.1.1, HZ3.1.2</li> <li>▪ Require mitigation for substantial noise increases: HZ3.1.6</li> <li>▪ Require environmental review &amp; mitigation for roadway projects with significant noise increases: HZ3.1.8</li> <li>▪ Install “quiet” pavement surfaces where beneficial: HZ3.1.10</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| RESULT IN SUBSTANTIAL TEMPORARY NOISE INCREASE                   | <ul style="list-style-type: none"> <li>▪ Minimize &amp; monitor construction noise: HZ3.1.3, HZ3.1.5</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

In addition, compliance with state regulations regarding maintaining interior noise levels of 45 dBA, in conjunction with implementation of the proposed General Plan policies and actions outlined above, will mitigate potential impacts of future development to a less-than-significant level. New development located within areas in which noise levels may exceed acceptable levels would be required to have a project-level acoustical/noise assessment conducted to

specify building and structural designs to attenuate noise levels and achieve the required interior noise level.

**Conclusion.** Adoption and implementation of the proposed *General Plan 2030* would not directly result in new development, but new development accommodated by the plan would result increased traffic and exposure to vehicular noise. However, the proposed *General Plan 2030* includes goals, policies and actions that set forth measures to avoid and minimize exposure to noise levels that exceed land use compatibility standards for noise exposure. With implementation of these proposed policies and actions, as well as future project-level environmental review, exposure to noise would be considered less-than-significant.

### **Mitigation Measures**

No mitigation measures are required, but revisions to the following *General Plan 2030* actions are recommended to specifically reference land-use noise compatibility standards.

#### **Recommended Revisions to the Draft General Plan 2030**

Revise or add policies/actions as indicated below. Deleted text is shown in ~~strikeout~~ typeface, and new text is shown in underlined typeface.

HZ3.2.1      Apply noise and land use compatibility table and standards to all new residential, commercial, and mixed-use proposals, including condominium conversions in accordance with the standards set forth in the "Land Use – Noise Compatibility Standards" table.

#### **Impact 4.13-2: Increase in Permanent Ambient Noise Levels**

Implementation of the proposed *General Plan 2030* would accommodate future development that would generate traffic and contribute to increased noise levels along City streets and highways, but would not exceed criteria of significance or substantially increase ambient noise levels. Thus, permanent increases in ambient noise levels due to increased vehicular traffic are considered a *less-than-significant impact*.

As discussed under the Impact 4.13-1 discussion above, future noise levels and noise contours were developed along City streets and highways based on the traffic data developed for this EIR. Table 4.13-3 shows existing and future noise levels along roadways. Most of the noise increases are less than 2 dBA as a result of traffic associated with future development accommodated by the General Plan. In some cases, noise increases are between 2 and 3 dBA, such as along some segments of River Street, Mission Street, and Swift Street.

As previously indicated, a change in noise level of 3 dB is considered just a noticeable difference. A 5 dB change is clearly noticeable, but not dramatic, and a 10 dB change is perceived as a halving or doubling in loudness (Rosen Goldberg Der & Lewitz, Inc., November 30, 2007). In areas where the ambient noise level without a project is below 60 dBA, an increase in the ambient noise level of 5 dBA or more would be considered significant. In areas where ambient noise levels are above 60 dBA, an increase in the ambient noise level of greater than 3 dBA would be considered significant.

All City streets and highway segments included within the future noise contours would experience noise increases of less than 3 dBA due to future estimated traffic volumes, except for one segment along Swift Street, which would reach a 3 dBA increase. Therefore, the increase in traffic would not result in significant ambient noise level increases (i.e., above 3 dBA) for existing or future residents. Noise levels along the segments of the following roads would exceed 65 dBA in the future (as well as under both existing conditions in some cases): Bay Street, Front Street, Ocean Street, River Street, Mission Street, High Street, Soquel Avenue, Morrissey Blvd., San Lorenzo-East Cliff-Murray, and Highways 1 and 17. However, the increase due to development accommodated by the proposed General Plan would be less than 3 dBA (and often less than 2 dBA), and thus, the increase would not be considered substantial.

The segment of Swift Street between Mission and Delaware Avenue would increase by 3 dBA to reach a projected ambient noise level of 65 decibels  $L_{dn}$ . New development would be subject to noise attenuation requirements as discussed in Impact 4.13-1. The existing development along this segment of Swift Street is primarily commercial and light industrial for which normally acceptable noise levels would be 70 decibels. For the few homes located along this segment, exterior noise levels would not exceed 65 decibels. Since normal noise attenuation within residential structures with closed windows is about 20 dBA, an exterior noise exposure of 65 dB ACNEL allows the interior standard to be met without any specialized structural attenuation (e.g., dual paned windows).

The *General Plan 2030* continues to include an industrial land use designation in the same areas currently designated industrial (Westside and Harvey West). Light industrial and “creative” industrial uses are encouraged in the Harvey West area (LU3.2.3), and “incubator” uses are specified for the Westside industrial area (LU3.2.3). Depending on the specific use, some industrial uses can result in a stationary source of emissions. However, Policy ED6.1.1 supports the establishment of industries and “lifestyle businesses” that draw on Santa Cruz’s natural assets and environment. Additionally, Policy ED6.2 encourages and supports “green” and environmentally-oriented businesses to locate in Santa Cruz. Furthermore, the draft plan supports “green” and sustainable commercial and industrial operating practices (ED6.2.2) and encourages businesses that “don’t pollute” (ED6.2.3). Overall, the type of industry and business supported in the draft *General Plan 2030* typically would not be heavy industrial or the type of business that would be significant source of noise.

The draft plan does support development of a desalination plant (LU3.1.3) as part of the actions outlined to implement the City’s adopted *Integrated Water Plan* (IWP) (see the WATER SUPPLY [Chapter 4.5] section of this EIR for further discussion of the planned desalination facility). A program EIR prepared for the IWP also reviewed potential impacts of a desalination facility, but did not identify permanent generation of noise as a potentially significant impact (EDAW,

June 2005). (See the WATER SUPPLY (Chapter 4.4) of this EIR for further discussion of potential impacts related to construction and operation of a desalination facility.)

The Draft *General Plan 2030* includes goals, policies and actions that set forth measures to avoid and minimize adverse impacts on noise that include applying noise compatibility standards to new residential, commercial and mixed-used development (HZ3.2.1) and establishing indoor and outdoor noise level targets of 45 dBA and 65 dBA, respectively, for new multifamily residential developments (HZ3.2.2) as discussed above for Impact 4.13-1. The draft general plan also includes support of measures to attenuate noise exposure, such as soundwalls, berms and setbacks (HZ3.1.11) and includes policies to minimize and mitigate new sources of vehicular and stationary noise (HZ3.1, HZ3.1.1, HZ3.1.6, HZ3.1.8, HZ 3.1.9). Additionally, the proposed *General Plan 2030* also includes numerous policies that seek to maintain or reduce existing noise levels (HZ3.1), and require mitigation for uses that would substantially increase noise levels (HZ3.1.6). A summary of the proposed *General Plan 2030* policies that serve to further reduce potential impacts related to increases in ambient noise levels are summarized in Table 4.13-4.

**Conclusion.** Adoption and implementation of the proposed *General Plan 2030* would not directly result in new development, but new development accommodated by the plan would result in increased traffic that would increase ambient noise levels. The increases would not exceed three decibels and mostly would be below two decibels. Thus, permanent increases in ambient noise levels would not be significant, and permanent increases in ambient noise levels is considered a less-than-significant impact. Implementation of proposed *General Plan 2030* includes goals, policies and actions that set forth measures to minimize increases in ambient noise levels, as well as future project-level environmental review, would further reduce potential permanent ambient noise increases.

#### **Mitigation Measures**

None mitigation measures are required as a significant impact has not been identified.

#### **Impact 4.13-3: Increase in Temporary Noise Levels Due to Construction**

Implementation of the proposed *General Plan 2030* would accommodate future development that would generate temporary increases in ambient noise levels due to construction activities, although substantial generation of vibration would not be expected. Due to the temporary and short-term duration of construction with intermittent noise levels, this is considered a *less-than-significant impact*.

Future development accommodated under the proposed General Plan would result in temporary increases in ambient noise levels due to construction activities. Construction-related noise levels would vary throughout the day, depending on the type of equipment in use at any one time and the distance to the receptors, and noise impacts from construction may vary greatly depending on the duration and complexity of the project. However, construction-related noise impacts are temporary and often of a short-term duration. Noise generated during construction

could be considered a nuisance to some residents and/or employees in the proximity to such construction, and may seem intolerable during construction phases with the loudest equipment/activities in operations.

Anticipated equipment includes, but is not limited to, equipment that would be used for excavation, site grading, and construction of structures. Construction equipment can operate in two modes – stationary and mobile. Stationary equipment operates in one location for one or more days at a time, with either a fixed power operation (pumps, generators, compressors) or a variable noise operation (pile drivers, pavement breakers). Mobile equipment moves around the construction site with power applied in cyclic fashion (bulldozers, loaders), or to and from the site (trucks). As a result of the equipment mix for any given project, each phase has its own noise characteristics; some have higher continuous noise levels than others, some have high impact noise levels. Table 4.13-5 shows typical noise levels associated with different types of construction equipment. These noise levels would decrease with distance from the construction site at a rate of approximately 6 dBA per doubling of distance (California Department of Transportation, November 2009).

Groundborne noise and other types of construction-related noise impacts would typically occur during the initial site preparation, which can create the highest levels of noise. Generally, site preparation has the shortest duration of all construction phases. Activities that occur during this phase include earthmoving and soils compaction. High groundborne noise levels and other miscellaneous noise levels can occur during this phase by the operation of heavy-duty trucks, backhoes and other heavy-duty construction equipment. Sources of man-made vibration often result from the use of heavy-duty construction equipment. The effects of vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Ground-borne vibrations from construction activities rarely reach levels that damage structures.

The draft general plan addresses construction noise in that it seeks to minimize and monitor construction noise (HZ3.1.3, HZ3.1.5). In particular, the plan seeks to ensure that construction activities are managed to minimize overall noise impacts on surrounding land uses (HZ3.1.3). Development projects are reviewed on a case-by-case basis, and typical conditions of approval include limiting the day and times of day during which construction and/or heavy construction can be conducted, provision of notification to neighbors regarding construction schedules, and implementation of a process to receive and respond to noise complaints. These are some of the types of measures that would be implemented by the City to manage and minimize construction noise impacts per proposed General Plan Actions HZ3.1.3 and HZ3.1.5.

**Conclusion.** Adoption and implementation of the proposed *General Plan 2030* would not directly result in new development, but new development accommodated by the plan would result in construction of varying sound level and duration, which could be an annoyance to adjacent residents. With implementation of the proposed *General Plan 2030* includes goals, policies and actions that set forth measures to minimize exposure construction noise levels, the increase in temporary noise levels from construction-related activities would be considered less-than-significant.

**Mitigation Measures**

No mitigation measures are required as a significant impact has not been identified.

**TABLE 4.13-5**  
**Noise Levels of Construction Equipment Noise (in dBA)**

| <b>Equipment</b>                                                                                                             | <b>Typical Noise Level (dBA)<br/>50 ft from Source</b> |
|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| Air Compressor                                                                                                               | 81                                                     |
| Backhoe                                                                                                                      | 80                                                     |
| Compactor                                                                                                                    | 82                                                     |
| Concrete Mixer                                                                                                               | 85                                                     |
| Concrete Pump                                                                                                                | 82                                                     |
| Concrete Vibrator                                                                                                            | 76                                                     |
| Crane, Derrick                                                                                                               | 88                                                     |
| Crane, Mobile                                                                                                                | 83                                                     |
| Dozer                                                                                                                        | 85                                                     |
| Generator                                                                                                                    | 81                                                     |
| Grader                                                                                                                       | 85                                                     |
| Impact Wrench                                                                                                                | 85                                                     |
| Jack Hammer                                                                                                                  | 88                                                     |
| Loader                                                                                                                       | 85                                                     |
| Paver                                                                                                                        | 89                                                     |
| Pile-driver (Impact)                                                                                                         | 101                                                    |
| Pile-driver (Sonic)                                                                                                          | 96                                                     |
| Pneumatic Tool                                                                                                               | 85                                                     |
| Pump                                                                                                                         | 76                                                     |
| Rock Drill                                                                                                                   | 98                                                     |
| Roller                                                                                                                       | 74                                                     |
| Saw                                                                                                                          | 76                                                     |
| Scraper                                                                                                                      | 89                                                     |
| Truck                                                                                                                        | 88                                                     |
| <b>SOURCE:</b> Transit Noise And Vibration Impact Assessment, May 2006,<br>Federal Transit Administration, FTA-VA-90-1003-06 |                                                        |

## REFERENCES

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California Governor's Office of Planning and Research. October 2003. *State of California General Plan Guidelines*. Appendix C – Noise Element Guidelines”.

California Department of Transportation. November 2009. “Technical Noise Supplement.” Prepared by ICF Jones & Stokes.

Rosen, Goldberg, Der & Lewitz, Inc..

- November 29, 2010. “Future Noise Contours for: City of Santa Cruz General Plan Noise Element Update, Santa Cruz, CA:”
- November 30, 2007. “Background Report for the City of Santa Cruz General Plan Noise Element Update.”

United States Department of Transportation, Federal Highway Administration. August 2006. “Construction Noise Handbook.”

United States Environmental Protection Agency website, “Noise Pollution;” online at: <http://www.epa.gov/air/noise.html>.