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## 5.11 - Noise

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### 5.11.1 - Introduction

This section evaluates the project relative to potential short-term and long-term noise impacts and is based on a noise study completed by Michael Brandman Associates in December 2006. The Acoustical Analysis Report is in Appendix B, Air Quality/Noise, of this EIR. The analysis consisted of measuring existing noise levels along roadway segments in the project vicinity, prediction of future noise conditions with and without the project, and a comparison of expected noise with relevant standards to determine impacts.

#### Rio Mesa Area Plan and EIR

The RMAP did not include policies to specifically address noise issues. The RMAP EIR identified significant cumulative noise impacts due to traffic on surrounding roadways. However, following implementation of mitigation measures with subsequent projects, no significant adverse noise impacts would occur with RMAP buildout.

The following descriptions define the terminology used in analyzing noise impacts.

#### Terminology

Sound is mechanical energy transmitted by pressure waves in a compressible medium, such as air. Sound can be described based on a variety of physical properties of sound waves, including: the rate of oscillation (frequency), the distance between successive troughs or crests, the speed of propagation, and the pressure level of the sound wave. The latter is the descriptor commonly used to describe the loudness of sound. A decibel (dB) is the unit of measure used to describe the loudness of sound. Because the range of sound that humans can hear is quite large, the dB scale is logarithmic, making calculations more manageable. In addition, the human ear is not equally sensitive to all sound frequencies, so “A-weighting” is used. A-weighting units are written as dBA.

Several statistical measurements have been developed to address noise levels over time. The two most common averaged measurements are Community Noise Equivalent Level and Equivalent Noise Level. Community Noise Equivalent Level (CNEL) is a 24-hour noise descriptor which has been adjusted to account for some individuals’ increased sensitivity to noise during evening and night hours. A CNEL noise measurement is obtained after adding 5.0 decibels to sound levels occurring between 7 PM and 10 PM, and 10.0 decibels to sound levels occurring from 10 PM to 7 AM. These added decibels are required by state law to account for the community’s increased sensitivity during these hours.

Equivalent Noise Level (Leq) is another averaged noise measurement. Leq can be measured over any period, but is typically measured for intervals of 1-minute, 15-minutes, 1-hour, or 24 hours. For example, Leq (24) would represent a 24-hour average. When no period is specified, a 1-hour average is assumed.

It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA, increases or decreases; that a change of 5 dBA is readily perceptible, and that an increase (decrease) of 10 dBA sounds twice (half) as loud (Caltrans 1998).

### **5.11.2 - Existing Conditions**

#### **Existing Noise Sources Onsite**

The project site is currently vacant property. The Arnold Ranch Airport is located 7 miles to the southwest and consists of a single runway, oriented to the West, capable of supporting only small airplanes. The Fresno Air Terminal is located 15 miles to the south; its runway oriented to the northwest. The project site is outside of the 60 dBA CNEL noise contour for these airports and the designated aircraft landing and take-off paths are not over the proposed site. Therefore, aircraft noise onsite is minimal.

Dominant noise sources at the project site are vehicle traffic on Road 145 on the western boundary, Road 206 on the eastern and southern boundary, Road 211 on the northern boundary, and Highway 41 just over 3 miles to the west. All these roadways contact the project site with the exception of Highway 41. Existing roadway noise levels onsite are estimated between 47.2 dBA CNEL to 57.1 dBA CNEL depending upon the exact location.

#### **Madera County General Plan Noise Element and Standards**

The County of Madera in the General Plan Noise Element has adopted the State of California noise/land use compatibility standards. Pursuant to these standards, exterior noise levels for residential ranging up to 65 dBA CNEL are classified as “normally acceptable,” based upon the assumption that the homes are built with normal conventional construction. Exterior noise levels for schools and office space ranging up to 70 dBA CNEL are classified as “normally acceptable.” Exterior noise levels ranging up to 70 dBA CNEL at residential uses are “conditionally acceptable.” “Conditionally acceptable” means that noise levels are acceptable only when a detailed noise analysis is conducted and needed noise insulation features are included in the design. Noise levels above 70 dBA CNEL for residential and schools and 75 dBA CNEL for office uses are normally unacceptable and development of these land uses in noise environments are discouraged.

Also of concern are project-generated impacts to sensitive receptors in the project area. The County of Madera defines sensitive receptors of noise as residences, schools, libraries, hospitals, churches, etc. “Noise impacted projects” are defined as residential projects, or portions thereof, which are exposed to an exterior noise level of 60 dBA CNEL or greater. The State of California’s noise/land use compatibility standards categorize residential outdoor noise levels of up to 60 dB CNEL as normally acceptable, as shown in Appendix B, Noise Study’s Table 2. If outdoor noise levels are expected to exceed 60 dB CNEL, a detailed noise analysis may be required. The County of Madera has established standards and guidelines to more specifically implement the residential element of the State of California noise/land use compatibility guidelines. In relation to the development of new homes and potential traffic noise impacts, the County requires that residential outdoor noise levels not

exceed 60 dB Ldn/CNEL and indoor noise levels in residential dwellings not exceed 45 dB Ldn/CNEL.

### **Rio Mesa Area Plan Findings**

An evaluation of noise impacts in the Rio Mesa Area Plan concluded that limited portions of the project area proposed for residential uses may experience traffic noise levels greater than 65 or 70 CNEL without some form of mitigation. In particular, these areas include residences along State Highway 41 and State Highway 145. This is considered a significant impact. Implementation of Mitigation Measure 1 is proposed to reduce this impact to a level of insignificance.

### **5.11.3 - Thresholds of Significance**

In accordance with CEQA Guidelines Appendix G, a project can be considered to have a significant impact on the noise environment if it would:

- a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; or
- f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.
- g) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; or
- h) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

The proposed project is not within an airport land use plan or within 2 miles of an airport or an airstrip; therefore, noise impacts related to an airport will not be considered further.

“Substantial” is not defined within the CEQA guidelines as a quantitative measure. A change of +1 dBA or less is generally not detectable by the human ear, even in a laboratory environment. A change of +3 dBA (20 to 25 percent louder than before), under ambient conditions, may be noticeable

to some people. A change of +5 dBA is readily noticeable, and a change of +10 dBA is perceived by the human ear as a doubling of sound.

For the purpose of this evaluation, a change of 3 dBA will be applied to determine if the project-related noise impacts are significant.

#### 5.11.4 - Project Impacts

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**Impact 5.11-1: Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (Threshold a.)**

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Long-term noise from the proposed project is primarily associated with motor vehicles on the local roadways. The proposed project would result in additional vehicles on the local roadways and could potentially increase noise levels on and off the project site to a significant level. Concerns associated with noise from motor vehicles on surrounding roadways were analyzed using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model - FHWA-RD-77-108 (FHWA Model). See the Noise Impact Analysis in Appendix B for more information.

In reviewing project impacts, future noise levels were compared with the County standards for residential uses since they have the most restrictive noise standards. The County of Madera new home residential outdoor noise levels must not exceed 60 dB Ldn/CNEL. Future evening peak hour traffic noise levels were modeled and converted to CNEL to address potential exceedances of the 60 dB CNEL standard using a day/evening/night traffic split of 75/10/15.

Table 5.11-1 summarizes the results of this analysis. Project related impacts are greatest on Road 211, and Road 206 immediately adjacent to the project site (maximum of 2.8 dBA differential between with and without project). Noise levels at these locations violate the County's 60 dBA CNEL standard and mitigation is required to reduce these noise levels.

The County's 60 dBA CNEL standard is exceeded in the future with and without the project adjacent to or exposed to and near all other road segments modeled except Friant Road. Because of the high traffic volumes on these roadways, existing and future noise levels without the project on these roadways exceed the County's 60 dBA CNEL standard for residential properties. *However, the project's contribution to the cumulative noise level at these locations is estimated to be extremely low (between 1.3 to less than 0.1 dBA) and would not be perceptible.*

Short-term noise from temporary construction activities is address in the discussion of Impact 5.11-3, which follows.

Table 5.11-1: Existing and Future Year 2030 Noise Impacts

Street Segment	Existing	Future No Project	Future With Project	Change from Future with No Project	Significant Impact?
SR-41 south of Avenue 12 <sup>1</sup>	64.2	64.9	64.9	>0.01	No
SR-41 between Avenue 12 and Avenue 15 <sup>1</sup>	62.0	62.4	63.2	0.8	No
SR-41 between Ave. 15 and Road 145 <sup>1</sup>	60.3	64.0	65.3	1.3	No
SR-41 north of Road 145 <sup>1</sup>	60.7	63.2	63.3	0.1	No
Friant Road south of Road 206 <sup>2</sup>	51.9	53.6	53.7	0.1	No
Road 211 north of Road 145 <sup>1</sup>	47.2	59.0	61.8	2.8	Yes
Road 145 west of SR-41 <sup>1</sup>	50.6	60.2	62.9	2.7	No
Road 145 between SR-41 and Road 206/Road 211 <sup>1</sup>	53.4	62.6	64.7	2.1	No
Road 206 between Road 145 and Friant Road <sup>1</sup>	57.1	59.9	62.2	2.3	Yes
Notes: <sup>1</sup> Measured at 228 feet from roadway centerline (approximate location of the closest edge of residential property lines) <sup>2</sup> Measured at 114 feet from roadway centerline (approximate location of the closest edge of residential property lines) Source: MBA 2006					

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**Impact 5.11-2: A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project (Threshold c.)**

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As shown in Table 5.11-1 above, the project contribution to ambient noise levels along all the roadway segments is 2.8 dB or less, which is below the 3 dB threshold of significance for a substantial increase. *Therefore, the project will not generate a substantial permanent increase in ambient noise levels in the project vicinity.*

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**Impact 5.11-3: A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (Threshold d.)**

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The development of the North Fork Specific Plan would require the use of heavy equipment, which would generate noise audible onsite and offsite, for the purpose of site preparation (i.e., land clearing, grading, excavation, and trenching) and construction of site improvements and residential units. Required heavy equipment includes scrapers, graders, tractors, loaders, and concrete mixers. Various trucks would be required to transport equipment and building materials, and to haul away waste. Pneumatic tools, saws, hammers and other small equipment would also be required. Noise levels generated by this equipment can range from approximately 68 dBA to noise levels in excess of 100 dBA at a distance of 50 feet. These noises, however, would diminish rapidly at a rate of approximately 6 dBA per doubling distance. The construction schedule of the project is unknown at

this time. The project site and immediately surrounding area is essentially devoid of any noise-sensitive receptors. However, it can be reasonably expected that once the initial phases of the development are built, that residential units in the initial phase of the project may be in close proximity to construction activities associated with subsequent phasing of the project. *For this reason, mitigation is needed to reduce temporary noise impacts associated with construction.*

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**Impact 5.11-4: Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels (Threshold b.)**

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Perceptible groundborne vibrations are typically associated with blasting operations and potentially the use of pile drivers, neither of which will be used during construction of the proposed project. *As such, no excessive groundborne vibration would be created by the proposed project, and therefore, impacts due to project generated groundborne vibrations are less than significant.*

### **5.11.5 - Cumulative Impacts**

Table 5.11-1 shows noise impacts both with and without the project at buildout of the project area in year 2030. The year 2030 buildout estimates include area growth and other projects in the project area. As such, the table shows cumulative impacts both with and without the project.

As shown in Table 5.11-1 the County's 60 dBA CNEL standard is exceeded in the future with and without the project adjacent to or exposed to and near all other road segments modeled except Friant Road. Because of the high traffic volumes on these roadways, existing and future noise levels without the project on these roadways exceed the County's 60 dBA CNEL standard for residential properties. Note that most of the current land uses along these roadways are agriculture and the predicted noise levels does not violate the 70 dBA CNEL standard for that type of land use. As the project area develops, it is anticipated that residential uses will increase in the project area. However, the project's contribution to the cumulative noise level at these locations is estimated to be extremely low (between 1.3 to less than 0.1 dBA) and would not be perceptible.

Because the project contribution to the cumulative impact is so small, it is less than significant.

### **5.11.6 - Mitigation Measures**

#### **Rio Mesa Area Plan**

The following was identified as mitigation measures designed to bring potentially significant noise impacts to a less than significant level:

1. Future developments will be required to have additional noise analysis prepared to ensure that adequate noise mitigation measures have been designed into the project.
2. The hours of future construction on the project site shall be limited to 7:00 AM to 7:00 PM Monday through Friday.
3. Onsite construction/mechanical equipment shall meet noise emission performance standards.

4. Perimeter walls (noise barriers) of six feet in height shall be constructed for all residential uses within 50 feet of a collector road centerline carrying more than 5,000 Average Daily Trips (ADT), or 100 feet of an arterial/collector road centerline carrying in excess of 15,000 ADT.
5. Major employers shall be included in any trip reduction programs to reduce volume of site generated automobile traffic and any associated noise.

### **Additional Project Mitigation Measures**

The following measures are added to reduce the significant impacts of the proposed project.

- N-1** The final grading and construction plans for any Final Map will include conditions requiring all construction equipment to be properly maintained with operating mufflers and air intake silencers, and prioritize the location of equipment staging and storage away from residential uses when practical. This measure shall be implemented to the satisfaction of the County Planning Director.
- N-2** The final grading and construction plans for any Final Map will include perimeter walls, berms or other noise attenuation features with a total height of 6 feet to reduce exterior traffic noise to 60 dB CNEL or less adjacent to any proposed residential units within 600 feet of Road 145, Road 206, or Road 211. This mitigation is needed to bring noise levels down to acceptable levels along these roadways and supersedes the shorter distance requirements found in mitigation measure 4 of the Rio Mesa Area Plan.
- N-3** An interior acoustical study shall be performed for all Tract Maps within the proposed specific plan. The study shall be completed and submitted prior to final plan check approval. The interior acoustical study shall evaluate noise at ground level and second stories of residential units adjacent to all collector and arterial roadways to verify that the structural features are adequate to meet the 45 dB CNEL interior standard. Noise attenuation features recommended in the study such as dual-paned windows, deck balcony enclosures, and/or additional insulation requirements sufficient to reduce interior noise levels to 45 dB CNEL or less interior noise levels shall be implemented.

### **5.11.7 - Level of Significance After Mitigation**

With mitigation incorporated into the project reducing temporary construction noise and permanent roadway noise, all noise impacts are reduced to less than significant.

