Section 3.10
Noise

3.10.1 Introduction

This section identifies and evaluates potential noise impacts that could arise from cannabis cultivation, distribution, manufacturing, processing, testing, and retail sales activities and facilities permitted under the Cannabis Land Use Ordinance and Licensing Program (Project) for the County of Santa Barbara (County). Key resources or data used in the preparation of this section include the Santa Barbara County Comprehensive Plan Noise and Land Use Elements, Federal Highway Administration Roadway Construction Noise Model User's Guide, U.S. Environmental Protection Agency (USEPA) Noise Effects Handbook, and various noise publications. Noise modeling was not performed for the proposed Project. Instead, the existing setting and impacts for the proposed Project are described and analyzed qualitatively. Where appropriate, mitigation measures are identified.

3.10.1.1 Fundamentals of Noise

Noise is defined as unwanted sound. It is usually objectionable because it is disturbing or annoying. The objectionable nature of noise can be caused by its *pitch* or its *loudness*. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (*frequency*) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is the amplitude of sound waves combined with the reception characteristics of the ear. Commonly used technical acoustical terms are defined in Table 3.10-1.

Decibels and Frequency

In addition to the concepts of pitch and loudness, several noise measurement scales are used to describe noise. The decibel (*dB*) is a unit of measurement that indicates the relative amplitude of a sound. Zero on the decibel scale is based on the lowest sound pressure that a healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 dB represents a tenfold increase in acoustic energy, while 20 dB is 100 times more intense, 30 dB is 1,000 times more intense, and so on. There is a relationship between the subjective noisiness or loudness of a sound and its level. Each 10-dB increase in sound level is perceived as approximately a doubling of loudness over a wide range of amplitudes. Because decibels are logarithmic units, sound pressure levels are not added arithmetically. When two sounds of equal sound pressure level are added, the result is a sound pressure level that is 3 dB higher. For example, if the sound level is 80 dB when one generator is operating, then it would be 83 dB when two generators are operating at the same distance from the observer. Doubling the amount of energy would result in a 3-dB increase to the sound level. Noise levels do not change much when a quieter noise source is added to relatively louder ambient noise levels. For example, if a 60 dB noise source is added to 70 dB ambient noise levels, the resulting noise level is equal to 70.4 dB at the location of the new noise source.

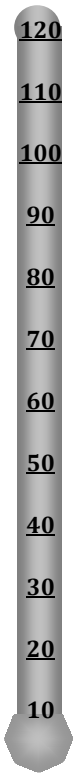
Frequency relates to the number of pressure oscillations per second, or Hertz (*Hz*). The range of sound frequencies that can be heard by healthy human ears is from about 20 Hz at the low-frequency end to 20,000 Hz (20 kilohertz [*kHz*]) at the high-frequency end.

Table 3.10-1. Definitions of Acoustical Terms

Term	Definition
Decibel (dB)	A unit describing the amplitude of sound equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micropascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micropascals (or micronewtons per square meter), where 1 pascal is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micropascals in air). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency (Hertz [Hz])	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 and 20,000 Hz. Infrasonic sounds are below 20 Hz, and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low- and very high-frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level (L_{eq})	The average A-weighted noise level during the measurement period. The hourly L_{eq} used for this report is denoted as dBA L_{eq}[h].
Community Noise Equivalent Level (CNEL)	The average A-weighted noise level during a 24-hour day obtained after the addition of 5 dB to sound levels in the evening from 7 p.m. to 10 p.m. and after the addition of 10 dB to sound levels in the night between 10 p.m. and 7 a.m.
Day-Night Noise Level (L_{dn})	The average A-weighted noise level during a 24-hour day obtained after the addition of 10 dB to levels measured in the night between 10 p.m. and 7 a.m.
Minimum noise level (L_{min})	The minimum noise level measured during the measurement period
Maximum sound level (L_{max})	The maximum noise level measured during the measurement period.
L_1, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1 percent, 10 percent, 50 percent, and 90 percent of the time during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	Noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, and tonal or informational content as well as the prevailing ambient noise level.

There are several methods for characterizing sound. The most common is the *dBA*. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Studies have shown that the dBA is closely correlated with annoyance to traffic noise. Other frequency weighting networks, such as *C-weighting,* or *dBC*, have been devised to describe noise levels for specific types of noise (e.g., explosives). Table 3.10-2 shows typical A-weighted noise levels that occur in human environments.

Table 3.10-2. Typical Noise Levels in the Environment

Noise Level dBA	Extremes	Home Appliances (at 3 Feet)	Speech (at 3 Feet)	Motor Vehicles (at 50 Feet)	General Type of Community Environment
	Jet aircraft at 500 feet				
		Chain saw			
		Gas lawnmower		Diesel truck (not muffled)	
		Shop tools	Shout	Diesel truck (muffled)	
		Blender	Loud voice	Automobile at 70 mph	Major metropolis
		Dishwasher	Normal voice	Automobile at 40 mph	Urban (daytime)
		Air-conditioner	Normal voice (back to listener)	Automobile at 20 mph	Suburban (daytime)
		Refrigerator			Rural (daytime)
	Threshold of hearing				

Source: Harris Miller Miller & Hanson Inc. 2006.

3.10.1.2 Noise Descriptors

Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations is utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq}. A common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration. Two metrics are commonly used to describe the 24-hour average—L_{dn} and Community Noise Equivalent Level (CNEL). Both include penalties for noise during the nighttime hours (10 p.m. to 7 a.m.). CNEL also penalizes noise during the evening hours (7 p.m. to 10 p.m.). CNEL and L_{dn}, which are normally within 1 dBA of each other, are used interchangeably in this section.

3.10.1.3 Human Response to Noise

Noise-sensitive receptors are generally defined as locations where people reside or where the presence of unwanted sound may adversely affect the use of the land. Noise-sensitive receptors typically include residences, hospitals, schools, guest lodging, libraries, and certain types of passive

recreational uses. Sensitive land uses that may be affected by the implementation of the proposed Project include:

- Residential land uses;
- Transient lodging (e.g., hotels, motels)
- Schools and libraries;
- Hospitals and medical care facilities;
- Retirement/assisted living homes;
- Parks and recreational land uses; and,
- Churches and places of worship.

Studies have shown that under controlled conditions in an acoustics laboratory, a healthy human ear is able to discern changes in sound levels of 1 dBA. In the normal environment, changes in noise level of 3 dBA are considered just noticeable to most people. A change of 5 dBA is readily perceptible, and a change of 10 dBA is perceived as being twice as loud.

Noise and Health

A number of studies have linked increases in noise with health effects, including hearing impairment, sleep disturbance, cardiovascular effects, psychophysiological effects, and potential impacts on fetal development (Babisch, Wolfgang 2005). Potential health effects appear to be caused by both short- and long-term exposure to very loud noises and long-term exposure to lower levels of sound. Acute sounds (i.e., L_{AF}[1] greater than 120 dB) can cause mechanical damage to hair cells of the cochlea (the auditory portion of the inner ear) and hearing impairment (Babisch, Wolfgang 2005). An L_{AF} greater than 120 dB is equivalent to a rock concert or an airplane flying overhead at 984 feet.

The World Health Organization and the USEPA consider a L_{eq} equal to 70 dBA to be a safe daily average noise level for the ear. However, even this "ear-safe" level can cause disturbance to sleep and concentration and may be linked to chronic health impacts such as hypertension and heart disease (Babisch, Wolfgang 2008).

A number of studies have looked at the potential health effects of chronic lower noise levels, such as traffic, especially as these noise levels affect children. In a study of school children in Germany, blood pressure was significantly higher in a group of students exposed to road traffic noise from high-traffic transit routes (Babisch, Wolfgang 2008). A study by Kawada (2004) showed that exposure to airplane noise was found to be associated with decreased fetal body weight in pregnant women (Kawada 2004).

Noise Annoyance

People's response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to stress and annoyance. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases. Annoyance may occur at noise levels well below levels known to cause direct physiological harm.

[1] L_{AF} = sound level with "A" frequency weighting and fast-time weighting.

Unwanted noise interferes with human activities by distracting attention and by making activities more difficult to perform, especially when concentration is needed. Interference from noise can even make some activities (e.g., communication or sleep) virtually impossible. However, except in the case of interference with verbal communication, the degree of interference is difficult to quantify or to relate to the level of noise exposure (USEPA 1979).

The degree of interference and annoyance depends on noise volume, duration and frequency of occurrence, time of year, time of day or night, accustomed ambient noise levels, previous experiences of intrusive noise, attitude toward the noise source, and noise characteristics (USEPA 1979). Noises that can be particularly annoying include: pure tones (e.g., truck back-up beepers), low-frequency noise (e.g., rumbling of heavy equipment), and impulsive noise (e.g., helicopters, pile drivers).

3.10.1.4 Sound Propagation

When sound propagates over a distance, it changes in both level and frequency content. The manner in which noise is reduced with distance depends on the factors discussed below.

Geometric spreading: In the absence of obstructions, sound from a single source (i.e., a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level typically attenuates (or drops off) at a rate of 6 dBA for each doubling of distance. Highway noise is not a single stationary point source of sound. The movement of vehicles on a highway makes the source of the sound appear to emanate from a line (i.e., a "line" source) rather than from a point. This results in cylindrical spreading rather than the spherical spreading resulting from a point source. The drop-off in sound level from a line source is typically 3 dBA per doubling of distance.

Ground absorption: Usually the noise path between the source and the observer is very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation caused by geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is done for simplification only; for distances of less than 200 feet, prediction results based on this scheme are sufficiently accurate. For acoustically "hard" sites (i.e., sites with a reflective surface, such as a parking area or a smooth body of water, between the source and the receptor), no excess ground attenuation is assumed. For acoustically absorptive or "soft" sites (i.e., sites with an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dBA per doubling of distance is normally assumed. When added to the geometric spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dBA per doubling of distance for a line source and 7.5 dBA per doubling of distance for a point source.

Atmospheric effects: Research by the U.S. Department of Transportation and Federal Transit Administration (FTA) has shown that atmospheric conditions can have a major effect on noise levels (Harris Miller Miller & Hanson Inc. 2006). Wind has been shown to be the single most important meteorological factor within approximately 500 feet, whereas vertical air temperature gradients are more important over longer distances. Other factors, such as air temperature, humidity, and turbulence, also have major effects. Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lower noise levels. Increased sound levels can also occur because of temperature inversion conditions (i.e., increasing temperature with elevation).

Shielding by natural or human-made features: A large object or barrier in the path between a noise source and a receptor can substantially attenuate noise levels at the receptor. The amount of

attenuation provided by this shielding depends on the size of the object, proximity to the noise source and receptor, surface weight, solidity, and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (such as buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receptor specifically to reduce noise. A barrier that breaks the line of sight between a source and a receptor will typically result in at least 5 dB of noise reduction. A higher barrier may provide as much as 20 dB of noise reduction.

3.10.2 Environmental Setting

This section discusses the existing noise environment on land designated for agricultural, commercial, industrial, and residential uses in the Rural, Inner-Rural, and Existing Developed Rural Neighborhood (EDRN) areas of the County. Significant noise impact problems in the County are primarily associated with transportation facilities. Noise in the immediate vicinity of airports, railroads, and major roadways may exceed health and welfare criteria for noise exposure in relation to residential uses. While noise from commercial, industrial, agricultural, and residential and recreational activities may be part of the ambient level at any location, rarely do these generate noise of the same magnitude as transportation sources. In locations outside the immediate influence of a major transportation noise source, ambient Day-Night Average Levels typically range from 46-57 dB (County of Santa Barbara 2008).

AG-I and AG-II zoned parcels may border a variety of land uses, including rural residential-, commercial-, and industrial- and/or transportation-related uses; notably, AG-1 zoned parcels are frequently located near residential areas and commonly adjacent to semi-rural and suburban areas. For example, in Goleta and Carpinteria, greenhouses located on AG-I properties abut large lot residential and single family neighborhoods in some limited locations (e.g., South Patterson agricultural areas in Eastern Goleta Valley). Within agricultural areas, natural and agricultural-related noise conditions generally dominate the area because human activity is limited. Noise levels are occasionally elevated due to nearby traffic and agricultural machinery and practices. Production agriculture can generate noise due to the use of equipment such as tractors, forage harvesters, silage blowers, chain saws, skid-steer loader, grain dryers, and livestock (Murphy, D., Robertson, S., & Harshman, W. 2007). According to a 1981 USEPA estimate, 10 percent of the 3.6 million United States farm workers are exposed to average daily noise levels in excess of 85 dB (Oskam, J. & Mitchell, J. 2002). Typical noise levels generated by agricultural activities in the County can range from 74 dBA to 116 dBA; however, ambient noise levels are generally much lower except in the vicinity of agricultural machinery use and roadways.

Commercial and industrial land uses may also border a variety of land uses, including rural residential and transportation-related uses. Within commercial and industrial areas, noise conditions are often associated with shopping centers, industrial plants and facilities, heavy machinery, and traffic. For example, during the County's ambient noise survey, which was conducted to measure ambient sound levels in urban areas of the unincorporated County, most commercial and industrial land use is located in areas where noise exposure is from transportation facilities (County of Santa Barbara 1979). For residential land uses, an interior Day-Night Average Sound Level of 45 dB, attributable to exterior noise sources, is considered to be the maximum level consistent with normal residential activity (County of Santa Barbara 1979).

3.10.2.1 Existing Noise Environment

Urban

An urban area is defined by residential, commercial, and industrial activity, and their related uses, buildings and structures, including schools, parks, and utilities. The Land Use Element identifies urbanization or urban development to include residential densities higher than 0.2 unit per gross acre (one unit per 5 gross acres) or creation of parcels smaller than 5 acres in gross area, with the exception of public facility parcels in the Rural or Inner-Rural lands. Agriculture is permitted and encouraged in this area when it is surrounded by urban uses, but when adjacent to a Rural Area, agriculture shall stay in the Rural Area. Agriculture is permitted and encouraged in this area when it is surrounded by urban uses, but when adjacent to a Rural Area, agriculture shall stay in the Rural Area (County of Santa Barbara Comprehensive Plan 2016).

Rural

The County's Land Use Element of its Comprehensive Plan defines the Rural Area as "an area shown on the land use map within which development is limited to agriculture and related uses, mineral (including oil) extraction and related uses and activities, recreation (public or private), low density residential and related uses and uses of a public or quasi-public nature." The minimum lot size permitted within this area is 40 acres. Uses are mostly agricultural and low-density residential. While rural roads generally have low ambient noise, specific roads with higher levels of noise generation include Highway 101 and State Routes (SRs) 154, 135, and 246. Agricultural operations in these areas can also produce high noise levels or nuisance noise during planting and harvest due to the operation of machinery, equipment, and increased vehicle trips.

Inner-Rural

The County's Comprehensive Plan defines Inner-Rural Areas as "an area shown on the land use map within which development is limited to rural uses such as agriculture and its accessory uses, mineral extraction (including oil) and its accessory uses, recreation (public or private), ranchette development, agricultural parcels, and uses of a public or quasi-public nature (County of Santa Barbara Comprehensive Plan 2016). These areas shall be adjacent to designated Urban Areas." At a minimum permitted lot size of 5 acres, uses are typically more dense than the "Rural" designated areas, and therefore are likely to have higher noise levels.

Residential development denser than one unit per 5 acres, commercial, industrial, and other intensive urban uses are reserved for Urban Areas and excluded from areas designated Inner-Rural. Agricultural and open space preserves and related uses are encouraged in Inner-Rural Areas. Recreational activities in these areas are compatible with ranchette and agricultural uses. Existing smaller lot neighborhood development is permitted within the Inner-Rural Area only in designated locations.

Existing Developed Rural Neighborhood (EDRN)

The County's Comprehensive Plan defines EDRN as a neighborhood area that has developed historically with lots smaller than those found in the surrounding Rural or Inner-Rural lands (County of Santa Barbara Comprehensive Plan 2016). The purpose of the EDRN boundary is to keep pockets of rural residential development from expanding onto adjacent agricultural lands.

3.10.2.2 Sensitive Receptors

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound or vibration could adversely affect the current or planned land uses. Human response to noise varies widely depending on the type of noise, time of day, and sensitivity of the receptor. Certain land uses are particularly sensitive to noise, including transient lodging (e.g., hotels, motels), schools, libraries, hospitals, retirement/assisted living homes, other medical care facilities, parks, recreational areas, churches, and places of worship. Residential areas are also considered noise sensitive, especially during the nighttime hours. The definition of "sensitive uses" found in the *County of Santa Barbara Environmental Thresholds and Guidelines Manual* includes residences, transient lodging, hospitals, and public or private educational facilities (County of Santa Barbara 2008). Within the Rural and Inner-Rural Areas of the County, rural residences are the most common noise sensitive receptors.

The rural areas of the County (left) exhibit generally low noise levels due to their low-density populations and large agricultural fields, whereas more urban areas such as the town of Los Alamos (right) experience more human activity and associated noises, such as roadway noise.

3.10.3 Regulatory Setting

3.10.3.1 Local

The *County of Santa Barbara Environmental Thresholds and Guidelines Manual*, Chapter 12, Noise Thresholds (October 2008) and the *Noise Element* of the *Santa Barbara County Comprehensive Plan* (May 2009) include the following standards related to noise:

a. In the planning of land use, a 65 dBA day-night average sound level is regarded as the maximum exterior noise exposure compatible with noise-sensitive uses unless noise mitigation features are included in project designs.

b. Noise-sensitive land uses are considered to include:

   i. Residential areas, including single- and multi-family dwellings, mobile home parks, dormitories, and similar uses;

   ii. Transient lodging, including hotels, motels, and similar uses;

   iii. Hospitals, retirement/assisted living homes, and other medical care facilities;

   iv. Public or private educational facilities and libraries;

v. Parks and recreational areas; and,

vi. Churches and places of worship.

c. Noise-sensitive uses proposed in areas where the day-night average sound level is 65 dBA or more should be designed so that interior noise levels attributable to exterior sources do not exceed 45 dBA L_{dn} when doors and windows are closed. An analysis of the noise insulation effectiveness of proposed construction should be required, showing that the building design and construction specifications are adequate to meet the prescribed interior noise standard.

d. Residential uses proposed in areas where the day-night average sound level is 65 dBA or more should be designed so that noise levels in exterior living spaces will be less than 65 dBA L_{dn}. An analysis of proposed projects should be required, indicating the feasibility of noise barriers, site design, building orientation, and other features in order to meet prescribed exterior noise standards.

e. The Planning and Development Department, including the Building and Safety Division, and the Public Health Department's Environmental Health Services Division have administrative procedures for determining project compliance with the State Noise Insulation Standards related to interior noise levels.

3.10.4 Environmental Impact Analysis

This section discusses the potential noise impacts associated with the proposed Project.

3.10.4.1 Thresholds of Significance

State CEQA Guidelines

According to Appendix G of the California Environmental Quality Act (CEQA) Guidelines, a project would normally have a significant impact on the environment if it would:

- Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies.
- Expose persons to or generate excessive ground-borne vibration or ground-borne noise levels.
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- Be located within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels.
- Be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels.

County of Santa Barbara Environmental Thresholds and Guidelines Manual

The State CEQA Guidelines (Appendix G) criteria are expanded and made more specific in the County's noise thresholds contained in the *County of Santa Barbara Environmental Thresholds and Guidance Manual* (County of Santa Barbara 2008). The County's thresholds are intended to be used with flexibility because each project must be viewed in its specific circumstances. The following noise thresholds will be applied in the impact analysis for determining significance of noise impacts for the proposed Project:

a. A proposed development that would generate noise levels in excess of 65 dBA CNEL and could affect sensitive receptors would generally be presumed to have a significant impact.[2]

b. Outdoor living areas of noise sensitive uses that are subject to noise levels in excess of 65 dBA CNEL would generally be presumed to be significantly affected by ambient noise. A significant impact would also generally occur where interior noise levels cannot be reduced to 45 dBA CNEL or less.[3]

c. A project will generally have a significant effect on the environment if it will increase substantially the ambient noise levels for noise-sensitive receptors adjoining areas. Per item a., this may generally be presumed when ambient noise levels affecting sensitive receptors are increased to 65 dBA CNEL or more. However, a significant effect may also occur when ambient noise levels affecting sensitive receptors increase substantially but remain less than 65 dBA CNEL, as determined on a case-by-case basis.

d. Noise from grading and construction activity proposed within 1,600 feet of sensitive receptors, including schools, residential development, commercial lodging facilities, hospitals or care facilities, would generally result in a potentially significant impact. According to USEPA guidelines, average construction noise is 95 dBA[4] at a 50-foot distance from the source. A 6 dB drop typically occurs with a doubling of the distance from the source. Therefore, locations within 1,600 feet of the construction site would be affected by noise levels over 65 dBA.[5] To mitigate this impact, construction within 1,600 feet of sensitive receptors shall be limited to weekdays between the hours of 8 a.m. to 5 p.m. only. Noise attenuation barriers and muffling of grading equipment may also be required. Construction equipment generating noise levels above 95 dBA may require additional mitigation.

[2] This threshold pertains to long-term operational noise.

[3] Interior noise is not separately evaluated, as exceedance of the exterior noise threshold at sensitive receptors is assumed to result in exceedance of the interior threshold.

[4] These noise levels represent L_{eq} measurements, not CNEL day-night averages.

3.10.4.2 Project Impacts

Table 3.10-3 below provides a summary of the impacts related to noise from the proposed Project. The discussion of the impact follows. Existing development standards and standard permit processes and conditions, as well as planning standards and requirements proposed as part of the Project, which would serve to mitigate environmental impacts are referenced in the analysis below.

Table 3.10-3. Summary of Noise Impacts

Noise Impacts	Mitigation Measure	Residual Significance
Impact NOI-1. Cannabis cultivation, distribution, manufacturing, processing, testing, and retail sales would result in a short-term increase in noise from construction.	No Mitigation Required	Less than Significant (Class III)
Impact NOI-2. Cannabis cultivation, distribution, manufacturing, processing, testing, and retail sales facilities would result in long-term increases in noise from traffic on vicinity roadways and from cultivation operations.	MM AQ-~~1~~3. Cannabis Site Transportation Demand Management	Significant and Unavoidable (Class I)
Cumulative Impacts	No Mitigation Required	Significant and Unavoidable (Class I)

Impact NOI-1. Cannabis cultivation, distribution, manufacturing, processing, testing, and retail sales would result in a short-term increase in noise from construction.

Construction of cannabis cultivation, distribution, manufacturing, processing, testing, and retail sales facilities allowed under the proposed Project would result in short-term increases in noise. Construction noise could emanate from heavy equipment used for grading, land clearing, and building construction within sites proposed for cannabis uses. Construction for cannabis facilities would involve transport of construction materials and workers, and would potentially include relatively minor excavation, grading, and the transport and operation of heavy machinery and equipment. Equipment necessary to complete construction activities would be staged within the facility's Project site when not in use. Such equipment would likely include earth moving trucks, water trucks, pavers, ready-mix concrete trucks, employee pick-up trucks, and agricultural tractors.

Construction is expected to be associated mainly with new cannabis cultivation sites; it would also be temporary. Construction would primarily occur in undeveloped rural and inner-rural areas without significant sensitive receptors, as rural agricultural uses are generally set on large parcels at a distance from established communities. In more urban areas, such as Carpinteria and Goleta, agricultural, commercial, and industrial areas are already developed, which limits the potential for construction noise. In limited cases where new development would be required to support proposed cannabis uses in the urban areas, noise increases would be temporary and existing County policies and proposed development standards would minimize short-term noise impacts.

The grading/excavation phase for most development projects, such as for facilities to support commercial cultivation sites, tends to create the highest construction noise levels because of the operation of heavy equipment. As shown in Table 3.10-4, the noise level associated with heavy equipment typically ranges from about 78 to 88 dBA at 50 feet from the source. During grading

operations, the equipment is dispersed in various portions of the site in both time and space. Physically, a limited amount of equipment can operate near a given location at a particular time.

Table 3.10-4. Typical Noise Levels at Construction Sites

Construction Phase	Average Noise Level at 50 Feet	
	Minimum Required Equipment On-Site	All Pertinent Equipment On-Site
Ground clearing	84 dBA	84 dBA
Excavation	78 dBA	88 dBA
Foundation/Conditioning	88 dBA	88 dBA
Laying Subbase, Paving	78 dBA	79 dBA
Finishing and Cleanup	84 dBA	84 dBA

As a reasonable worst-case scenario assumption, it is presumed that construction noise is 95 dB at 50 feet from the source and that point source noise from construction equipment typically attenuates at a rate of 6 dB per doubling of distance. When considering attenuation of construction noise, the noise level would be 65 dBA at 1,600 feet from the noise source.

While some cannabis cultivation sites may be removed from adjacent residences and structures, depending on the location of sites, sensitive receptors could be subject to construction-related noise during work hours. Construction-related noise is expected to most likely occur within existing residential communities located within proximity to where cannabis cultivation is already present, such as Carpinteria, Lompoc, and Santa Ynez. However, all proposed cannabis activity would be subject to the policies and standards contained within the County's Comprehensive Plan (refer to Section 3.10.3) that aim to reduce construction-related noise impacts. The proposed Cannabis Land Use Ordinance and Licensing Program also contains development standards, outlined in Land Use and Development Code (LUDC) amendments, that would require noise sources to be located, shielded, or controlled so as to avoid exposure of incompatible noise to nearby sensitive receptors, thereby minimizing cannabis-related noise impacts. Further, proposed cannabis cultivation, distribution, manufacturing, processing, testing, and retail sales facilities would be subject to County Department of Planning and Development discretionary review. With the application of these policies and development standards, discretionary review, and the temporary nature of potential impacts to a given sensitive receptor, construction-related noise impacts would be *less than significant* (Class III).

Impact NOI-2. Cannabis cultivation, distribution, manufacturing, processing, testing, and retail sales facilities would result in long-term increases in noise from traffic on vicinity roadways and from cultivation operations.

Long-term impacts associated with noise from traffic on vicinity roadways would occur if cannabis activities generate enough additional vehicle trips on an adjacent roadway to result in roadway noise increases that exceed the thresholds listed in Section 3.10.4.1. Likewise, equipment noise associated with cultivation and farming operations could also contribute to long-term noise impacts if equipment generates noise at levels that exceed the thresholds. These thresholds are dependent on existing noise levels; the greater the existing noise level, the smaller the threshold. In areas where the pre-project ambient noise level is below 60 dBA, a substantial increase is 5 dBA; where the pre-project ambient noise level is between 60 and 65 dBA, a substantial increase is 3 dBA; and where the ambient pre-project noise level exceeds 65 dBA, a significant increase is 1.5 dBA.

Cannabis cultivation activities ~~by nature,~~ do not generate high levels of noise. Outdoor cannabis cultivation involves common agricultural practices, including tilling soil, sowing seeds, irrigating soil, and harvesting mature plants. Noise could be generated by farm equipment and possible truck traffic during peak harvest activities, but these noise sources are generally compatible with the agricultural zoning and uses allowed under the proposed Project. Greenhouse cultivation and other indoor cultivation sites would generate noise from farm equipment, but noise levels would typically be reduced as activities would occur inside the greenhouse, which would buffer noise levels to some degree. Greenhouses may use fans or blowers that could generate low levels of ambient noise, but these noise levels are not expected to be perceptible beyond the building or property line. Also, indoor cultivation has few sources of noise other than heating, ventilation, and air conditioning (HVAC) and dehumidification equipment and the noise associated with this equipment is expected to only generate a low hum from fans or blowers.

Additionally, HVAC and dehumidification systems utilized for the purpose of cultivating cannabis in an enclosed structure or similar environment are developed or installed within the structure itself or in a separate enclosed area, and the noise from these systems ~~occurs within structures and~~ is generally not perceptible outside the building or property. Noise levels from commercial HVAC equipment can be the dominant noise source in areas void of heavy traffic or where background noise levels are low (i.e., less than 50dB); however, units are typically fitted with noise shielding cabinets, placed on the roof behind parapets on commercial or industrial structures, or placed in mechanical equipment rooms to block the line-of-sight, thus reducing noise levels. Typical packaged HVAC equipment used for non-residential use may generate noise levels of approximately 44 dB Leq at a distance of 50 feet within direct line-of-sight. Larger HVAC systems can result in noise levels that average between 50 and 65 dB Leq at 50 feet within direct line-of-sight. Additionally, if 10 packaged HVAC units were to operate simultaneously and all at 50 feet from a receiver, total noise levels would equate to a total of approximately 54 dB Leq, decaying to 48 dB Leq at 100 feet (County of Santa Barbara 2007). Environmental control systems such as HVAC units and other mechanical equipment may also be utilized for commercial or industrial cannabis operations, such as manufacturing, testing, distribution, or retail operations.

~~Similarly~~Similar to cultivation, manufacturing noise is also very low and is associated with operation of extraction machinery, including rosin presses and carbon dioxide (CO_2) extraction machines. These machines are generally silent, and during operations consist of low levels of hums or hisses. Other forms of manufacturing, such as hash washing and infusions, have no substantial sources of noise. Similarly, processing, testing, and retail sales sites are not expected to result in substantial sources of noise, as operational noise is limited to small appliance operations and general commercial use noise that are contained within buildings. All mechanical equipment associated with operation of licensed cannabis sites is required to comply with the California Building Standards Code where noise levels should not exceed 45 dBA CNEL in any habitable room, and with the County's noise level criteria where noise levels should not exceed 65 CNEL at sensitive receptors. Noise levels from HVAC systems would therefore be below the interior and exterior noise thresholds at both the state and County level. Where a licensed cannabis facility would operate HVAC or other mechanical equipment, the operation of such equipment is anticipated to have a negligible effect on the existing ambient noise environment. Further, the Project would require environmental control systems such as HVAC equipment to be located and/or shielded to avoid generating incompatible noise to sensitive receptors. Given average noise levels of HVAC equipment, requirement for compliance with state, County, and Project noise standards, noise impacts associated with the operation of HVAC equipment are considered

insignificant. However, new vehicle traffic on County roadways may result in long-term noise increases.

As summarized in Section 3.12, *Traffic and Transportation*, the proposed Project is not anticipated to substantially increase vehicle trips or traffic volumes along any one road or intersection, as proposed cannabis activities would be dispersed across a relatively wide area within the County. Given the vast area of eligibility for new cannabis sites, and the uncertainty regarding the number of licenses and operations due to the potential for duplication and self-reporting biases of Cannabis Registry data, it is difficult to estimate potential impacts to specific road segments or intersections. However, Cannabis Registry data represents the best available data available. At a programmatic level, implementation of the proposed Project has the potential to introduce new vehicle traffic to County roadways and intersections such that the County's thresholds for traffic related impacts are exceeded. As such, implementation of the proposed Project may also result in increased noise levels associated with the additional vehicle trips and congestion from cultivation and distribution activities, but only for relatively short periods, particularly during harvesting and transport of cannabis products.

Like other agricultural, commercial, and industrial activities, cannabis activity sites would be required to conform to the County's regulatory standards. These existing regulations would ensure that cannabis activities ~~do~~ would not produce noise levels that exceed the County's thresholds and standards. The proposed Project also includes features that would ensure any noise generated by cannabis activities would not adversely affect sensitive receptors. For example, cannabis cultivation must be set back from sensitive receptors, including schools providing instruction in kindergarten or any grades 1 through 12, day care centers, and youth centers. Also, all noise sources would be located, shielded, or controlled so as to avoid exposure of incompatible noise to nearby sensitive receptors, in compliance with the Santa Barbara County Comprehensive Plan Noise Element. Further, manufacturing facilities and activities would be licensed within buildings, which would sufficiently contain the low levels and incidences of noise.

However, the potential still exists for future long-term increases in roadway noise and congestion associated with Project implementation to result in impacts to sensitive receptors. As described in Section 3.12, *Transportation and Traffic*, the Project could generate up to 15,089 new trips Countywide associated with employment in cannabis activities. Based on the Registry data, it is foreseeable that trips would increase both in urban areas (e.g., Goleta, Santa Maria) and rural areas (e.g., Tepesquet, Santa Ynez Valley). Increased trips on roadways in urban areas that currently carry high volumes ~~of~~ would have a low potential to measurably increase ambient noise levels, as incremental contributions to an already-noisy environment are not perceptible. However, ~~in~~ rural areas with roadways that do not currently carry substantial volumes of employment trips ~~are~~ would be much more susceptible to noise impacts from increases in trip volumes. For example, rural roads in Santa Ynez Valley, Tepesquet, or the foothills of the South Coast Region (e.g., Toro Canyon) ~~may~~ currently provide limited access to agricultural properties and rural home sites without substantial employment traffic and associated noise. With implementation of the Project, rural cannabis sites could generate employment traffic using rural roads daily, which may increase ambient noise levels beyond the County's thresholds. Therefore, even though the location and degree of noise effect cannot be accurately determined, Project-related long-term increases in roadway noise from cannabis employee vehicle trips would result in *potentially significant* impacts.

Implementation of **MM AQ-~~1~~3**, *Cannabis Site Transportation Demand Management*, would be required to reduce employee trips to and from cannabis sites, especially in rural areas where reduced trips through carpooling and variable work schedules could measurably reduce noise impacts from vehicle

noise on relatively quiet roadways. However, since the location and degree of vehicle noise cannot be known as part of the Project, there is no feasible way to ensure that vehicle noise increases from Project traffic would not exceed County thresholds for ambient noise.

3.10.4.3 Cumulative Impacts

The impacts of the Project would be combined with cumulative impacts resulting from development under plans and projects identified in Section 3.0.4, *Cumulative Project Scenario*. Cumulative construction of new projects, including cannabis sites would increase the potential for adverse noise effects on sensitive receptors. However, as described in Impact NOI-1, all construction activities would be subject to the policies and standards contained within the County's Comprehensive Plan (refer to Section 3.10.3) that aim to reduce construction-related noise impacts. The proposed Cannabis Land Use Ordinance and Licensing Program also contains development standards, outlined in Land Use and Development Code (LUDC) amendments, that would require noise sources to be located, shielded, or controlled so as to avoid exposure of incompatible noise to nearby sensitive receptors, thereby minimizing cannabis-related noise impacts. Further, proposed cannabis cultivation, distribution, manufacturing, processing, testing, and retail sales facilities would be subject to County Department of Planning and Development discretionary review.

Further, cultivation activities would occur on agricultural lands where noise associated with farming equipment is common and expected. For outdoor noise, noise levels from farming equipment are typically considered as point sources for noise generation and typically would drop off at a rate of 6-dBA per doubling of distance from the source over hard site surfaces, such as parking lots and water. The drop-off rate typically would increase approximately 7.5-dBA per doubling of distance for soft site surfaces, such as grass fields and open terrain with vegetation (Federal Highway Administration 2006). Drop-off rates for surfaces with buildings and trees would further increase to the point that it would be unlikely that noise from the projects would reach each other and combine to produce a cumulatively significant impact. Compliance with the County's noise thresholds and regulatory standards would further minimize cumulative noise impacts. Further, the manufacturing, distribution, testing, and sales activities are expected to occur within commercial and industrial zoning districts inside existing buildings and warehouses in the County, where any noise associated with operation equipment would be very limited.

However, the Project has the potential to contribute to cumulative noise impacts from roadway noise effects on ambient noise levels in the County. Combined with other development, increased vehicle trips could increase congestion and daily travel on roadways, including low noise roadways in rural areas. As the Project's contribution would be cumulatively considerable, even with implementation of MM AQ-~~1~~ 3 to require reduced employee trips through transportation demand management measures, cumulative impacts from the Project would be *significant and unavoidable* (Class I).

3.10.4.4 Proposed Mitigation Measures

Implement MM AQ-~~1~~3. Cannabis Site Transportation Demand Management. To reduce impacts associated with increases in vehicle noise under the Project, MM AQ-~~1~~3, requiring reduction of employee trips through transportation demand management (TDM) measures, shall apply to Impact NOI-2.

3.10.4.5 Residual Impacts

Impact NOI-1. With application of existing County policies under the Comprehensive Plan, proposed development standards within the LUDC amendments, and discretionary review by the County Planning Commission, short-term construction noise impacts related to the Project would be minimized. Given the temporary nature of potential construction impacts to sensitive receptors, development review processes, and existing and proposed regulations with which cannabis activities must comply, residual impacts related to construction-related noise under the Project would be *less than significant* (Class III).

Impact NOI-2. Implementation of **MM AQ-~~1~~3**, *Cannabis Site Transportation Demand Management*, would help reduce the potentially significant impacts resulting from roadway noise under long-term Project operations by reducing employee trips to cannabis site, particularly in the rural areas. Existing regulatory standards and requirements under the General Plan and County Code would also ensure that operational noise levels or the generation of any noise significantly above ambient levels and/or in conflict with the County's noise ordinance would be reduced to less than significant. However, since the location and degree of vehicle noise cannot be known as part of the Project, there is no feasible way to ensure that vehicle noise increases from Project traffic would not exceed County thresholds for ambient noise. Therefore, the proposed Project could result in significant long-term noise impacts related to traffic noise from cannabis activity operations and the residual impact would be *significant and unavoidable* (Class I).