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NOISE MEMORANDUM

TO: Stephen Peterson, *County of Santa Barbara, P&D*
CC: Patrick Pflipsen, *Castlerock Family Farms II, LLC*
FROM: Troy A. White, AICP
DATE: 06/09/2020
SUBJECT: Castlerock Family Farms II (2200 W Hwy 246, Buellton, CA)
Cannabis Cultivation Noise Plan

PURPOSE

TW Land Planning & Development, LLC (TW Land P&D) prepared this memorandum to assess potential noise issues associated with the Castlerock Family Farms II, LLC proposed cultivation project (June 2020), located at 2200 W. Hwy 246 in the Buellton area, within unincorporated Santa Barbara County, California. The analysis evaluates off-site noise impacts associated with project-generated vehicle trips, and quantifies operational noise levels associated with on-site mechanical equipment serving the proposed Farm Office.

BACKGROUND AND TERMINOLOGY

Project Vicinity and Noise Sensitive Users

The proposed project is located at 2200 W. Hwy 246 in the Buellton area of Santa Barbara County, California. In general, the surrounding project area is characterized by agricultural land supporting ranching and cultivated row crops. The project site is currently developed with several homes, barns, various agricultural structures, and water wells. The property has been actively ranched/ farmed for almost a century. An aerial photograph of the existing project site and vicinity is depicted in Figure 1. With respect to Figure 1, existing scattered rural residences are located to the north and east of the project site.

Residential land uses are considered noise-sensitive, and could be impacted by noise from Project on-site activities or from Project-related traffic increases on vicinity roadways. The existing residences closest to the project site are labelled on Figure 1 with “R” designations. Noise from operation of the proposed project was modelled at the closest of these identified residences, as explained in further detail later in this memorandum.

FIGURE 1 – VICINITY MAP

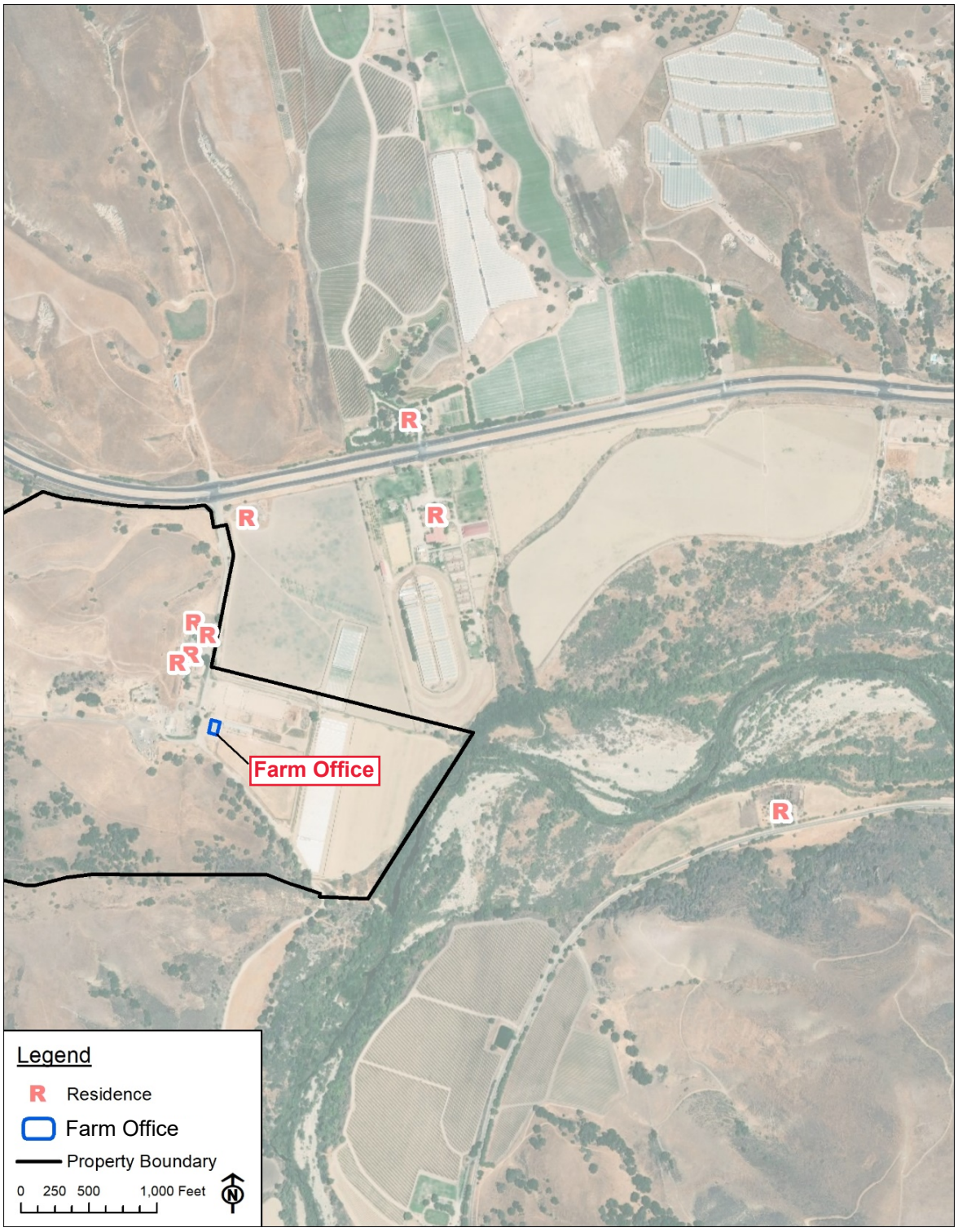


TABLE 1
TYPICAL SOUND LEVELS IN THE ENVIRONMENT AND INDUSTRY

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
—	110	Rock band
Jet flyover at 300 meters (1,000 feet)	100	—
Gas lawn mower at 1 meter (3 feet)	90	—
Diesel truck at 15 meters (50 feet), at 80 kph (50 mph)	80	Food blender at 1 meter (3 feet) Garbage disposal at 1 meter (3 feet)
Noisy urban area, daytime gas lawn mower at 30 meters (100 feet)	70	Vacuum cleaner at 3 meters (10 feet)
Commercial area Heavy traffic at 90 meters (300 feet)	60	Normal speech at 1 meter (3 feet)
Quiet urban daytime	50	Large business office Dishwasher, next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime	30	Library
Quiet rural night time	20	Bedroom at night, concert hall (background)
—	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2013.
Notes: kph = kilometers per hour; mph = miles per hour

Noise Characteristics and Terminology

Pressure fluctuations, traveling as waves through air from a source, exert a force perceived by the human ear as sound. Sound pressure level (referred to as sound level) is measured on a logarithmic scale in decibels (dB) that represent the fluctuation of air pressure above and below atmospheric pressure. Frequency, or pitch, is a physical characteristic of sound and is expressed in units of cycles per second or hertz (Hz). The normal frequency range of hearing for most people extends from about 20 to 20,000 Hz. The human ear is more sensitive to middle and high frequencies, especially when the noise levels are quieter. To accommodate for this phenomenon, a weighting system to evaluate how loud a noise level is to a human was developed. The frequency weighting called "A" weighting is typically used for typical environmental sound levels which de-emphasizes the low frequency components of the sound in a manner similar to the response of a human ear. This A-weighted sound level is also often referred to as the "noise level" and is referenced in units of dBA (refer to *Attachment A* for definitions of acoustical terms). Table 1 provides examples of A-weighted noise levels from common sound sources.

Since sound is measured on a logarithmic scale, a doubling of sound energy results in a 3 dBA increase in the noise level. Changes in a community noise level of less than 3 dBA are not typically noticed by the human ear (Caltrans 2013). Changes from 3 to 5 dBA may be noticed by some individuals who are extremely sensitive to changes in noise. A 5 dBA increase is readily noticeable.

The human ear perceives a 10 dBA increase in sound level as a doubling of the sound level (i.e., 65 dBA sounds twice as loud as 55 dBA to a human ear).

An individual's noise exposure occurs over a period of time; however, noise level is a measure of noise at a given instant in time. The equivalent noise level Leq, also referred to as the average sound level, is a single-number representing the fluctuating sound level in decibels (dB) over a specified period of time. It is a sound-energy average of the fluctuating level and is equal to a constant unchanging sound of that dB level. Community noise sources vary continuously, being the product of many noise sources at various distances, all of which constitute a relatively stable background or ambient noise environment.

Noise levels are generally higher during the daytime and early evening when traffic (including airplanes), commercial, and industrial activity is the greatest. However, noise sources experienced during nighttime hours when background levels are generally lower can be potentially more conspicuous and irritating to the receiver. In order to evaluate noise in a way that considers periodic fluctuations experienced throughout the day and night, a concept termed "community noise equivalent level" (CNEL) was developed. The CNEL scale represents a time-weighted 24-hour average noise level based on the A-weighted equivalent (Leq) sound level. CNEL accounts for the increased noise sensitivity during the evening hours (7 p.m. to 10 p.m.) and nighttime hours (10 p.m. to 7 a.m.) by adding 5 dB to the average sound levels occurring during the evening hours and 10 dB to the sound levels occurring during nighttime hours.

REGULATORY CONTEXT

Generally, federal and state agencies regulate mobile noise sources by establishing and enforcing noise standards on vehicle manufacturers including off-road vehicles and equipment used for construction. Local agencies generally regulate stationary noise sources and construction activities to protect neighboring land uses and the general public's health and welfare.

Federal

The EPA has set forth guidelines regarding noise levels identified as a requisite to protect public health and welfare related to noise in its document entitled "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety". This document specifies indoor residential activity not be exposed to greater than 45 dBA LDN (EPA 1974).

California Noise Insulation Standards (CCR Title 24)

The state has established noise insulation standards for new multi-family residential units, nursing care facilities (including assisted living), hotels, and motels that would be subject to relatively high levels of transportation-related noise. These requirements are collectively known as the California Noise Insulation Standards (Title 24, California Code of Regulations). The noise insulation standards set forth an interior standard of Ldn 45 dBA in any habitable room of a multi-family residential, assisted living, or hospital facility.

Santa Barbara County Standards

The County of Santa Barbara *Environmental Thresholds and Guidelines Manual*, Chapter 12, Noise Thresholds (October 2008) and the N*oise 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; 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.
    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 Ldn 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 Ldn. 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.

PROJECT DESCRIPTION

The proposed cannabis project includes three (3) main components: a farm office, hoop houses, and a storage container. A general description of each component, along with their noise-generating characteristics, is provided below. The location of each component is illustrated on Figure 2, Site Plan.

Farm Office

A small structure (160 SF) is proposed to contain the farm office, security equipment, and document storage. A small window-unit or split-system air conditioner may be provided for this unit. Given the internal site location and lower sound generating capability of such a small HVAC unit, assessment of potential HVAC system noise for this small office would not normally be necessary in a noise evaluation. The Farm Office is depicted as "Structure #36" on Figure 2.

Hoop Structures

Outdoor cannabis cultivation acreage is as follows:

Cultivation Area A:	16.53 ac
Cultivation Area B:	4.63 ac
Cultivation Area C:	1.79 ac
TOTAL:	22.95 ac

Cultivation Areas A, B, and C will all make use of hoop structures. The majority of cultivation rows will be covered with 24-ft wide hoops [13'-16' tall hoops; five (5) rows per hoop cover], which will be covered with plastic. In areas where it is impracticable for the farmer to erect hoops, cannabis will be grown under open sun.

These simple hoop enclosures consist of plastic stretched over a row of metal hoops, forming a low cost space for germination of plants and an extension to the natural growing period. Hoop structures would not include any noise-generating equipment. Hoop structure locations are depicted within the Cultivation Areas on the Site Plan (Figure 2).

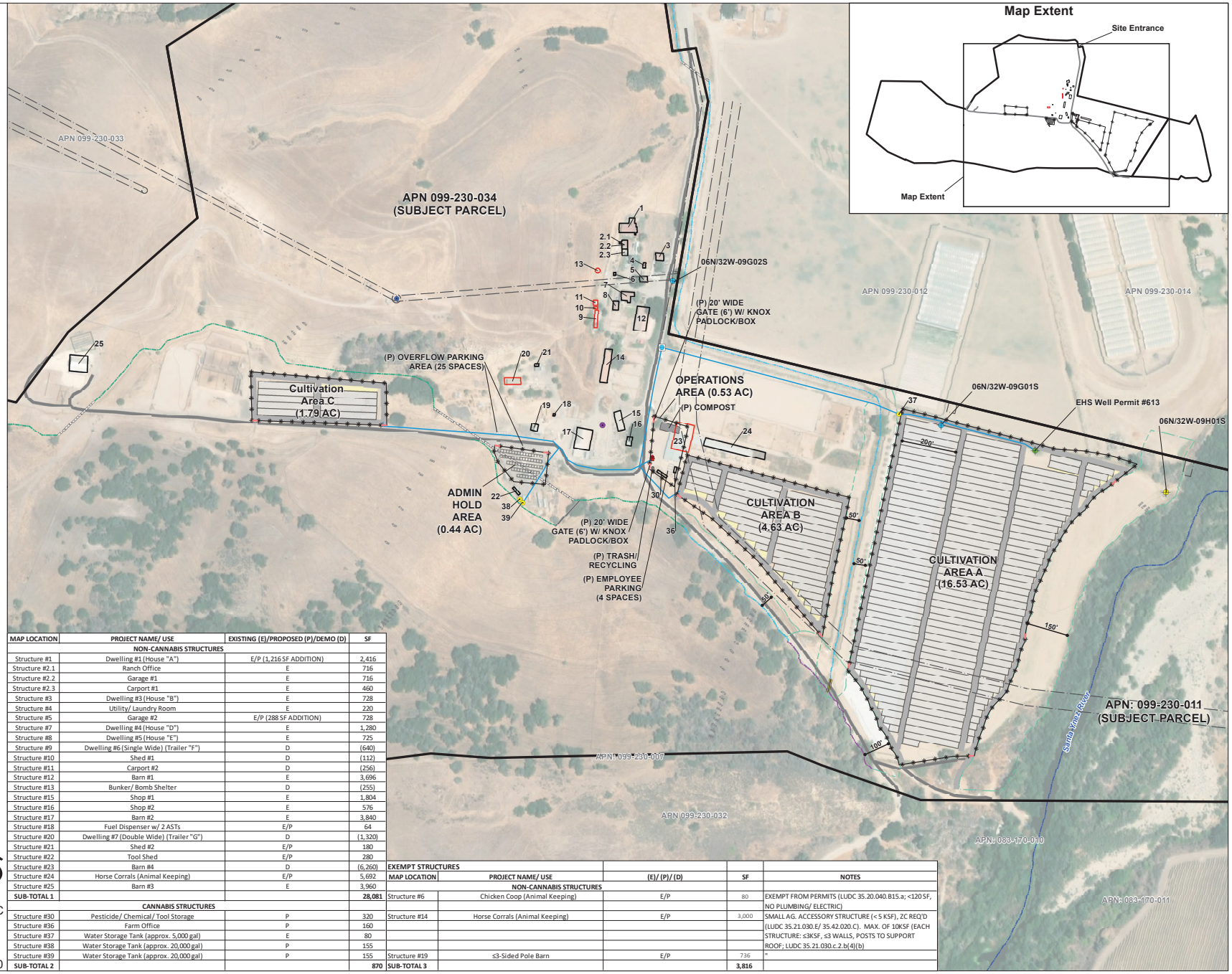
SITE PLAN
SHEET 2 OF 14

Legend

- Subject Property
- Topographic Contours (10ft)
- (E)/ (P) Structures
- (E) Structures to be Demolished/ Removed
- (P) Open-Sun Cannabis Cultivation
- (P) Hoop House Cannabis Cultivation
- (P) Compost
- (P) Employee Parking
- (P) Harvest Storage/ Admin Hold Area
- (P) Trash/Recycling
- (P) Fence (6 ft)
- (P) Gate (6 ft)
- (P) Water Distribution System
- (P) Access Roads (10'-20', Dirt/ Gravel)
- (E) Access Roads (10'-20', Dirt/ Gravel)
- (E) Easement
- (E) Power Pole
- (P) Fire Hydrant
- (E) Domestic Water Well
- (E) Inactive Water Well
- (E) Cannabis Water Well
- (P) Booster Pump
- (E)/ (P) Water Tank
- (E) Domestic Cistern

Hydrologic Features

- Santa Ynez River (Class I)
- Intermittent Watercourse (Class II)
- Ephemeral Watercourse (Class III)
- Other Watercourse (Class IV)
- (E) Concrete Swale
- (E) Culvert
- (E) Low Water Crossing
- Watercourse Setback



MAP LOCATION	PROJECT NAME/ USE	EXISTING (E)/PROPOSED (P)/DEMO (D)	SF
	NON-CANNABIS STRUCTURES		
Structure #1	Dwelling #1 (House "A")	E/P (1,216 SF ADDITION)	2,416
Structure #2.1	Ranch Office	E	716
Structure #2.2	Garage #1	E	716
Structure #2.3	Carport #1	E	460
Structure #3	Dwelling #3 (House "B")	E	728
Structure #4	Utility/ Laundry Room	E	220
Structure #5	Garage #2	E/P (288 SF ADDITION)	728
Structure #7	Dwelling #4 (House "D")	E	1,280
Structure #8	Dwelling #5 (House "E")	E	725
Structure #9	Dwelling #6 (Single Wide) (Trailer "F")	D	(640)
Structure #10	Shed #1	D	(112)
Structure #11	Carport #2	D	(256)
Structure #12	Barn #1	E	3,696
Structure #13	Bunker/ Bomb Shelter	D	(255)
Structure #15	Shop #1	E	1,804
Structure #16	Shop #2	E	576
Structure #17	Barn #2	E	3,840
Structure #18	Fuel Dispenser w/ 2 ASTs	E/P	64
Structure #20	Dwelling #7 (Double Wide) (Trailer "G")	D	(1,320)
Structure #21	Shed #2	E/P	180
Structure #22	Tool Shed	E/P	280
Structure #23	Barn #4	D	(6,260)
Structure #24	Horse Corrals (Animal Keeping)	E/P	5,692
Structure #25	Barn #3	E	3,960
SUB-TOTAL 1			**28,081**
	CANNABIS STRUCTURES		
Structure #30	Pesticide/ Chemical/ Tool Storage	P	320
Structure #36	Farm Office	P	160
Structure #37	Water Storage Tank (approx. 5,000 gal)	E	80
Structure #38	Water Storage Tank (approx. 20,000 gal)	P	155
Structure #39	Water Storage Tank (approx. 20,000 gal)	P	155
SUB-TOTAL 2			**870**

EXEMPT STRUCTURES				
MAP LOCATION	PROJECT NAME/ USE	(E)/ (P)/ (D)	SF	NOTES
	NON-CANNABIS STRUCTURES			
Structure #6	Chicken Coop (Animal Keeping)	E/P	80	EXEMPT FROM PERMITS (LUDC 35.20.040.B15.a; <120 SF, NO PLUMBING/ ELECTRIC)
Structure #14	Horse Corrals (Animal Keeping)	E/P	3,000	SMALL AG. ACCESSORY STRUCTURE (< 5 KSF), ZC REQ'D (LUDC 35.21.030.E/ 35.42.020.C). MAX. OF 10KSF (EACH STRUCTURE: ≤3KSF, ≤3 WALLS, POSTS TO SUPPORT ROOF; LUDC 35.21.030.c.2.b(4)(b)
Structure #19	≤3-Sided Pole Barn	E/P	736	"
SUB-TOTAL 3			**3,816**	

0 150 300 600 Feet

1 inch = 150 feet

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6/9/2020

Storage Container

An existing Storage Container (320 SF) will be relocated onsite to the proposed Operations Area. No electrical connections or mechanical equipment are proposed for the structure. No noise modeling/ discussion is, therefore, required for this structure. The Storage Container is depicted as "Structure #30" on Figure 2.

Water Treatment / Well Pumps/ Fire Pumps

Equipment for groundwater extraction (i.e., electric pumps for on-site wells) and water treatment (i.e., pumps and filter systems), is located in the are north of Cultivation Area A. Because the well pumps are submerged and related treatment equipment is located in isolated areas of the property, sound levels experienced by distant residential uses would be minimal. Given placement the location of the water well equipment, assessment of water pumps and treatment systems noise was not deemed necessary in this noise evaluation. Fire pumps related to cannabis operations would only be triggered in the event of an emergency and are would be utilized infrequently for system testing only. Fire pumps are, therefore, not further addressed within this noise evaluation.

Project Traffic

According to the Site Transportation Demand Management Plan (TW Land P&D, 2020), the project would have a peak traffic generation of twelve (12) average daily trips (ADT). The ADTs would be represented by a mix of automobiles, light trucks, vans, and to a limited extent heavy trucks. All of the trips would arrive to the site via Highway 246 (aka, SR-246). It is assumed that 50% of the trips would be expected to travel westward and 50% of the trips would be expected to travel eastward.

EXISTING CONDITIONS

Transportation facilities, including major roadways and airports, typically are the principle sources of noise that dictate the ambient noise environment in a rural area. The principle roadway in the vicinity of the project site is Highway 246, from which the property is accessed. Since roadways are typically the most important contributor to any ambient noise environment, characterizing noise levels along roadways generally provides a good indicator of the ambient noise levels for land uses in the vicinity. Noise levels identified within the City of Buellton's General Plan Noise Element are as follows:

TABLE 2
AMBIENT NOISE LEVELS

	Roadway Segment	Roadway Traffic Volume	Distance to CNEL Contour from Centerline		
			70 dB	65 dB	60 dB
Existing Traffic Noise Levels (2005)	Industrial Way to Highway 246 West	12,170 ADT	43’	97’	209’
Future Traffic Noise Levels (2025)	Industrial Way to Highway 246 West	15,400 ADT	52’	112’	242’

NOISE IMPACT ANALYSIS

Off-Site Traffic Noise

As identified in Table 2 above, existing and future traffic noise levels along Highway 246 within the vicinity of the project site would be 65 dB or less at 97’-112’ from the centerline of Highway 246. As indicated in the project Site Transportation Demand Management Plan (2020), the project would have a maximum of 12 average daily trips (ADTs), which would equate to 0.08% of the Future 2025 Roadway Traffic Volume for Highway 246.

The County does not have a specific criterion for evaluating the significance of project-related increases in off-site traffic noise levels at residences or noise-sensitive areas. For the purposes of this analysis, traffic noise level increases are considered significant if they exceed ambient traffic noise levels by five dB or more. An increase or decrease in noise level of five dBA is the minimum before any noticeable change in community response would be expected (Caltrans 2013).

With implementation of the STDMP, traffic levels associated with the project are anticipated to be less than that which has historically been associated with existing agricultural operations. The project traffic volumes would have de minimus impacts on noise levels along Highway 246 and would not be anticipated to change the average existing/ future noise levels identified above. No mitigation is required.

On-Site Noise Sources

Beyond regular operation of farm and ranching equipment, the primary on-site noise source associated with the project would include the small HVAC unit for the Farm Office. A description of noise-generating characteristics associated with this component is provided below. The HVAC units would be located immediately north of the office building.

On-Site Noise Source Calculations

The provided site plan and noise specifications for the noise-generating equipment anticipated to be used were utilized to model the operational noise from the proposed project. The resulting project operational noise level at the identified proximate noise sensitive receivers was modeled based upon the published sound level for each piece of equipment; standard outdoor distance attenuation rates for point sources and hard-site conditions (most conservative) applied to the distance between each equipment location and the receiver locations; and, the logarithmic sum of individual equipment noise levels at the receivers.

PROXIMITY TO PROPERTY LINES: The location of the Farm Office is located within the center of the subject 277-acre property; the nearest property line is approx. 500' from the office site (see Figure 3 below).

FIGURE 3:
500' HVAC EQUIPMENT SETBACK FROM NORTHERN PROPERTY LINE

The proposed HVAC unit would produce a maximum sound level of 48 dBA at 50 feet. With a doubling of distance, the sound level would decrease by 6 dB(A), or result in sound levels of 42 dBA at 100 feet, or 52 dBA CNEL during the night. The environmental control systems (i.e., HVAC equipment) for the Farm Office will, therefore, be located, designed, and/or shielded such that the decibel level, as measured at the property line of the lot on which the cannabis activity is located, will not exceed 65 dBA CNEL. No mitigation is required.

PROXIMITY TO SENSITIVE RECEPTORS: The Farm Office is located approximately 650' from the nearest residence (sensitive receptor); see Figure 4 below.

FIGURE 4:
650' HVAC EQUIPMENT SETBACK FROM NEAREST RESIDENCE

The proposed HVAC unit produces maximum sound levels of 48 dBA at 50 feet. With a doubling of distance, the sound level would decrease by 6 dB(A), or result in sound levels of 42 dBA at 100 feet, or 52 dBA CNEL during the night. The environmental control systems (i.e., HVAC equipment) for the Farm Office will, therefore, be located, designed, and/or shielded such that the noise levels

would not exceed 65 dBA CNEL heard by sensitive receptors, in compliance with the Santa Barbara County Noise Element. No mitigation is required.

CONCLUSION

The project would not have the potential to expose noise sensitive receptors to exterior noise levels above 65 dBA CNEL. Noise levels at the subject property boundaries would also not be greater than 65 dBA CNEL, below the limit for residential land use exterior noise exposure.

Consequently, operations on the project site would not have the potential to create an operational noise level of 65 dBA CNEL, and operational noise is therefore considered *less than significant*. No mitigation is required.

ATTACHMENT(s)

ATTACHMENT A

DEFINITIONS

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.

A-Weighted Sound Level, (dB[A]): The sound pressure level in decibels as measured on a sound level meter using the A-weighted 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.

Community Noise Equivalent Level (NEL): CNEL is the A-weighted equivalent continuous sound (CNEL) exposure level for a 24-hour period with a ten Db adjustment added to sound levels occurring during nighttime hours (10 pm to 7 am) and a five dB adjustment added to the sound levels occurring during the evening hours (7 pm to 10 pm).

Decibel (dB): A unit for measuring sound pressure level, equal to 10 times the logarithm to the base 10 of the ratio of the measured sound pressure squared to a reference pressure, which is 20 micropascals.

Time-Average Sound Level (TAV): The sound level corresponding to a steady state sound level and containing the same total energy as a time varying signal over a given sample period. TAV is designed to average all of the loud and quiet sound levels occurring over a specific time period.

Sound Transmission Class (STC): A single number rating of the noise reduction of a building element.

ATTACHMENT B

REFERENCES

Caltrans. 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol.* September 2013.

City of Buellton. 2015. *General Plan 2025 Noise Element.*

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