

El Dorado County Board of Supervisors
330 Fair Lane, Building A
Placerville, California, 95667
March 3, 2024

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DATE 3-5-24

Dear Board of Supervisors,

My name is Susie Vasquez. I am joining other south county residents in the Clary appeal to rescind the January 25 Planning Commission vote supporting the Harde cannabis cultivation facility, CCUP21-0002.

I found the information available to neighbors of the project at the January 25 completely inadequate with respect to assurances concerning water, health, crime, odors and disruption of the community character.

For example, the Commission estimated the water use for Hardee's marijuana crops at 1.2 million gallons per year. I am interested in knowing how they arrived at that figure, since they don't have a definitive number of plants proposed? He is talking about two harvests annually rather than one. Was that considered?

A study printed in the Journal of Cannabis Research states that cannabis is a water- and nutrient-intensive crop that far exceeds the water needs of crops like soybeans and wheat. This demand could easily impact neighboring wells, watersheds and wildlife.

"The immense amount of water needed to keep cannabis alive will continue to burden our environment.....Water for Cannabis will have to be diverted, leading to deficits of 23 percent in the least impacted watersheds of this study."

Flow modification is one of the greatest threats to aquatic biodiversity and the high demand for water will affect fish, amphibians, and other aquatic life. (Dillis et al)

According to the California Department of Water Resources, wells located in and around the granite fissures so common here in the Foothills are subject to the vagaries of the geology below. Each well does not necessarily have a different source than the others nearby, as implied by commissioners at the January 25 planning commission meeting.

"A neighboring well can interfere with your well. How much water passes through fractured rock varies greatly depending on connections between fractures," according to Water Resources.

On another note, cannabis is a nutrient-intensive crop. More than 30 soil amendments, from foliage nutrient sprays to applied pesticides, herbicides, rodenticides, insecticides and fungicides can be applied, ultimately ending up in the environment's reduced water supply.

"If the polluted water continues to be used, it will add contaminants to the soil, as well as surface and groundwater, and ultimately the food chain," according to the study.

Harde has said he will be certified organic, but at this point, I do believe he is not.

I have focused on water here, but there were a plethora of legitimate questions that weren't answered concerning crime, odor, environmental contamination and the health of surrounding neighbors.

But, I am assuming here, I will get another swipe at this topic.

In the meantime I do have some pointed issues:

- Why are we allowing manufacturing on agriculturally zoned land?
- Rural residential dwellings should be included in the sensitive receptor classification. There is a prohibition to cultivating cannabis within a certain distance of public facilities. Families and children in rural residential communities should be provided the same setbacks and restrictions.
- Keep cannabis indoors and limit to sealed facilities and greenhouses that don't vent into the atmosphere for the health, safety and well being of neighbors.
- I am calling for a complete CEQA environmental impact report for the sake of the environment, the safety of residents, and to ensure that the project, if it goes forward, will be sustainable.

Local government entities must sometimes make decisions that are contentious, but usually it is for the greater public good, like an extended airport runway.

The sacrifice could be worth it for a higher cause but there is no public good here. Our property values are probably going down. Our wells will be impacted despite denials from cannabis cultivation supporters and the county, and our roads will still need work. Residents will pay, while one isolated neighbor will reap the benefits.

The health, safety and well being to the residents of this county should be the primary focus here, not rushing a pot farm application.

I'm not against David Harde pursuing his lofty dream of making money selling pot, but he should find a venue outside of a residential area so neighbors aren't paying the price with respect to smell, commercial traffic, pollution, increased crime and depleted wells due to marijuana's demand for water.

Susan Vasquez
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REVIEW

Open Access



A narrative review on environmental impacts of cannabis cultivation

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Abstract

Interest in growing cannabis for medical and recreational purposes is increasing worldwide. This study reviews the environmental impacts of cannabis cultivation. Results show that both indoor and outdoor cannabis growing is water-intensive. The high water demand leads to water pollution and diversion, which could negatively affect the ecosystem. Studies found out that cannabis plants emit a significant amount of biogenic volatile organic compounds, which could cause indoor air quality issues. Indoor cannabis cultivation is energy-consuming, mainly due to heating, ventilation, air conditioning, and lighting. Energy consumption leads to greenhouse gas emissions. Cannabis cultivation could directly contribute to soil erosion. Meanwhile, cannabis plants have the ability to absorb and store heavy metals. It is envisioned that technologies such as precision irrigation could reduce water use, and application of tools such as life cycle analysis would advance understanding of the environmental impacts of cannabis cultivation.

Keywords: Cannabis cultivation, Water demand, BVOCs emission, Carbon footprint, Soil erosion

Background

The *Cannabis* plant has been cultivated throughout the world since ancient civilizations and used for thousands of years for both medicinal and recreational applications. Cannabis contains a psychoactive compound called tetrahydrocannabinols (THC) that creates a psychogenic effect. It can be consumed through the respiratory tract and digestive tract through smoking and oral ingesting, respectively. In contrast, cannabidiol (CBD), another component derived from cannabis, is a non-psychoactive cannabinoid that has gained popularity for its medicinal values and as a supplement. In the USA, an estimated “30 million Americans use marijuana (cannabis) at least occasionally, and 20 million use it at least once per month” (Osbeck and Bromberg 2017). Despite being used widely, the lack of science-based information due to the legal status of cannabis in the last centuries worldwide (e.g., in the USA) has prevented research.

Cultivation methods have an unavoidable influence on the environment in different degrees. Outdoor cultivation is the traditional and original method of cannabis cultivation. Although with low costs, it is subject to weather and natural resources. Improper soil and water resources management and pest control may induce critical environmental issues. On the contrary, indoor cultivation (including greenhouse cultivation) enables full control over all aspects of the plants, such as light and temperature, but is constrained by higher costs, energy demand, and associated environmental implications. Reducing the global environmental impact of agriculture is vital to maintain environmental sustainability. However, there is a lack of systemic principles towards the sustainable farming of cannabis because its environmental impacts remain unclear. In the wake of the unprecedented legalization of cannabis, there is a pressing need for a complete review of its environmental assessment.

In this paper, we conduct a narrative review of the available literature. We strive to build a better understanding of the environmental impacts induced by cannabis cultivation. This improved understanding can benefit communities, including policymakers, cannabis industry

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stakeholders, agricultural engineers, ecologists, and environmental scientists. This review covers the environmental effects on water, air, and soil. Energy consumption and carbon footprint are included as well. Possible research directions are also put forward.

Methods and materials

The literature search for this narrative review paper was conducted several times in 2020 and 2021. We searched combinations of keywords such as “cannabis cultivation,” “marijuana cultivation,” “cannabis water demand,” “cannabis emissions,” “cannabis energy demand,” and “environmental impacts.” Papers, reports, and government documents from 1973 to 2021 from Science Direct and Google Scholar databases have been searched in English. We screened over 250 literatures and discarded irrelevant literature for further analysis. A total of 63 literatures were cited in the review.

Water demand analysis

To unify the water demand calculations from different data sources, we conducted the following unit conversions:

$$1 \text{ inch of water} = 27,154 \text{ gallons of water per acre} \quad (1)$$

$$1 \text{ acre} = 43,560 \text{ ft}^2 \quad (2)$$

Similarly, units reported for water demand such as “mm/total growing period” were converted to “gallon/

ft²/day”. For example, the water need of cotton is 700 mm per total growing period. The water demand was calculated to:

$$700 \text{ mm} = 27.56 \text{ inches} = 748,346 \text{ gallon per acre} \quad (3)$$

Finally, the minimal daily water demand for cotton (shown in Table 1) was calculated using the maximal growing days (195 days):

$$\frac{748,346 \text{ gallon per acre}}{195 \text{ days}} \times \frac{\text{acre}}{43,560 \text{ ft}^2} = 0.09 \frac{\text{gallons}}{\text{ft}^2 \times \text{days}} \quad (4)$$

Water demand and pollution

Water demand

Cannabis is a water- and nutrient-intensive crop (Carah et al. 2015). Table 1 shows that the water demand for cannabis growing far exceeds the water needs of many commodity crops. For example, cannabis in a growing season needs twice as much as the water required by maize, soybean, and wheat. On average, a cannabis plant is estimated to consume 22.7 l (6 gallons) of water per day during the growing season, which typically ranges from June to October for an approximate total of 150 days (Butsic and Brenner 2016). As a comparison, the mean water usage for the wine grapes, the other major irrigated crop in the same region, was estimated as 12.64 l of water per day (Bauer et al. 2015). Although the average daily water use varies from site

Table 1 Water demand comparison between Cannabis and commodity crops

Plants	Total growing period (days)	Water demand per season (million gallons acre ⁻¹)	Daily water demand (gallon ft ⁻² day ⁻¹)	Ref
Cannabis: outdoor	150	1.57 ^a	0.24	(HGA, 2010)
Cannabis: outdoor	August	n.a	0.22	(Wilson et al., 2019)
Cannabis: outdoor	September	n.a	0.17	(Wilson et al., 2019)
Cannabis: indoor	August	n.a	0.18	(Wilson et al., 2019)
Cannabis: indoor	September	n.a	0.22	(Wilson et al., 2019)
Cotton	180–195	0.75–1.39 ^b	0.09–0.15	(Brouwer and Heibloem, 1986)
Cotton	/	/	0.14–0.17	(Hussain et al., 2020)
Maize	130–150	0.53–0.86 ^b	0.07–0.13	(Brouwer and Heibloem, 1986)
Corn	/	/	0.22 (peak)	(Rogers et al. 2017)
Soybean	135–150	0.48–0.75 ^b	0.07–0.13	(Brouwer and Heibloem, 1986)
Soybean	/	/	0.22 (peak)	(Rogers et al. 2017)
Wheat	120–150	0.48–0.69 ^b	0.07–0.19	(Brouwer and Heibloem, 1986)
Wheat	/	/	0.19 (peak)	(Rogers et al. 2017)
Rice	90–150	0.48–0.75 ^b	0.09–0.18	(Brouwer and Heibloem, 1986)
Rice	/	/	0.11–0.15	(Intaboot, 2017)

Note^a: The water demand of cannabis is calculated based on 22.7 l (6 gallons) of water per day during the growing season and 200 plants per 5,000 sq. ft (HGA, 2010)

Note^b: The water demand of crops is based on crop water need from Table 14 in Brouwer Heibloem (Brouwer and Heibloem, 1986). We convert the unit from mm to million gallon acre⁻¹ according to the rule of unit conversion where 1 acre inch is equivalent to 27,154.29 gallon

to site, depending on many factors such as the geographic characters, soil properties, weather, and cultivation types, it is an agreed-upon truth that cannabis is a high-use water plant. A survey conducted by Wilson et al. (2019) reports the water usage of outdoor cannabis cultivation in California is 5.5 gallons per day per plant (equivalent to $0.22 \text{ gallon ft}^{-2} \text{ day}^{-1}$) in August and 5.1 gallons per day per plant (equivalent to $0.17 \text{ gallon ft}^{-2} \text{ day}^{-1}$) in September (Wilson et al. 2019). The indoor cultivation water consumptions are 2.5 and 2.8 gallons per day per plant in August and September. However, the application rates ($0.18 \text{ gallon ft}^{-2} \text{ day}^{-1}$ in August and $0.22 \text{ gallon ft}^{-2} \text{ day}^{-1}$ in September) are very close to outdoor cultivation (Wilson et al. 2019). In California, irrigated agriculture is regarded as the single largest water consumer, accounting for 70–80% of stored surface water and pumping vast volumes of groundwater (Moyle 2002; Bauer et al. 2015). The great water demand induced by agriculture, amid population growth and climate change, is most likely to exacerbate water scarcity in the foreseeable future (Bauer et al. 2015). Notably, the predicted decrease in water availability downscales in California may adversely affect the value of farmland (Schlenker et al. 2007) and pose a severe challenge to the cannabis industry. As a result, the immense amount of water necessary to keep cannabis plants alive and healthy will continue to burden our environment.

The high water demand presses the need for water sources. Water diversion is a common practice, which removes or transfers the water from one watershed to another to meet irrigation requirements. While the water diversion alleviates the water shortage problem for cannabis cultivation, it also presents new challenges. A study conducted by Bauer et al. quantitatively revealed that surface water diversions for irrigation led to reduced flows and dewatered streams (Bauer et al. 2015). Four northwestern California watersheds were investigated in this study since they are remote, primarily forested, sparsely populated. The results show that the annual seven-day low flow was reduced by up to 23% in the least impacted watersheds of this study, and water demands for cannabis cultivation in three watersheds exceed streamflow during the low-flow period. More recently, Dillis et al. identified well water (58.2%), surface water diversions (21.6%), and spring diversions (16.2%), are the most commonly extracted water source for cannabis cultivation in the North Coast region of California (Dillis et al. 2019). The distributing percentages, however, vary among the counties. For example, the growers in Humboldt County relied more on surface water and spring diversions (57%) than the wells (40.9%), while another study conducted by Wilson et al. showed that groundwater (wells or springs)

was the primary water source for irrigation, followed by municipal water, rainwater, and surface water (Wilson et al. 2019).

Water pollution

Cannabis cultivation, especially illegal cultivation, may deteriorate water quality. Recent studies have suggested the considerable demands of nutrition such as nitrogen (Saloner and Bernstein 2020, 2021), phosphorous (Shiponi and Bernstein 2021), and potassium (Saloner et al. 2019) for cannabis growth. However, there is limited data on the impact of cannabis cultivation on water quality worldwide or even nationwide. Here we focus on a survey conducted by Wilson et al. (2019) for CA, USA. Based on the survey, more than 30 different soil amendments and foliar nutrient sprays were used to maintain nutrition and fertility (Wilson et al. 2019). The applied pesticides (including herbicides, insecticides, fungicides, nematodes, and rodenticides), due to routine pest and disease controls, make their way into the water without restriction and therefore posing significant risks to the water environment (Gabriel et al. 2013). The transport and fate of the applied fertilizers and pesticides vary. For example, nitrogen and pesticides can get into runoff or leach into groundwater due to rainfall or excessive irrigation (Trautmann et al. 2012). If the polluted water continues to be used, it would add contaminants into soil, surface water, and groundwater. These chemicals may threaten humans and crops through the food chain (Pimentel and Edwards 1982). The other major irrigated crops can also be significantly impacted since the placement of crops is subject to the environmental safety of runoff, groundwater contamination, and the poisoning of nearby bodies of water. However, without the ability to sample water quality and assess the extent to which chemical inputs are entering adjacent water bodies, the ability to link cultivation practices to water pollution is greatly limited (Gianotti et al. 2017). Besides, few environmental clean-up and remediation efforts in the polluted watersheds are accessible due to a lack of resources and staff in state or federal agencies.

Water ecosystem

Water diversion and water pollution affect the water ecosystem. The high demand for water due to cannabis cultivation in watersheds affects wildlife such as fish and amphibians in a significant way since cannabis cultivation is widespread within the boundaries of the watersheds, where the downstream water houses populations of sensitive aquatic species. The diminished flows may be notably detrimental to salmonid fishes since they need clean, cold water and suitable flow regimes (Bauer et al. 2015). As the reduced streamflow has a strong positive

correlation with increased water temperature, indirectly resulting in reduced growth rates in salmonids, lowered dissolved oxygen, increased predation risk, and increased susceptibility to disease (Marine and Cech 2004). It has been reported that there are 80%–116% increases in cannabis cultivation sites near high-quality habitats for threatened and endangered salmonid fish species (Butsic et al. 2018). Besides, the threat of water diversions and altered stream flows to amphibians cannot be neglected. The desiccation-intolerant species, such as southern torrent salamander (*Rhyacotriton variegatus*) and coastal tailed frog (*Ascaphus truei*), are vulnerable to headwater stream diversions or dewatering (Bauer et al. 2015). The headwater stream-dwelling amphibians also exhibit high sensitivity to water temperature changes (Bury 2008). It is vital to get all the growers on the same page regarding water resources because flow modification is one of the greatest threats to aquatic biodiversity. The cannabis industry is becoming a major abuser concerning water diversions. Studies show that the second-generation anticoagulant rodenticides (ARs) affect many predators in both rural and urban settings (Gabriel et al. 2013, 2012; Elliott et al. 2014). Necropsy revealed that a male fisher had died of acute AR poisoning in April 2009, most likely due to the source of numerous illegal cannabis cultivation sites currently found on public lands throughout the western USA (Thompson et al. 2014). A study examining the effects of ARs on the Pacific fisher reports that four out of fifty-eight deceased fishers examined were killed by “lethal toxicosis, indicated by AR exposure.”

Outdoor and indoor air quality

Outdoor air quality

Little attention has been devoted so far to study the impact of cannabis cultivation on outdoor air quality. The emission of volatile organic compounds (VOCs) attracts special attention because of the vital role played by VOCs in ozone and particulate matter formation, as well as VOC's health impact (D.R. et al. 2001; Jacob 1999). Amongst the VOCs, the biogenic volatile organic compounds (BVOCs) (Atkinson and Arey 2003), mainly emitted from vegetation, account for approximately 89% of the total atmospheric VOCs (Goldstein and Galbally 2007). Previous studies have identified cannabis plant tissues contain high concentrations of many BVOCs such as monoterpenes (C_6H_{16}), terpenoid compounds (e.g., eucalyptol; $C_{10}H_{18}O$), sesquiterpenes ($C_{15}H_{24}$), and methanol. Hood et al. investigated that the monoterpenes α -pinene, β -pinene, β -myrcene, and d-limonene accounted for over 85% of the detected VOCs emitted, with acetone and methanol contributing a further 10% (Hood et al. 1973; Rice and Koziel 2015; Ross and ElSohly 1996). However, limited systematic studies characterized and accurately

quantified volatile emissions during the growing and budding process (Wang et al. 2019b).

To determine the BVOCs emission rates, Wang et al. employed an enclosure chamber and live Cannabis spp. plants during a 90-day growing period considering four different strains of Cannabis spp. including Critical Mass, Lemon Wheel, Elephant Purple, and Rockstar Kush (Wang et al. 2019b). They found the percentages of individual BVOCs emissions were dominated by β -myrcene (18–60%), eucalyptol (17–38%), and d-limonene (3–10%) for all strains during peak growth (Table 2). The terpene emission capacity was determined, ranging from 4.9 to 8.7 $\mu\text{g-C}$ per g dry biomass per hour. The estimation with $\mu\text{g-C}$ per g dry biomass per hour for Denver would result in more than double the existing rate of BVOCs emissions to 520 metric ton year⁻¹, leading to 2100 metric ton year⁻¹ of ozone, and 131 metric ton year⁻¹ of PM (particulate matter). However, a high emission can be expected since the better growing conditions contribute to rapid growth and higher biomass yields.

A recent study conducted by Wang et al. was the first attempt at developing an emission inventory for cannabis (Wang et al., 2019a). This study compiled a bottom-up emission inventory of BVOCs from cannabis cultivation facilities (CCFs) in Colorado using the best available information. Scenarios analysis shows that the highest emissions of terpenes occur in Denver County, with rates ranging from 36 to 362 t year⁻¹, contributing to more than half of the emissions across Colorado. With the emission inventory, the air quality simulations using the Comprehensive Air Quality Model with extensions (CAMx) show that increments in terpene concentrations could result in an increase of up to 0.34 ppb in hourly

Table 2 Composition of BVOCs

BVOCs	30-day (%)	46-day (%)
β -myrcene	26.6–42.6	18.3–59.4
Eucalyptol	18.5–32.8	16.8–37.6
d-limonene	4.4–17.2	3.0–10.0
p-cymene	2.3–12.8	0.6–4.6
γ -terpinene	2.0–9.7	2.8–14.0
β -pinene	0.4–6.9	1.3–3.5
(Z)- β -ocimene	1.3–5.9	0.0
Sabinene	0.0–5.0	0.2–10.9
Camphene	0.0–4.4	0.0–1.0
α -pinene	0.8–4.3	2.7–3.6
Thujene	0.9–3.1	1.2–3.4
α -terpinene	0.0–2.0	0.5–5.4

Note: BVOCs biogenic volatile organic compounds

Data adapted from Wang, C. T., Wiedinmyer, C., Ashworth, K., Harley, P. C., Ortega, J., Vizuete, W. (2019b). Leaf enclosure measurements for determining volatile organic compound emission capacity from Cannabis spp. *Atmos. Environ.*, 199, 80–87. (Wang et al., 2019b)

ozone concentrations during the morning and 0.67 ppb at night. Given that Denver county is currently classified as “moderate” non-attainment of the ozone standard (USEPA 2020), the air quality control of the CCF operation is essential.

In addition to BVOC emissions, like every crop cultivation in water-sensitive zones, the fertilization of cannabis causes deterioration in air quality. As fertilization is one of the most critical factors for cannabis cultivation, the introduction of excessive nitrogen into the environment without regulation can lead to adverse multi-scale impacts (Balasubramanian et al. 2017; Galloway et al. 2003). Ammonia in the chemical nitrogen fertilizer volatilized from cropland to the atmosphere forms PM via the reaction with acidic compounds in the atmosphere. Besides, the wet and dry deposition of reactive nitrogen consisting of ammonia continuously deteriorates the ecological environment. Both soil acidification and water eutrophication risks could significantly increase because of the nitrogen cascade (Galloway et al. 2003; Galloway et al. 2008).

Indoor air quality

Although cannabis can be grown outdoors in many regions of the world, sizeable commercial cultivation can also occur indoors or in greenhouses. Ambient measurements collected inside growing operations pre-legalization have found concentrations as high as 50–100 ppbv of terpenes including α -pinene, β -pinene, β -myrcene, and d-limonene for fewer than 100 plants in the cannabis cultivation facility (Martyny et al. 2013; Atkinson and Arey 2003; Wang et al. 2019a). The study conducted by Spokane Regional Clean Air Agency (SRCAA) measured indoor VOCs in seven flowering rooms and two dry bud rooms across four different CCFs, reporting the average terpene concentration was 361 ppb (27–1676 ppb) (Southwellb et al. 2017).

Samburova et al. analyzed the BVOCs emissions from four indoor-growing Cannabis facilities in California and Nevada (Samburova et al. 2019). They reported the indoor concentrations of measured BVOCs could

vary among the facilities, ranging from 112 $\mu\text{g m}^{-3}$ to 5502 $\mu\text{g m}^{-3}$ (Table 3), for a total measured BVOCs of 744 $\text{mg day}^{-1} \text{plant}^{-1}$. The BVOCs characterization partially agrees with the measurements shown by Wang et al. where β -myrcene is one of the dominated BVOCs emitted by Cannabis, but eucalyptol was not a dominating terpene in this study (Wang et al. 2019b). The obtained emission rates ranged between 0 to 518.25 $\text{mg day}^{-1} \text{plant}^{-1}$. The largest emission contributors were β -pinene (518.25 $\text{mg day}^{-1} \text{plant}^{-1}$, 70% of the total BVOCs) α -pinene (142.92 $\text{mg day}^{-1} \text{plant}^{-1}$, 19% of the total BVOCs), and D-limonene (30.86 $\text{mg day}^{-1} \text{plant}^{-1}$, 4% of the total BVOCs). Silvey (2019) characterized the overall VOC total terpene mass concentration using sorbent tube sampling and found a higher range between 1.5 mg m^{-3} (office) to 34 mg m^{-3} (trimming room) (Silvey 2019).

The indoor cannabis (marijuana) grows operations (known as “IMGO”) also pose a risk of potential health hazards such as mold exposure, pesticide, and chemical exposure (Martyny et al. 2013). For example, cannabis cultivations typically require a temperature between 21 and 32 °C, with a relative humidity between 50 and 70% (Koch et al. 2010), while the ventilation rate is often suppressed to limit odor emanating, especially for the illegal cultivation. John and Miller suggested that the houses built after 1980 in Canada are at high risk of moisture-related damage if used as IMGO, and increased moisture levels of the IMGO are associated with elevated mold spore levels (Johnson and Miller 2012). The reports by IOM (IOM 2004) and WHO (World Health Organization) showed that the presence of mold in damp indoor environments is correlated with upper respiratory tract symptoms, respiratory infections, wheeze, cough, current asthma, asthma symptoms in sensitized individuals, hypersensitivity pneumonitis, and dyspnea (WHO 2009). Cuypers et al. conducted a study in Europe, showing that pesticide use in Belgian indoor cannabis cultivation is a common practice, putting both the growers and intervention staff at considerable risk (Cuypers et al. 2017). They

Table 3 Indoor BVOCs concentrations

BVOCs	Sites	Unit in ppbv	Unit in $\mu\text{g m}^{-3}$	Ref
α -pinene, β -myrcene, β -pinene, and limonene	Growing room	50–100	n.a	(Martyny et al., 2013; Wang et al., 2019a)
Terpenes	Flowering room	30–1600	n.a	(Southwellb et al., 2017; Wang et al., 2019a)
Total BVOCs	Growing room	n.a	112–5502	(Samburova et al., 2019)
Total BVOCs	Curing room	n.a	863–1055	(Cuypers et al., 2017)
Total BVOCs	Purging room	n.a	1005	(Trautmann et al., 2012)

BVOCs Biogenic volatile organic compounds

found 19 pesticides in 64.3% of 72 cannabis plant samples and 65.2% of 46 carbon filter cloth samples, including o-phenylphenol, bifenazate, and cypermethrin.

Energy demands and carbon footprint

Indoor cultivation energy demands and impacts

As one of the most energy-intensive industries in the USA (Warren 2015), cannabis cultivation results in up to \$6B in energy costs annually, accounting for at least 1% of the nation's electricity (Mills 2012). The cannabis electricity consumption increases to 3% in California (Warren 2015). In Denver, the average electricity use from cannabis cultivation and associated infused product manufacturing increased by 36% annually between 2012 and 2016 (DPHE 2018). As cannabis becomes legalized throughout the country, energy consumption will continue to grow in the foreseeable future.

The energy use of indoor cannabis cultivation arises from a range of equipment, falling into two major categories: lighting and precise microclimate control. For the cannabis plants to thrive and therefore make the growers a profit, several energy-intensive tools are regularly utilized. The energy demand for indoor cannabis cultivation was reported to be 6074 kWh kg-yield⁻¹ (Mills 2012). Figure 1 shows the end-use electricity consumption according to a study performed by the Northwest Power and Conservation Council (NPCC 2014). Amongst them, lighting, HVAC (heating, ventilation, and air conditioning), and dehumidification account for 89% of the total end-use electricity consumption.

High-intensity lighting is the main contributor to electricity for indoor production facilities. Sweet pointed out that lighting alone can account for up to 86% of the total electricity usage (Sweet 2016). It has been reported that the intensity of the indoor cannabis lamps (25 klux for leaf phase, and 100 klux for flowering (Mills 2012)) approximates that of hospital operating room lamps, which is up to 500 times greater than a standard reading

light (Warren 2015). Indoor cultivation facilities typically utilize a combination of high-pressure sodium (HPS), ceramic metal halide (CMH), fluorescent, and/or light-emitting diode (LED) lamps. In addition to the lamp type, lighting system design is also critical to maximizing energy efficiency in the cultivation facilities, and time of use also plays a crucial role.

HVAC Dehumidification system ensures frequent air exchanges, ventilation, temperature, and humidity control day and night. This system can account for more than half of the total energy consumption in an indoor cultivation facility (Mills 2012). Besides, water and energy are inextricably linked, given water and wastewater utilities contribute to 5% of overall USA electricity consumption (Pimentel and Edwards 1982). The grow systems (including automation and sensors), irrigation (including fertigation and pumps), and CO₂ injection also consume an amount of electricity.

Energy production, especially fossil fuel use, is accountable for the environmental impact. Table 4 shows that coal and natural gas make up almost three-quarters of the power supply for Colorado customers in the USA. Considering the environmental impacts of different energy sources, the extensive usages of fossil fuels (coal, natural gas, and oil) causes serious environmental damage and

Table 4 Power supply mix for Colorado customers

Energy sources	Total generation mix (%)
Coal	44
Natural gas	28
Wind	23
Solar	3
Hydroelectric	2
Others (including biomass, oil and nuclear generation)	0

Data adapted from Dever Public Health Environment. 2018. Cannabis Environmental Best Management Practices Guide. (DPHE, 2018)

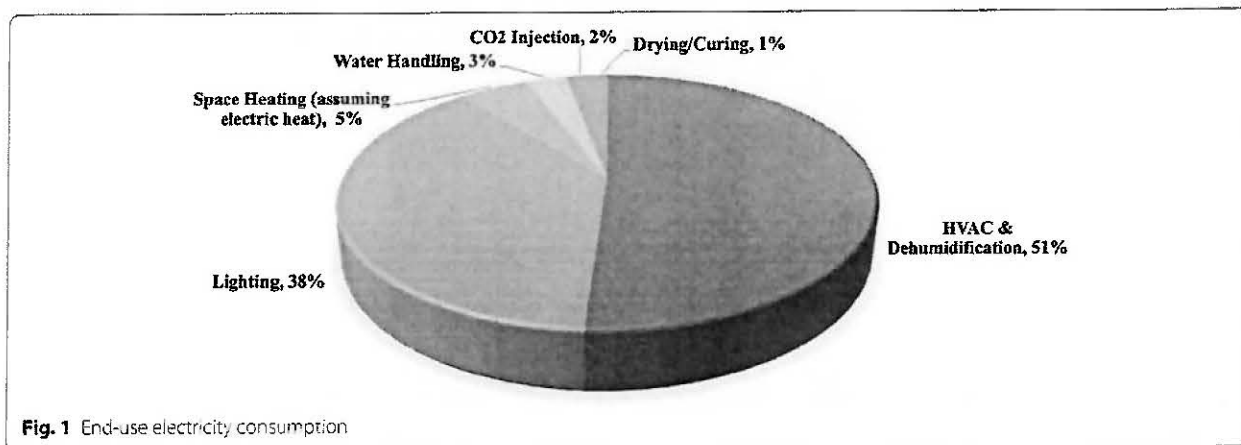


Fig. 1 End-use electricity consumption

pose effects on (1) humans, (2) animals, (3) farm produce, plants, and forests, (4) aquatic ecosystems, and (5) buildings and structures (Barbir et al. 1990).

Carbon footprint

The term *carbon footprint* refers to “a measure of the exclusive total amount of carbon dioxide emissions that is directly and indirectly caused by an activity or is accumulated over the life stages of a product” (Wiedmann and Minx 2008). In the context of cannabis cultivation, a carbon footprint can be defined as the total amount of greenhouse gases (GHGs) emitted during the production of cannabis. Denver Department of Public Health Environment broke the GHG inventory down into the three primary scopes: (1) an organization’s direct GHG emissions produced on-site; (2) an organization’s off-site carbon emissions, or indirect emissions; (3) all other indirect carbon emissions associated with the operation of a business (DPHE 2018). However, a relatively small body of literature pays particular attention to the carbon footprint calculation. Mills estimates that producing one kilogram of processed cannabis indoors leads to 4600 kg of CO₂ emissions to the atmosphere, equivalent to one passenger vehicle driven for one year or 11,414 miles driven by an average passenger vehicle (Mills 2012). Amongst them, the emissions factor (kg CO₂ emissions per kg yield) of lighting is 1520 (33%), followed by ventilation and dehumidify (1231, 27%), and air conditioning (855, 19%). On the other hand, outdoor cultivation can alleviate the energy use for lighting and precise microclimate control but requires other facilities and techniques such as water pumping. Carbon footprint analysis is the first step towards the carbon reduction strategies, which contributes to the reduction of the environmental impacts of the cannabis industry. Future studies are foreseen to improve the understanding of the carbon footprint of cannabis cultivation both indoors and outdoors.

Soil erosion and pollution

Soil erosion

Soil erosion is a natural process that occurs when there is a loss or removal of the top layer of soil due to rain, wind, deforestation, or any other human activities. It increases fine-sediment loading into streams and threatens rare and endangered species (Carah et al. 2015). Soil erosion can happen slowly due to wind or quickly due to the heavy rainfall event. Land terracing, road construction, and forest clearing make their ways to remove native vegetation and to induce soil erosion (Carah et al. 2015). Barringer (Barringer 2013) and O’Hare et al. suggested that cannabis cultivation directly contributes to soil erosion (O’Hare et al. 2013). The slope is a useful proxy for erosion potential since soil on steep slopes tends to erosion

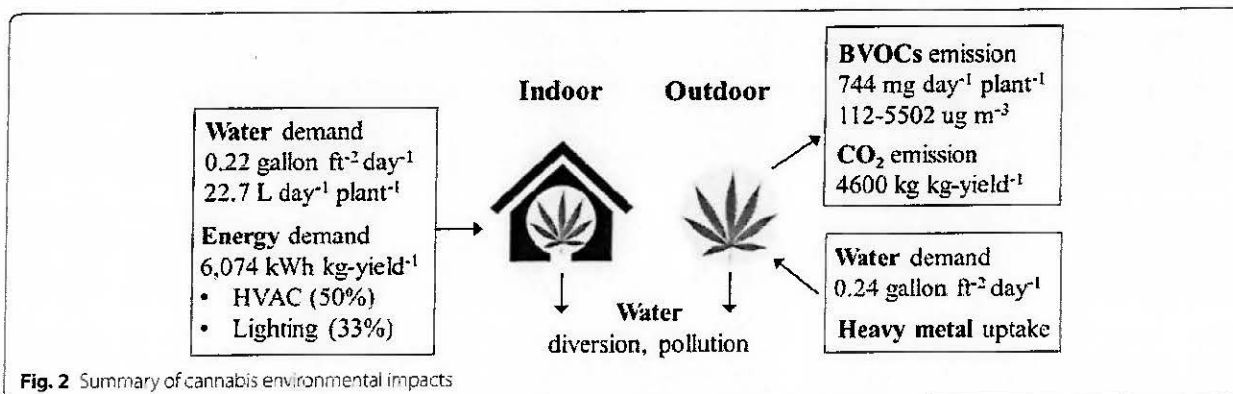
when cleared or cultivated (Butsic et al. 2018). Butsic and Brenner conducted a systematic, spatially explicit survey for the Humboldt County, California, involving digitizing 4,428 grow sites in 60 watersheds (Butsic and Brenner 2016). About 22% of the clustered cannabis on steep slopes indicates a risk of erosion. Many studies also suggest that cannabis cultivation can result in deforestation and forest fragmentation (Wang et al. 2017), which exacerbate soil erosion. Though greenhouse prevents soil erosion, they are surrounded by large clearings accumulated during construction with exposed soils subject to erosion (Bauer et al. 2015).

Phytoremediation potential

Cannabis has gradually garnered attention as a “bioremediation crop” because of its strong ability to absorbing and storing heavy metals (McPartland and McKernan 2017). It can remove heavy metal substances from substrate soils and keep these in its tissues by means of its bio-accumulative capacity (Dryburgh et al. 2018). Usually, it takes up high levels of heavy metals from the soil or growing medium via its roots and potentially deposits into its flowers (Seltenrich 2019). Tainted fertilizer uptake from the soil is often a source of heavy metals contamination such as arsenic, cadmium, lead, and mercury. Singani and Ahmadi reported that *Cannabis sativa* could absorb lead and cadmium from soils amended with contaminated cow and poultry manures (Singani and Ahmadi 2012). Though limited studies discussed the effectiveness of cannabis for heavy metals removal, many studies have addressed the uptake of heavy metals by industrial hemp (Campbell et al. 2002; Linger et al. 2002). It indicates that the cannabis plant is qualified as a phytoremediation of contaminated soils.

Conclusions and envisions

A summary of the environmental impacts of cannabis cultivation is shown in Fig. 2. Water demand and usage will continue to be a major concern. Illegal cannabis cultivation and improper operation may raise water pollution issues. Studies on cannabis’ physiological properties will guide to determine water demand. Besides, identifying and applying best management practices, such as precision irrigation and enhanced climate control, will be critical to minimize the environmental impacts on water. Energy consumptions mainly come from the equipment operation of the indoor cultivations such as lighting, HVAC, and dehumidification. Carbon footprint can be calculated both indoors and outdoors based on energy consumption. Quantitatively accounting for the energy assumption across operations at scales is the key to better estimating the carbon footprint. Techniques such as life cycle energy



assessment and life cycle carbon emissions assessment would offer informative guidance to reduce the environmental impacts. Few studies have focused on the impacts of cannabis cultivation on air quality. Evidence has emerged that BVOCs and fertilization may contribute to outdoor air quality issues. Indoor air pollutants, i.e., BVOCs emission, mold, pesticide, and chemicals pose a risk of health hazards. Field or chamber studies on determining the species and emission rate of BVOCs, trace gases, and particles from the plant, plant detritus, and soils are important. Much work will be needed to include this information in the emission inventory for air quality modeling. Investigation concerning the contribution of those species to regional, even global air quality, is useful for policymakers and the public. Besides, a better understanding of indoor pollutant concentration and emission ensures the safety of indoor operation. The environmental impact of cannabis cultivation on soil quality has two sides, and it needs to be treated dialectically. On one side, cannabis cultivation directly contributes to soil erosion. On the other side, cannabis has a strong ability to absorb and store heavy metals in the soil. Further studies on the soil mechanics and dynamics of heavy metals in plant-soil interactions are needed.

Abbreviations

ARs: Anticoagulant rodenticides; BVOCs: Biogenic volatile organic compounds; CAMx: Comprehensive Air Quality Model with extensions; CBD: Cannabidiol; CCFs: Cannabis cultivation facility; CMH: Ceramic metal halide; CSA: Controlled Substances Act; GHGs: Greenhouse gases; HPS: High-pressure sodium; HVAC: Heating, ventilation, and air conditioning; IMGO: Indoor Marijuana Grows Operations; LED: Light-emitting diode; NIH: National Institutes of Health; OSHA: Occupational Safety and Health Administration; PM: Particulate matter; SRCAA: Spokane Regional Clean Air Agency; THC: Tetrahydrocannabinols; USDA: Department of Agriculture; VOCs: Volatile organic compounds; WHO: World Health Organization.

Acknowledgements

The authors would like to thank Illinois State University for supporting this project.

Authors' contributions

Dr. Zheng worked on sections including outdoor and indoor air quality, energy demand and carbon footprint, and soil erosion. Miss Fiddes worked on water demand and pollution. Dr. Yang supervised Dr. Zheng and Miss Fiddes in completing this project. The author(s) read and approved the final manuscript.

Funding

Not applicable.

Availability of data and materials

All data generated or analyzed during this study are included in this published article.

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests

Not applicable.

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Received: 16 April 2021 Accepted: 9 July 2021

Published online: 06 August 2021

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Dear Board of Supervisors,

I am writing to express my strong opposition to the proposed commercial cannabis grows in Wine Country. As a resident and advocate for sustainable agriculture and community well-being, I believe that the proliferation of commercial cannabis grows in this area poses a significant threat to the environment, public health, and local economy.

Cannabis cultivation requires a significant amount of water, energy, and other resources, which can strain our already limited resources. Additionally, the use of pesticides, herbicides, and other chemicals in cannabis cultivation can have negative impacts on the environment and public health. The odor from cannabis grows can also be a nuisance to nearby residents, affecting their quality of life and property values.

Furthermore, the proposed commercial cannabis grows could have a negative impact on the local economy, particularly in the wine industry. Many wineries in the area rely on the unique character of Wine Country to attract tourists and generate revenue. The introduction of commercial cannabis grows could change the character of the area and negatively impact those who rely on the wine industry for their livelihood.

I urge the Board of Supervisors to carefully consider these concerns and take a stand against the proposed commercial cannabis grows in Wine Country. I believe that there are better alternatives to generating revenue and promoting economic growth that are in line with the values of the community.

Thank you for your time and consideration.

Sincerely,

Iman Kahwaji
2700 Omo Ranch RD.
Somerset, CA 95684

Reference case - **CCUP21-002/Harde and CCUP-A24-0001/Appeal**

From: Cindy Dronberger <DronbergerC@tntfireworks.com>
Sent: Tuesday, March 5, 2024 9:50 AM
To: BOS-Clerk of the Board
Subject: Opposition to Commercial Cannabis in Wine Country CCUP21-002/Harde and CCUP-A24-0001/Appeal

Importance: High

FYI, public comment #19, 24-0275.

To: BOS-Clerk of the Board <edc.cob@edcgov.us>

Subject: Opposition to Commercial Cannabis in Wine Country **CCUP21-002/Harde and CCUP-A24-0001/Appeal**

Please use this memo as my formal expression of my opposition to the above referenced subject. Tuesday, March 5th at 9:44 am. Please add this as a late submission. Cynthia Miller 7261 Fairplay Road, Fair Play, CA 95684

Dear Board of Supervisors,

I am writing to express my strong opposition to the proposed commercial cannabis grows in Wine Country. As a resident and advocate for sustainable agriculture and community well-being, I believe that the proliferation of commercial cannabis grows in this area poses a significant threat to the environment, public health, and local economy.

Cannabis cultivation requires a significant amount of water, energy, and other resources, which can strain our already limited resources. Additionally, the use of pesticides, herbicides, and other chemicals in cannabis cultivation can have negative impacts on the environment and public health. The odor from cannabis grows can also be a nuisance to nearby residents, affecting their quality of life and property values.

Furthermore, the proposed commercial cannabis grows could have a negative impact on the local economy, particularly in the wine industry. Many wineries in the area rely on the unique character of Wine Country to attract tourists and generate revenue. The introduction of commercial cannabis grows could change the character of the area and negatively impact those who rely on the wine industry for their livelihood.

I urge the Board of Supervisors to carefully consider these concerns and take a stand against the proposed commercial cannabis grows in Wine Country. I believe that there are better alternatives to generating revenue and promoting economic growth that are in line with the values of the community.

Thank you for your time and consideration.

Sincerely,

Cynthia Miller
7261 FairPlay Road
Somerset, CA 95684

Petition Opposing Commercial Cannabis Cultivation License on Perry Creek Road and Surrounding Areas

To the El Dorado Planning and Building Department and El Dorado County Board of Supervisors:

We, the undersigned residents of Somerset and Surrounding Areas, are writing to express our strong opposition to the proposed commercial cannabis cultivation licenses in the Somerset community. We believe these developments present significant threats to the safety, character, and well-being of our community and urge you to deny the permit applications.

Concerns regarding social impact:

- **Public Park and School Bus Stops:** We are deeply concerned that at least one of the proposed cannabis cultivation farms is near a public park. Children and adults use the park's playground, disc golf course, horse arena, and athletic facilities daily. School bus stops, where children the ages of Kindergarten through high school wait for their bus throughout the school year, are near some of the proposed cannabis farms.
- **Increased crime and safety risks:** We are deeply concerned that the presence of a large-scale cannabis farm will attract unauthorized visitors, leading to increased theft, trespass, and potential drug trafficking activity. This poses a direct threat to the peaceful and secure environment we have enjoyed in Somerset and the surrounding areas.
- **Disruption of community character:** Our community values its tranquility, strong family values, and traditional way of life. We fear that these developments will alter this character, drawing unwanted attention and potentially attracting individuals outside our close-knit community.
- **Nuisance issues:** The farms' operations could result in a variety of nuisances, including noise from processing equipment, light pollution that disrupts the night sky, unpleasant odors, and increased traffic flow on our rural roads. These factors would significantly impact the quality of life for residents.

Concerns regarding economic impact:

- **Potential decrease in property values:** We are concerned that the presence of commercial cannabis cultivation farms could have a negative impact on property values in our community. This would be detrimental to residents, especially those invested in agriculture or tourism.
- **Excessive water usage:** Our region faces water scarcity challenges. The farms' high water demand could deplete vital resources, affecting both our community's access and the natural environment.

- **Unfair competition for resources:** We believe the farms could unfairly compete for limited resources, such as skilled labor or infrastructure, that are currently essential for existing businesses and residents.

Concerns regarding environmental impact:

- **Pesticide and herbicide use:** The potential use of pesticides and herbicides on the farms pose a significant risk to our local ecosystem, potentially harming wildlife and contaminating water sources.
- **Light pollution:** Excessive artificial lighting at the farms would disrupt nocturnal animals and impact the night sky, a cherished aspect of our rural environment.
- **Waste disposal concerns:** We are concerned about the proper disposal of waste generated by the farms, including plant trimmings and chemical containers. Improper disposal could lead to environmental contamination and health risks.

Additional concerns:

- **The difference in obtaining a Beer/ Wine or Liquor License:** Our community at-large is currently unaware of entities seeking permits to have industrial size cannabis grows in their neighborhoods. Unlike Liquor Licenses applicants who are mandated to publicly post their intentions well in advance, these Cannabis applications are being processed without the same requirements, denying directly affected people the same access to information.
- **Lack of trust in regulations:** We have concerns about the effectiveness of regulations governing cannabis farms. We fear inadequate enforcement or loopholes could lead to negative consequences for our community.
- **Moral objections:** Many residents hold personal or religious objections to cannabis use, regardless of its legal status. We believe they have the right to live in a community that aligns with their values.

Therefore, we implore you to consider the concerns outlined above and deny the permit application for the proposed commercial cannabis farms. We believe these developments are incompatible with the values and needs of our community and pose a significant threat to our way of life. We urge you to prioritize the safety, character, and well-being of Somerset and surrounding areas and reject this proposal.

Sincerely,

The undersigned residents of Somerset and Surrounding Areas


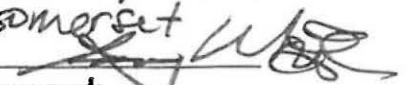
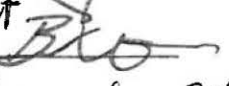



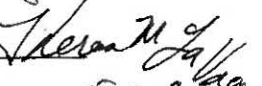
Notice: There are 12 approved (not just 2). Harde's project is "Processing".

	PROJECT_NUMBER	PROJECT_NAME	SITE_APN	SITE_ADDR	STATUS
1	CCUP-A23-0001	Green Gables Growers, Latrobe School District Appeal	087021057	8914 SOUTH SHINGLE RD	APPROVED
2	CCUP19-0001	Foothill Health and Wellness Cannabis Retail Storefront	109420018	3830 DIVIDEND DR UNIT	APPROVED
3	CCUP19-0002	Pure Life Commercial Cannabis Retail Storefront	054391018	535 PLEASANT VALLEY RD 1	APPROVED
4	CCUP19-0003	Kana Commercial Cannabis Retail Storefront	109040071	4020 DUROCK RD	APPROVED
5	CCUP19-0004	3830 DIVIDEND DR _ Distribution	109420018	3830 DIVIDEND DR UNIT	APPROVED
6	CCUP19-0005	3031 ALHAMBRA DR Commercial Cannabis Retail Storefront	083420002	3031 ALHAMBRA DR	APPROVED
7	CCUP19-0006	All Natural Inc.	090440023	4151 SOUTH SHINGLE RD	APPROVED
8	CCUP19-0008	2140 US HIGHWAY 50 retail/ delivery	033050023	2140 US HWY 50	APPROVED
9	CCUP20-0001	Cybele Holdings Commercial Cannabis Cultivation	048071011	3029 FRESHWATER LN	APPROVED
10	CCUP20-0005	Arabian Commercial Cannabis Cultivation	041910008	5445 HAWKEYE RD	APPROVED
11	CCUP21-0001	EMBARC Commercial Cannabis Retail Storefront and Delivery	034671005	3008 US HWY 50	APPROVED
12	CCUP21-0005	Norcanna Commercial Cannabis Distribution and Delivery	117071007	5070 ROBERT J MATHEWS PKY	APPROVED
13	CCUP20-0004	Green Gables Growers Commercial Cannabis Cultivation	087021057	6914 SOUTH SHINGLE RD	DENIED
14	CCUP20-0002	Green Valley Farm Commercial Cannabis Cultivation	104520008		ON HOLD
15	CCUP19-0007	3901 PARK DR BLDG A Retail/ Delivery	121170009	3901 PARK DR A	PROCESSING
16	CCUP20-0003	Klitzer/Somerset Ridge Commercial Cannabis Cultivation	041900003	5840 STEPHANIE CT	PROCESSING
17	CCUP21-0002	Harde Commercial Cannabis Cultivation	093032071	6540 PERRY CREEK RD	PROCESSING
18	CCUP21-0004	Single Source Solutions Commercial Cannabis Cultivation	046710017	4941 D AGOSTINI DR	PROCESSING
19	CCUP21-0006	Gomez/Wilkerson Commercial Cannabis Cultivation	046460031	1820 COUNTRY LN	PROCESSING
20	CCUP21-0007	Rosewood Commercial Cannabis Cultivation	095130051	3331 ROSEWOOD LN	PROCESSING
21	CCUP21-0008	Archon Commercial Cannabis Cultivation	095030036		PROCESSING
22	CCUP22-0001	BH&K Commercial Cannabis Cultivation	094090010	8260 FAIRPLAY RD	PROCESSING
23	CCUP22-0002	Hidden Ranch Commercial Cannabis Cultivation	048061037	2145 HIDDEN RANCH RD	PROCESSING
24	CCUP22-0003	Landrace Commercial Cannabis Cultivation	088021043	5700 HACKOMILLER RD	PROCESSING
25	CCUP-A23-0002	Sun Ridge Meadows Green Gables Appeal	087021057	8914 SOUTH SHINGLE RD	SUBMITTED
26	CCUP21-0003	Ladybug Row Commercial Cannabis Cultivation	061780011	2130 BOTTLE HILL RD	WITHDRAWN

Signature Page For Petition of Somerset Cannabis License Denial

- | Name: | Address | Signature |
|---------------------|-----------------------------------|-------------|
| 1. Cory Jordan | 7060 Grizzly Flats Rd | [Signature] |
| 2. Darrell Starr | 7131 Grizzly Flats Rd. Somerset | [Signature] |
| 3. Sunny Hammond | 7663 Grizzly Flats Rd | [Signature] |
| 4. Dan Hammond | 7663 Grizzly Flats Rd Somerset | [Signature] |
| 5. Amy Lipp | 7090 Winding Way Grizzly Flats CA | [Signature] |
| 6. Stan Rouppet | 7301 Grizzly Fl. Rd. Somerset | [Signature] |
| 7. Sam Matheson | 7271 Grizzly Flats Rd Somerset | [Signature] |
| 8. Christa Manetti | 7271 Grizzly Flats Rd Somerset | [Signature] |
| 9. Larry Linn | 4070 Kingswood Trl Pollock Pines | [Signature] |
| 10. [Signature] | 2197 Myrick Rd Somerset CA | [Signature] |
| 11. Karen Holt | 5901 Eagle Hill Rd Somerset CA | [Signature] |
| 12. Chad Wilcox | 2569 Prado Vista P.V. Cal. | [Signature] |
| 13. Theresa Heel | 5901 Eagle Hill Rd | [Signature] |
| 14. Joe Ben | 5305 Blue Mt Drive Grizzly. | [Signature] |
| 15. Tyler | 2015 Brentwood Ct, SS | [Signature] |
| 16. Matt Yankovic | 486 Canal St. | [Signature] |
| 17. Tom O'Fall | V-ville | [Signature] |
| 18. Megan Crisp | Somerset | [Signature] |
| 19. Row Baldwin | Somerset | [Signature] |
| 20. Brittany Leane | Grizzly Flat | [Signature] |
| 21. Kristopher Reed | Grizzly Flat | [Signature] |

Signature Page For Petition of Somerset Cannabis License Denial

- | Name: | Address | Signature |
|-----------------------|----------------------------------------------|---------------------------------------------------------------------------------------|
| 1. BRE Haberty | P.O. Box 313 Grizzly Flats |  |
| 2. Steve Luce | 5866 Bucks Bar Rd Placerville | |
| 3. Stacey Whitton | 4500 Mystic Mine rd. Somerset |  |
| 4. Blair Dixon | 4500 Mystic Mine rd. Somerset |  |
| 5. Michael Morreale | 6625 Perry Creek Rd Mt. Merreale 2/1/24 | |
| 6. Susan L. Vesper | 3021 Squirrel Hill, Mt. Auburn | |
| 7. Margaret Cathie | people.cathie@gmail.com - Somerset | |
| 8. JUSTEN HEDS | PO Box 152, Somerset | |
| 9. Jonathan Russell | 7251 Perry Creek Rd. |  |
| 10. Jan Edminster | 6935 Perry Creek Rd. Somerset |  |
| 11. Lisa Hein | 6220 Hawk Haven Ln, Somerset 95684 | |
| 12. Shepstein | | |
| 13. Judy Westfall | PO Box 351 Somerset 95619 | |
| 14. Rachel Heath | 4612 Ringold Rd Diamond Springs, CA | |
| 15. Summer Reid | 4035 Fern Rd. Placerville CA 95667 | |
| 16. Kinessa Densmore | 5241 Hidden Hollow Dr., Placerville CA 95665 | |
| 17. Rebecca Trammell | PO Box 1341 Angels Camp CA 95222 | |
| 18. Jim Thompson | P.O. Box 86 Somerset, CA 95684 |  |
| 19. Theresa M. LaVoie | P.O. Box 800 Somerset, CA 95684 |  |
| 20. PATRICK A PUNCH | 6051 LT. MTN RD. SOMERSET, CA 95684 P.A.P. | |
| 21. Annette GREENOUGH | POB 846 Mt Auburn, CA 95656 | |

Signature Page For Petition of Somerset Cannabis License Denial

Name:	Address	Signature
1. Joy Vierra	6130 VICTINGDALE RD Somerset Ct	Joy Vierra
2. RANDY ROSSI	7505 GRIZZLY FLAT RD	Randy Rossi
3. DAN DWYER	8481 GRIZZLY FLAT RD	Dan Dwyer
4. Janet Telfer	3032 Little Spur Rd	Janet Telfer
5. Scott Telfer	3032 Little Spur Rd	Scott Telfer
6. Eileen Perkins	2121 Shadow Rock Rd.	Eileen Perkins
7. Nick Schuch	3380 Stage Rr	Nick Schuch
8. Katie Curtin	3457 La Cienega Way	Katie Curtin
9. Mikayla Wentworth	1574 Shangri-la Ct.	Mikayla Wentworth
10. Charmaine Scott	4261 Nanas Ln Placerville 95667	Charmaine Scott
11. Natasha Rafferty	22550 Latrobe Rd., Plymouth CA 95669 N. Ridge	Natasha Rafferty
12. Shari Deville	2881 Sierra Vista Rd, Rescue, CA 95672	Shari Deville
13. Jennifer Carcia	14114 14th Placerville CA 95662	Jennifer Carcia
14. Karen Haena	119 winterstein dr Folsom ca 95630	Karen Haena
15. Ramey Reynolds	3342 Hacienda Rd. Cameron Park CA 95682	Ramey Reynolds
16. Laura Cantrell	3840 market Ct. Shinglet Springs CA 95682	Laura Cantrell
17. Lynne Chapman	2120 Shadow Rock Rd Somerset CA 95684	Lynne Chapman
18. Kevin Chapman	2120 Shadow Rock Rd Somerset Ct 95684	Kevin Chapman
19. RONALD JONES	2500 Mockingbird Ln. CAMINO, CA 95709	Ronald Jones
20. Dawn Jones	2500 Mockingbird Ln. CAMINO, CA 95709	Dawn Jones
21. Jan Stinson	2514 Mockingbird Ln. Camino, CA 95709	Jan Stinson

Signature Page For Petition of Somerset Cannabis License Denial

Name:	Address	Signature
1. Renee Romanko	10150 Sweeney rd.	Renee Romanko
2. Stacie Cross	3220 Boondock trl.	[Signature]
3. Cory Oden	10115 Grizzly Flats	[Signature]
4. Clarice Delatta	5327 Grizzly Flats	Clarice Delatta
5. Kocula Ghanke		
6. KARENA SKINNER	7373 Slug Gulch 5176 Pineside st	[Signature]
7. T Bishop		[Signature]
8. Sarah Hoel	5901 Eagle Hill Rd	
9. Kaita Hensley	5084 Rollingwood	[Signature]
10. DON SNYDER	5084 ROLLINGWOOD DR	[Signature]
11. Henry Schwartz	4800 OLD FOX RD.	[Signature]
12. Jonathan Knapp	21441 Lakeside Rd	[Signature]
13. Alex Posther	4091 Lakeside rd	[Signature]
14. Blaine Clayson	4441 Lakeside Dr	[Signature]
15. B WHITTINGTON	2410 PERRY CREEK	[Signature]
16. Steven Gruber	4955 creekside drive	
17. Matt	9568A OUTING PLACE	
18. Mike Williams	19012 NIMOS WAY	Mike Williams
19. Ross DeCatur	1008 EMINENCE AVE	[Signature]
20. Stephen Seiber	5625 Back Bay R	
21. ROBERT SANCHEZ	684 COLD SPRINGS RD	[Signature]

Signature Page For Petition of Somerset Cannabis License Denial

Name:	Address	Signature
1. Kelly Heskett	7238 Grizzly	Kelly Heskett
2. Jillian Starckfield	6120 Freedom Ct	Jillian Starckfield
3. Nick Wilson	6221 Antler Fork Rd	Nick Wilson
4. Megan McCall	7390 Old Schoolhouse Rd.	Megan McCall
5. Harley Thomas	4971 Mount Pleasant DR	Harley Thomas
6. Stacy Hurley	1000 Miraciel Way Somerset	Stacy Hurley
7. Susus Villanueva	4994 Meadow Glen Dr 95636	
8. Kim Courtney	5015 Old nail GRIZZY 95636	
9. Chris Odell	3061 Sand Ridge Puille 95667	
10. Joey Meyers	" "	Joey Meyers
11. Christen Williams	" "	Christen Williams
12. KYLE HAUSAM	6090 GRIZZLY	Kyle Hausam
13. Mike Ottich	58	Mike Ottich
14. MATTHEW WHITMAN	7900 BOUNDACK TR	Matthew Whitman
15. Jon Bnl	2055 S. RAINBOW LN	Jon Bnl
16. Travis Alvord	7761 Grizzly Flats	Travis Alvord
17. Travis Baskins	6013 Foxtail Rd	Travis Baskins
18. Muffat	4829 Creekside Dr GF 95636	Muffat
19. Betsy Puseoth	8495 Grizzly Flat Rd Somerset CA 95684	Betsy Puseoth
20. Jorge Mendez	6011 Mt Arkanhd Somerset 95684	Jorge Mendez
21. Cynthia Carlson	6245 Redwell Canyon 95684	Cynthia Carlson

Signature Page For Petition of Somerset Cannabis License Denial

Name:	Address	Signature
1. Doc Basset	Somerset	Doc Basset
2. Eric Riesenhuber	Somerset	Eric Riesenhuber
3. JAMES HUBBARD	SOMERSET	JAMES HUBBARD
4. Chloe Ledbetter	Somerset	Chloe Ledbetter
5. Jennifer Reed	Somerset	Jennifer Reed
6. Shane Ruiz	Sacramento	Shane Ruiz
7. Alexander Farnan	Somerset	Alexander Farnan
8. Stephen Wicks	Somerset	Stephen Wicks
9. Janelle Wastor G.F.	G.F.	Janelle Wastor
10. Jara Zuk	Somerset	Jara Zuk
11. Sheicelenny Grizzlyflats	Grizzlyflats	Sheicelenny Grizzlyflats
12. David Krueger	Somerset	David Krueger
13. Emma C. Webb	Grizzly Flats	Emma C. Webb
14. Susan F. Taylor	Grizzly Flats	Susan F. Taylor
15. Adam Bennett	Somerset	Adam Bennett
16. Alex C. Pollock	Pollock Ave	Alex C. Pollock
17. Tamara Young	Placerville	Tamara Young
18. Casey Logan	Somerset	Casey Logan
19. Daye McIntosh	Somerset	Daye McIntosh
20. Michael Freeman	Somerset	Michael Freeman
21. Nichole Steinhauer	Placerville	Nichole Steinhauer

Signature Page For Petition of Somerset Cannabis License Denial

Name: Address Signature

1. JEREMY GANNON 5810 Bucks Bar

2. MID CHAMPA 7240 Morning Canyon

3. Mike Gilh Grizzly

4. Julie Styler Somerset

5. Anthony Furlong 6441 Sweeney

6. ~~JAMES JOHNSON 6893 BUCKS BAR~~

7. ~~DAVID TEAL~~

8. JULIE MAY

9. Mick Keenya Plumas Lake

10. Bradley Gordy 4951 arctic Ln

11. Kevin Mills Placerville

12. CURTIS LOWE PLACERVILLE

13. Pamela Selko-Lawson 5609 Bucks Bar Placerville

14. Elliott Petrocchi 6611 Autumn Somerset

15. Charles McDonald 4625 37th Placerville

16. Scott Purvis 8040 Crystal And

17. Steve Schindler 19575 American Flat

18. Russell Moore 3809 Tawanka rd. Somerset

19. David Holm 5088 Bucks Bar Placerville

20. Joe Belton 4855 Birch Trail

21. BRET HOPPER GRIZZLY FLATS

Signature Page For Petition of Somerset Cannabis License Denial

Name:	Address	Signature
1. DAN SCAGG	5895 Bucks Brn Rd	Dan Scagg
2. Bryan Rust	5850 Cortingdale Rd	Bryan Rust
3. Eric Fleming	6130 Kendra way	Eric Fleming
4. Shantel Lee		Shantel Lee
5. Summer Funding Park Pines		Summer Funding Park Pines
6. Alicia Leach		Alicia Leach
7. David Hlher	5698 Bucks Brn	David Hlher
8. Cindy Johnson	SANDRIDGE SANDRIDGE	Cindy Johnson
9. Colleen Reese	4010 Boulder Point Ln	Colleen Reese
10. Mark O'Connell	4010 Boulder Point Ln	Mark O'Connell
11. Lauren Berg		Lauren Berg
12. Georgia Morrison	5893 Bucks Brn Rd	Georgia Morrison
13. Jamie Abington		Jamie Abington
14. Timothy West	Somerset Ca.	Timothy West
15. Cameron Bowman	Cortingdale	Cameron Bowman
16. Andrew Zato	Cortingdale	Andrew Zato
17. Dawn Miller	7610 Forest Glen Dr. G.F.	Dawn Miller
18. Gashi Gray	7761 Grizzly Flat Rd. Somerset	Gashi Gray
19. RANDI Koski	5360 String Cyan	Randi Koski
20. Julia Dellinger	7329 S. View Grizzly Flat	Julia Dellinger
21. Steve Pearce	Somerset	Steve Pearce

Signature Page For Petition of Somerset Cannabis License Denial

- | Name: | Address | Somerset, Ca. | Signature |
|-------------------------|----------------------------------------------|---------------|----------------------|
| 1. David Giouannetti | 7182 Grizzly Flat Rd | | David Giouannetti |
| 2. Collette Giouannetti | 7182 Grizzly Flat Rd | | Collette Giouannetti |
| 3. Susan Porter | 7140 Grizzly Flat Rd | | Susan Porter |
| 4. Janera Wilson | 8301 Grizzly Flat Rd | | Janera Wilson |
| 5. Jeff Leif Wilson | 8301 Grizzly Flat Rd | | Jeff Leif Wilson |
| 6. Sandra D Provance | 8301 Grizzly Flat Rd | | Sandra Provance |
| 7. Eleanor Jaynes | 4281 Toyano Dr DS. | | Eleanor Jaynes |
| 8. Richard Saunders | 17281 Old School house Rd Somerset CA 95684 | | Richard Saunders |
| 9. Wilma Koehler | 7281 Old School house Rd. Somerset ca. 95684 | | Wilma Koehler |
| 10. MICHAEL PERRY | 8081 DIAMOND RAILROAD GRADE SOMERSET | | Michael Perry |
| 11. Debbie Perry | 8081 Diamond RR Grade Somerset | | Debbie Perry |
| 12. Tim BELL | 4040 Timm Ln Somerset CA 95684 | | Tim Bell |
| 13. Steve Husak | 6991 Grizzly Flat Rd Somerset, CA | | Steve Husak |
| 14. Jud Husak | 6991 Grizzly Ft Rd Somerset ca, Jud Husak | | Jud Husak |
| 15. Cammy Morreale | 6625 Perry Creek Rd C. Morreale | | Cammy Morreale |
| 16. Theresa Valdez | 6800 Mt Anukum Rd, Somerset, CA | | Theresa Valdez |
| 17. SANDRA MYRON | 6800 MT Anukum Rd, Somerset, CA | | Sandra Myron |
| 18. Angelo Velasquez | 4500 Mystic Mine rd Somerset | | Angelo Velasquez |
| 19. Jennifer Jordan | 5705 Streamway Somerset | | Jennifer Jordan |
| 20. Mud Sally | 7740 Fairplay Rd Somerset | | Mud Sally |
| 21. STEPHEN WUNSCH | 6200 HAWK HALL, SOMERSET | | Stephen Wunsch |

Signature Page For Petition of Somerset Cannabis License Denial

Name:	Address	Signature
1. Sam	7271 Grizzly Flat Rd	Sam Matthews
2. Sarah Micallef	Grizzly Flats	Sarah Micallef
3. Katy Ackerson	5950 Sweetway Rd	Katy Ackerson
4. Jovellana Trajkovic	4141 Panchito Montes	Jovellana Trajkovic
5. James Kowally	7091 Ricketty Row	Somerset
6. Kayla Barnett	8280 Grizzly Flat Rd	Kayla Barnett
7. Mike Zeller	5400 Rainbow Ridge Rd	Mike Zeller
8. Sherry Pelt	6100 Leon Rd. Grizzly Flats, CA 97630	Sherry Pelt
9. Ana Godinez	5154 Golden Aspen	grizzly flats
10. [Signature]	5470 Bluffs Mt Rd	[Signature]
11. Yolanda Valencia	2615 Sand Ridge Rd.	Yolanda Valencia
12. Trista McMurray	3000 SAND RIDGE RD	Trista McMurray
13. [Signature]	5866 Bucks Bar Rd	Mike Dittich
14. Crystal Dawn Co	7030 Ricketty Rd	Crystal Collins
15. Hannah		
16. Patrick	10390 Old School Hwy Rd	Patrick
17. Jason Singer	Bucks Bar Rd.	Jason Singer
18. Ted GLASS	4090 Al Twist	Ted GLASS
19. Gary Yelton	6341 Oaringdale Rd	Somerset CA 95684
20. [Signature]	6241 Oaringdale Rd	Somerset CA 95684
21. April King	5270 Hippo Dr	April King

all not
sent

13. Kristi Williams 8331 Grizzly Flat Rd Kust WA

14. Piper Sandoval

15. Sandra Kay Jarama

16. ~~Thyphane~~ Grizzly flats.

17. ~~Yvonne~~ Grizzly flats

18. ~~Phyllis~~ Susan Grizz Flat

19. Michael Williamson Sandridge Rd.

20. Jess Fauci Grizzly Flat ~~Grizzly~~

21. Ryan Fauci Sandridge ~~Grizzly~~

12. ~~Anthony~~ Zolt Happy Vly Anthony B Hill

13. Eduardo Pantoja, Somerset

14. Jen Hin Somerset Essari Banski

15. Stephen Garcia 8200 Happy Valley Rd Somerset ~~California~~

16. ~~Zacharia J Jackson~~

16. ~~Zacharia J Jackson~~ 7230 Winding Way Grizzly Flats, 95636

17. Claire Girardi 4453 Sciaroni Rd Grizzly flats 95636 ~~Grizzly~~

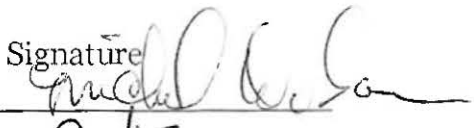


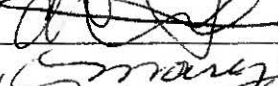
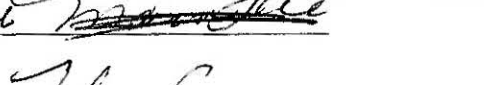
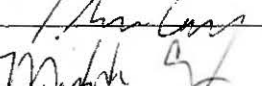
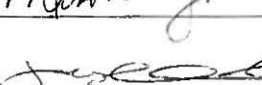
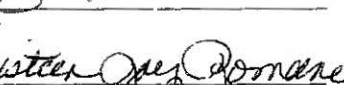
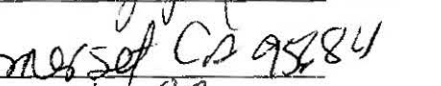

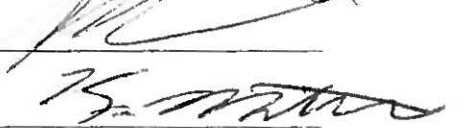

18. ~~Wendy~~ Anne Somerset CA

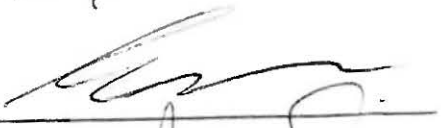
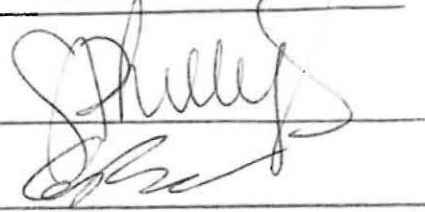
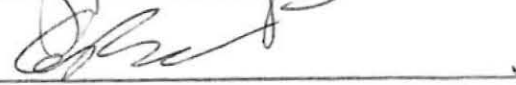


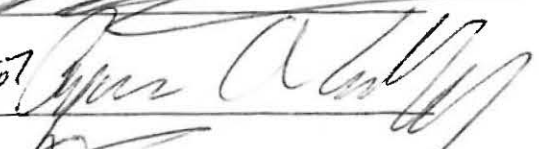

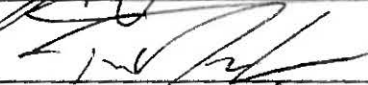
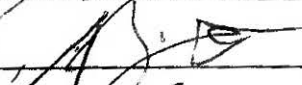
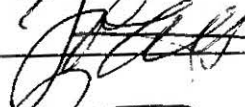
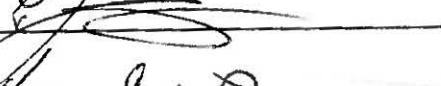
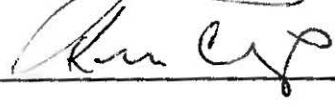
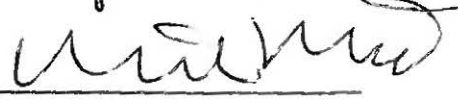
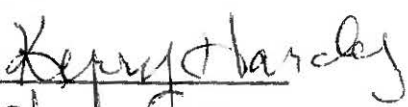
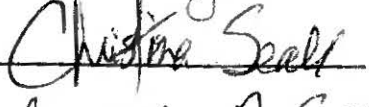

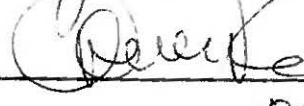
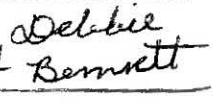
19. Vivian Hargis 6628 Grizzly Ft ca 95684

20. Lisa Heck 5107 Winta Way Somerset CA 95684

21. Patricia Rusk 5850 Dotingsdale Rd Somerset CA 95684

Signature Page For Petition of Somerset Cannabis License Denial

- | Name: | Address | Signature |
|-----------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------|
| 1. Mike Davidson | 6575 Deer Pass |  |
| 2. Scott Sowa | 346 Main St. |  |
| 3. AMEE Lamoureux | 3880 SUNSHINE CT. |  |
| 4. Austin Coffin | 6560 HoApe Ct |  |
| 5. Mary W. Meader | 4276 EAST Rd ^{Pinole} |  |
| 6. Thoma n Conway | 6455 Omo Ranch |  |
| 7. Michele Conway | 6455 Omo Ranch Rd |  |
| 8. JERRY MACIAS | 5881 OMO RANCH RD |  |
| 9. KRISTEEN ROMMOLO | 7730 SUGG GULCH RD ^{OMO RANCH} |  |
| 10. Shreka Triebull | 6111 Omo Ranch Rd | Somerset CA 9584 |
| 11. Jyssa Sandford | 6032 GAZZLIFT Rd | Somerset CA 95684 |
| 12. Christopher Grans | PO Box 680 | Mound Avila CA 95656  |
| 13. Kay's Graves | 3321 Cedarvale Rd ⁹⁵⁸²¹ |  |
| 14. JEN MITCHELL | 694 PLEASANT VALLEY RD |  |
| 15. | | |
| 16. | | |
| 17. | | |
| 18. | | |
| 19. | | |
| 20. | | |
| 21. | | |

<u>Print Name</u>	<u>Address</u>	<u>Signature</u>
TRAVIS GLASS	367 B. L. DR	
Jessica Phillips		
Greg Ryker		
John H...	5707 Wrayton Blvd Somerset NJ 08853	
John H...	6628 Grizzly Huts	
Scott Lowe		
Ryan Smalley	4150 Bestafa Ct R. Ville ^{CA.} 95667	
Michael Crowl	6445 Gerrys Dream Ln	
Travis DeCiano	3560 Highview	
Greg Atkins	6654 Summerhill Rd	
Tom Atkins	7441 Dorado Canyon Rd	
Jamie Standfield	6120 Freedom Ct	
Kenneth Crisp	4210 Bronco trail	
MIKE MULLER	2550 SANDRIDGE	
KERRY HARDY	5798 Vacation Bl Somerset	
CHRISTINA SEALE	60201 GUY ROCK Rd. Somerset	
JAMES CARTER	6881 FAIRPLAY Rd	
Denise Romanek	2981 Freshwater	
Debbie Bennett	7000 casa contenta DR. Somerset	

Signature Page For Petition of Somerset Cannabis License Denial

- | Name | Address | Signature |
|---------------------------|------------------------------------------|-----------------------|
| 1. Karen Case | 5301 Lazy Bee Trl, El Dorado CA 95623 | Karen Case |
| 2. Wayne Dewey | 1477 Ginson Rd Pacerville CA 95617 | Wayne Dewey |
| 3. Jerry Lomberson | 2664 Barnett Lane Pacerville CA 95617 | C. J. Lomberson |
| 4. Mike Redcut | 415 Pacerville St B-361 | Mike Redcut |
| 5. Kathleen Smith | 1130 Wall St. Pacerville | Kathleen Smith |
| 6. Rebecca Rivers | 2220 Forebay Rd Pollock Pines | Rebecca Rivers |
| 7. Sierra DeSness | 2865 Lilac Rd. Pollock Pines CA 95726 | Sierra DeSness |
| 8. John Casanova | 2151 Hill Springs Rd Pacerville | John Casanova |
| 9. IRV GLEWIN | 1961 SWANSDOROUGH RD, MOSQUITO | Irvin Glewin |
| 10. Robyn Walshaw | 5269 Andrews Lane, Camino, Ca 95709 | Robyn Walshaw |
| 11. Christopher M. Cuccia | 1440 wildlife way Pacerville CA 95666 | Christopher M. Cuccia |
| 12. PAUL BARNES | 1493 BOLIVAR CT EDH 95762 | Paul Barnes |
| 13. Deb Birdsall | 4581 Valley Vista Rd Camanche Pal. 95682 | Deb Birdsall |
| 14. | | |
| 15. | | |
| 16. | | |
| 17. | | |
| 18. | | |
| 19. | | |
| 20. | | |
| 21. | | |

Signature Page For Petition of Somerset Cannabis License Denial

Name:

Address

Signature

1. *Mr. Tom Clark* *6510 Klara Rd Somerset NJ* *Tom Clark*

2. _____

3. _____

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5. _____

6. _____

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Signature Page For Petition of Somerset Cannabis License Denial

Name:

Address

Signature

1. DAVID A WILF 3457 GOLD RIDGE RD TRIAL POLLOCK 

2. _____

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Signature Page For Petition of Somerset Cannabis License Denial

Name:

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2. Cheryl Manning 7311 Idlewild

3. cutmanfarms@reagan.com

4. Land line 530-620-7311 Idlewild Rd

5. 530-919-5017 cell

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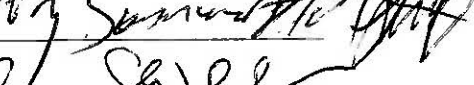
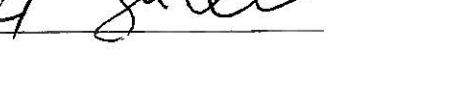
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Signature Page For Petition of Somerset Cannabis License Denial

- | Name: | Address | Signature |
|----------------------|-----------------------|-------------------------------------------------------------------------------------|
| 1. Jen Ledbetter | 5121 Cosumnes Mine Rd |  |
| 2. Chris Yank | PO Box 474 |  |
| 3. Brendan King | 5270 Hilltop Dr |  |
| 4. DAVE HANSEN | 3900 ORD CT. |  |
| 5. Neil Swanton | 6607 Spring Wg |  |
| 6. Samantha Medeiros | PO Box 682 |  |
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From: Bruce Bowers <brucefbowers1@gmail.com>
Sent: Tuesday, March 5, 2024 10:03 AM
To: BOS-Clerk of the Board
Cc: Bowers Annie; Cammy &/or Michael Morreale
Subject: Bruce Bowers' comments

Thank you for allowing me the chance to express my opinion. I have no issue with cannabis. I have no issue with David Harde. My problem is where this industrial grow is going to be located. We live in a neighborhood, where families are made up of children, senior citizens & everyone in between. Perry Creek is a neighborhood. For me, my motivation for speaking out starts & ends on Perry Creek.

I had originally intended to talk about how this would negatively affect our neighborhood's property values. As I started to put my thoughts together, I kept coming back to what really bothers me what David Harde is proposing. The fact that the words Neighborhood & Community Benefit are missing from his conversation concerning this project.

The syndicate (using the dictionary definition) that supports David Harde & David Harde himself have had a long while to build an attack plan to organize & accomplish their goals. We as working folks have had a comparatively short period of time to mobilize. We count on those representing us to recognize the will of the my regular type neighbors, who are out gunned.

Here's where the burr in my saddle blanket lies....

The first brick in this wall is that proponents have said "65% of our county voted to legalize" something like David is proposing. Followed by if that "same vote were taken today it would be 75%". My boots on the ground conversations don't support this. I would argue that what people voted for was the right to grow for personal use. The verbiage of that prop didn't easily disclose that we would be having to consider the industrialized operations in their neighborhoods. I have not heard a single person that this will effect advocate for Industrial Marijuana in their backyard. The saving grace of this is our local governing board can deny these applications.

Most importantly - Our arguments, fears & concerns are met with responses of "ill-informed, mis-informed & plain wrong". In the Planning Board meeting concerning David Harde a pro-cannabis speaker dismissed & minimized my neighbor's beliefs as a "trope". I had a principle of David Harde's project describe Brian Ismeal's death as an issue with the EDSO's dispatcher & not really connected to the marijuana. There is always a slick answer to any concern.

The ironic part is that I read a cannabis proponent point out if you moved here didn't you realize that all types of agriculture could be grown in your area – marijuana wasn't legal 21 years ago when we brought our kids to this neighborhood. So the burden of proof should be on your shoulders on how what you propose this change benefits my neighborhood.

Long & short of this.....

My complaint is that the push to have an industrial marijuana grow in my neighborhood lacks any real community benefit & the lacks any sense of neighborhood. Their argument consists solely of refuting our concerns versus selling us on all the community benefits. How does this enrich our neighborhood? Just because you can doesn't mean you should....

Bruce Bowers

6140 Hawk Haven Lane

Somerset

Petition Opposing Commercial Marijuana Farm in FairPlay AVA Wine Grape Appellation located in Somerset/ Fairplay California, Eldorado County Ca

Petition-Opposing Commercial Cannabis Cultivation License on Perry Creek Road, Fairplay Rd and Surrounding Areas

To the Eldorado Planning and Building Department and Eldorado County Board of Supervisors:

We, the undersigned residents and business owners of Somerset/Fairplay and Surrounding Areas, are writing to express our strong opposition to the proposed commercial cannabis cultivation licenses in the Somerset community. We believe these developments present significant threats to the safety, character, and well-being of our community and urge you to deny the permit applications.

Concerns regarding social impact:

- **Public Park and School Bus Stops:** We are deeply concerned that at least one of the proposed cannabis cultivation farms is near a public park. Children and adults use the park's playground, disc golf course, horse arena, and athletic facilities daily. School bus stops, where children the ages of Kindergarten through high school wait for their bus throughout the school year, are near some of the proposed cannabis farms.
- **Increased crime and safety risks:** We are deeply concerned that the presence of large-scale cannabis farm will attract unauthorized visitors, leading to increased theft, trespass, and potential drug trafficking activity. This poses a direct threat to the peaceful and secure environment we have enjoyed in Somerset and the surrounding areas.
- **Local Wineries and Vineyards:** Owners are deeply concerned of losing sales tax paying clients that visit our safe area to purchase wine and goods. The Fairplay AVA is a coveted designation by the US government that helps make our area a destination for many enthusiastic visitors to our wine region. We believe having large scale cannabis farms will compromise our wine business designation.

Disruption of community character: Our community values its tranquility, strong family values, and traditional way of life. We fear that these developments will alter this character, drawing unwanted attention and potentially attracting individuals outside our close-knit community.

Nuisance issues: The farms' operations could result in a variety of nuisances, including noise from processing equipment, light pollution that disrupts the night sky, unpleasant odors, and increased traffic flow on our rural roads. These factors would significantly impact the quality of life for residents.

Concerns regarding economic impact:

- **Potential decrease in property values:** We are concerned that the presence of commercial cannabis cultivation farms could have a negative impact on property values in our community. This would be detrimental to residents, especially those invested in agriculture or tourism.
- **Excessive water usage:** Our region faces water scarcity challenges. The farms' high water demand could deplete vital resources, affecting both our community's access and the natural environment.
- **Unfair competition for resources:** We believe the farms could unfairly compete for limited resources, such as skilled labor or infrastructure, that are currently essential to existing residence and businesses including the wineries and vineyards.

Concerns regarding environmental impact:

- **Pesticide and herbicide use:** The use of pesticides and herbicides on the farms pose a significant risk to our local ecosystem, potentially harming wildlife and contaminating water sources.
- **Light pollution:** Excessive artificial night lighting at the farms would disrupt nocturnal animals and impact the night sky, a cherished aspect of our rural environment.
- **Waste disposal concerns:** We are concerned about the proper disposal of waste generated by the farms, including plant trimmings and chemical containers. Improper disposal could lead to environmental contamination and health risks.

Additional Concerns:

- **Lack of trust in regulations:** We have concerns about the effectiveness of regulations governing cannabis farms. We fear inadequate enforcement or loopholes could lead to negative consequences for our community.
- **Moral Objective:** Many residents hold personal or religious objectives to cannabis use, regardless of its legal status. We believe they have a right to live in a community that aligns with their values and federal laws.


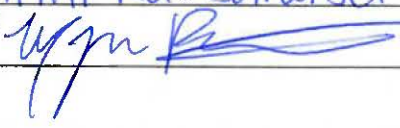
Therefore, we implore you to consider the concerns outlined above and deny the permit applications for the proposed commercial cannabis farms. We believe these developments are incompatible with the values and needs of our business and residential community and pose a significant threat to our way of life. We urge you to prioritize the safety, character and well-being of Somerset/Fairplay and surrounding areas and reject these proposals.

Sincerely,

The undersigned residents and business owners of Somerset/Fairplay and Surrounding Areas.

[Signatures and contact information]

Signature Page For Petition of Somerset/Fairplay AVA Cannabis License Denial

1.	DATE 3/3/24	NAME Tim Mittelstaedt	ADDRESS 7280 Fairplay Rd Somerset CA 95684
	EMAIL Tim@toogoodwinery.com		SIGNATURE 
2.	DATE 3/5/24	NAME Kayla Mittelstaedt	ADDRESS 7280 Fairplay Rd SOMERSET CA 95684
	EMAIL Kayla@toogoodwinery.com		SIGNATURE Kayla Mittelstaedt
3.	DATE 3/3/24	NAME Morgan Peterson	ADDRESS 6900 Anthill Rd. Somerset CA 95684
	EMAIL morgunpeterson430@yahoo.com		SIGNATURE 
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Signature Page For Petition of Somerset Cannabis License Denial

Name:	Address	Signature
1. Judy Hobson	4040 Stinson Rd	Judy Hobson
2. M P Scully	4690 Sand Ridge Rd	M P Scully
3. Janine DiGostini	7381 Mount Aukum Rd Somerset	Janine DiGostini
4. Jackie Pence	3143 Curran Trail Somerset	Jackie Pence
5. Charlie Simon	7537 Slug Gulch RD	Charlie Simon
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