

LAW OFFICES OF
PERRY, JOHNSON, ANDERSON,
MILLER & MOSKOWITZ LLP
438 First Street, 4th Floor, Santa Rosa, CA 95401

May 18, 2026

VIA ELECTRONIC MAIL ONLY

Helen Owen:
Helen.Owen@lakecountyca.gov

Bruno Sabatier:
Bruno.Sabatier@lakecountyca.gov

Eddie Crandell:
Eddie.Crandell@lakecountyca.gov

Brad Rasmussen:
Brad.Rasmussen@lakecountyca.gov

Jessica Pyska:
Jessica.Pyska@lakecountyca.gov

Re: **Rancho Lake LLC Major Use Permit UP 21-15**

Dear Supervisors:

I am writing on behalf of 276 Ranch LLC, the appellant in this matter. 276 Ranch LLC owns and operates a 650-acre certified organic beef production ranch located on California designated Prime Farmland located immediately adjacent to the proposed cannabis cultivation project at 19955 Grange Road in Middletown.

It is important to note from the outset that the reasons 276 Ranch LLC opposes this project is not in response to a negative perception of cannabis. Rather, 276 Ranch LLC opposes this project out of legitimate concern for the project's impact on the environment and 276 Ranch LLC's property, which impacts have not been studied in the Initial Study and Mitigated Negative Declaration (MND). Those concerns include impacts on biological resources, impacts on water availability, impacts on emergency evacuation routes and accessibility, and impacts from odor and chemical drift.

The significance of these concerns are reflected in the Writ Petition (*276 Ranch LLC v. County of Lake, et al.* Lake County Superior Court Case No: CV428624) 276 Ranch filed challenging the County's denial of 276 Ranch's application for a zoning change to apply the County's Farmland Protection Zone designation to the 276 Ranch property to protect it from harms from the proposed cannabis operation.

E. Page Allinson
David F. Beach
Daphne A. Beletsis
Deborah S. Bull
Traci L. Carrillo
Chad O. Dorr
Isaac M. Gradman
Martin L. Hirsch
Nicole M. Jaffee
John E. Johnson
Marla Keenan-Rivero
Scott A. Lewis
Michael G. Miller
Lawrence A. Moskowitz
Leslie R. Perry
Burton H. Fohrman
Sarah Jane T.C. Truong
Kelsey L. O'Rourke
Alexander A. Wiegel
Jennifer H. Alexander
Kristine Tellefsen
Michael E. Tracht
Zsuzsanna Veres
Amanda M. Galvin
Nathan M. Siedman
Nickolas M. Rineberg
Kim Marois
Kit Marois Driscoll
Gina Fortino Dickson
Nikki Sareen

TELEPHONE
(707) 525•8800

FACSIMILE
(707) 545•8242

E-MAIL
hirsch@
perrylaw.net

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Ranch 276 further opposes this project for the reasons set forth below.

I. CEQA Standards

California Code of Regulation, Title 14 § 15064 (CEQA Guidelines) provides in relevant part:

“If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, the agency shall prepare a draft EIR.” (CEQA Guidelines § 15064(a).)

“The decision as to whether a project may have one or more significant effects shall be based on substantial evidence in the record of the lead agency. If the lead agency determines there is substantial evidence in the record that the project may have a significant effect on the environment, the lead agency shall prepare an EIR (*Friends of B Street v. City of Hayward* (1980) 106 Cal. App. 3d 988). Said another way, if a lead agency is presented with a fair argument that a project may have a significant effect on the environment, the lead agency shall prepare an EIR even though it may also be presented with other substantial evidence that the project will not have a significant effect (*No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal. 3d 68).” (CEQA Guidelines § 15064(f).)

“After application of the principles set forth above in Section 15064(f), and in marginal cases where it is not clear whether there is substantial evidence that a project may have a significant effect on the environment, the lead agency shall be guided by the following principle: If there is disagreement among expert opinion supported by facts over the significance of an effect on the environment, the Lead Agency shall treat the effect as significant and shall prepare an EIR.” (CEQA Guidelines § 15064(g).)

II. Well Impacts

The project’s hydrological impacts are one area where there is disagreement between the experts who have evaluated this project. Ryan Crawford (GHD Resources Hydrologist) submitted a letter dated November 11, 2025, stating “The Rancho Lake LLC Well... will likely cause material adverse impacts to the Luchetti Ranch’s water supply in dry years... These impacts would directly threaten the viability of the Luchetti Ranch’s organic, pasture-based cattle operation.”

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Further, in a recent filing in connection with the *276 Ranch LLC v. County of Lake, et al.* case, Ryan Crawford opined, “At this juncture, the potential for operational well-impacts remains an unresolved concern. Based on my experience within the Coyote Basin during dry seasons and times of extended drought conditions, it is my professional opinion that introducing the Rancho Lake LLC will in such close proximity to 276 Ranch wells will result in significant negative impacts on the 276 Ranch wells water levels and availability for existing hay and beef production operations.” (See Exhibit A.)

Ryan Crawford’s opinion is in stark contrast to the Project’s Hydrogeologic Report, which essentially concluded that the project will not impact neighboring wells. In such instances of stark contrast between experts, the CEQA guidelines direct that the effect should be treated as significant and that an EIR should be prepared. (CEQA Guidelines § 15064(g).)

III. Odor and Pesticide Drift

The applicant draws conclusions regarding odor impacts based on a 1-acre odor study from Sonoma County to justify a 19.6-acre project. As discussed in the attached letter from Dr. Mark Kram where he discusses at the length the impacts of a cannabis grow this size with respect to both odor and pesticide drift. (Exhibit B).

As discussed in more detail in Dr. Kram’s analysis, odor impacts and pesticide drift have not been adequately studied in the MND and that 276 Ranch will suffer harm as a result of the odor and pesticide drift from the project.

In addition, the mitigation measure suggested in the MND for pesticide drift is woefully inadequate. The MND states, “In the event of a drift occurrence, a complaint could be submitted to the Agriculture department, and they would follow up with an investigation.” This approach allows for the harm to occur before with no recourse other than investigation. This is an inadequate mitigation measure as it does nothing to protect neighboring land from harm.

IV. Fire Safety

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The MND concludes that the project would not prevent use of the access road to accommodate emergency vehicles. However, the Project fails to meet State Fire Safe Regulations, which is inconsistent with the findings of the MND (Public Resources Code § 4290).

PRC section 4290 requires that access roads in State Responsibility Areas (SRAs) meet a minimum 20-foot width to ensure two-way emergency access. The main access road across the subject property — the sole route for access to the project — measures only 20 feet wide. This is below the minimum required under section 4290 and inadequate to support emergency vehicle access.

This substandard road serves the 276 Ranch, the U.S. Coast Guard facility, the Guenoc Valley/Noyes Ranch holdings, and now the proposed cannabis project. The proposed "Grange Road Connector" utilizes the same inadequate roadway network. The Guenoc Valley Resort EIR identifies up to 4,511 vehicles exiting during an emergency. Adding commercial cannabis traffic (estimated at 40 trips/day) to a sub-standard, 16-foot-wide road without analyzing the cumulative evacuation load violates CEQA Guidelines section 15130 and CEQA Appendix G (Wildfire).

V. Biological Resources

With respect to the biological resource evaluation, the Initial Study itself is inadequate and further study is required. CEQA requires that the Lead Agency, through its initial study, evaluate the whole of a project. A project must not be broken into smaller parts, each of which alone might qualify for a Negative Declaration, in an attempt to avoid preparing an EIR (*Association for Sensible Development of Bishop Area v. County of Inyo* (1985) 172 Cal.App.3d 151). The decision to prepare a Negative Declaration or a MND must be grounded in an objective, good faith effort on the part of the Lead Agency to review the project's potential for significant impacts (*Sundstrom v. County of Mendocino* (1988) 101 Cal.App.3d 296).

The original determination made on the basis of the initial study whether to prepare either a Negative Declaration or an EIR is subject to the "fair argument" test (*Laurel Heights Improvement Assoc. v. U.C. Regents* (1993) 47 Cal.4th 376). In other words, if a fair argument can be made on the basis of "substantial evidence" in the record that the project may have a significant adverse environmental impact - even if evidence also exists to the contrary - then an EIR is required. A Negative Declaration is authorized

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when the Lead Agency determines that no substantial evidence exists supporting a fair argument of significant effect.

Here, the initial study is insufficient for the purposes of making such a determination. As detailed in the attached memo from Eric Smith of Smith Ecological Consulting, the project documents are inadequate because they fail to adequately address impacts to candidate and proposed threatened and endangered species, the botanical surveys were conducted during a period of exceptional drought, the survey performed did not cover the entire project area, and the survey results are out-of-date (among other reasons). (Exhibit C).

VI. Conclusion

Finally, in the spirit of resolution, 276 Ranch submitted proposed mitigation measures to County staff and the project applicant in an effort to reach agreement on measures to protect 276 Ranch's property while providing an immediate pathway to project approval and avoiding litigation. Those measures are included here as Exhibit D. Ranch 276 remains willing to consider such mitigation measures as a means to expedite project approval and avoid litigation.

Very truly yours,



Martin L. Hirsch

MLH:sgd

Enclosures as noted.

cc via email:

Lloyd Guintivano: Lloyd.Guintivano@lakecountyca.gov

Mireya Turner: Mireya.Turner@lakecountyca.gov

Mary Claybon: Mary.Claybon@lakecountyca.gov

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EXHIBIT A

Martin L. Hirsch, Bar No. 255718
PERRY, JOHNSON, ANDERSON,
MILLER & MOSKOWITZ, LLP
438 1st Street, 4th Floor
Santa Rosa, California 95401
Telephone: (707) 525-8800
Facsimile: (707) 545-8242
Email: hirsch@perrylaw.net

Attorneys for Petitioner
276 RANCH LLC

SUPERIOR COURT OF THE STATE OF CALIFORNIA
COUNTY OF LAKE

276 RANCH LLC,

Case No. CV 428624

Petitioner,

**DECLARATION OF RYAN
CRAWFORD IN SUPPORT OF
PETITIONER'S APPLICATION FOR
ORDER TO SHOW CAUSE AND
TEMPORARY RESTRAINING
ORDER**

v.

COUNTY OF LAKE, LAKE COUNTY
BOARD OF SUPERVISORS, LAKE
COUNTY PLANNING COMMISSION,
and DOES 1 through 20, inclusive.

Date: May 13, 2026

Respondent

Time: 4:00 p.m.

RANCHO LAKE LLC

Action filed: April 6, 2026

Real Party in Interest

Trial Date:

Assigned to: Hon. Michael S. Lunas

Dept. 1

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1 I, Ryan Crawford, hereby declare as follows:

- 2 1. I have personal knowledge of the matters stated herein, and if called as a witness,
3 I could and would testify competently thereto.
- 4 2. I am a Professional Geologist (PG), licensed in the State of California, and Senior
5 Hydrogeologist for GHD Inc. (GHD), whose offices are located at 2235 Mercury
6 Way, Santa Roa, CA 95407.
- 7 3. I have Bachelor of Science (BS) in Geology from California State Polytechnic
8 University, Humboldt and a Master of Science (MS) in geology from California
9 State Polytechnic University, Humboldt, in support with Penn State University
10 and the University of Oregon. I have over 20 years of hydrogeology experience,
11 including as a lead in developing State approved Groundwater Sustainability
12 Plans (GSPs) in California prioritized groundwater basins, aquifer testing and
13 analysis, aquifer modeling, and using advanced geophysical tools to characterize
14 groundwater within boreholes and wells, well design and groundwater basin
15 impacts analysis, and lead groundwater monitoring and reporting programs for
16 water districts and municipalities broadly around the State, among many other
17 groundwater resources related projects and studies.
- 18 4. Locally, I've worked within the Coyote Basin for more than 15 years on
19 groundwater related projects including performing the groundwater monitoring
20 and reporting program on behalf of the Hidden Valley Lake Community Services
21 District (HVLCD) to the State of California Central Valley Regional Water
22 Quality Control Board (CVRWQCB) during that time. In addition, I've performed
23 aquifer pumping tests on HVLCD's production and irrigation wells to document
24 water level and flow interference between wells and provided well cycling and flow
25 rate recommendations so as not to negatively impact water levels in the
26 groundwater basin. GHD's water resources engineering group designed and
27 managed the construction of HVLCD over 30-years ago, and I manage an on-call
28 contract with HVLCD to assist in all things related to water resource assets

1 owned or managed by HVLCSO. Recently, I monitored the Luchetti wellfield
2 water levels with high resolution pressure transducers through both a wet and dry
3 season and am intimately familiar with that portion of the Coyote Basin it's
4 recharge elements (Putah Creek, Crazy Creek, rainfall amounts, etc.), and
5 drought conditions.

- 6 5. More broadly, I have hydrogeology and groundwater basin related project
7 experience in various parts of North, Central, and South America, the Pacific
8 Ocean rim, including with the USGS, US Navy, and other public and private
9 clients.
- 10 6. 276 Ranch LLC holds the most senior water right for irrigation purposes in the
11 Upper Putah Creek Watershed. This water right entitles 276 Ranch LLC to
12 irrigate up to 320.3 acre-feet/ year from Putah Creek between May and October.
13 Applicant Rancho Lake LLC drilled a new well within 120 feet of the property line
14 and approximately 500 feet and 800 feet, respectively, from the two agricultural
15 wells operated by 276 Ranch LLC.
- 16 7. To document the current groundwater conditions in the existing 276 Ranch LLC
17 irrigation wells 276 Ranch LLC retained GHD, Inc. to conduct a seasonal
18 groundwater level monitoring and well test from May to November 2024, during
19 which transducers were placed in the 276 Ranch LLC agricultural wells to enable
20 continuous water-level monitoring. At that time, 276 Ranch LLC invited Rancho
21 Lake LLC to place transducers in its well so that all three wells could be
22 monitored and tested together, producing a more accurate understanding of the
23 groundwater conditions with all wells pumping and the potential interference
24 impacts that occur.
- 25 8. It is my understanding in conversations with 276 Ranch LLC that Rancho Lake
26 LLC declined to participate in the well monitoring. It is also my understanding to
27 date that Rancho Lake LLC has not performed a dry season 8-hour, or more (24-
28 72 hours are more reflective of groundwater interference and boundary conditions

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in the area), dry-period (August–September) well test on its new well.

9. At this juncture, the potential for operational well-impacts remains an unresolved concern. Based on my experience within the Coyote Basin during dry seasons and times of extended drought conditions, it is my professional opinion that introducing the Rancho Lake LLC well in such close proximity to 276 Ranch wells will result in significant negative impacts on the 276 Ranch wells water levels and availability for existing organic hay and beef production operations.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Dated: _____, 2026

Ryan Crawford

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EXHIBIT B

May 18, 2026

Dear Supervisors,

As requested by Peter Luchetti and 276 Ranch, LLC, I have been asked to comment on Rancho Lake LLC's proposed cannabis project located at 19955 Grange Road, Middletown, Lake County, California (Assessor's Parcel No. 014-290-08), and the Initial Study / Mitigated Negative Declaration IS 21-16 (the "Project").

I. Qualifications

I hold a Ph.D. in Environmental Science and Management, a Master's degree in Geology, and a Bachelor's degree in Chemistry. I have more than four decades of professional experience performing environmental assessment and remediation, measuring and modeling chemical fate and transport in air, soil, and water, and designing and operating instrumented environmental monitoring systems. I have been retained as a technical consultant and as an expert witness by federal and state agencies, private clients, and public-interest litigants in California, other U.S. States, and internationally.

Since 2018, my colleagues and I have conducted continuous, high-frequency, multi-point gas-chromatographic monitoring of cannabis-related terpenes — including Myrcene (also referred to as "beta-Myrcene") — at more than forty outdoor, greenhouse, and mixed-light cannabis cultivation operations in Santa Barbara County, California. This work has been performed for purposes that include baseline characterization prior to operations, emission tracking during flowering and harvest, evaluation of odor-abatement technologies, and compliance testing under court-ordered and privately negotiated settlements. Our instrumentation is laboratory-grade and multiplexed to enable up to sixteen sampling stations, with near-real-time data reporting to a secure web dashboard and with simultaneous measurement of meteorological parameters. Our analytical protocol follows Modified USEPA Method TO-14A. Our approach and data have been used to track chemical releases at Superfund sites with USEPA oversight and are described in state and national guidance. My team's data are, to my knowledge, among the most extensive ambient terpene datasets for cannabis cultivation operations in the United States.

Based on that body of work, my colleagues and I have developed and field-validated a human odor-detection threshold for cannabis emissions based on the combined atmospheric concentration of three commonly emitted terpenes, including Myrcene. When the combined concentration of these three terpenes exceeds approximately 20 to 50 parts per billion by volume ("ppbv"), more than 50 percent of participants in controlled tests report detecting cannabis odors. We have applied this threshold successfully on dozens of projects located in Santa Barbara County, Riverside County, and Sonoma County.

I previously offered my opinions to the Sonoma County Board of Supervisors on July 9, 2025, in connection with that county's Comprehensive Cannabis Program Update Draft Environmental Impact Report. The modeling document that supported that DEIR — prepared by Trinity Consultants in 2020 and referenced by Ascent in 2025 — is the same modeling effort that the Applicant cited before the Planning Commission to support the "*less-than-significant*" odor finding in the Rancho Lake Mitigated Negative Declaration ("MND").

II. MND Statement Regarding Air Quality

The Air Quality section of the MND (Section III(d), at page 21) disposes of the odor and air-quality question in a single sentence: "*The operation will not result in other emissions (such as those leading to odors or dust) adversely affecting a substantial number of people.*" That finding is supported only by the observation that the nearest residence is more than 1,000 feet from the cultivation site. The MND does not analyze the emission rate, dispersion dynamics, meteorological data, calibration against field measurements, or site-specific topographic or inversion effects. The MND does not mention Myrcene. The MND also does not discuss how past studies and public agencies have documented that odors can be detected more than a mile from the release point. For instance, the Sonoma County Draft EIR stated the following (P. 3.3-12): "*The results of modeling by Kern County indicated that specific cannabis compounds may be detectable at a distance of 2 miles or more depending on weather conditions (Kern County 2017). Nevada County released an EIR (State Clearinghouse No. 2018082023) for its Commercial Cannabis Cultivation Ordinance in 2019 and identified in their odor detection modeling that cannabis odors could be detected in some circumstances between 100 feet and as far as 1 mile from the source of the odor (Nevada County 2019).*" Odor detection equals exposure.

The Applicant's Odor Management Plan and supporting materials rely on the Trinity (2020) one-acre operation simulation depicting the source concentration and concentration dissipation over distance. Several key points can be made about the Trinity model, including:

- The Trinity model source strength and dissipation assumptions are not realistic and do not match empirical observations.
- At 600 feet from the operation, the Trinity model concluded that one would encounter approximately 6.6 ppbv Myrcene for a 1-acre operation and 16.4 ppbv for a 10-acre operation (approximately one half the size of the Applicant's proposed operation). The Trinity modeling exposure over distance results are inconsistent with what our team has measured in the field as well as the Kern County (2017) and Nevada County (2019) reports (see table below).
- Detailed modeling assumptions have yet to be shared, so we do not know the user input for all controlling factors, and it appears that the Trinity model has yet to be calibrated. However, we have directly measured Myrcene at much higher levels at greater

distances from operations (e.g., ~440 ppbv Myrcene at 2,600 feet downwind of a 4-acre outdoor operation, which is only one-fifth of the size of the proposed operation).

- As stated above, if someone reports odors, they are most likely encountering at least 20 ppbv of select terpenes which can typically be dominated by Myrcene. As such, when Kern County describes odors as far as 2 miles from an operation, this suggests that the folks reporting odors are being exposed to levels comparable to what the model suggests at 100 feet from a 1-acre facility and at 600 feet from a 10-acre facility. These inconsistencies point to the critical need for site-specific empirical assessments with confirmation testing.

Table 1. Myrcene Concentration over Distance; Trinity Model Simulations vs. Field Evidence

	<u>Operation Size</u>	<u>Distance from Operation (ft)</u>	<u>Maximum Myrcene (mg/m3)</u>	<u>Maximum Myrcene (ppbv)</u>
Trinity Model	1-acre	100	0.10	16.4
	1-acre	600	0.04	6.6
	10-acre	100	0.30	49.2
	10-acre	600	0.10	16.4
Empirical Field Observations	4-acre	2,600	2.68	439.5*
Kern County (2017)	?	10,560	0.12-0.30	20-50
Nevada County (2019)	?	5,280	0.12-0.30	20-50
* Maximum reported/measured does not represent maximum occurrence due to spatiotemporal constraints.				

I opined extensively on the limitations of the Trinity dispersion model in a July 9, 2025 letter to the Sonoma County Board of Supervisors in connection with the Draft EIR for Sonoma County Cannabis Ordinance. A copy of that letter is enclosed.

III. The Science of Cannabis Odor

a. What a 19.6-Acre Outdoor Cannabis Operation Emits

Flowering cannabis plants produce terpenes — volatile organic compounds that evaporate readily into the surrounding air and contribute to the characteristic "skunky" cannabis smell. Myrcene is one of the most abundant of these terpenes in commercial cannabis. While emission rates fluctuate, volatile chemical releases are continuous throughout the flowering period from every plant in the canopy. Emission rates increase markedly in the late flowering stage and peak during harvest. The MND describes an April 15 to November 15 operating season, which aligns with the flowering and harvest window during which emissions are greatest (typically August through October).

Commercial cannabis cultivation also involves the routine application of fertilizers, fungicides, and pesticides. The MND acknowledges that the Applicant will utilize pesticides in its operations. Application of any agricultural chemicals to an open-air 19.6-acre canopy produces drift in the form of spray droplets, dust, and volatilized compounds. Drift is inherent to large-

scale outdoor pesticide application. As such, downwind transport, air quality issues, and deposition are guaranteed. Recent concerns have been raised regarding certain pesticide use and exposures resulting in Parkinson's disease (see: [UCLA Health article](#)). At a minimum, the public needs to know what chemicals will be applied as well as the timing and volumes well in advance of application.

Put in the simplest terms: the Project is an enormous, continuously emitting, open-air chemical source for both odors and pesticides. The operation consists of approximately 853,000 square feet of emitting canopy — larger, by area, than fifteen typical football fields arranged side by side. Air passing through that canopy during flowering stages carries biogenic terpenes toward downwind receptors. Every pesticide or fertilizer application adds additional impacts to the baseline terpene load. These emissions are not speculative; they are the inevitable consequence of the operation the Applicant proposes to implement.

b. Where the Emissions Will Go

Once a vapor forming compound is emitted into the open air, it travels with the moving air as a vapor plume. The distance it travels and the concentration at any downwind receptor depend on emission source concentration, the height and geometry of the emission source, wind speed, wind direction, atmospheric stability, local topography, and the relative position of the receptor. Practitioners refer to potential exposure risk in the context of source, pathway, and receptor. The physics of this process are not controversial and serve as the basis of every regulatory air-dispersion model in use by the U.S. Environmental Protection Agency and the California Air Resources Board.

Given the proximity of the extensive Rancho Lakes LLC outdoor commercial cannabis grow operation to the 276 Ranch LLC, and the property positions relative to prevailing afternoon wind conditions, it is my professional opinion that cannabis related volatile discharges (including Myrcene) from the project will result in an elevated likelihood (e.g., more likely than not) of chemical exposures and land deposition of cannabis terpenes at the downwind 276 Ranch LLC property.

c. At What Concentrations

Cannabis odor threshold studies I have performed in Santa Barbara County with public participants revealed that when key terpenes (including Myrcene) exceed approximately 20 to 50 parts per billion concentration in air samples, the majority of subjects reported detection of cannabis odors. It is my professional opinion that, given the distance between cultivation activities and the Petitioner's property, and the prevailing northwest winds that commonly occur in the afternoons, it is highly likely that odor threshold exceedances will be experienced on the Petitioner's property. Given the elevated likelihood of toxic chemical release and

transport emanating from the Project source area, associated land deposition, and associated exposures, it is my professional opinion that the Petitioner representing 276 Ranch will suffer harm from cannabis related activities approved for the Rancho Lakes LLC large outdoor commercial cannabis grow operation (Major Use Permit PL-25-13).

My opinions on this matter are based on my personal empirical evidence as well as documents produced by agencies and researchers. I reserve the right to further identify additional records and to supplement my analysis and opinions should additional facts that I have not previously considered become available.

I can make myself available if questions about my opinions arise.

Thank you for your consideration,

A handwritten signature in black ink, appearing to read "Mark Kram", with a stylized, flowing script.

Mark Kram, Ph.D., CGWP #471

7127 Hollister Ave., #25A-108

Goleta, CA 93117

Chair – ASTM Subcommittee D18.21 (Groundwater and Vadose Zone Investigations)

Mark L. Kram, Ph.D.

Environmental Consulting Services
7127 Hollister Ave., Suite 25A-108
Goleta, CA 93117

July 9th, 2025

To: Sonoma County Board of Supervisors

Subject: Sonoma County Cannabis Ordinance; [Draft Environmental Impact Report; Sonoma County Comprehensive Cannabis Program Update, May, 2025](#).

Dear Supervisors,

As requested by Save Our Sonoma Neighborhoods, I have reviewed the Draft Environmental Impact Report (DEIR) generated by Sonoma County and their consultants to address the subject listed above and have provided my general and specific comments below. I am offering these opinions to a reasonable degree of scientific certainty based on my review of the DEIR as well as my education, training, and experience that spans more than four decades in the fields of environmental assessment and remediation, chemical fate and transport measurement and modeling, and specifically, my extensive volatile chemical measurement and high-frequency multivariate monitoring experiences.

General Comments:

- 1) The DEIR is well-written, comprehensive, and well-organized.
- 2) The DEIR does not include several key model assumptions. For instance, specific model input for wind speed range, cannabis varieties, plant age, and vapor dispersion related assumptions for each model iteration are not provided. A model is only as reliable as its weakest assumption. As such, it would be helpful to be transparent about every assumption used in each simulation, and to perform sensitivity analyses to understand critical controlling factors and impacts on exposure predictions.
- 3) The models are generic and have not been calibrated. For instance, terrain and topography are assumed to be flat, and it appears that a very calm wind speed has been assumed. In addition, different cannabis varieties emit very different terpene concentrations and profiles. As such, it is not possible to apply the simulations and predictions to specific operations and downwind receptors. While models can be helpful for understanding process, empirical evidence is far more reliable. Calibrated simulations based on data collected from a few select operations either within Sonoma County or from other regions with similar characteristics would have been useful and potentially more applicable.
- 4) The model results regarding predicted exposure point concentration are inconsistent with empirical field measurements. More specifically, the predicted terpene concentrations at key distances from operations are lower than those measured by my team as well as those reported by others based on odor threshold relationships to terpene concentrations (e.g., Kern County, 2017; Nevada County, 2019). As such, if the objective is to avoid impacts associated with odors and terpene exposures, the proposed setbacks are insufficient.

Specific Comments:

Comments below are organized in a manner consistent with the order of items contained within the document under review. As such, several comments are presented more than once for completeness.

Mark L. Kram, Ph.D.

Environmental Consulting Services
7127 Hollister Ave., Suite 25A-108
Goleta, CA 93117

- P.3.3-12: The following is stated: *“Currently, there is not a clear or consistent numerical threshold to use for cannabis odors. Because odor is a perception-based phenomenon and involves complex mixtures of substances rather than single chemically defined substances, it is important to evaluate odors comprehensively rather than breaking down individual chemical constituents of the odor.”* My colleagues and I have derived a human odor detection threshold (ODT) by identifying a correlation between human detection and the combined concentration of three common cannabis terpenes, including Myrcene. **When these terpene concentrations range between 20 and 50 ppbv, greater than 50% of the participants report odors. This criterion has been successfully used for more than 40 projects in Santa Barbara County.** These projects included baseline screening, emission tracking during harvest, evaluation of odor testing and mitigation technologies, and compliance testing as required in legal settlements. The technology we deployed consisted of a laboratory grade gas chromatograph customized to automatically track select terpene concentrations from multiple locations along with weather conditions. Data was delivered to a web dashboard in near real-time for reporting and automated response. Note that Nevada County (2019) described a Myrcene ODT of 13 ppbv in their EIR. Myrcene is one of the terpenes we track and use to determine whether an odor will be detected by the public.
- P. 3.3-12: The following is stated: *“The results of modeling by Kern County indicated that specific cannabis compounds may be detectable at a distance of 2 miles or more depending on weather conditions (Kern County 2017). Nevada County released an EIR (State Clearinghouse No. 2018082023) for its Commercial Cannabis Cultivation Ordinance in 2019 and identified in their odor detection modeling that cannabis odors could be detected in some circumstances between 100 feet and as far as 1 mile from the source of the odor (Nevada County 2019).”* **When combined with our consistent odor threshold observations, this shows that terpene compounds can range from 20 to 50 ppbv as far as one to two miles from the source. In many cases, Myrcene is the dominant terpene detected downwind of emission sources.**
- P. 3.3-14: The DEIR describes setbacks and proposes 100 feet separation from property lines, 600 feet from residential zoned parcels, and 1,000 feet from sensitive use properties. As stated above, the reports described by Kern County (2017) and Nevada County (2019) suggest that when odors are detected at one or two miles downwind, terpene concentrations can at times range from 20-50 ppbv at those distances from the operation. When these models are considered along with the outdoor grow example presented in Case Study #1 below (e.g., where 440 ppbv Myrcene was measured approximately 2,600 feet downwind of the operation), **it is highly probable that residential neighbors and sensitive receptors will experience odors and exposures to Myrcene concentrations above the risk exposure level (REL) at distances farther than the proposed setbacks.** This will most likely occur when specific combinations of conditions are met (e.g., spatial and topographic context, cannabis varietal mix and age, wind speed and direction, and operational activities such as harvest, etc.). **As such, this unavoidable impact must be appropriately addressed.**

Mark L. Kram, Ph.D.

Environmental Consulting Services
7127 Hollister Ave., Suite 25A-108
Goleta, CA 93117

- P.3.3-15: The following is stated: *“According to Appendix G of the State CEQA Guidelines and standard practice, an impact on air quality would be significant if implementation of the project would...result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.”* This would be operation-specific. **As such, a clear definition of “substantial number of people” will be required.**
- P.3.3-21: The following is stated: *“Operation of existing and new cannabis uses could generate objectionable odors with adverse effects for residents and other sensitive land uses. This impact would be significant.”* Also, *“The furthest distance cannabis odors from cultivation uses may be recognizable or detectable is approximately 2 miles, depending on topography and meteorology (Kern County 2017)...The distance for odor detection is very site-specific and can be affected by many variables, including meteorology, topography, and plant stages of plant growth.”* Our studies are consistent with these comments. We also note that the detection of odors commonly occurs when select terpenes (including Myrcene) range in concentration from 20-50 ppbv. We did not perform studies related to health risks, but instead refer to Prop 65 which classifies Myrcene as a carcinogen.
- P.3.3-22: The following is stated: *“Sonoma County commissioned Trinity Consultants to evaluate the potential for toxics risk and community exposure of beta-myrcene related to cannabis cultivation (Appendix C). The study included the development of an occupation exposure level (OEL), with the intent of determining the potential to adversely affect members of the public with proximity to cannabis cultivation. Based on a review of readily available clinical and nonclinical data an OEL of 5 mg/m³ as an 8-hour time-weighted average was recommended. The OEL provides a threshold at which no adverse effects would occur in an exposed worker (i.e., somebody within proximity to the chemical in question for the duration of a normal 8 hours work day). The OEL considers pharmacological and other adverse effects (e.g., sneezing, itching, nasal congestion and irritation, drowsiness, moderate skin and eye irritations), as well as nonclinical effects (reproductive and developmental effects at extremely high doses). To address public exposure, the OEL was lowered by a factor of 10 to develop the chronic risk exposure level (REL), which was used as a threshold in consideration of protecting the general public, which may experience exposure 24 hours per day, 7 days per year, year round. Thus, this analysis assumed an REL of 0.5 mg/m³ or less would not present an adverse effect.”* Given that 1 ppbv Myrcene equals 6.1×10^{-6} mg/L (see below), then **an REL of 0.5 mg/m³ is equal to 82 ppbv** (e.g., $0.5 \text{ mg/m}^3 \times (\text{ppbv}/6.1 \times 10^{-6} \text{ mg/L}) \times (\text{m}^3/1000\text{L}) = 82 \text{ ppbv}$). This REL value is very close to the upper end of the odor threshold (e.g., 20 – 50 ppbv for 50% of participants to report odor detection) my team has consistently documented. **As such, when community members report smelling odors, they are often being exposed to Myrcene levels that are close to or above the REL.**
- P. 3.3-22: The following is stated: *“To determine the potential for exposure on the general public, air dispersion modeling was completed to estimate ground-level beta myrcene concentrations at a distance of 100 feet for two hypothetical outdoor cannabis growing operations: a 1-acre facility and a 10-acre facility. These scenarios were modeled to estimate the ground-level concentration of beta-myrcene from a cannabis growing area at various distances using the US*

Mark L. Kram, Ph.D.

Environmental Consulting Services
7127 Hollister Ave., Suite 25A-108
Goleta, CA 93117

EPA regulatory model, AERSCREEN...The results showed that the maximum concentration of airborne beta-myrcene generated by 1-acre and 10-acre cannabis fields at a distance of 100 feet from the edge of a field would be 0.1 mg/m³ (23 percent of REL) and 0.3 mg/m³ (64 percent of REL), respectively. Additionally, at 600 feet, the setback required for residential zoning under the Cannabis Program Update, airborne concentrations of beta myrcene would be reduced to 0.04 mg/m³ for a 1-acre site and 0.1 mg/m³ for a 10-acre site. Levels at Cannabis Program defined sensitive land uses, which would be setback at least 1,000 feet from a cannabis premises under the Cannabis Program Update, would be reduced further.” **When we convert this to units of ppbv, the models suggest that at 100 feet from the edge of a field, one would encounter approximately 16.4 ppbv Myrcene for a 1-acre operation and approximately 49.2 ppbv Myrcene for a 10-acre operation (Table 1). At 600 feet from the operation, the model concludes that one would encounter approximately 6.6 ppbv Myrcene for a 1-acre operation and 16.4 ppbv for a 10-acre operation (see table below). The Trinity modeling numbers are inconsistent with what our team has measured in the field as well as the Kern County (2017) and Nevada County (2019) reports. Detailed modeling assumptions have yet to be shared, so we do not know the user input for all controlling factors, and it appears that the model has yet to be calibrated. However, we have directly measured Myrcene at much higher levels at greater distances from operations (e.g., ~440 ppbv Myrcene at 2,600 feet downwind of a 4-acre outdoor operation). In addition, as stated above, if someone reports odors, they are most likely encountering at least 20 ppbv of select terpenes which can typically be dominated by Myrcene. As such, when Kern County describes odors as far as 2 miles from an operation, this suggests that the folks reporting odors are being exposed to levels comparable to what the model suggests at 100 feet from a 1-acre facility and at 600 feet from a 10-acre facility. These inconsistencies point to the critical need for site-specific empirical assessments with confirmation testing.**

Table 1. Myrcene Concentration over Distance; Trinity Model Simulations vs. Field Evidence

	Operation Size	Distance from Operation (ft)	Maximum Myrcene (mg/m ³)	Maximum Myrcene (ppbv)
Trinity Model	1-acre	100	0.10	16.4
	1-acre	600	0.04	6.6
	10-acre	100	0.30	49.2
	10-acre	600	0.10	16.4
Empirical Field Observations	4-acre	2,600	2.68	439.5*
Kern County (2017)	?	10,560	0.12-0.30	20-50
Nevada County (2019)	?	5,280	0.12-0.30	20-50

* Maximum reported/measured does not represent maximum occurrence due to spatiotemporal constraints.

- P.3.3-22: The following is stated: “Because site-specific conditions can determine the effectiveness of buffers, identifying a standard buffer distance at which odors could not be

Mark L. Kram, Ph.D.

Environmental Consulting Services
7127 Hollister Ave., Suite 25A-108
Goleta, CA 93117

perceived for outdoor and mixed-light cannabis cultivation operations not contained within buildings or greenhouses is not considered feasible.” I agree with this acknowledgement. As such, and since each operation will have site-specific impacts (if any) on neighbors, it is essential that the model and analysis represent realistic conditions and outcomes. At present, the simulations and conclusions are inconsistent with our work as well as the fate and transport related conclusions reported in Kern County (2017) and Nevada County (2019). Concentrations of Myrcene are expected to be higher at larger distances from operations than the current Trinity model predicts. If a person smells odors at 1,000 feet or greater from an operation, there is an elevated probability that they are inhaling levels of Myrcene that exceed exposure point concentrations predicted by the Trinity models.

- P.3.3-24, Figure 3.3-3, the Trinity dispersion model: The following is stated: *“Based on dispersion modeling, odors emitted from outdoor cannabis cultivation facilities decrease substantially for the first approximately 500 to 600 feet from a cultivation site (see Figure 3.3-3). Past this point, up to 1,000 feet, odors become less detectable at a slower rate. Past 1,000 feet, odor perceptibility tends to decrease further with distance at a slower rate compared to the first 1,000 feet from a cultivation site. Modeling indicates a direct relationship between odor emissions levels and cultivation area size, and in turn, a decreased rate of odor dissipation as cultivation area increases within a given site. While odors would be substantially reduced at 1,000 feet from a 1-acre cannabis cultivation site they would remain perceptible and may be considered objectionable (note that the maximum area of cultivation on the smallest allowable parcel size under the proposed Cannabis Program Update is 0.5 acres) (Trinity Consultants 2020).”* A few pages earlier, they state: *Because site-specific conditions can determine the effectiveness of buffers, identifying a standard buffer distance at which odors could not be perceived for outdoor and mixed-light cannabis cultivation operations not contained within buildings or greenhouses is not considered feasible.”* We agree with the second statement (e.g., the model does not address site-specific conditions), and need to know more about the assumptions before commenting in detail about the first statement beyond the fact that the applicant acknowledges that there can be Myrcene detected beyond 1,000 feet of the operation. As such, and since each operation will have site-specific impacts on neighbors, it is essential that the model and analysis represent realistic conditions and outcomes. The specific model assumptions have not yet been shared. However, **given that people report odor detections when terpenes (including Myrcene) reach concentrations of 20 - 50 ppbv, if a person smells odors (in this case at or beyond 1,000 feet from the operation), there is an elevated probability that they are breathing levels of Myrcene that exceed exposure point concentrations predicted by the simulations.** More specifically, the proposed policy based on the Trinity model suggests that 600 feet is an appropriate residential setback, when in fact, terpene levels will still exceed odor thresholds at least out to 1,000 feet (see below). This is consistent with what we’ve documented regarding Myrcene and odor, and with what Kern County (2017) has reported.
- Myrcene Concentration Estimate Based on Empirical Data Combined with Trinity Dissipation Model: Below, I estimate the Myrcene concentration at key proposed setback distances by applying field observations from a 4-acre outdoor operation located in Buellton, California, to

Mark L. Kram, Ph.D.

Environmental Consulting Services
7127 Hollister Ave., Suite 25A-108
Goleta, CA 93117

the Trinity dissipation model in Figure 3.3-3. Table 2 (see Case Studies) represents a summary of these results.

- Myrcene Concentration Estimate at 600 feet from Source Using Empirical Data Combined with Trinity Dissipation Model: Figure 3.3-3 suggests that at 2,500 feet, only about 6.25% of source remains (e.g., 2.5 divided by 40) and that at around 600 feet, only about 20% remains (e.g., 8 divided by 40). We can use this relationship to calculate a Myrcene concentration for the Case 1 effort described below. For instance, we measured approximately 440 ppbv Myrcene at 2,600 feet from the emission source. if $440 \text{ ppbv} = 6.25\%$, then the source concentration would be 7,040 ppbv (e.g., $440 \text{ ppbv} / .0625$) Myrcene. Figure 3.3-3 suggests that we would encounter 20% of the source concentration 600 feet from the source. As such, 20% of 7,040 ppbv suggests that 1,408 ppbv Myrcene would occur 600 feet from the source for the Case 1 situation described below. **This estimate is more than an order of magnitude higher than what the Trinity model predicts at 600 feet from a source for a grow operation more than twice the size (e.g., 4-acre: 1,408 ppbv Myrcene vs. Trinity Model 10-acre: 16.4 ppbv). This is also more than 17 times the REL set by SafeBridge/Trinity (e.g., 0.5 mg/m³ or 82 ppbv).**
- Myrcene Concentration Estimate at 1,000 feet from Source Using Empirical Data Combined with Trinity Dissipation Model: Using the same logic (e.g., empirical evidence combined with the Trinity dissipation model; Figure 3.3-3) for a location 1,000 feet from the source, we note that the Trinity dissipation model predicts that 12.5% of source remains (e.g., 5 divided by 40). **This translates to a concentration of Myrcene equal to 880 ppbv (e.g., 12.5% of 7,040 ppbv) 1,000 feet from an operation, which is more than 10 times the REL set by SafeBridge/Trinity.**
- Myrcene Concentration Estimate at 100 feet from Source Using Empirical Data Combined with Trinity Dissipation Model For completeness, the predicted Myrcene concentration at 100 feet from the 4-acre outdoor operation is calculated. Applying the same logic as the earlier examples, we note that the Trinity dissipation model suggests that (conservatively) 50% of the source remains at 100 feet from the operation (e.g., 20 divided by 40 at the source). As such, 50% of 7,040 ppbv suggests that 3,520 ppbv Myrcene would occur 100 feet from the source for the Case 1 situation described below. **This estimate is more than an order of magnitude higher than what the Trinity model predicts at 100 feet from a source for a grow operation more than twice the size (e.g., 4-acre: 3,520 ppbv Myrcene vs. Trinity Model 10-acre: 49.2 ppbv). This is approximately 43 times the REL set by SafeBridge/Trinity (e.g., 0.5 mg/m³ or 82 ppbv).**

Mark L. Kram, Ph.D.

Environmental Consulting Services
7127 Hollister Ave., Suite 25A-108
Goleta, CA 93117

Conclusions:

- 1) The Trinity model predictions are inconsistent with empirical evidence as well as observations reported by Kern County (2017) and Nevada County (2019). More specifically, concentrations of Myrcene will most likely be much higher than the Trinity model predictions at specific criteria distances from cultivation operations.
- 2) The proposed REL will be exceeded much farther from grow facilities than the Trinity model results predict.
- 3) Given #1 and #2 above, the proposed setback requirements should be increased.

Regards,



Mark L. Kram, Ph.D.
7127 Hollister Ave., #25A-108
Goleta, CA 93117

Mark L. Kram, Ph.D.

Environmental Consulting Services
7127 Hollister Ave., Suite 25A-108
Goleta, CA 93117

Case Studies:

We used a laboratory grade gas chromatograph to measure key cannabis odor related terpenes (including Myrcene) along with wind speed and direction. The analytical system was multiplexed to allow for automated continuous sampling and analysis from multiple locations with a single instrument. Case Study 1 is more applicable to the Sonoma DEIR because the monitoring was performed downwind of an outdoor cannabis operation. Given that Alternative 2 includes indoor operations, Case Study 2 is also described below.

Case Study 1: 4-Acre Outdoor Grow Operation; Buellton, Santa Barbara County

Our team documented 440 ppbv Myrcene approximately 2,600 feet downwind of the facility. Wind was approximately 7 mph from the West. This was a randomly timed sample, so it does not represent the maximum occurring concentration.

Conclusions:

- 1) The Myrcene concentration at 2,600 feet downwind (e.g., 440 ppbv) is almost an order of magnitude higher than what the Trinity model predicts at 100 feet for a 10-acre operation (e.g., 0.3 mg/m³, or 49.2 ppbv).
- 2) Figure 3.3-3 suggests that at 2,500 feet, only about 6.25% of source remains (e.g., 2.5 divided by 40) and that at around 600 feet, only about 20% remains (e.g., 8 divided by 40). We can use this relationship to calculate a Myrcene concentration for the Case 1 effort. For instance, we measured approximately 440 ppbv Myrcene at 2,600 feet from the emission source. If 440 ppbv equals 6.25%, then the source concentration of Myrcene would be 7,040 ppbv (e.g., 440 ppbv/.0625). Figure 3.3-3 (the Trinity dissipation model) suggests that approximately 50% of the source remains at 100 feet from the operation (e.g., 20 divided by 40 at the source). As such, 50% of 7,040 ppbv suggests that 3,520 ppbv Myrcene would occur 100 feet from the source (Table 2). Similarly, Figure 3.3-3 suggests that we would encounter 20% of the source concentration 600 feet from the source. As such, 20% of 7,040 ppbv suggests that 1,408 ppbv Myrcene would occur 600 feet from the source. Furthermore, the Trinity dissipation model would imply that 880 ppbv would occur at 1000 feet from the operation.
- 3) **The Trinity model compliance point predictions are inconsistent with empirical evidence. More specifically, the model represents an underestimate of downwind Myrcene concentrations at 600 feet from the source (e.g., 16.4 ppbv for a 10-acre model prediction versus 1,408 ppbv for a 4-acre operation).**

Table 2. Empirical Observations (Buellton, 4-Acre Grow) Combined with Trinity Dissipation Model.

<u>Distance from Operation (ft)</u>	Trinity Model	Buellton Case 1	
	<u>Percent Remaining</u>	<u>Predicted Myrcene Concentration (ppbv)*</u>	<u>REL Multiple**</u>
100	50.0	3520	42.9
600	20.0	1408	17.2
1,000	12.5	880	10.7
* Source concentration = 7,040 ppbv			
** REL = 82 ppbv			

Mark L. Kram, Ph.D.

Environmental Consulting Services
7127 Hollister Ave., Suite 25A-108
Goleta, CA 93117

Case Study 2: Greenhouse Emissions; Carpinteria, Santa Barbara County

Our team tracked Myrcene (and other terpene) levels at a roof vent of a 3-acre greenhouse and at other locations at varying distance downwind from the greenhouse. Wind speed ranged from approximately 3 to 7 mph from the Southwest when maximum downwind concentrations were recorded. The maximum Myrcene concentration recorded at the greenhouse vent was 122,149 ppbv. Maximum Myrcene concentrations were recorded downwind from the greenhouse vent location and included the following:

- 227 feet from roof vent to a downwind flagpole:
 - Maximum concentration at flagpole = 2,495 ppbv Myrcene
- 520 feet from roof vent to a downwind Foothill Rd point:
 - Maximum concentration at Foothill Rd point = 2,025 ppbv Myrcene

Downwind dissipation rates were calculated using maximum values observed. Assuming a linear dissipation rate over these distances (conservative), we estimate that at 100 feet downwind of the vent, dissipation ranged from 19 to 43 percent. Myrcene concentrations ranged from 69,625 ppbv to 98,941 ppbv, which corresponds to a range of 57 to 81 percent of the source concentration remaining (see calculations below).

#1) $(122,149 \text{ ppbv} - 2,495 \text{ ppbv}) / 227' = 527 \text{ ppbv/ft}$
98% drop over 227' = 0.43%/ft
100' = 43% dissipated (57% remains); 69,625 ppbv remains

#2) $(122,149 \text{ ppbv} - 2,025 \text{ ppbv}) / 520' = 231 \text{ ppbv/ft}$
98% drop over 520' = 0.19%/ft
100' = 19% dissipated (81% remains); 98,941 ppbv remains

Conclusions:

- 1) While dissipation is most likely non-linear past a specific distance (consistent with the Trinity model), these values suggest that Myrcene concentrations 100 feet downwind of the facility will be much higher than what the Trinity model predicts.
- 2) The Myrcene concentration at 227 and 520 feet downwind are several orders of magnitude higher than what the Trinity model predicts at 100 feet.
- 3) While these values represent the maximum values we documented, higher values could have occurred when the system was sampling at other locations when the true maximum passed by the monitoring points.

Mark L. Kram, Ph.D.

Environmental Consulting Services
7127 Hollister Ave., Suite 25A-108
Goleta, CA 93117

Conversion of 1ppbv Myrcene to mg/L

Facts:

- Avogadro's number is 6.022×10^{23} molecules/mole of compound; a mole is defined as the molecular weight in grams [1].
- Myrcene (Myr) has a molecular weight of 136.23 g/mole [2].
- The volume of a mole of a gas (e.g., air) at Standard Temperature and Pressure (STP) is 22.4 L [3].

Thus: the number of molecules in one Liter of air is calculated as:

- $(6.022 \times 10^{23} \text{ molecules/mole of air}) \times (1 \text{ mole of air}/22.4 \text{ Liters}) = 0.27 \times 10^{23} \text{ molecules air per 1 Liter air}$

1ppb (part per billion) of Myr is 1 molecule Myr per billion (10^9) molecules of air.

Number of molecules of Myr, at 1 ppb, per L of air, is:

- $(1 \text{ molecule Myr}/10^9 \text{ molecules air}) \times (0.27 \times 10^{23} \text{ molecules air}/1\text{L of air}) = 0.27 \times 10^{14} \text{ molecules Myr/L air at 1 ppb}$

Converting to g of Myr at 1 ppb of air:

- $(0.27 \times 10^{14} \text{ molecules Myr/L air}) \times (136.23 \text{ g B-Myr}/6.022 \times 10^{23} \text{ molecules/mole Myr}) = 6.1 \times 10^{-9} \text{ g Myr/L air at 1 ppb of Myr}$
- $1000 \text{ mg} = 1 \text{ g}$

As such, **$6.1 \times 10^{-6} \text{ mg Myr/L air} = 1 \text{ ppb}$**

References:

1. [Britannica, Avogadro's number.](#)
2. [National Institute of Standards and Technology, NIST chemistry webbook SRD 69,B-Myrcene.](#)
3. [Testbook](#)

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EXHIBIT C

MEMORANDUM

To: Peter Luchetti, 276 Ranch LLC

Date: 3/23/2026

From: Eric Smith

No. Pages: 11,
plus attachments

Subject: Rancho Lake Bio Review

Introduction

This memorandum provides a review of the biological resource documents related to the approval of the Major Use Permit UP 21-15 for Rancho Lake LLC (“Project”), a proposed cannabis cultivation facility on an approximately 1,246-acre property adjacent to Putah Creek in Lake County, California. The preparers of this memo have no relationship to the Project, and were not involved in any of the site studies or preparation of Project documents. The purpose of this memo is to provide a peer-review of the documents, and to identify potential impacts which are not adequately addressed in the Project documents.

Executive Summary

This memo identifies several deficiencies in the biological resource documentation and impact analysis:

1. The documents do not adequately address impacts to candidate and proposed threatened and endangered species:
 - a. The documents do not address Crotch’s bumble bee, which was discovered near the Project site after completion of the Project’s biological studies.
 - b. The documents accurately state that northwestern pond turtle occurs in stream habitat adjacent to the Project site, and that it nests up to 1,640 feet from aquatic habitat, but fails to address the obvious conclusion—that northwestern pond turtle may nest on the Project site.
2. The Botanical Survey Report for the Project is insufficient:
 - a. The surveys were conducted during an exceptional drought;
 - b. Reference populations of rare species were not visited to confirm that they were identifiable during the survey windows;
 - c. The report did not meet the protocol requirement of identifying all plants to the taxonomic level needed to rule out special-status taxa;
 - d. The surveys did not cover the entire Project area;
 - e. The survey results are out-of-date.

3. The aquatic resource surveys are insufficient:
 - a. An aquatic resource delineation that meets agency submission standards was never prepared or verified.
4. The Project documents do not address the entire Project impact area:
 - a. The Project may be required to construct, reconstruct, or relocate roads, culverts, and fences. However, the road alignments were not included in the survey area for all biological surveys.

These deficiencies are detailed under “Results”, below.

Regulatory Background

The Project is enrolled in the State Water Resources Control Board’s (“Board”) Order WQ 2019-0001-DWQ, General Waste Discharge Requirements for Discharges of Waste Associated with Cannabis Cultivation Activities, together with its subsequent revisions (collectively “WDRs”)(State Water Resources Control Board, 2023).

Methods

We reviewed the biological technical documents and evaluated their completeness, age, geographic scope, adherence to relevant survey protocols and professional standards, qualifications of their preparers, and whether they reflect the best available science. These included the Biological Resources Assessment (“BRA”, Graening & Nosal, 2021) and the Botanical Survey Report (“BSR”, Graening et al., 2021). We reviewed other supporting documents including the Site Plans (Vine, 2023) and Hydrogeologic Assessment Report (Hurvitz, 2023) for additional project background. We reviewed the Initial Study (“IS”, Lake County, 2025a) and Conditions of Approval (Lake County, 2025b) and evaluated whether they adequately analyze the Project’s potential for impacts to biological resources, whether the proposed mitigation measures are likely to reduce impacts to a less-than-significant level, and whether the conclusions drawn about significance of impacts are supported by the evidence provided.

Results

The preparers of the BRA are highly qualified, and the reports and documents generally follow the relevant protocols and professional standards. However, we did identify several areas where the documents as presented do not provide sufficient evidence to support the conclusions drawn in the IS, namely that the Project would have No Impact/Less-than-Significant Impact/Less Than Significant Impact with Mitigation Measures. These areas are detailed below.

CESA Candidate/ESA Proposed Threatened Wildlife

The project has potential for significant impacts to two animals which are Proposed or Candidates for listing, and neither is sufficiently addressed by the documents due to

changes in circumstance occurring between the development of the documents and the present.

Crotch's Bumble Bee

Crotch's Bumble Bee ("CBB", *Bombus crotchii*), is a Candidate for listing under the California Endangered Species Act (CESA). As a candidate, it receives the protections of CESA until a listing decision is made. If the California Fish and Game Commission chooses to list the species, it will retain those protections. Therefore, it is appropriate that the Project treat the species as CESA-listed. This includes ensuring that the Project has no unauthorized "take" of the species. "Take" is defined by Fish and Game Code section 86 as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

CBB was not discussed in the BRA, IS, or other Project documents, apparently because there were no publicly-documented occurrences of the species within the 10-mile query radius used in the BRA. An increase in the level of interest and the survey effort for CBB has led to additional detections in recent years, however. The BRA was prepared in February 2021; in April 2021, a new occurrence of CBB was documented within 10 miles of the Project site. This occurrence was re-documented 11 more times between then and now, and multiple occurrences were also documented in a cluster around this new finding (CNDDDB, 2026).

Bumble bees can use disturbed and ruderal habitats such as fallow fields as foraging and nesting habitats (Williams et al., 2014). They nest underground, and would be subject to take from project activities such as disking and construction. Destruction of a nest of a CESA-listed or candidate species is a significant impact. Therefore, the Project as described may have significant, undisclosed impacts on this species.

Northwestern Pond Turtle

Northwestern pond turtle ("NWPT", *Actinemys marmorata*) is documented to occupy Putah Creek on the Project property, as documented in the BRA. In 2023, subsequent to the preparation of the BRA, the U.S. Fish and Wildlife Service (USFWS) published a proposed rule to list the northwestern pond turtle as threatened under the Endangered Species Act ("ESA"). Unlike CESA Candidate species, ESA Proposed species do not receive take protection, but they may be elevated to Threatened at any time (the listing decision for NWPT was due in 2025, and is now overdue).

The BRA states, on page 20, that:

The cannabis cultivation / operation areas are at least 300 feet away from Putah Creek. No direct impacts to special-status animals are expected from implementation of the proposed project. However, special-status species could migrate into Project Areas between the time that the field

survey was completed and the start of construction. This is a potentially significant impact before mitigation.

However, on page 13, the BRA states that this species nests up to 1,640 feet (500m) from aquatic habitat, a much greater distance than the 300-foot setback. This larger distance is in line with a recent literature review of NWPT nesting, which recommended that areas within 1,640 feet be assumed to provide turtle nesting habitat (Alvarez & Del Vecchio, 2024).

The mitigation measures included for impacts to NWPT are erosion control measures, a 100-foot setback from aquatic features, permit requirements for in-stream work, and a pre-construction survey conducted by a qualified biologist to ensure that special-status species are not present. Unfortunately, turtle nests are buried and nearly undetectable by standard preconstruction survey techniques (Alvarez et al., 2021; Alvarez & Del Vecchio, 2024).

The setbacks as described do not cover the large distances which NWPT may travel between aquatic habitat and nest sites. The entire Project site is within 1,640 feet of either Putah Creek or of the intermittent tributary which runs along the south edge of the site, and which may also provide aquatic habitat for NWPT. Therefore, NWPT could nest anywhere within the Project site, and the mitigation measures provided would be unlikely to prevent or detect this occurrence. Nests are typically constructed in spring, and turtle hatchlings often spend the summer in the nest, so project activities such as disking and construction could potentially take NWPT eggs or hatchlings. Take of an entire nest of a Proposed Threatened species would be a significant impact under the California Environmental Quality Act (CEQA).

Rare Plants

Surveys for rare and special-status plants are challenging due to the fact that many plant taxa are only identifiable during a short annual window. This challenge is compounded when dealing with annual plants, which may not germinate every year, particularly during droughts. This challenge is typically addressed by conducting multiple survey rounds timed to the detection windows of each rare species with potential to occur. Observing nearby reference populations provides confirmation that the species in question are identifiable at the time of the survey. When surveying for annual plants, multiple years of surveys may be required, especially during adverse conditions.

The BSR for the Project states that it follows the following protocols:

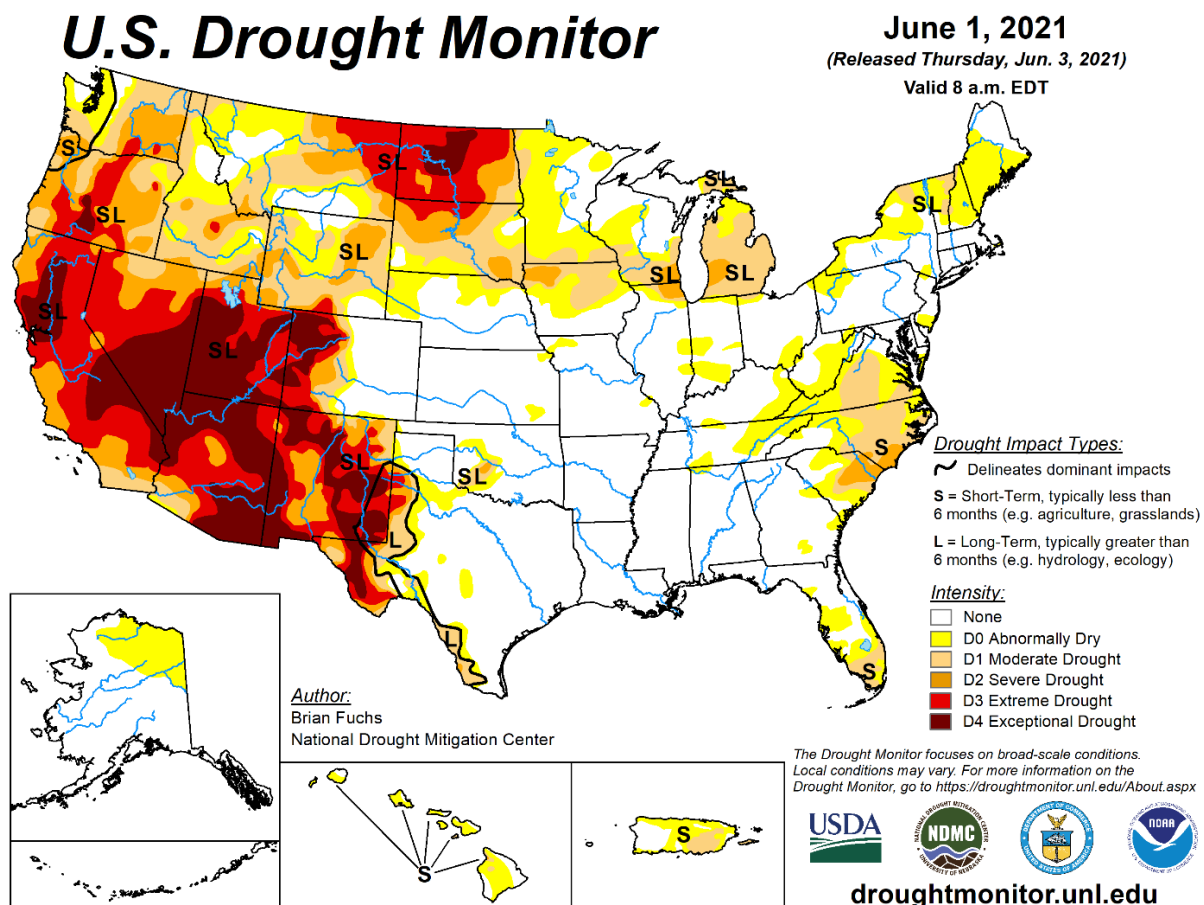
- Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW, 2018),
- Guidelines for conducting and reporting botanical inventories for federally listed, proposed and candidate plants (USFWS, 2000), and

- CNPS botanical survey guidelines (CNPS, 2001).

Each of these protocols requires multiple survey rounds within a year. Two of the protocols require multiple years of surveys if conditions are adverse (CDFW, 2018; USFWS, 2000). The surveyors who prepared the BSR conducted three survey rounds, on February 8-9, April 21, and June 3, 2021.

Drought

The 2021 water year was a severe drought, with only 40% of average annual precipitation falling on the site. The prior year had only 58% of average annual precipitation (PRISM Group, 2026). This fact alone calls the validity of the surveys into question. However, the BSR did not provide any description of the prevailing weather conditions, and stated that “There were no unusual climatic conditions.” To the contrary, on the date that the BSR was published, the U.S. Drought Monitor was reporting that the region was experiencing “Exceptional Drought” with short-term and long-term impacts—the highest intensity class used (NDMC, 2021).



The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, the National Oceanic and Atmospheric Administration and the National Aeronautics and Space Administration. Map courtesy of NDMC.

Reference Populations

Each of the three protocols states that reference populations of the rare plants with potential to occur should be visited to determine whether they are actually identifiable at the time of surveys (CDFW, 2018; CNPS, 2001; USFWS, 2000). The use of reference sites provides confidence in the validity of surveys, particularly in drought years. Even if suitable reference sites cannot be located, surveyors are instructed to use herbarium specimens as references for the appearance of the plants. Each of the three protocols requires that the report include a description of the reference sites visited, the date of the visit, and the phenological development of the reference population at the time of the visit. The entirety of the discussion of reference sites in the BSR is as follows: “Deemed not necessary.” No explanation is given for why reference sites were unnecessary.

The BSR generally characterizes the Project site as having limited potential to support special-status plants due to its history of agricultural use and the dominance of non-native species. However, some of the rare plants known from the vicinity, such as congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*) are known to occupy hayfields and similar habitats, as suggested by the name. The BSR states that “The botanical survey effort was very comprehensive; early, mid, and late-season botanical field surveys were performed” and “A false negative is highly unlikely.” Congested-headed hayfield tarplant, like several other species with potential to occur, does not typically bloom until the summer, sometimes blooming as late as November (The Calflora Database [a non-profit organization], 2026). The late-season botanical survey performed for the BSR was on June 3rd. It is entirely possible that late-season species may therefore have been missed. The use of reference populations would have avoided this situation.

Unidentified Taxa

Each of the three protocols cited by the BSR requires that all plants be identified to the taxonomic level necessary to determine rarity and listing status. In many cases, plants cannot be identified with sufficient precision during an initial survey, and must be revisited later for accurate identification. This is particularly important when the plants in question belong to a family or genus which has rare or special-status members with potential to occur in the study area. The plant list provided as an appendix to the BSR lists at least eighteen instances in which a plant was only identified to the genus level: *Asclepias* sp¹., ***Brodiaea* sp.**, *Clarkia* sp., *Eleocharis* sp., ***Eriogonum* sp.**, *Eschscholzia* sp., *Galium* sp., *Iris* sp., *Juncus* sp., *Lomatium* spp²., *Melilotus* sp., ***Navarretia* sp.**, *Phacelia* sp., *Ranunculus* sp., *Stachys* sp., *Toxicoscordion* sp., *Triteleia* sp., and *Nemophila* sp. The three bolded genera contain special-status plants known to occur in the region, as documented in the appendix to the BSR. The rare taxa in question

¹ The abbreviation “sp.” stands for “species”, and signifies an unidentified species.

² The abbreviation “spp.” stands for “species plural” and signifies multiple unidentified species.

(*Brodiaea leptandra*, *Eriogonum nervulosum*, *Navarretia leucocephala* ssp. *Bakeri*, *Navarretia leucocephala* ssp. *pauciflora*, *Navarretia leucocephala* ssp. *Plieantha*, *Navarretia myersii* ssp. *deminuta*, *Navarretia rosulata*, and *Navarretia paradoxinota*) have specialized habitat requirements which the Project site lacks, according to the BSR. Nonetheless, the inclusion of these unidentified taxa calls into question the ability of the survey as conducted to detect all species present.

Study Area

The surveys described in the BSR do not cover the entirety of the Project Area, and the survey area of the BSR is poorly defined. The BSR uses the term “Study Area”, but does not define it. In the BRA, the term “Study Area” is used to discuss the entire 1,246-acre property on which the Project will occur. The vast majority of this property was not surveyed for the BSR, so referring to it as the “Study Area” is inaccurate. The BSR also uses the term “Survey Area”, and states that “[t]he survey area was the Project Area plus a buffer of several hundred feet.” The BSR also includes a map showing the actual survey coverage (reproduced below).

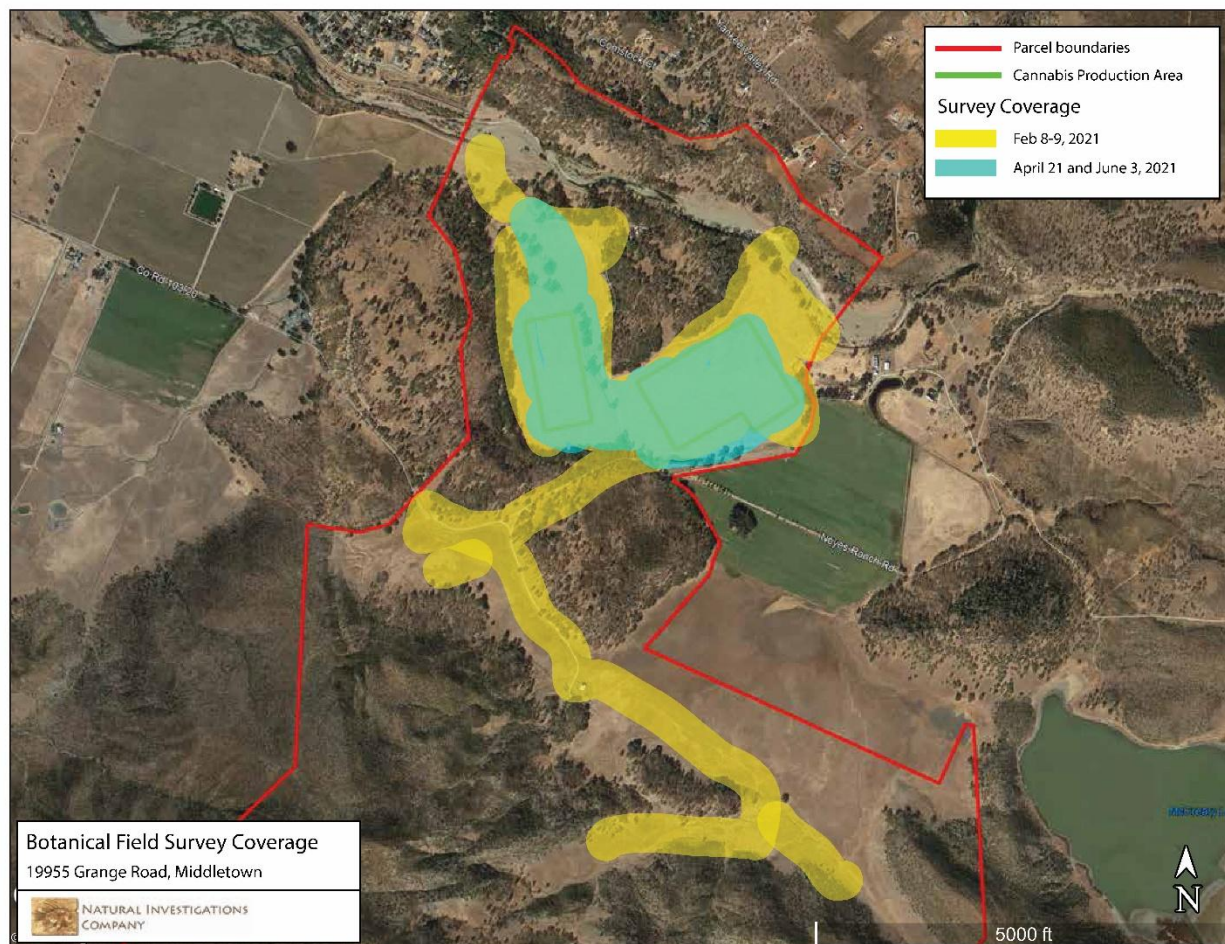


Image copyright Natural Investigations Company, 2021.

As shown on the map, the February botanical survey covered the cannabis cultivation area and the access roads to reach it. (The access roads are a necessary part of the Project, as described later in this document). The April and June surveys, however, covered a smaller area. They entirely omitted the access roads, and may not have achieved coverage over the entire cannabis cultivation area. The April survey was the “peak bloom” survey, when the most plants would be expected to be identifiable. The June survey was the “late” survey, when many species growing in disturbed grasslands, such as congested-headed hayfield tarplant, would be identifiable. A single February survey is insufficient to characterize botanical resources. Therefore, large portions of the Project area were not sufficiently studied. The statement that the survey area covered “the Project Area plus a buffer of several hundred feet” is also not congruent with the survey coverage map provided.

Age of Surveys

The USFWS guidelines (2000) state that “Project sites with inventories older than three years from the current date of project proposal submission will likely need additional survey.” The studies of the Project site were completed approximately five years ago. They may no longer accurately represent the conditions of the site.

Taken together, the exceptional drought conditions, lack of references to show that target species were identifiable during the time of the surveys, many species left unidentified, lack of survey coverage over the entire Project area, and age of the survey lead to the conclusion that the BSR does not provide sufficient information to conclude that special-status plants are absent from the Project area. Without this information, the conclusion that the Project will not significantly impact special-status plants is unfounded.

Aquatic Resources

The Project claims to avoid all impacts to aquatic resources, but the documentation provided does not meet the minimum requirements set forth by the regulatory agencies.

The WDRs require the Project to avoid streams and wetlands, and provide avoidance buffers of up to 150 feet, based on the sensitivity of the aquatic resource (State Water Resources Control Board, 2023). The BRA and IS assert that there are no aquatic resources in the cultivation area, and that appropriate buffers have been provided for off-site resources. The BRA provides a map and description of aquatic resources on the Property, but explicitly states that it does not include an aquatic resource delineation meeting the standards published by the U.S. Army Corps of Engineers (“USACE”, 2016). Such a delineation is the only means of documenting the location and extent of aquatic resources accepted by USACE or the Regional Water Quality Control Boards (“RWQCB”).

Publicly available aerial imagery and topographic data shows that there are depressions or swales present on the project site. The BRA claims that no wetlands are present within the project area, but does not provide any delineation data forms to document the claim

that these depressions are not wetlands. The mapping in the BRA includes oddities such as a culvert without an associated stream, and a spring without an associated wetland. Features described by the BRA as “manmade linear depressions that do not carry flow” are described as “Class III watercourses” in the engineering plans for the Project, while a feature that the BRA describes as a Class III watercourse is upgraded to a Class II watercourse in the engineering plans (Vine, 2023).

The engineering drawings appear to show a 200-foot wide corridor containing this Class-II watercourse at the southern edge of the project site; however, the WDRs require a 100-foot setback from the line defined by the stream’s bankfull stage (or from the top of bank in incised channels), not from the stream’s centerline. A 200-foot wide corridor cannot contain a 100-foot setback on both sides of a feature that has a width greater than zero; the setback as displayed may therefore be insufficient.

Inconsistencies such as the above are correctly addressed by preparing an aquatic resource delineation meeting USACE standards, and having it verified by USACE.

Complete Project Study Area and Access Roads

The BRA, BSR, and IS do not study the entirety of the Project’s area of effects. The documents discuss the cannabis cultivation area, but do not include complete descriptions or analyses of other required Project elements such as access roads, culverts, fences, and gates. Construction and maintenance of these features can create significant impacts, and must be analyzed as part of the Project.

The WDRs and the Conditions of Approval (Lake County, 2025b) place multiple requirements on the access roads used to reach the project site. The WDRs require that the roads comply with the *Handbook for Forest, Ranch, and Rural Roads* (Weaver et al., 2015). They also state that “Road surfacing, especially within a segment leading to a waterbody, is sufficient to minimize sediment delivery to the wetland or waterbody and maximize access road integrity. Road surfacing may include pavement, chip-seal, lignin, rock, or other material appropriate for timing and nature of use. All access roads that will be used for winter or wet weather hauling/traffic shall be surfaced.” The Conditions of Approval require that “[t]he primary access and parking areas [be] surfaced with chip seal, asphalt, or an equivalent all weather surfacing to reduce fugitive dust generation (Lake County, 2025b).

In addition to these road surfacing requirements, the WDRs state that existing roads should be moved out of riparian buffers or decommissioned whenever possible. They also have multiple requirements for locations where roads cross watercourses, included that culverts be sized to the 100-year flood as determined by a qualified professional, that they allow fish passage, that they include features such as wing walls to direct flow toward the inlet, that they include a critical dip (if possible), that they be parallel to the stream, at grade, of sufficient length, and regularly maintained.

The access roads to reach the Project site include gravel roads, as depicted on the Project drawings. They also include culverted crossings of watercourses. Most notably, approximately 800 feet of one of the (gravel) Project access roads parallels an existing streamcourse and lies within the required avoidance buffer. The Project may therefore be required to relocate roads, reconstruct roads, and reconstruct culverts in order to comply with the conditions of the WDR and the Conditions of Approval.

As described above, the BRA, BSR, and IS are focused almost entirely on the cannabis cultivation area. They do not include studies of the access roads. Given that the Project may be required to conduct significant work along the access roads, this is a clear instance of CEQA documents which fail to address all reasonably foreseeable impacts from a full and complete project.

Conclusion

CEQA provides the opportunity for the public to review the decision-making process through which public agencies determine the environmental impacts of their actions. The studies which underly the CEQA analysis of this project do not meet the relevant technical standards, and do not provide a reliable basis for the determinations made.

References

- Alvarez, J. A., & Del Vecchio, C. (2024). Maximum Distance of Pond Turtle (*Actinemys* sp.) Nests From Aquatic Sites, and Management Implications. *Sonoran Herpetologist*, 37(4).
- Alvarez, J. A., Richardson, A., & Rozumowicz-Kodsuntie, B. (2021). *Actinemys pallida*. *Herpetological Review*, 52(2).
- CDFW. (2018, March 20). *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities*. California Natural Resources Agency Department of Fish and Wildlife. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959>
- CNDDDB. (2026). *California Natural Diversity Database* [Computer software]. California Department of Fish and Wildlife.
- CNPS. (2001, June 2). *Botanical Survey Guidelines*. California Native Plant Society.
- Graening, G. O., & Nosal, T. (2021). *Biological Resources Assessment for the Cannabis Cultivation Operation at 19955 Grange Road, Middletown, California*. Natural Investigation Co.
- Graening, G. O., Nosal, T., & Downing, K. (2021). *Botanical Survey Report for the Cannabis Cultivation Operation at 19955 Grange Road, Middletown, California*. Natural Investigation Co.

- Hurvitz, L. S. (2023). *Hydrogeologic Assessment Report* [Report]. Hurvitz Environmental Services Inc.
- Lake County. (2025a, February 7). *California Environmental Quality Act Environmental Checklist Form Initial Study (UP 21-15, IS 21-16)* [Initial Study]. Community Development Department Planning Division.
- Lake County. (2025b, February 7). *Conditions of Approval, Major Use Permit, PL-25-13 (UP 21-15, IS 21-16)* [Conditions of Approval]. Community Development Department Planning Division.
- NDMC. (2021, June 1). *U.S. Drought Monitor*. National Drought Mitigation Center at the University of Nebraska-Lincoln, United States Department of Agriculture, National Oceanic and Atmospheric Administration, and National Aeronautics and Space Administration. droughtmonitor.unl.edu
- PRISM Group. (2026). *PRISM Data Explorer* [Digital Database]. <https://prism.oregonstate.edu/>
- State Water Resources Control Board. (2023). *General Waste Discharge Requirements and Waiver of Waste Discharge Requirements for Discharges of Waste Associated with Cannabis Cultivation Activities*.
- The Calflora Database [a non-profit organization]. (2026). *Calflora: Information on California plants for education, research and conservation*. [Web application]. <https://www.calflora.org/>
- U.S. Army Corps of Engineers. (2016, January). *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports*. https://www.spk.usace.army.mil/Portals/12/documents/regulatory/jd/minimum-standards/Minimum_Standards_for_Delineation_with_Template-final.pdf
- USFWS. (2000, January). *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants*. U.S. Department of the Interior.
- Vine, J. B. (2023, June 26). *Site Plans* [Civil Engineering Planset]. Realm Engineering.
- Weaver, W., Weppner, E., & Hagans, D. (2015). *Handbook for Forest, Ranch, and Rural Roads*. Pacific Watershed Associates. <https://www.pacificwatershed.com/sites/default/files/RoadsEnglishBOOKapril2015b.pdf>
- Williams, P., Thorp, R., Richardson, L., & Colla, S. (2014). *Bumble bees of North America: An identification guide*. Princeton University Press.

Attachments: Attachment 1. Preparer Qualifications

Attachment 1

Preparer Qualifications

 eric@smith-eco.com

 (530) 220-2835

 Sacramento, CA

 www.linkedin.com/in/eric-smith-ecology

EDUCATION

U.C. DAVIS, 2006

B.A. Biological Science,
Concentration Evolution &
Ecology, Minor in Education

SAN JOSÉ STATE U. 2009

GIS Certificate

EXPERTISE

- California Endangered Species
- Wetland and Aquatic Resource Ecology and Policy
- Private Land Preserve Establishment and Monitoring
- Geospatial & Statistical Analysis

PERMITS

- ESA Section 10 Handling Permit
 - California Tiger Salamander
 - Vernal Pool Branchiopods
 - California Red-Legged Frog
- CESA Section 2081(a)
 - Amphibians
 - Invertebrates
 - Endangered Plants

ERIC SMITH

Conservation Biologist

SUMMARY

I am committed to the conservation, management, and restoration of California's unique habitats for the benefit of sensitive species, biodiversity, climate, and humanity. I am a lifelong learner, and have devoted myself to furthering these goals through mastery of technical skills, technological tools, and policy.

SELECTED EXPERIENCE

SMITH ECOLOGICAL CONSULTING

Principal, 2025 - Present

Work with clients to design and implement customized, high-quality biological and aquatic resource studies to help stakeholders identify, conserve, and manage critical natural resources.

VOLLMAR NATURAL LANDS CONSULTING

Senior Biologist, 2018 - 2025

Managed five to six staff- and mid-level biologists to carry out complex biological studies, shepherd project proponents through permitting and entitlement, and ensure legal compliance.

Mid-Level Biologist I, 2016 - 2018

Carried out duties of Staff Biologist II; planned and managed simple and intermediate-complexity projects

Staff Biologist II / GIS Specialist II, 2013 - 2016

Carried out duties of Staff Biologist I; independently prepared standard documents such as Biological Assessments; independently conducted field surveys and habitat assessments for special-status species. Conducted complex and county-scale GIS modeling analyses.

Staff Biologist I / GIS Specialist I, 2011 - 2013

Assisted Senior biologists with field surveys, habitat assessments, and document preparation for California special-status species and habitats. Performed GIS analysis and created maps. Assisted in restoration design and monitored habitat restoration construction.

SKILLS

- Project Management
 - Scoping & Budget Est.
 - Scheduling & Staff Mgmt.
 - Task & Budget Tracking
 - QA/QC
 - Stakeholder Communication
 - Habitat Assessment
 - Bio Constraints Analysis
 - Wetland Delineation
 - Focal Species Surveys
 - Amphibians and Reptiles (CTS, CRF, WPT, WSF)
 - Vernal Pool Invertebrates
 - Special-Status Raptors
 - Rare Plants
 - Section 7 Consultation
 - CEQA Review & Support
 - Preserve Establishment
 - Permittee-Responsible
 - Mitigation Bank
 - Preserve Monitoring
-

SOFTWARE PROFICIENCY

- ArcGIS Desktop – Expert
- ArcGIS Pro & Apps – Advanced
- Agisoft Metashape – Advanced
- SQL - Intermediate
- Python 3 – Intermediate
- R – Intermediate
- MaxEnt – Intermediate
- Adobe Suite – Intermediate
- Asana – Intermediate

KEY PROJECT ACCOMPLISHMENTS

COYOTE CREEK MITIGATION PRESERVE, 2023-2025

Lead the team developing all required documents for approval and implementation of an in-lieu-fee preserve for National Fish & Wildlife Foundation's Sacramento District ILF Program (Project Development Plan, restoration designs, Long-Term Monitoring Plan, environmental documents). Project was permitted, approved by Interagency Review Team, and is in construction as of 2025.

SFC PRESERVE MONITORING, 2017-2025

Prepared Long-Term Monitoring Plans for two preserves. Implemented biological monitoring for California tiger salamander, western spadefoot, vernal pool branchiopods, and vernal pool plants on three preserves; awarded seven separate monitoring contracts.

LA PURISIMA CONSERVATION BANK, 2012-2025

Assisted with preparation of preserve documents for only approved bank for Santa Barbara tiger salamander. Implemented 10-year interim monitoring program. Managed surveys for California tiger salamander, western spadefoot, California red legged frog, other wildlife, rare plants, and habitat conditions. Oversaw pond repairs and pond habitat enhancements. Currently contracted for long-term monitoring on a yearly basis.

CONNOLLY RANCH PRESERVE MONITORING, 2016-2020

Managed and acted as lead scientist on implementation of five-year interim monitoring program for CTS, CRF, and SJKF on a newly-established preserve. Delivered annual reports with quantitative analysis of wildlife populations.

SCVOSA AMPHIBIAN AND REPTILE SURVEYS, 2015-2016

Designed and led surveys detecting presence and breeding of California tiger salamander and California red-legged frog in more than 50 ponds and several stream reaches on six preserves owned and managed by the Santa Clara Valley Open Space Authority. Trained authority staff in survey techniques. Provided prioritized management recommendations, which have been implemented.

TESORO VIEJO DEVELOPMENT ENTITLEMENT, 2014-2016

Conducted biological studies to support entitlement of a 1600-acre master-planned community in Madera County. Documented California tiger salamander and vernal pool branchiopods, obtained CESA and ESA permits for project, which is currently under construction.

LICENSES & CERTIFICATES

- FAA Part 107 SUAS (drone)
 - Geographic Information Science (18 sem. Unit)
 - California Rapid Assessment Method for Wetlands (CRAM)
 - General & Vernal Pool Module
 - Riparian Rapid Assessment Method (Rip-RAM)
-

CONFERENCES

SERCAL 2018

Presenter, *Topographic Restoration of a Leveled California Vernal Pool Terrain*

CNPS 2022

Poster Presenter, *Applying Cluster Analysis to Wetland Mitigation Monitoring Data*

MEMBERSHIPS

USFWS VERNAL POOL RECOVERY IMPLEMENTATION TEAM

Vice-Chair of RIT
Vice-Chair of GIS Subcommittee

CONSERVATION LANDS NETWORK

CLN 2 Herps & Inverts Committee
CLN 3 Herps & Inverts Committee

PUBLICATIONS

Vollmar, John; Kristen Chinn, **Eric Smith**, Henry Hwang, and Anton Bokisch. 2024. *Conservation of California's Great Valley Vernal Pool Landscapes*. Vollmar Natural Lands Consulting, Inc. Berkeley, CA.

Smith, Eric and John Vollmar. 2019. *Topographic Restoration of a Leveled California Vernal Pool Terrain*. Vernal Pool Landscapes: Past, Present and Future, Studies from the Herbarium. California State University, Chico, CA.

Vollmar, John; **Eric Smith**, and Linnea Neuhaus. 2017. *Multi-Scale Assessment of Past Achievements and Future Directions for Vernal Pool Conservation and Mitigation*. Prepared for U.S. Environmental Protection Agency, Region 9. Wetland Program Development Grant Agreement No. 99T06001.

Renz, Wendy; John Vollmar, Brent Helm, and **Eric Smith**. 2014. *Constructing Vernal Pools for Ecological Function: An Historical Study Of Ten Vernal Pool Construction Sites In The Northern Central Valley, California*. United States Department Of The Interior Bureau Of Reclamation Agreement/Study NO. R09AP20017.

Vollmar, John; Jake Schweitzer, Robert Holland, Carol Witham, Cassie Pinnell, **Eric Smith**, Roxanne Hulme, and Katie Young. 2013. *Predictive Habitat Analysis and Mapping of Four Rare Vernal Pool Species in Merced, Sacramento, and Placer Counties, Great Valley, California, USA*. Prepared for CVPIA Habitat Restoration Program, U.S. Fish and Wildlife Service Pacific Southwest Region. Grant Agreement No. 80270-A-G509.

ORGANIZATIONAL ACCOMPLISHMENTS

VNLC STRATEGIC PLANNING COMMITTEE

Established and co-facilitated a steering committee to advise on long-term planning and management transition. Created new standardized processes to improve product quality. Implemented cross-functional teams to foster inter-office collaboration.

VNLC DRONE PROGRAM

Established an internal program for safe, legal, and effective use of drones with multispectral, RTK, and LiDAR capabilities.

COLLABORATIONS

CCCGP 2023-24

Acknowledged contributor, *California Conservation Genomics Project, Reptiles & Amphibians*

JEPSON PRAIRIE ORCUTT GRASS STUDIES 2022-2025

Assistant on *Neostapfia colusana* and *Tuctoria mucronate* monitoring project conducted by Carol Witham

PROFESSIONAL DEVELOPMENT

RipRAM Riparian Rapid Assessment (Coastal Training Program). Elkhorn Slough CA, September 2025.

California's Native Bees (Jepson Herbarium). Hopland CA, May-June 2024.

Foothill Yellow-Legged Frog (Laguna de Santa Rosa Foundation). Santa Rosa CA, October 2023.

Boraginaceae (Jepson Herbarium). Berkeley CA, February 2022.

Polemoniaceae (Jepson Herbarium). Berkeley CA, May-June 2019.

Poaceae II (Jepson Herbarium). Berkeley CA, May 2018.

Vegetation Mapping (California Native Plant Society in Conjunction with CDFW and AIS). Redlands CA, March 2017.

UAV/Drone Commercial Certification Training (Drone University). Sacramento CA, January 2016.

Asteraceae (Jepson Herbarium). Berkeley CA, May 2014.

Poaceae (Jepson Herbarium). Berkeley CA, May 2014.

Alameda Striped Racer (Alameda County Conservation Partnership). Livermore CA, May 2014.

Wetland Delineation (Jepson Herbarium). Berkeley CA, March 2014.

California Plant Families (Jepson Herbarium). Berkeley CA, June 2013.

Western Pond Turtle (Coastal Training Program). Elkhorn Slough CA, June 2013.

50 Plant Families in the Field (Jepson Herbarium). Berkeley CA, April 2013.

Mastering The Jepson Manual II (Jepson Herbarium). Berkeley CA, March 2013.

California Tiger Salamander (Coastal Training Program). Elkhorn Slough CA, June 2012.

California Red-Legged Frog (Los Vaqueros Reservoir Watershed). Livermore CA, March 2012.

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EXHIBIT D

PROPOSED CONDITIONS OF APPROVAL

Submitted by Appellant 276 Ranch LLC

in connection with the Appeal of Major Use Permit PL-25-13 (UP 21-15) and Mitigated Negative Declaration (IS 21-16) — Rancho Lake LLC

File References:

- Major Use Permit: PL-25-13 (UP 21-15)
- Mitigated Negative Declaration: IS 21-16
- Applicant: Rancho Lake, LLC
- Property: 19955, 19986, 20110, and 22222 Grange Road, Middletown, CA (APNs 014-290-08; 014-300-02, 03, & 04)
- Appellant: 276 Ranch LLC / Luchetti Family, 21333 Grange Road, Middletown, CA
- Hearing Body: Lake County Board of Supervisors

1. Purpose and Effect of These Conditions

The Appellant submits the following proposed Conditions of Approval as alternatives to outright denial of the Major Use Permit, in the event the Board of Supervisors elects to approve the project rather than require a full Environmental Impact Report. The conditions are designed to address specific, documented impacts identified in the administrative record — most prominently the well-interference findings of GHD's May 12, 2025 hydrologic study, the inadequate odor control program, the substandard ingress/egress in a High Fire Severity Zone, and the gaps in the biological assessment — that the Mitigated Negative Declaration adopted by the Planning Commission failed to mitigate to a less-than-significant level.

These conditions are not intended to replace, but to supplement and substantially strengthen, the conditions and mitigation measures set forth in the Staff Report dated November 13, 2025. Where these conditions overlap or conflict with previously adopted measures, the more protective provision shall govern. Each condition includes a defined performance standard, a monitoring protocol, a notification and cure procedure, and a permit revocation trigger.

Each condition shall run with the use permit and bind the permittee, its successors, assigns, lessees, contractors, sub-cultivators, and any subsequent permit holder. The conditions shall be recorded against the title of all four project parcels (APNs 014-290-08; 014-300-02, 03, & 04) at the permittee's expense within thirty (30) days of permit issuance.

2. Condition 1 — Groundwater Monitoring, Well Interference Mitigation, and Three-Year Performance Cure

2.1 Findings Supporting This Condition

GHD Inc., the firm that has provided engineering services for the Coyote Valley aquifer monitoring program for the Hidden Valley Lake Community Services District for over twenty years, conducted a 2024 monitoring season hydrologic study of three wells on the Luchetti Ranch (Ag-1, Ag-2, and Monitoring Well A/B). GHD's letter dated May 12, 2025 reports that simultaneous operation of the two existing Luchetti agricultural wells already produces measurable interference and degraded well performance, and that during dry years the Luchetti wells experience automatic pump shut-offs that directly impair pasture irrigation.

The Comstock production well, drilled in 2021 to support the proposed cannabis cultivation, sits approximately 120 feet from the shared property line and approximately 500 feet from Luchetti Agricultural Well 2. The applicant's hydrogeologic report (Hurvitz Environmental Services Inc.) does not include a monitored pump test conducted in concurrence with operation of the two Luchetti agricultural wells, and GHD has concluded that the Comstock Well, in its proposed location and at the proposed extraction rate of 49.1 acre-feet per year, will likely cause material adverse impacts to the Luchetti Ranch's water supply in dry years and even in years of normal precipitation. The MND adopted by the Planning Commission does not require a stress test, does not require continuous monitoring of the Comstock Well, and does not provide an enforceable mechanism to cure interference if and when it occurs.

Mitigation Measure HYD-1 in the adopted MND requires only that the production well have a meter and water-level monitor and that data be reported annually. That measure is insufficient to detect, document, or remedy real-time interference between the Comstock Well and the Luchetti agricultural and domestic wells.

2.2 Performance Standard

The permittee's groundwater pumping shall not cause measurable interference with the Luchetti Ranch's two agricultural wells or domestic well that exceeds the natural background drawdown experienced when the Luchetti wells are operating without contribution from the Comstock Well. "Measurable interference" is defined for purposes of this condition as either (a) an additional drawdown attributable to Comstock Well operation of greater than two (2) feet at the Luchetti Ag-1 or Ag-2 well, or (b) a documented increase in the frequency of automatic pump shut-off events at the Luchetti wells of more than 15 percent compared to the established three-year baseline.

2.3 Real-Time Monitoring Network

Prior to issuance of any building, grading, or construction permit, the permittee shall, at its sole expense, design and install a real-time groundwater monitoring network meeting the following minimum specifications:

- (a) Pressure transducers and data loggers shall be installed in each of the three subject wells: the Comstock production well; Luchetti Agricultural Well 1; and Luchetti Agricultural Well 2. A fourth transducer shall be installed in the Luchetti domestic well at the option of the Appellant. The Hidden Valley Lake Community Services District monitoring well A/B located on the Luchetti

Ranch shall serve as a regional reference well and its data shall be incorporated into the monitoring record.

- (b) Each transducer shall record water level, pressure, and temperature at intervals not greater than ten (10) minutes, with full barometric compensation, consistent with the methodology used by GHD in its 2024 monitoring season.
- (c) Each Comstock Well discharge line shall be equipped with a tamper-resistant, totalizing flow meter recording cumulative volume and instantaneous flow rate at intervals not greater than five (5) minutes.
- (d) All monitoring data shall be telemetered to a cloud-hosted platform that provides real-time public access via a read-only dashboard. The Appellant, the County Community Development Department, the County Water Resources Director, and the Hidden Valley Lake Community Services District engineer of record shall be granted continuous, password-protected access to live data and to the full archive of historical readings.
- (e) The monitoring network shall be designed, installed, calibrated, and certified by an independent California-licensed Professional Geologist or Certified Hydrogeologist selected jointly by the permittee and the Appellant. If the parties cannot agree, the County Water Resources Director shall designate the Independent Hydrogeologist from a list of three qualified candidates.
- (f) The independent Hydrogeologist shall remain retained for the term of the permit and shall be compensated by the permittee. The Hydrogeologist shall be subject to professional duties to both the permittee and the Appellant and to the County, and shall not be subject to direction from any party regarding the substantive content of any report.

2.4 Pre-Operational Baseline and Stress Test

Prior to commencement of cannabis cultivation pumping, the permittee shall fund a controlled aquifer stress test conducted by the Independent Hydrogeologist over the full May–October irrigation season immediately preceding first cultivation. The stress test shall include at minimum:

- A 72-hour constant-rate pump test of the Comstock Well at the proposed maximum operating rate, with the Luchetti agricultural wells operating at their normal irrigation duty cycle.
- Step-drawdown testing to characterize aquifer transmissivity, storativity, and the cone of influence of the Comstock Well.
- Recovery monitoring for a minimum of 168 hours following each test.
- Establishment of a documented baseline water-level record covering the entire May–October period, including frequency, duration, and depth of any pump shut-off events at the Luchetti wells when the Comstock Well is not operating.

The stress test report shall be circulated for thirty (30) days of public comment. The County Community Development Director shall not authorize the start of cultivation pumping until the Independent Hydrogeologist certifies in writing that the baseline has been adequately characterized.

2.5 Tiered Interference Triggers and Mitigation Cascade

The following triggers and corresponding mitigation actions shall apply throughout the term of the permit:

Tier 1 — Advisory (drawdown ≥ 1.0 ft above baseline at Luchetti wells)

- (g) Within 24 hours of the Independent Hydrogeologist's confirmation of a Tier 1 exceedance, the permittee shall provide written notice to the Appellant, the County, and the Hidden Valley Lake Community Services District.
- (h) The permittee shall reduce instantaneous Comstock Well pumping rate by 25 percent for a minimum of 72 hours and the Independent Hydrogeologist shall verify recovery.

Tier 2 — Operational Adjustment (drawdown ≥ 2.0 ft above baseline OR a confirmed pump shut-off event at any Luchetti well coincident with Comstock Well operation)

- (i) Within 12 hours of confirmation, the permittee shall cease Comstock Well pumping daily during the May–October irrigation season) until the Luchetti wells recover to within 0.5 feet of baseline.
- (j) The permittee shall implement a written rotational pumping schedule, prepared by the Independent Hydrogeologist and shared with the Appellant, designed to eliminate the trigger condition for the remainder of the irrigation season.
- (k) The permittee shall reimburse the Appellant for documented pump-saver activations, increased fuel and electricity costs, hauled water, and any veterinary or pasture-restoration costs proximately caused by the interference event.

Tier 3 — Material Interference (drawdown ≥ 3.0 ft above baseline OR more than three Tier 2 events in any rolling 90-day period)

- (l) The permittee shall suspend all Comstock Well pumping within 24 hours and shall not resume pumping until the Independent Hydrogeologist certifies in writing that engineering controls (e.g., variable-frequency drive limitation, scheduled-pumping protocol, or supplemental water supply from off-site sources delivered by truck or pipeline) have been implemented and verified to prevent recurrence.
- (m) During any suspension, the permittee shall provide irrigation water to the Appellant from an independent source (e.g., trucked water or temporary connection) at the permittee's sole cost in any volume necessary to make the Appellant whole for that irrigation cycle.
- (n) All Tier 3 events and the corresponding cure shall be reported to the County Community Development Department within seven (7) days and shall be documented in the annual compliance report described in Section 6 below.

2.6 Five-Year Performance Cure Period and Permit Revocation Trigger

If, at any time within the first five (5) full irrigation seasons of cultivation operation, the permittee experiences more than two (2) Tier 3 events in a single irrigation season, or any combination of Tier 2 and Tier 3 events totaling more than five (5) in a single irrigation season, the permittee shall be deemed to have failed the performance standard. The County Community Development Director shall issue a Notice of Failure to Cure and shall set the matter for revocation hearing before the Planning Commission within ninety (90) days. The Planning Commission shall revoke the use permit unless the permittee demonstrates by a preponderance of the evidence, supported by the Independent Hydrogeologist's certification, that engineering changes have eliminated all measurable interference. In the event such showing is made and approved by the Planning Commission, the five year period set forth herein shall restart.

If, at the close of the fifth full irrigation season, measurable interference attributable to the Comstock Well persists at any tier above Tier 1, the use permit shall expire automatically by its own terms unless the Board of Supervisors, on application by the permittee and after a noticed public hearing, finds by substantial evidence in the record that interference has been fully and durably resolved.

2.7 Drought-Year Reductions

During any year in which the State Water Resources Control Board, the Governor, or the Lake County Board of Supervisors declares a drought emergency, or in which the Coyote Valley aquifer monitoring program documents groundwater elevations more than 10 percent below the long-term mean for the relevant month, the permittee shall reduce its outdoor canopy area and total water extraction by no less than 30 percent (rather than the 10 percent figure set forth in the applicant's Drought Management Plan). The Independent Hydrogeologist shall verify the reduction and report compliance to the County.

3. Condition 2 — Engineered Odor Control, Property-Line Sensor Network, and 90-Day Cure

3.1 Findings Supporting This Condition

The administrative record contains no engineered odor control plan. The applicant's Property Management Plan and the MND rely on an Odor Management Plan that does not specify performance standards, does not require physical odor-control infrastructure (such as carbon filtration, vapor-phase neutralization, biofilters, or enclosed structures), and contains no enforceable monitoring protocol. The cultivation area is proposed within a setback that brings the canopy edge significantly closer than 1,000 feet to the Luchetti residences, organic farm center, and certified organic permanent pasture. The published case history of large-scale outdoor cannabis cultivation — most prominently in Carpinteria, Santa Barbara County — demonstrates that odor cannot be effectively controlled at industrial cultivation scales without engineered infrastructure.

Multiple members of the public, including residents of Hidden Valley Lake and Middletown, submitted comments confirming that existing cultivation sites along Highway 29 produce odors detectable from substantial distances and that those odors trigger headaches, lower property values, and impair quality of life for nearby residents.

3.2 Performance Standard

Cannabis odor measured at any point along the shared property line between the Comstock Ranch parcels and the 276 Ranch parcels shall not exceed a five-second-average concentration corresponding to a dilution-to-threshold (D/T) value of 7 as measured by Nasal Ranger field olfactometry, consistent with the standard adopted in cannabis-odor litigation and used by the Santa Barbara County Air Pollution Control District. Continuous electronic-nose readings shall not exceed the equivalent threshold for total volatile organic compounds (TVOC) and beta-myrcene, alpha-pinene, and terpene-class indicators as calibrated against the olfactometric standard during commissioning.

3.3 1,000-Foot Buffer / Cultivation Setback

Notwithstanding the minimum setback in Lake County Code Article 27.11, the outdoor cannabis canopy footprint shall be relocated and reconfigured such that no portion of the canopy area is closer than one

thousand (1,000) feet from any property line shared with the 276 Ranch parcels. This buffer is consistent with the spirit of Lake County Ordinance No. 3101 (Farmland Protection Zones), which acknowledges that cannabis may present conflicts with traditional farming and prohibits outdoor cultivation within 1,000 feet of designated Farmland Protection Zones. The Luchetti Ranch's certified organic permanent pasture is on Prime Farmland of statewide significance per the California Department of Conservation Important Farmland Finder and is entitled to no less protection than other Lake County Prime Farmland.

3.4 Engineered Odor-Control Infrastructure

The permittee shall, at its sole expense, design, install, operate, and maintain engineered odor-control infrastructure that includes, at minimum:

- (o) A perimeter vapor-phase neutralization system or equivalent atomization curtain along the cultivation-area boundary facing the Luchetti property, designed by a California-licensed mechanical or environmental engineer with documented experience in cannabis odor mitigation.
- (p) Enclosed Harvest Storage and Staging structures equipped with negative-pressure exhaust ventilation routed through carbon filtration sized for not less than three air changes per hour during harvest, drying, and curing operations.
- (q) Closed-loop trim and waste handling — no on-site open composting, open trim piles, or open waste storage during the harvest, drying, or curing periods.
- (r) A written Odor Control Operations and Maintenance Manual prepared by the design engineer, certified annually, and posted to the publicly accessible compliance portal described in Section 6.

3.5 Property-Line Odor Sensor Network

Prior to the start of operations, the permittee shall install, at its sole expense, a continuous electronic-nose / VOC sensor array along the shared property line with the Luchetti Ranch, meeting the following minimum specifications:

- (s) Not fewer than four (4) sensors deployed at intervals not exceeding 500 feet along the shared boundary, sited in consultation with the Appellant.
- (t) One (1) upwind reference sensor and one (1) sensor sited at the Luchetti farm center to characterize ambient background and impacts at the receptor.
- (u) Each sensor shall record total VOCs and cannabis-indicator terpenes (including beta-myrcene, alpha-pinene, and limonene) at intervals not greater than one (1) minute, with co-located meteorological stations recording wind speed and direction.
- (v) All sensor data shall be telemetered to the same publicly accessible cloud dashboard as the hydrology data, with continuous read-only access for the Appellant, the County, and the Lake County Air Quality Management District.
- (w) The network shall be commissioned, calibrated, and audited by an independent air-quality consultant retained by the County at the permittee's expense, and recalibrated at least annually.

3.6 Notification, Cure, and 90-Day Revocation Trigger

Upon confirmation by the independent air-quality consultant that the property-line standard in Section 3.2 has been exceeded:

- (x) The permittee shall provide written notice to the Appellant, the County Community Development Department, and the Lake County Air Quality Management District within twenty-four (24) hours.
- (y) The permittee shall implement corrective action — adjusting harvest timing, increasing carbon-filter capacity, deploying supplemental neutralization, suspending high-emission cultivation activities (such as defoliation or harvest), or otherwise — and shall report the action taken to the County in writing within seven (7) days.
- (z) The permittee shall have ninety (90) calendar days from the date of the first confirmed exceedance to demonstrate, through continuous sensor data and at least one independent field-olfactometry verification, that the property-line standard has been re-attained on a sustained basis.

If, at the conclusion of the 90-day cure period, the property-line standard has not been re-attained on a sustained basis (defined as no exceedances in the final 30 days of the cure period), the County Community Development Director shall set the matter for permit revocation hearing before the Planning Commission within forty-five (45) days. The Planning Commission shall revoke the use permit unless the permittee demonstrates by a preponderance of the evidence that compliance has been achieved.

Three or more separately confirmed and unresolved exceedance events within any rolling 24-month period shall constitute an independent and sufficient basis for revocation regardless of the cure-period status.

4. Condition 3 — Wildfire Mitigation and Access Road Improvements

4.1 Findings Supporting This Condition

The project site is located in a State Responsibility Area subject to a moderate to high Fire Hazard Severity Zone designation, in a sub-watershed catastrophically impacted by the Valley Fire of 2015 and seriously threatened by the LNU Lightning Complex of 2020. Grange Road, the sole ingress and egress for the cultivation site, the Luchetti Ranch, the United States Coast Guard facility, and other residences, was never formally constructed to current standards, lacks an engineered structural section, and is in a state of progressive deterioration that the Lake County Department of Public Works has been able to address only through periodic chip seals and pothole patching. The Coast Guard Road continuation is similarly substandard. Public Resources Code section 4290 and the California Board of Forestry's Fire Safe Regulations require minimum widths, surface standards, vertical clearance, turnouts, and turnarounds that the existing roadway cannot fully meet without complete reconstruction.

The Office of Emergency Services has not been formally consulted on the combined-traffic and emergency-evacuation implications of this project together with the Guenoc Valley Resort project, which contemplates evacuation routing through the Grange Road Connector. The MND adopted by the Planning Commission does not analyze cumulative wildfire-evacuation impacts. The introduction of up to forty (40) daily vehicle trips during peak harvest, twelve full-time employees, and twenty seasonal workers — together with portable membrane structures, fuel-handling, and machinery — materially

increases the number of unique ignition points in a high-risk fire landscape, while the only evacuation route remains a substandard rural road.

4.2 Performance Standard

The permittee shall not commence cultivation operations until the project's ingress, egress, and on-site access infrastructure have been brought into substantial conformance with the access provisions of Public Resources Code section 4290 and Title 14 California Code of Regulations sections 1273.00 through 1273.09 to the maximum extent reasonably feasible, and until the wildfire mitigation measures set forth below have been installed and inspected.

4.3 Mandatory Road and Access Improvements

- (aa) Turnouts. The permittee shall, at its sole expense, design and construct PRC §4290 / 14 CCR §1273.04-compliant passing turnouts along the Coast Guard Road on the Comstock Ranch at intervals not greater than 400 feet or as otherwise required by CAL FIRE on review of the Fire Safe plan. Turnout design shall be approved by Lake County Public Works and CAL FIRE prior to construction.
- (bb) Vertical Clearance and Vegetation Management. The permittee shall maintain a minimum 15-foot vertical clearance and a minimum 10-foot horizontal clearance over the entire length of the project access route from Highway 29 to the cultivation site, including removal of overhanging limbs and dead or dying trees within 30 feet of the road centerline that pose a strike or fall hazard.
- (cc) Roadside Fuel-Load Reduction. The permittee shall annually mow, masticate, or otherwise treat fuels within a roadside zone extending 30 feet on each side of the centerline of the project access route from Highway 29 to the project gate, and shall install and maintain a shaded fuel break of not less than 100 feet on each side of the road within the four parcels under the permittee's control. The treatment shall be completed prior to June 1 of each year and shall be documented in the annual compliance report.
- (dd) Surface Improvements. Where existing pavement structural section is failed, the permittee shall, in coordination with Lake County Public Works, contribute its proportionate fair-share cost to road rehabilitation through a recorded reimbursement agreement, with permittee's share calculated based on its average daily trips relative to total trips on the affected segment.
- (ee) Onsite Roads. All internal driveways, fire-apparatus access roads, gates, and turnarounds within the project parcels shall meet the full PRC §4290 standard. Gates shall be Knox-Box equipped per CAL FIRE specification. Internal road grades shall not exceed 16 percent except where authorized by the AHJ.

4.4 On-Site Wildfire Mitigation Measures

- (ff) Dedicated Fire-Suppression Water. Of the twenty (20) 5,000-gallon water storage tanks proposed, no fewer than ten (10) tanks (50,000 gallons total) shall be plumbed exclusively for fire suppression with NFPA-compliant fittings, in addition to any irrigation storage. A draft hydrant suitable for CAL FIRE engine connection shall be installed at the cultivation entrance.
- (gg) Generator and Equipment Standards. All on-site internal-combustion generators shall be Tier 4 Final or electrically equivalent, fully spark-arrested, and operated only within metal-clad shelters with non-combustible bases. Refueling shall occur only in designated, paved or non-

combustible-surfaced fueling areas with secondary containment, located not less than 100 feet from any vegetated area.

- (hh) Red Flag Operational Restrictions. During any period of declared Red Flag Warning, Fire Weather Watch, or PSPS event affecting the project area, the permittee shall (a) suspend all internal-combustion field operations except those required for site security and water management; (b) cease use of all hot-work equipment; (c) increase on-site security staffing to maintain a fire watch; and (d) maintain all 50,000 gallons of dedicated fire-suppression water at full capacity.
- (ii) Worker Wildfire Training and Evacuation. All permanent and seasonal employees shall receive annual wildfire awareness, fire extinguisher use, and evacuation training prior to the start of fire season. The permittee shall maintain a written site-specific Wildfire Operations Plan and Evacuation Plan, prepared in consultation with CAL FIRE and the South Lake County Fire Protection District, posted on site and shared with the Appellant.
- (jj) Onsite Ignition-Source Inventory. The permittee shall maintain an updated inventory of every potential ignition source on site (generators, pumps, vehicles, hot-work equipment, electrical service entries, photovoltaic combiners, lighting), with corresponding ignition-prevention specifications. The inventory shall be reviewed by the AHJ annually.

4.5 OES and Cumulative Evacuation Consultation

Prior to the start of operations, the permittee shall fund a formal consultation with the Lake County Office of Emergency Services and CAL FIRE addressing the combined emergency-evacuation impacts of this project and the approved Guenoc Valley Resort, including evacuation routing through the Grange Road Connector. The consultation report shall identify cumulative impacts to evacuation time and capacity and shall recommend additional mitigation, which the permittee shall implement at its expense to the extent reasonably attributable to the cannabis project.

5. Condition 4 — Biological Resources Mitigation Plan

5.1 Findings Supporting This Condition

Lucy MacMillan, biologist retained by the Appellant, has documented that the Initial Study and biological assessment relied upon by the Planning Commission contain three categories of deficiencies that render the Mitigated Negative Declaration's "no significant impact" finding unsupported: (a) the absence of a CEQA-required wetlands delineation study; (b) a temporal and methodological gap in special-status plant and animal species surveys (including survey timing that does not match the seasonal phenology of likely sensitive species); and (c) a loophole in adopted Mitigation Measure BIO-5 under which non-ground-disturbing activities (such as removal of trees and shrubs that provide nesting habitat) may proceed without a pre-construction nesting bird survey. In addition, the MND does not analyze glare from the proposed greenhouse and hoop-house materials, which are typically highly reflective and which can produce significant aesthetic and ecological effects, particularly for raptors and other avian species.

Putah Creek (Class I) and Crazy Creek (Class II) bound the project parcels and host federally and state-listed species and their habitats. The Coyote Valley aquifer that supports them is the same aquifer subject to the hydrologic concerns described in Condition 1.

5.2 Wetlands Delineation

Prior to issuance of any grading or building permit, the permittee shall fund a formal jurisdictional wetlands delineation prepared by an independent qualified wetlands biologist in accordance with the U.S. Army Corps of Engineers' 1987 Wetland Delineation Manual and the applicable Regional Supplement, and shall submit the delineation for verification by the Corps and the Regional Water Quality Control Board. Setbacks from delineated wetlands shall be no less than 100 feet from the wetland edge for all cultivation, irrigation, and storage facilities, and no less than 150 feet from any feature determined to be a Class I watercourse.

5.3 Seasonally Appropriate Special-Status Species Surveys

The pre-construction survey requirement of MM BIO-4 is hereby strengthened. The permittee shall fund focused, seasonally appropriate, protocol-level surveys for all special-status plant and animal species with potential to occur on the project parcels. Surveys shall be conducted within the bloom or activity period appropriate to each target taxon (e.g., spring botanical surveys for vernal-pool plants, summer surveys for late-season annuals, dawn and dusk surveys for special-status bats, breeding-season surveys for special-status birds). Survey reports shall be provided to the County and to the Appellant for thirty (30) days of review prior to any ground disturbance. The project documents do not address candidate and proposed threatened and endangered species such as Crotch's bumble bee and the northwestern pond turtle. The biological surveys required herein shall specifically address such species.

5.4 Closure of the BIO-5 Nesting-Bird Loophole

Mitigation Measure BIO-5 is hereby modified to read in substance as follows:

"No vegetation removal, tree limbing, shrub clearing, mowing of grasslands, deconstruction of structures, or any other activity that has potential to disturb actively used or potentially used nest sites shall occur during the avian nesting season (February 1 through September 15) without a pre-activity survey conducted within seven (7) days prior by a qualified biologist within a 500-foot radius of the activity area. If active nests are identified, an appropriate species-specific buffer (typically 250 feet for songbirds and 500 feet for raptors) shall be established and maintained until the qualified biologist documents that the young have fledged and are independent of the nest. The pre-activity survey requirement shall apply equally to ground-disturbing and non-ground-disturbing activities, and to vegetation management associated with fuel reduction, road maintenance, and security operations."

5.5 Glare and Reflective-Surface Analysis

Prior to issuance of any building permit for the Harvest Storage and Staging structures, hoop houses, or greenhouses, the permittee shall submit a Glare and Reflectivity Analysis prepared by a qualified consultant evaluating direct and indirect solar reflection from all proposed reflective surfaces, as seen from (a) the Luchetti residences, (b) public roads within one mile, and (c) raptor flyway corridors associated with Putah Creek and Crazy Creek. The permittee shall employ low-reflectivity films, matte-finish coatings, or shade structures as needed to bring glare to a level not perceptible from the listed receptors.

5.6 Ongoing Biological Monitoring

The permittee shall fund an annual biological monitoring report prepared by a qualified independent biologist, addressing implementation of MM BIO-1 through BIO-5 as modified herein, and including documentation of any wildlife mortality, unusual sightings, special-status species observations, and the condition of riparian and wetland buffers. The annual report shall be submitted to the County and to the Appellant within sixty (60) days following the close of each cultivation season.

6. Condition 5 — Cross-Cutting Compliance, Audit, Standing, Bonding, and Insurance

6.1 Annual Independent Compliance Audit

The permittee shall fund an annual independent compliance audit conducted by a third-party consultant or consulting team selected by the County Community Development Director from a pool of qualified candidates. The audit shall verify compliance with each of Conditions 1 through 4 and shall include site inspection, review of all monitoring data, and interviews with personnel. The audit report shall be made publicly available on the County's website and on the project compliance portal. The cost of the audit shall not be passed through to the Appellant.

6.2 Public Compliance Portal

The permittee shall, at its sole expense, establish and maintain a publicly accessible web-based compliance portal that hosts (a) real-time hydrology and odor sensor data; (b) all annual compliance reports; (c) all stress-test and monitoring reports; (d) records of all Tier 1, Tier 2, and Tier 3 events under Condition 1, and all confirmed odor exceedances under Condition 2; (e) the Wildfire Operations Plan and Evacuation Plan; and (f) all biological monitoring reports. The portal shall remain online for the term of the permit and for ten (10) years following expiration or revocation.

6.3 Performance Bond and Letter of Credit

Prior to commencement of any construction activity, the permittee shall post a performance bond or irrevocable letter of credit in favor of the County of Lake in an amount of not less than two million dollars (\$2,000,000), in a form approved by County Counsel, securing the permittee's obligations under Conditions 1 through 4. The bond shall be drawable by the County to fund mitigation, site restoration, monitoring, or interim water deliveries to affected parties (including the Appellant) in the event of permittee default. The bond amount shall be adjusted at three-year intervals to reflect inflation and changes in scope.

6.4 Insurance and Indemnification

The permittee shall maintain commercial general liability insurance with a minimum per-occurrence limit of \$5,000,000 and an aggregate limit of \$10,000,000, naming the County of Lake and 276 Ranch LLC as additional insureds with respect to the operations conducted under this permit. The permittee shall indemnify and hold harmless the Appellant from any loss arising from (a) loss of the Luchetti Ranch's USDA Organic Certification or any successor certification by reason of pesticide, fertilizer, or chemical drift attributable to the Comstock cultivation; (b) loss of agricultural production by reason of well

interference; (c) wildfire ignition attributable to the cultivation operation; or (d) any third-party claim arising from the cultivation operation.

6.5 Standing of the Appellant to Enforce

The Appellant 276 Ranch LLC shall have express standing to enforce these conditions of approval through any available administrative or judicial proceeding, and shall be deemed an intended third-party beneficiary of these conditions. Recovery by the Appellant of attorney's fees and costs shall be available in any action in which the Appellant substantially prevails on the merits, in accordance with Code of Civil Procedure section 1021.5 and the Lake County Code.

6.6 No Permit Transfer Without Written Consent

The use permit shall not be transferred, assigned, sublet, or sold, in whole or in part, without prior written consent of the County Community Development Director, after notice to the Appellant and an opportunity to comment. Any change in the controlling membership interests of Rancho Lake LLC of more than 25 percent in any rolling 36-month period shall constitute a transfer for purposes of this condition.

6.7 Five-Year Permit Term and Compliance-Based Renewal

The use permit shall have a maximum initial term of five (5) years from the date of first cultivation. Renewal shall not be administrative. Renewal shall require a noticed public hearing before the Planning Commission, supported by an independent compliance audit covering the full prior term, with notice to the Appellant. The Planning Commission may deny renewal, condition renewal on additional measures, or shorten the term of any subsequent permit based on compliance history.

6.8 Severability

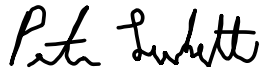
If any portion of these conditions is held invalid or unenforceable by a court of competent jurisdiction, the remaining conditions shall remain in full force and effect, and the County and the Planning Commission shall consider whether replacement conditions of equivalent effect should be imposed.

7. Conclusion

These conditions are offered in the alternative — without waiver of the Appellant's primary contention that this project's significant and not-yet-mitigated impacts require a full Environmental Impact Report under the California Environmental Quality Act. The Appellant submits that the Mitigated Negative Declaration adopted by the Planning Commission is unsupported by substantial evidence in the record, and that a fair argument exists that the project may have significant effects on water resources, biological resources, public safety, agricultural compatibility, and tribal and cultural resources.

If the Board nevertheless determines to approve the project, the Appellant respectfully urges adoption of the foregoing conditions as the minimum necessary to protect the Luchetti Ranch's 56-year organic cattle operation, the Coyote Valley aquifer, the public's safety in the event of wildfire, and the natural resources of Putah Creek, Crazy Creek, and the surrounding habitat.

Respectfully submitted,

A handwritten signature in black ink that reads "Peter Luchetti". The signature is written in a cursive, slightly slanted style.

Peter Luchetti

Managing Member, 276 Ranch LLC

21333 Grange Road, Middletown, CA 95461

(415) 710-0906 | peter@tablerockpartners.com

Date: _____