Ramirez, Angelica

From:	Mandy Duong <mduong@cappellonoel.com>
Sent:	Friday, April 17, 2020 11:45 AM
To:	Alexander, Jacquelyne; sbcob
Cc:	Lawrence J. Conlan; Kavaughn B
Subject:	Santa Barbara West Coast Farms, LLC Appeal of Planning Commission 12-4-19 Denial of LUP
Attachments:	2020.04.17, BOS, C&N, Letter re Appeal of Planning Commission Denial of LUP.pdf

Dear Ms. Alexander,

Please find attached correspondence in support of Santa Barbara West Coast Farms, LLC's appeal.

We will be sending our power point and PDF momentarily in a separate e-mail.

Please confirm receipt of this e-mail.

Thank you,
Mandy

Mandy Duong | Cappello & Noël LLP
831 State St | Santa Barbara, CA
Email: mduong@cappellonoel.com
Phone: 805.564.2444

CAPPELLO
& NOËL LLP
TRIAL LAWYERS

LAWRENCE J. CONLAN

April 17, 2020

Via email

Santa Barbara County Board of Supervisors
c/o Jacquelyne Alexander
Chief Deputy Clerk of the Board
jralexander@co.santa-barbara.ca.us
sbcob@co.santa-barbara.ca.us.

Re: **Santa Barbara West Coast Farms, LLC Appeal of Planning Commission December 4, 2019 Denial of Land Use Permit for Cannabis Cultivation W Highway 246, Buellton, CA; APN 099-240-067 (Planning Commission Case No.: 19LUP-00000-00010)**

Dear Chair Hart and Honorable Supervisors:

We represent Santa Barbara West Coast Farms, LLC (West Coast Farms) in the *de novo* appeal set for hearing on April 21, 2020. Please accept this letter as a supplement to our December 12, 2019 letter in support of our appeal.

The Santa Barbara County Planning Department Director previously approved West Coast Farms for a Land Use Permit to cultivate cannabis. The Department reaffirmed and defended that decision several times before the Planning Commission instructed it in late 2019 to find a basis for denial. The bases for the denial ultimately adopted by the Planning Commission were potential visual and aesthetic impacts, potential odor impacts, and potential cumulative impacts presented by other cannabis farms in the Santa Ynez Valley and specifically along Highway 246 west of Buellton where West Coast Farms is located. As set forth in our December 12, 2019 letter and below, the grounds for denial are not based on substantial evidence or well-founded facts. Further, the denial of West Coast Farms' permit is fundamentally at odds with the approval of two other cannabis farms located east and west of this project. Accordingly, we

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request that our appeal be upheld and that West Coast Farms be granted its permit and allowed to move forward with the beautifully designed and progressive farm that is now years in the making.

West Coast Farms is Located in a Rural Area West of the City of Buellton and Will Employ Progressive and Clean Farming Methods

West Coast Farms is located on the south side of State Highway 246, approximately 3 miles west of Highway 101. It will upgrade a farm that was most recently used for row crops to a cannabis farm using organic practices that conform to the agricultural interests of the community and contribute to the local economy. The farm will use best management practices for farming that will improve soil conditions, reduce the need for fertilizers, mitigate potential odor impacts, address pest issues without sprays or traditional pesticides, and conserve water using drip irrigation. The farm will be visually appealing and completely in harmony with the local community and landscape.

West Coast Farms' Architecture and Landscaping Satisfies LUDC Goals and Policies Regarding Aesthetic and Visual Resources

West Coast Farms is, consistent with its name, focused on agriculture. The farm will have two barns, well-designed and built by an architectural firm that has designed wineries and tasting rooms throughout California. Local residents and tourists alike will be pleased to see it transform from a simple row crop parcel to a lush, green farm bordered by native landscaping, much like other nearby farms and vineyards. The farm has an existing well that will supply water for all purposes, and the farm will include an onsite wastewater treatment system for the water used for nonagricultural purposes. The property sits inside the boundaries of the Santa Ynez Valley Community Plan, so the farm will also operate consistently with the goals and policies of that Plan, including through use of a state-of-the-art odor abatement system and building design.

As detailed in the plan submission, the landscaping will shield the fencing that secures the perimeter of the farm, as well as the odor abatement system that will be installed, and as required by the LUDC, screen the agricultural operations of the farm. The landscaping includes native species that will grow naturally, use water efficiently, conform to the local landscape, and conserve views from Highway 246 of the rolling hills south of the property, which sits at an elevation below the roadway. Even the Planning Commission members lauded the overall

visual aesthetic of West Coast Farms before ultimately backtracking over a speculative and inaccurate concern that the landscaping (required by the LUDC) could potentially restrict views along the Highway 246 corridor.

In sum, West Coast Farms will enhance the visual aesthetic of the local community at every level. True and correct copies of the architectural renderings of the farm are attached hereto as **Exhibit A**, and true and correct copies of letters from West Coast Farms' building contractor and landscape designer are attached as **Exhibits B and C.**

West Coast Farms Satisfies the Agricultural Resource Goals, Policies, and Regulations

As the Planning Department recognizes, cannabis cultivation is considered an agricultural use pursuant to the Uniform Rules and qualifies as "agriculture" pursuant to the Land Use Element and the LUDC. Ironically, cannabis farmers have been criticized in this regard not for their own agricultural practices, which are fundamentally clean, water efficient and pesticide free, but for how they may respond to "pesticide drift" inadvertently caused by neighboring farms and vineyards that do use pesticides on their crops.

Setting aside that pesticide drift is not allowed under California law, it makes little sense to penalize cannabis growers (who do not use pesticides) by denying land use permits in favor of other farmers whose pesticide use could impact nearby cannabis crops. West Coast Farms has investigated this issue and considered potential impacts from properties nearby and has little concern about being impacted by neighbors' pesticides. Indeed, West Coast Farms has attempted to cooperate with the one neighbor, Blair Pence, whose use of pesticide on his grapes could theoretically cause an impact on West Coats Farms, but Mr. Pence has declined to engage in productive discussions. If necessary, West Coast Farms would be pleased to consider a Memorandum of Understanding with Mr. Pence that would limit his potential liability in the event of inadvertent pesticide drift.

West Coast Farms Will Eliminate Potential Odor Impacts and therefore Satisfies the Goals, Policies and Regulations Concerning Odor

One of the beneficial characteristics of this farm is that it is designed for producing cannabis oil. Growing cannabis for oil enables West Coast Farms to negate virtually all theoretical concerns about odor. The farm's plants will be

harvested twice a year, with a total harvest time of approximately a month. When the plants are cut, they will be moved immediately inside one of the barns and packaged through a cryogenic freezer. So, except for the initial and brief moment when the plants are first cut, there will be essentially no other harvesting on site. There will be no drying, no clipping, and no manufacturing of cannabis products. Rather, the crops will be frozen and sealed before being transported away to a different location to be processed for oils. There will be virtually no opportunity for detectible, traceable odor.

Nevertheless, to ensure that all concerns about odor are addressed and eliminated, the farm will include a state-of-the-art odor abatement system by Byers. The details of the Byers vapor system, which will be carefully located around the property border and regularly monitored, are set forth in the presentation attached as **Exhibit D**, and a report analyzing local wind direction prepared by Sespe Consulting is attached as **Exhibit E**. The system will border the property to the north and east (accounting for prevailing wind direction) and it will be regularly monitored by experts to ensure maximum odor abatement.

We believe West Coast Farms is the only cannabis applicant proposing to use a vapor phase system as a baseline, proactive measure to ensure odor is not an issue at its farm and for surrounding properties.

West Coast Farms' Practices Will Minimize and Mitigate Potential "Cumulative Impacts" and Any Such Impacts Have Already Been Considered and Accounted for as Part of the PEIR

Certain concerns have been expressed by cannabis opponents about "cumulative effects" of cannabis farms in proximity to one another. The concern typically voiced involves the potential for cumulative odor from cannabis farms. But this issue was specifically considered during the PEIR which, as the Planning Department recognizes, acknowledged the potential for significant impacts and that future cannabis cultivation would likely occur along Highway 246. As importantly as it relates to West Coast Farms, and as explained above, the notion that this project could contribute to cumulative odor impact is almost entirely mitigated by the proactive measures West Coast Farms will take to reduce and eliminate odor during its farming operations and further to ensure that any odor that is created is abated at the property borders. Hence, as it relates to West Coast Farms, there is very little likelihood that it would contribute to odor in the area.

A second concern expressed by cannabis opponents, though one that the Planning Department and even the Planning Commission did not ultimately accede to, is the speculative claim about cumulative effects caused by so-called "terpene drift" from cannabis plants potentially harming grapes. To put it bluntly, the concern about possible effects of cannabis terpenes on grapes is factually and scientifically unsubstantiated.

Recent scientific studies have entirely debunked this notion. For example, in the Final Report of an analysis conducted in the Santa Ynez Valley by Pacific Environmental Analytics, Dr. William Vizuete concluded that there is virtually zero likelihood that grapes would absorb terpenes from cannabis strains, and that could only occur when the cannabis is harvested year-round for multiple consecutive years, which is not the case for West Coast Farms or any other known farm. A true and correct copy of the Final Report of Dr. William Vizuete of Pacific Environmental Analytics is attached hereto as **Exhibit F**.

In addition, a separate scientific investigation was done to assess the claims of "terpene drift" by Mr. Pence in particular. Scientific lab analysis has been conducted that demonstrates that cannabis grown next to the Pence Vineyard several years ago had zero effect on all varietals of his grapes grown at the same time. This means that no cannabis terpenes were found in his wine made from grapes grown immediately adjacent to a large cannabis grow. True and correct copies of the final lab analyses of performed by Infinite Chemical Analysis LLC in compliance with lab quality control requirements of 16 California Code of Regulations section 5730 are attached hereto as **Exhibit G**.

The Economic Upside of Cannabis in Santa Barbara County is A Critically Important Consideration

A key consideration for every potential cannabis project in Santa Barbara County, including this farm, is the positive economic impact the industry will have. This impact should be a significant factor in the analysis of every Land Use Permit application. The UCSB Economic Forecast Project, led by Dr. Peter Rupert, UCSB economics professor and former Chair of the Economics Department, has done a preliminary analysis of the positive monetary impacts of cannabis in Santa Barbara County. A true and correct copy of excerpts of Dr. Rupert's Initial Impact Report are attached hereto as **Exhibit H**.[1]

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[1] See also Initial Impact report at https://efp.ucsb.edu/Cannabis/implan_InitialAssessment.pdf

Based on studies of existing growers, his team has determined that the cannabis industry buys locally (in Santa Barbara County) goods and services (output) worth $785,000 per year per cultivated acre. Using a baseline of 156 acres legally cultivated in the county, this amounts to direct purchases from the local economy of $122.5 million, generating approximately $169.3 million worth of output, for a total direct output impact of $291.8 million. In addition, the number of jobs generated leads to an estimated $215.8 million worth of output produced by the cannabis industry. The total economic impact of the industry is estimated at $458.3 million, almost half a billion dollars in positive economic impact from this new industry, based on existing legal farms alone, at the 2018 level.

The Planning Commission Made Inconsistent Findings and Violated the Law in its Denial of West Coast Farms' Permit

West Coast Farms' Land Use Permit Application is fully compliant with all laws and county ordinances and plans. After the Director approved the permit, it was appealed, and twice the Planning Department staff recommended approval of the permit and denial of the appeal. The staff's recommendations were made after thoughtful and careful consideration, and were consistent with the applicable law governing Land Use Permits for cannabis cultivation.[2] On December 4, 2019, however, after approving Land Use Permits for similar projects at two nearby farms, Busy Bee's Organics and Santa Rita Ag, the Planning Commission inexplicably voted to deny West Coast Farms' permit.

The record shows that the decision by the Commission was error and not based on substantial evidence. *See* Code Civ. Proc., § 1094.5, subd. (c); *Strumsky v. San Diego County Employees Retirement Assn.* (1974) 11 Cal.3d 28, 32. Likewise, the decision of the Commission lacked a rational basis, and was arbitrary, capricious and unconstitutional. *See Clark v. City of Hermosa Beach* (1996) 48 Cal.App.4th 1152, 1185 (recognizing potential for federal 1983 civil rights claim for "action that is legally irrational in that it is not sufficiently keyed to any legitimate state interests."); *see also Stubblefield Construction Co. v. City of San Bernardino* (1995) 32 Cal.App.4th 687, 709–710.

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[2] West Coast Farms incorporates and adopts the prior findings, conclusions, reports and recommendations of the Planning Department Director and Staff dated April 26, 2019, June 6, 2019, and November 6, 2019.

Under all circumstances, there is not substantial evidence to support a denial of West Coast Farms' land use permit. There is no fact-based evidence that the goals and policies of preventing odor impact are not satisfied by West Coast Farms' project. The evidence is to the contrary – West Coast Farms' odor abatement system and mitigation measures are the most advanced of any cannabis farm applicant. Similarly, there is no fact-based evidence that the goals and policies of preserving visual and aesthetic resources are not satisfied by this project. The architectural design of West Coast Farms' barns is winery-inspired, and the water-efficient, native landscaping perfectly aligns with the requirements of the LUDC and will be in harmony with the natural beauty of the Santa Ynez Valley. Finally, any concerns about cumulative impacts were already considered and included as part of the PEIR, and there is no sensible, rational basis for penalizing one cannabis farm applicant based on proximity to other applicants. This is especially true for West Coast Farms where the concerns about cumulative visual and odor impacts are fully addressed by compliance with the LUDC and appropriate mitigation measures.

Conclusion

West Coast Farms is precisely the type of project the County contemplated when the cannabis ordinances were passed and the PEIR was certified. The farm will reflect the visual aesthetic of the valley, it will have no adverse impact on existing agricultural uses, it will apply progressive farming methods, it will preserve our precious water supply, and it will contribute to the positive economic growth of the County.

West Coast Farms' application fully complies with the requirements of the LUDC and all provisions of the community plans. We request that our appeal be upheld and West Coast Farms' Land Use Permit be approved.

Sincerely,

CAPPELLO & NOËL LLP

/s/ Lawrence J. Conlan

Lawrence J. Conlan

EXHIBIT A

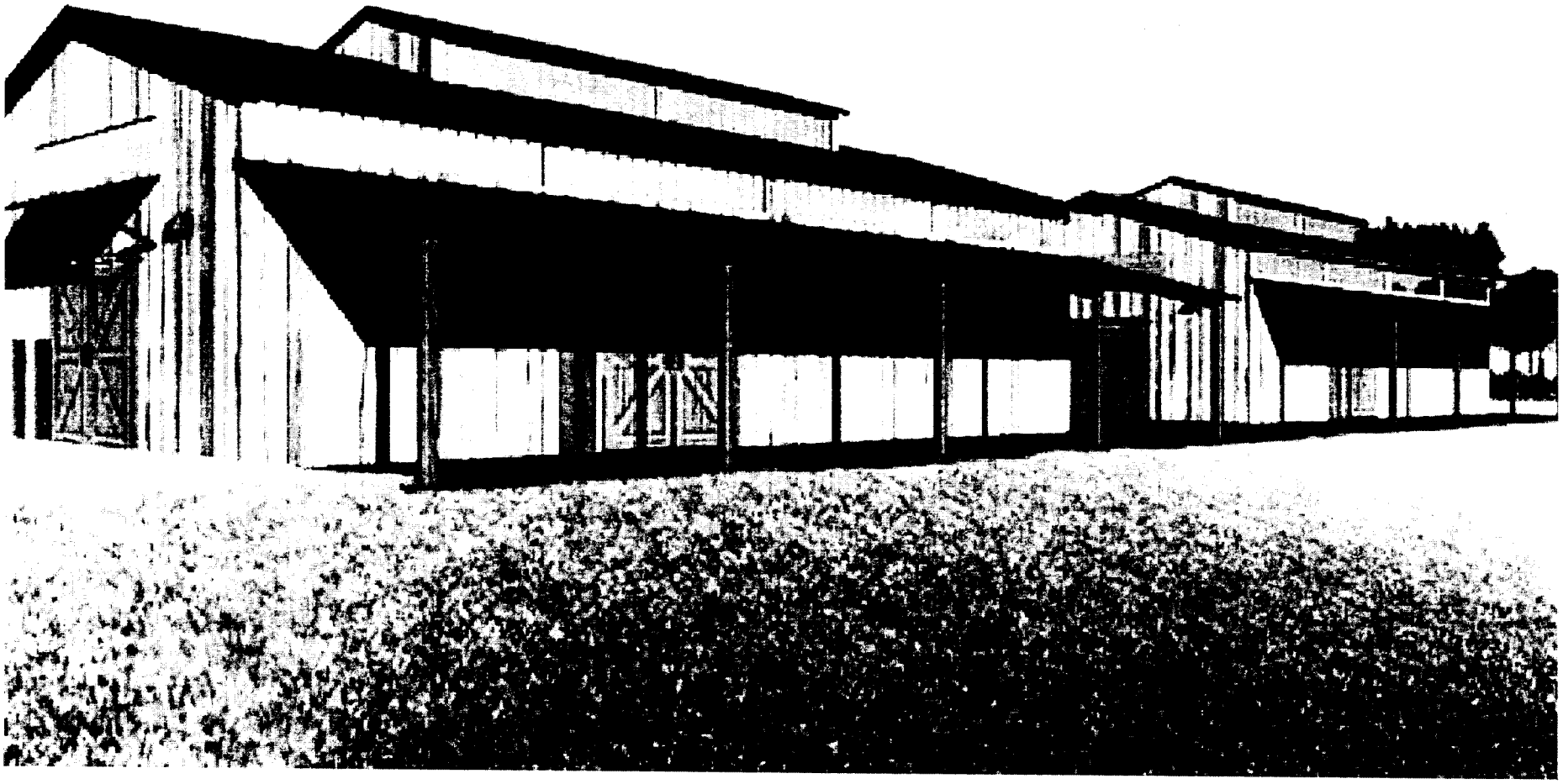


EXHIBIT B

BURKE DESIGN

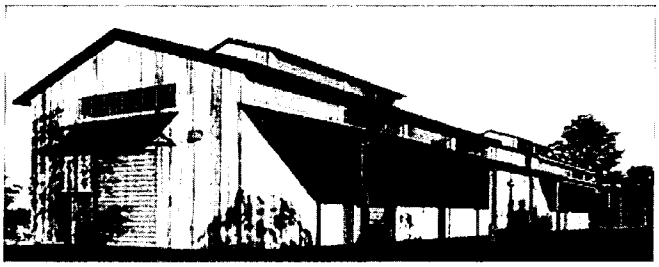
ARCHITECTURE · PLANNING · CONSTRUCTION

April 13, 2020

To: The Honorable Santa Barbara County Board of Supervisors,

Re: 19LUP-00000-0064
Santa Barbara West Coast Farms Agriculture Barns

This correspondence is for the purpose of supporting the application of West Coast Farms to construct two agriculture barn buildings on their property at 1800 W. Hwy 246 in Buellton. My firm, Burke Steel Buildings, has constructed several agricultural barn buildings in the Santa Ynez Valley over the last few years and I wanted to demonstrate that the two barns that are currently under consideration for approval are, in my opinion, the most attractive of any of the barns I've constructed in the Valley. ... The West Coast Farms Barn is clearly designed to have an attractive curb appeal when viewed from Hwy 246 passersby. The following virtual photo is a view of the proposed barns



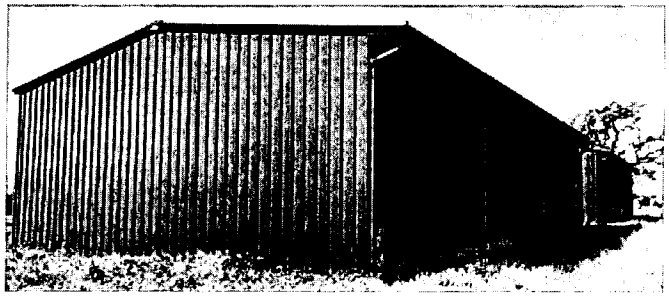
Following are some photos of agricultural barn buildings that we have designed and built in the Valley over the last few years that, in my opinion, are not as attractive as the barns being proposed in this application. Most barns are intended strictly for weather protection

4141 State Street, Suite C 4.1 · Santa Barbara, CA 93110 · Phone (805) 453-6464 ·

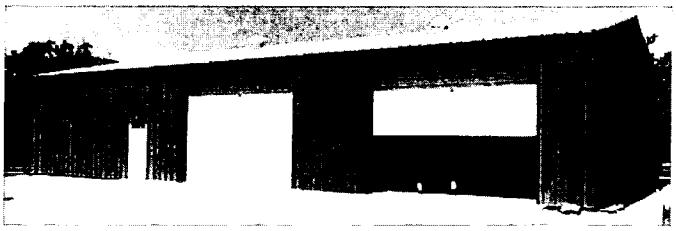
E-mail DLBurke@Burke-Design.biz

www.burke-design.biz

Hay Barns: Roblar Ave. @ Edison Ave Hay Barns



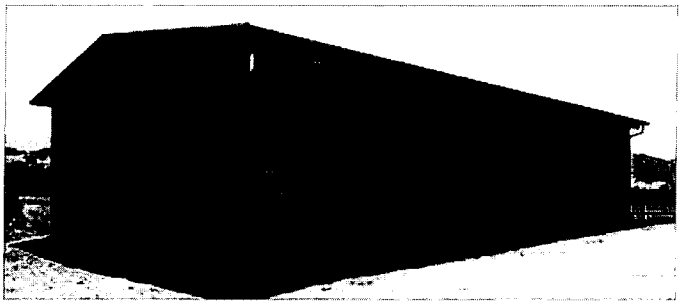
Walnut Ranch Barn: 4000 Via Rancheros Rd.



Winery Barn: 2401 N. Refugio Road

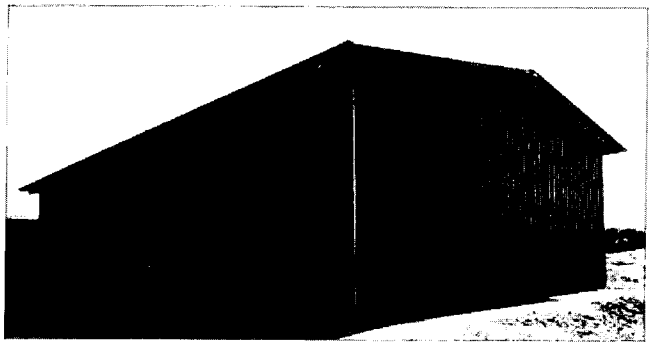
Horse Ranch Hay Barn: 2540 Mesa Verde Road

1st building on the ranch



Horse Ranch Equipment Barn: 2540 Mesa Verde Road

2nd building on the ranch



The following photo is the Peake Ranch Winery production building for which Burke Steel Buildings was the steel building contractor. The wood siding on the exterior of this building is very similar to what the siding on the West Coast Barns would look like.

Peake Ranch Winery Production Building: 7290 Santa Rosa Road

Sincerely,
David Burke, AIA
Principal

President

04-13-20

EXHIBIT C

3203 LIGHTNING ST. SUITE 201
SANTA MARIA, CA 93455-1805
T: 805.349.9695 F: 805.928.4689
www.pleinairedg.com

April 13, 2020

Santa Barbara County Board of Supervisors
Attn: Chairman Gregg Hart
105 E Anapamu St.
406
Santa Barbara, CA 93101

RE: Santa Barbara West Coast Farms
1800 West Highway 246
Buellton, CA 93427

Dear Chairman Hart:

As the Landscape Architects for this project, we welcome the opportunity to explain the design concepts and the efforts we have gone to, for the Santa Barbara West Coast Farms project. This site is in a rural agricultural area that on its northern edge borders the State Highway 246. This is a route of bucolic scenery and natural California Coastal Hills.

Our goal has been to make the landscape buffer along the highway appear natural, while still meeting the goals outlined in the Cal-Cannabis guidelines, and the requirements of Santa Barbara County. We have achieved this by doing the following:

- Use of trees and shrubs that are naturally occurring in the area.
- Using taller species to direct the viewers eye up to the hills beyond for a long-distance view that matches the close in view.
- Using trees and shrubs that will grow together imitating the natural growth patterns seen in nearby natural areas along the highway.
- Using trees and shrubs that are arranged in a way that they will grow into the space where they are planted reducing the need for future pruning that would cause an un-natural appearance.
- The plant palate is one that when viewed by the public at highway speeds will fade in the overall

- view in a way that will make the farm operations to the south unnoticeable.
- We have used a varied mix of trees and shrubs that will continue even if one species is lost to a pest or pathogen.
- The long-term goal is that once the plants are established that the irrigation can be turned off reducing the need for water.

This approach, we believe has, met the goals outlined by the State and County for this project, allowing for the project to be a use that is compatible with the surrounding area.

Thank you for this opportunity.

Respectfully,

Kevin J. Small
PleinAire Design Group
CA Registered Landscape Architect 2929
ISA Certified Arborist WE-7333A
CA C-27 Contractors License 872414

EXHIBIT D

Santa Barbara County Board of Supervisors

Odor Assessment –

Santa Barbara West Coast Farms

March 24, 2020

Greg Wolffe, CPP

Yorke Engineering, LLC
www.YorkeEngr.com

Office Locations: Los Angeles, Orange County, Riverside, Ventura, San Diego, Fresno, Berkeley
Tel: (949) 248-8490 ▼ Fax: (949) 248-8499

Yorke Engineering & Presenter

Yorke Engineering

- Established 1996, Specializing in Air Quality
- City/County Odor Abatement of Cannabis

Greg Wolffe, Certified Air Permit Professional

- Air dispersion modeling, health risk analysis, ambient air monitoring & odor impacts
- Cannabis Assessments
  - Ordinance Compliance– Odor Nuisance
  - Abatement System Engineering Review
  - Odor Monitoring

Yorke ENGINEERING, LLC

Agenda

Requirements and Standards

Abatement Technology

Control Efficiency

Odor Monitoring

Maintenance & Calibration

Applicable Requirements - Odor

Santa Barbara County Code

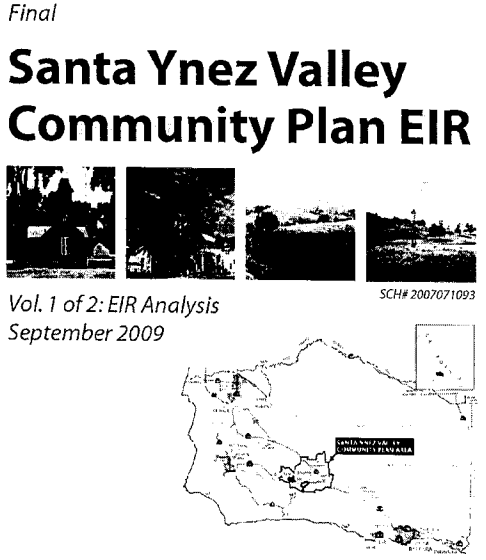
- Section 50-10, Odor Control Systems

Cannabis Land Use Ordinance EIR

- Appendix F - Cannabis Odor Control (Dec 2017)

Santa Ynez Valley Community Plan

- Odor Abatement Plan (OAP)
- Future applicants for wineries or other odor generators



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www.YorkeEngr.com

Performance Standards - Odor

Odor Nuisance (Cannabis Ordinance EIR)

- Public Concern, not a health-based standard
- Prevent persistent, intrusive or pervasive odors outside the property boundary, particularly within any nearby residential neighborhoods

Odor Nuisance (Santa Ynez Community Plan)

- Actions to be taken when odor complaint is received
- Description of potential odor reducing methods
- Contingency measures to curtail emissions in the event of a continuous public nuisance

Abatement Technology – Overview

Source Controls, Minimize air emissions

- Shorter flower cycle – reduced window, target monitoring
- Flash freezing reduces volatilization through moisture loss

Design of Odor Abatement System

- Absorption technology for oil-based odor reduction
- Relies on natural process rather than destruction
- Scalable delivery (piping) for enhancing open path contact

Principle of Operation

- Chemical absorption (different from adsorption),
- Oil-to-oil (lipophilic, dissolving in lipids and oils)

Control Efficiency – Abatement Design Criteria

Terrain driven air movement

- Downdraft influences from Santa Ynez Valley, Santa Rita Hills, and Crawford Canyon

Line of travel "open path" controls

- Low area source plume rise
- Perpendicular to wind direction

Inversions restrict mixing (a high degree of stability)

- Surface@0-500 ft; Subsidence@1000-2000 ft
- Most efficient in stable wind conditions

    Higher winds more dispersion, lower winds better contact

Yorke ENGINEERING, LLC
www.YorkeEngr.com

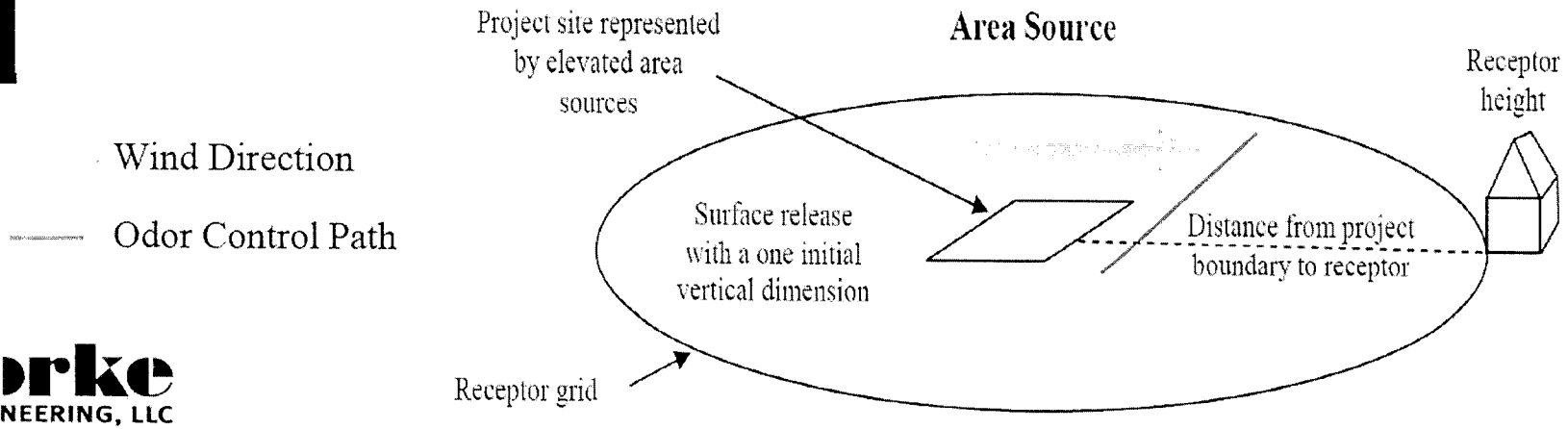
Control Efficiency – Odor Abatement at Area Sources

Dispersion characteristics of area sources:

- Open path for atmospheric transport
- Wind creates directional airflow

Abatement Strategy

- Perpendicular orientation maximizes contact
- Increasing control efficiency



Yorke ENGINEERING, LLC

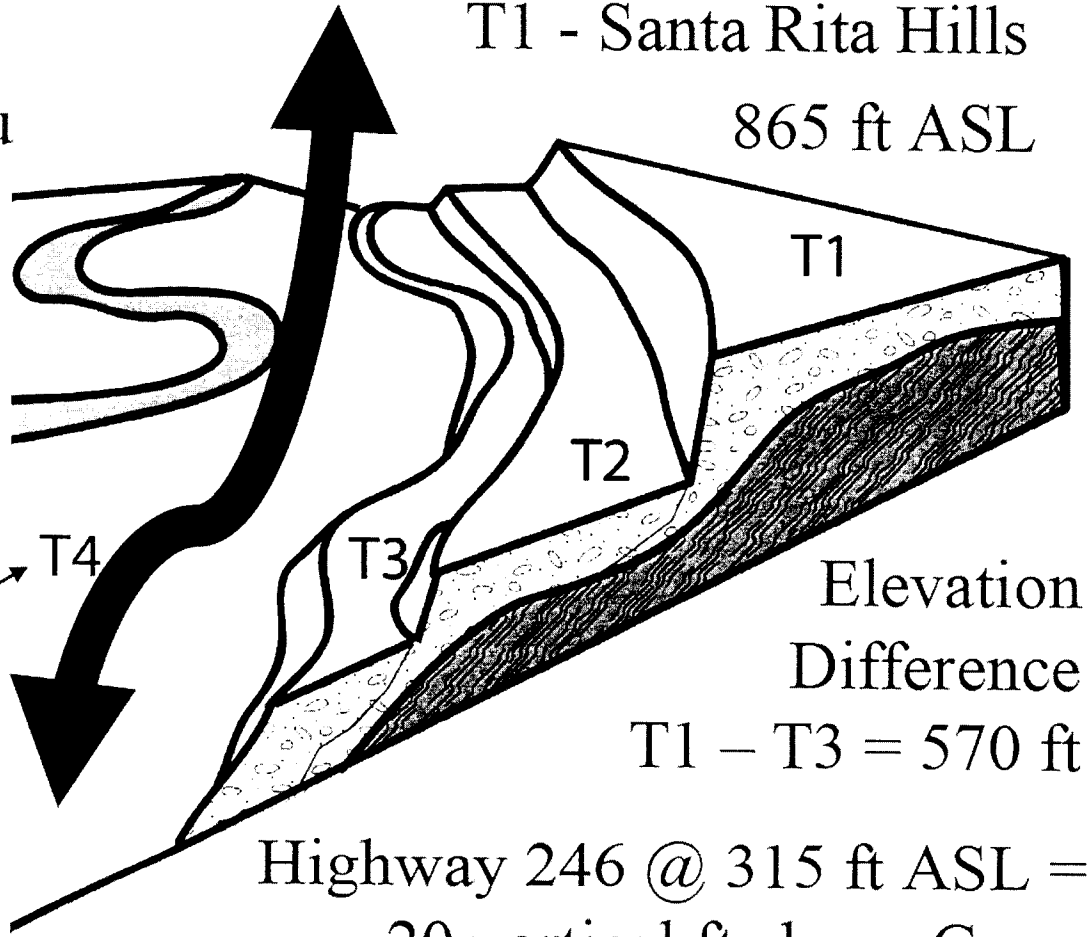
Control Efficiency – Topographic Representation

T1 - Santa Rita Hills
865 ft ASL

T2 – Packaging Plateau
(305 ft ASL)

T3 – Grow Plateau
(295 ft ASL)

T4 - Santa Ynez River Valley
(280 ft ASL)



Elevation Difference
T1 – T3 = 570 ft

Highway 246 @ 315 ft ASL = 20 vertical ft above Grow

ASL = Above Sea Level

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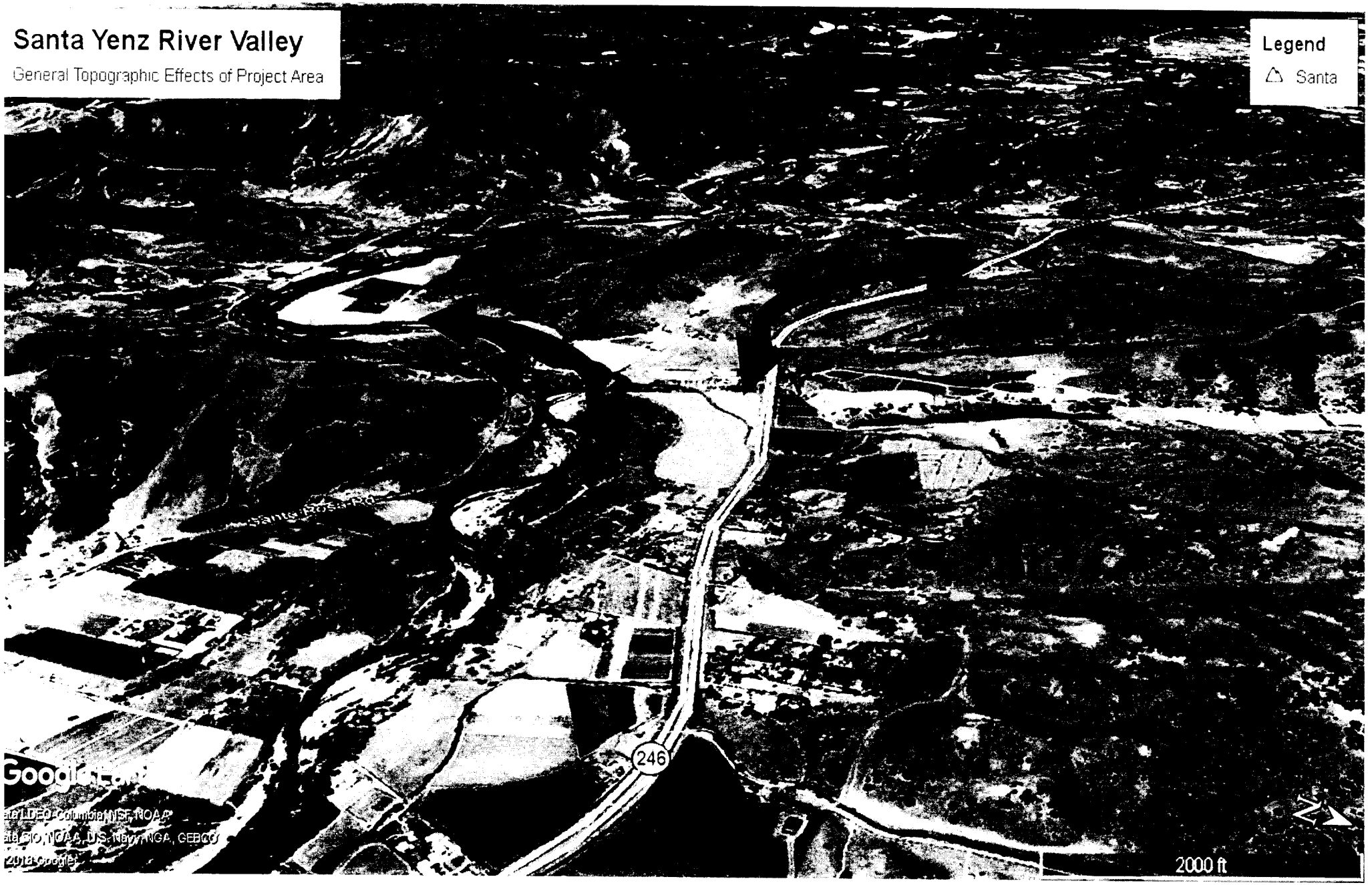
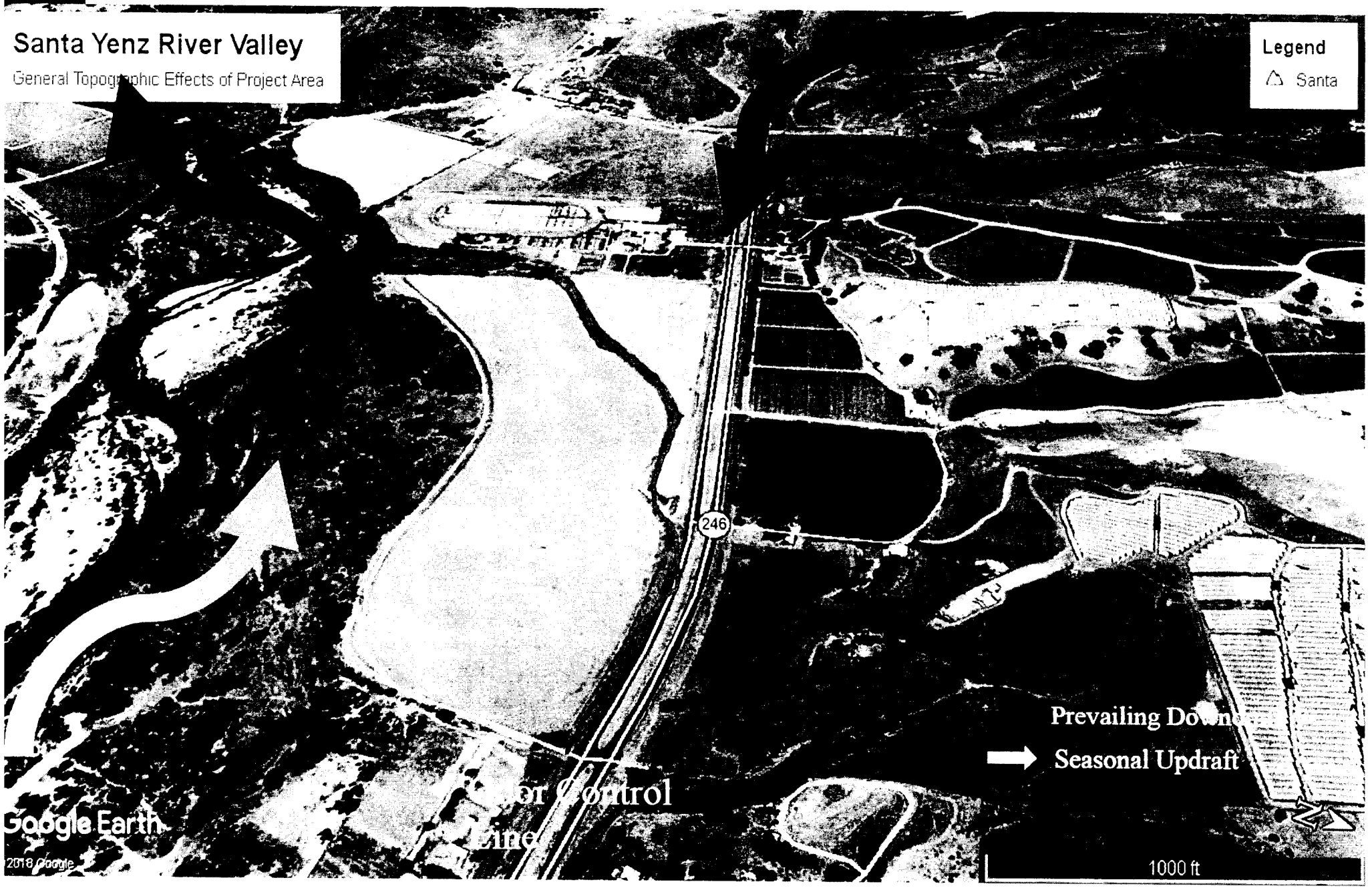
Project Area – Terrain Influences



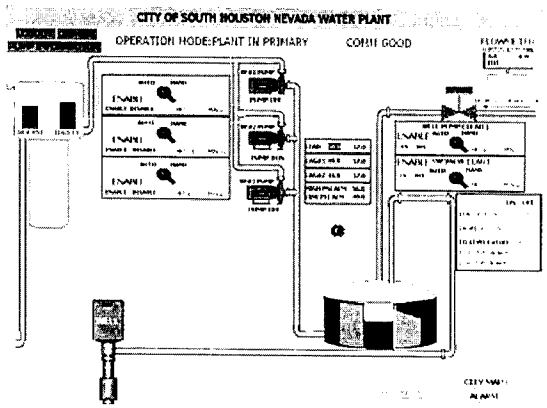
Project Area –Prevailing Winds



Setup and Implementation

Install Odor Abatement System

- Use absorption technology
- Consider local site characteristics and terrain



Supervisory control and data acquisition

- SCADA, Weather station fully integrated
- Programmed logic controller for dosing and timer
- Perimeter delivery system for crosswind
- Perform initial field evaluation and monitoring

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Odor - Measurable Compounds

Odor compounds are not subjective, they are real chemicals.

- Odor compounds can be measured by source testing and ambient monitoring as an air concentration

Odor nuisance is subjective.

- Individuals experience Type and Intensity
- Odor samples can be sent for odor panel analysis
- Odor intensity is based on concentration in air

Qualitative and quantitative methods

Odor Monitoring Methods and Equipment

Olfactometers

- Nasal Ranger (dilution to threshold, D/T)

EPA Method 2170

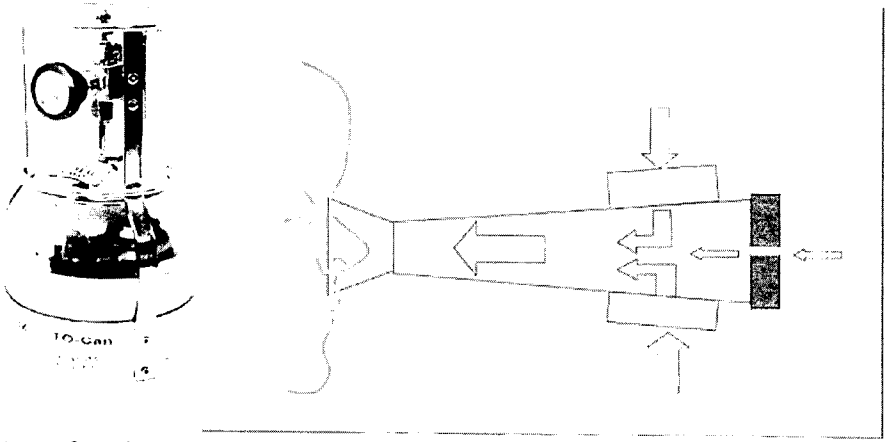
- Flavor Profile Analysis

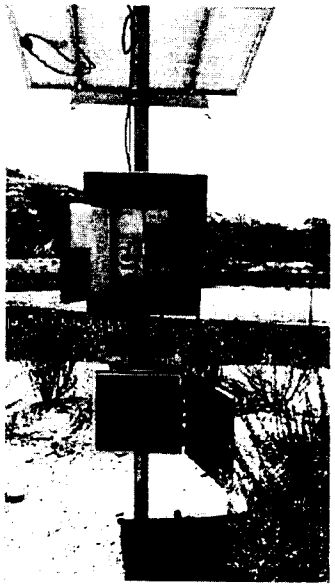
Air Sampling (Lab)

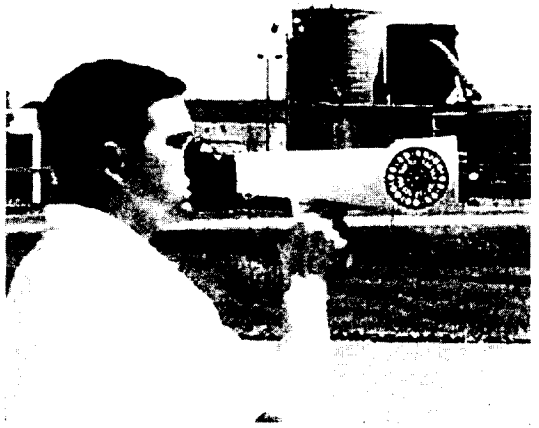
- SUMMA canisters (concentration, ppm)

Field station networks

- Real-time continuous monitors







Yorke ENGINEERING, LLC

Monitoring Response Plan

Field Monitoring, part of Project OAP

- Regularly to start optimize dose and mix
- Event-based monitor of odor complaints

Odor detection (e.g., nose or D/T > 7)

- Review abatement system and dose rate
- Air data (wind speed, direction, stability)

Modify abatement system, as needed

Yorke ENGINEERING, LLC
www.YorkeEngr.com

Compliance with Odor Performance Standards

Install Odor Nuisance (Cannabis Ordinance EIR)

- Public Concern, not a health-based standard
- Prevent persistent, intrusive or pervasive odors outside the property boundary, particularly within any nearby residential neighborhoods

Odor Nuisance (Santa Ynez Community Plan)

- Actions to be taken when odor complaint is received
- Description of potential odor reducing methods
- Contingency measures to curtail emissions in the event of a continuous public nuisance

Yorke ENGINEERING, LLC
www.YorkeEngr.com

Compliance With Odor Nuisance Requirements

Santa Ynez Valley Community Plan

- Prepare Odor Abatement Plan
- Install Odor Control System

Cannabis Ordinance

- Prevent persistent or pervasive odors

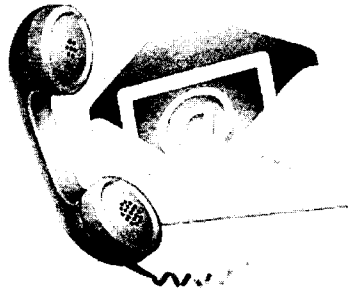
Monitoring Program (best practice)

- Address public concerns

Contact Information

Questions

Greg Wolffe
(714) 315-9049
GWolffe@YorkeEngr.com



Yorke ENGINEERING, LLC
www.YorkeEngr.com

EXHIBIT E

SESPE
CONSULTING, INC.

468 Poli Street, Suite 2E • Ventura, California 93001

MEMORANDUM

Date: November 4, 2019

To: Santa Barbara West Coast Farms

From: Scott Cohen, P.E., C.I.H. and Andre Almeida, P.E.

Re: Cannabis Odor Modeling

Sespe was hired to perform independent air quality analysis to clarify relative odor impacts from the subject property (Figure 1) and provide expert testimony regarding methods that were used and findings of the analytical effort.

Methods used in preparing this memo are the same as those used for industrial projects that emit air pollutants. Air pollution engineering and analysis is one of Sespe's core services and staff has assessed many industrial projects for significance of air quality impacts and air quality health risk assessment impacts. Resumes for Sespe staff that performed this work and briefs describing similar air quality projects are provided in Attachment 3.

In order to determine the relative impact of odor on various locations surrounding the Project site, this document describes the existing setting and quantifies the severity and frequency of potential odor episodes.

1.0 EXISTING SETTING

The site is within lands zoned for agricultural use and specifically cannabis cultivation as described in applicable County Ordinances, Programs guidelines, and an existing programmatic environmental impact report (PEIR) that assessed impacts from cannabis cultivation during approval of those ordinances and programs. As discussed in the Staff Report, the Project including potential odor is consistent with the Ordinance and PEIR. Thus, additional analysis may not be required.

In addition to the land use and cannabis related ordinances and requirements, the County Air Pollution Control District Rule 303 (and California Health & Safety Code from which it derives its authority) prohibits nuisance as follows:

> *A person shall not discharge from any source whatsoever such quantities of air contaminants or other material in violation of Section 41700 of the Health and Safety Code which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety or any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property.*
> https://www.ourair.org/wp-content/uploads/rule303.pdf

Accordingly, odor emissions may be a nuisance if the following are true:

1. Injury, detriment, nuisance or annoyance results from the odor and the odor affects a considerable number of persons or the public; or
2. The odor endangers the comfort, repose, health or safety or any such [considerable number of] persons or the public; or
3. The odor causes or has a natural tendency to cause injury or damage to business or property.

If the County were to receive an odor complaint, Rule 303 is a standard by which the complaint and conditions on the ground would be evaluated. Various documents relevant to cannabis are available on the APCD land use webpage under the subheading "Cannabis and Air Quality."[1]

2.0 ODOR MODELING

Information regarding cannabis odor was collected from the internet. In general, research indicates that the state-of-science remains lacking for this nascent industry. Nevertheless, Sespe was able to exercise some professional judgment and collect sufficient information from several sources to prepare an air dispersion model.

The United States Environmental Protection Agency (EPA) AERMOD (version 19191) gaussian dispersion model as implemented by the Lakes Environmental AERMOD View software package was used to predict concentrations of several odorous compounds that were described in the literature review. The AERMOD dispersion model is the preferred model by EPA (see Title 40 Code of Federal Regulations Section 51, Appendix W)[2], CARB (see HARP webpage)[3], and Santa Barbara County APCD (Modeling Guidelines for Air Quality Impact Assessment, April 2019)[4]. AERMOD is used by all types of industrial sources that emit pollutants to demonstrate that new and modified sources will not result in concentrations that exceed or contribute to an existing exceedance of an ambient air quality standard (AAQS). In addition, California agencies and air districts throughout the State use AERMOD to assess health risk from toxic air contaminants (TACs) under the AB 2588 Air Toxics Hot Spot Program and as needed to evaluate potential impacts under CEQA. Thus, it is appropriate to use AERMOD to evaluate potential for odor conditions around the Project site.

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[1] https://www.ourair.org/land-use/
[2] https://www.govinfo.gov/content/pkg/CFR-2018-title40-vol2/pdf/CFR-2018-title40-vol2-part51-appW.pdf
[3] https://ww3.arb.ca.gov/toxics/harp/harp.htm
[4] https://www.ourair.org/wp-content/uploads/aqia.pdf

2.1 Meteorological Data

One of the primary inputs to AERMOD is hourly wind data. Generally, meteorological stations should be within ten miles of a model domain (i.e., site and receptors) to possibly be considered representative. If no station exists, then prognostic wind data sets generated by the EPA processor software, MMIF, may be used to generate Mesoscale Meteorological 5 (MM5) datasets for use in modeling. In this case, the closest station with wind data is located on H Street in Lompoc. Given the distance and differences in terrain between Lompoc and the model domain, it was determined that MM5 generated wind data would be more representative. Therefore, Lakes Environmental was contracted to generate wind data that would be representative of conditions near the Project site. As discussed above, Lakes Environmental packages EPA AERMOD code and would be expert in assessing the representativeness and of wind datasets and in preparing MM5 data as was done in this case.

Site specific meteorological data for the time period of Jan 1, 2014 to Dec 31, 2018 (Attachment 2) was purchased from Lakes Environmental and used in the AERMOD model to calculate concentration of odorous chemicals in and around the Project site.

Flowering season for cannabis plants generally occurs during August and September. It is during this time that odor is a concern. Therefore, the wind data was modeled for these two months during each of the five (5) years contained in the dataset. Normally, low wind speed results in stagnation and plumes remain more cohesive during stagnation producing the highest model concentrations. High wind periods result in greater dispersion of pollutants and lower concentrations.

Review of the wind dataset shows the frequency of Calm Winds (wind less than 0.97 Knots) was 0.51% during the flowering period. This means that throughout the course of a year, calm winds and potential for related high concentrations of odorous emissions from flowering cannabis may occur simultaneously for 0.1% of the time.

2.2 Cannabis Emissions Rates

The model contains a two area sources representing the portion of the Project site in the northwest (NW) corner and the remainder of the cultivation area in the southeast (SE). Each source has initial vertical dimension of 4 meters and initial release height of two meters emitting uniformly at constant rates of 0.028 and 0.25 grams per second (g/s), respectively. The emissions rates were derived from an assumption that one (1) acre yields 200 kg of dry cannabis product (Kern County Cannabis Land Use Ordinance Project FEIR, July 2017) and relative size of each area source.[5]

A pre-print copy of an article authored by researchers at University of North Carolina at Chapel Hill, University of Colorado at Boulder, Lancaster Environment Centre in United Kingdom, and University of California at Irvine titled "Potential Regional Air Quality Impacts of Cannabis Cultivation Facilities in Denver, Colorado" is under review for possible publication in the journal, Atmospheric Chemistry and

[5] https://kernplanning.com/environmental-doc/kern-county-cannabis-land-use-ordinance-project/

Physics (ACP).[6] The article presents "emissions capacity" on a dry weight basis of 100 µg of organic emissions per gram of dry weight cannabis product per hour (µg gdw^{-1} hr^{-1}) which was used with the dry weight per acre to determine the five (5) and 45 acre site specific emissions rates used in the model.

2.3 Odor Thresholds

The Kern County FEIR contains data showing the relative amounts of various odorous chemicals associated with cannabis cultivation and an "ODT" odor threshold for each. The ODT is defined as the concentration of a compound that may be detectable by fifty-percent (50%) of the population and states that "nuisance levels typically occur at concentrations that are several multiples higher than the ODT." Thus, using the ODT as a threshold for nuisance should be overly conservative and is the approach taken in evaluating the model results. Table 1 presents the relative rate of emissions and ODTs used to obtain the weighted ODT of 28.1 ppb that was applied to modeled data in order to produce an isopleth representative of the ODT for the mixture of odorous chemicals.

Table 1. Odor Thresholds

Chemical	Emissions Rate (g/s)	Relative Emissions	ODT (ppm)	Weighted ODT (ppm)
Benzaldehyde	2.59E-05	53.7%	4.17E-02	0.02240
Myrcene	2.05E-05	42.5%	1.30E-02	0.00553
Decanal	1.72E-07	0.4%	8.97E-04	0.00000
Heptanal	1.64E-06	3.4%	4.79E-03	0.00016
Mixture ODT:				0.02810

2.4 Model Results

AERMOD produces output in units of µg/m^3 and the Lakes Environmental software contains a tool for converting results to other units. It was assumed that the average chemical weight for these compounds is 136.1 grams per gram-mole (g/g-mole) which is a value reported for myrcene and several other terpenes.[7] Using the chemical weight, the model results were converted to parts per billion (ppb). Parts per billion concentration of the mixture was then divided by the mixture ODT (28.1 ppb) calculated in Table 1 to produce results normalized to the mixture ODT where a value of 1.0 is equal to the ODT, values lower than 1.0 are less than the ODT, and values greater than 1.0 exceed the ODT and are thus much more likely to be detected as odor. Figure 1 shows the model results which indicate that 99.7% of the time the odor is less than 1.0 ODT index at any point in the model domain (i.e., on- or off-site).

[6] https://www.atmos-chem-phys-discuss.net/acp-2019-479/
[7] https://www.steephill.com/science/terpenes

Table 2. Odor Index Results (100th Highest Hour in 43,719 Hours Modeled)

Receptor	UTM Coordinates (m E, m N)	Odor Index
1	(752243.98, 3834467.72)	0.32
2	(752255.05, 3834524.46)	0.28
3	(752421.27, 3834257.95)	0.45
4	(753095.51, 3833678.11)	0.12
5	(754374.32, 3833142.09)	0.07
6	(754552.99, 3833553.37)	0.09
7	(753993.65, 3834434.66)	0.23
8	(753574.5, 3834558.55)	0.43
9	(753467.61, 3834543.38)	0.54
10	(753395.69, 3834689.46)	0.34
11	(753310, 3834783.58)	0.06
12	(753104.64, 3834800.71)	0.04
13	(752914.03, 3834646.2)	0.40
14	(752587.31, 3834798.89)	0.21

Notes: Highest odor index occurs on-site (0.968 O.I.). 100 hours in 43,719 hours of meteorological data constitutes 0.003% of the hours when odor may be detected off-site.

The two percent (2%) of time that ODT may be greater than shown in the model is appropriate given analogous EPA ambient air quality standards which are promulgated as statistical standards. For instance, PM_{10} and $PM_{2.5}$ each are evaluated at the 98th percentile rather than then highest concentration output by the model or measured by an air agency. The form and values of ambient air quality standards are summarized by CARB[8] and contain a footnote which states:

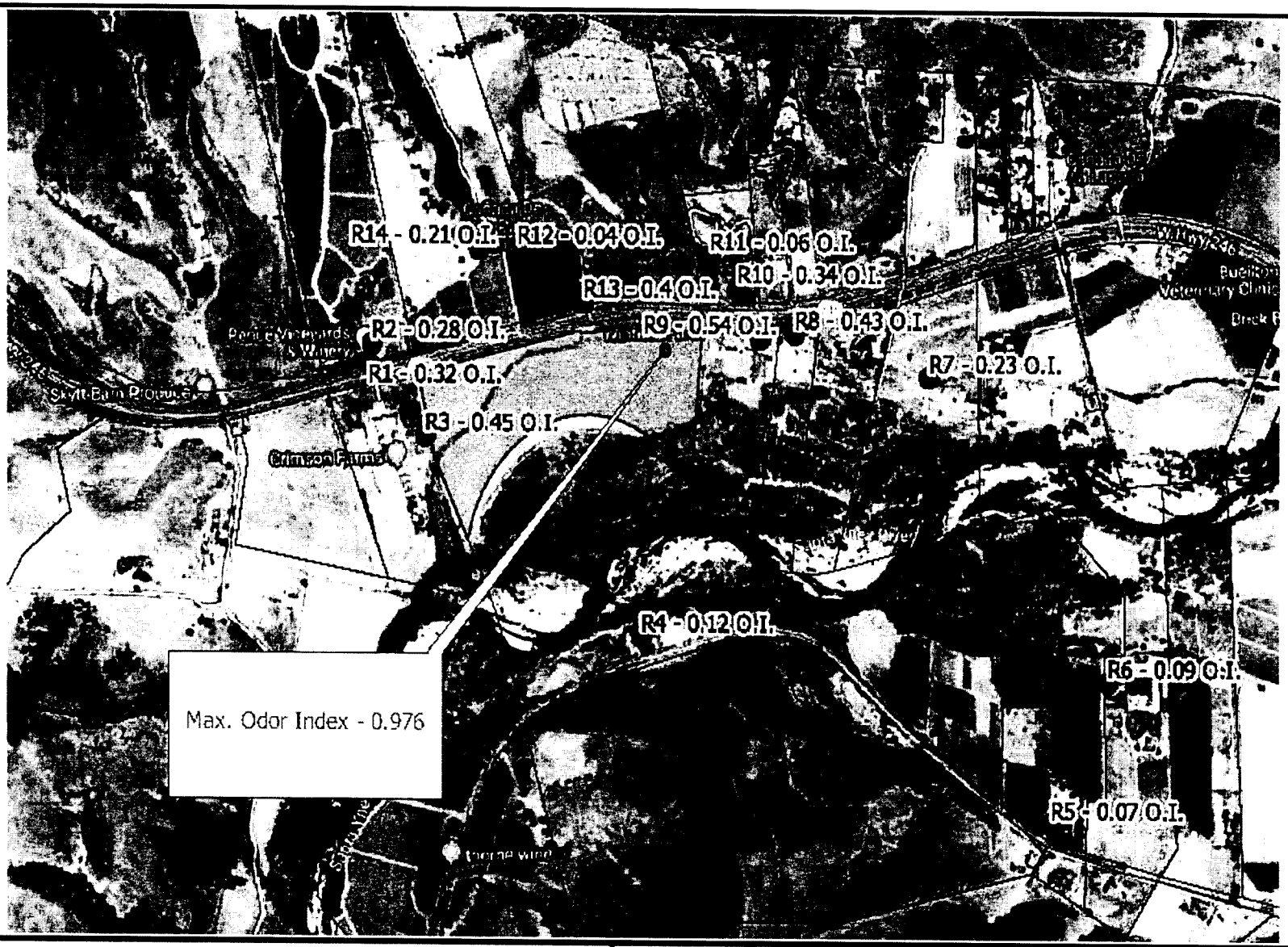
> *National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard....*

[8] https://ww3.arb.ca.gov/research/aaqs/aaqs2.pdf

3.0 CONCLUSION

Air dispersion modeling was performed to estimate the level of odor near the Project site. Concentrations of common odorous compounds found in cannabis and comprising the model output were then converted to an odor index using the odor detection thresholds and weighted amounts of the compounds. Odor indices greater than one (1.0) indicate a greater than 50% likelihood that odor would be detected and indices less than one (1.0) indicates less than 50% likelihood that odor would be detected. 99.7% of the time the odor index is less than 1.0 O.I. at each location outside the property boundary. The greatest odor index value predicted by the model to occur at a residence is 0.54 O.I. which is exceeded less than 0.3% of the time at Receptor 9 (UTM Zone 10N, 753467.61 m E, 3834543.38 m N). Given only half of people would detect odor at 1.0 O.I., much less than half of people would detect odor at residential locations surrounding the Project site. Given the range of odor indices at residences, detection of odor by occupants is considered unlikely resulting in compliance with APCD's Nuisance Rule discussed above and corresponding to a less than significant impact due to odorous emissions from the Project site.

ATTACHMENT 1
Figures



SESPE CONSULTING, INC.

FIGURE	Odor Index Santa Barbara West Coast Farms		
1			
PROJECT #:	SA16.19.01	DATE:	11/4/19
SCALE:	not shown	DRAWN BY:	SDC

ATTACHMENT 2
Meteorological Data

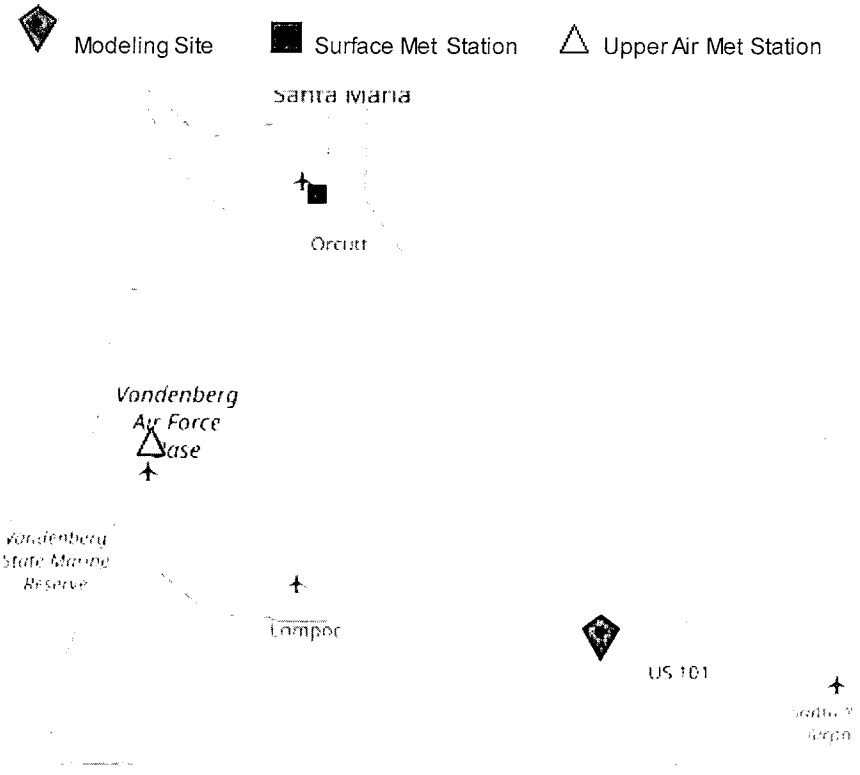
AERMOD-Ready Station Met Data

SFC and PFL Met Data Files

August 1, 2019

Met Data Order Information

Order #	MET1914753
Ordered by	Andre Almeida
Company	Sespe Consulting
Met Data Type	AERMOD-Ready Station Met Data (Surface & Profile Met Data Files)
Start-End Date	Jan 1, 2014 to Dec 31, 2018
Modeling Site Latitude	34.62083 N
Modeling Site Longitude	120.24722 W
Datum	WGS 84
Site Time Zone	UTC/GMT UTC-0800 hour(s)
Closest City & State	Buellton, California - USA



Location of Modeling Site, Surface Station, and Upper Air Station

Lakes Environmental Software
E-mail: sales@webLakes.com
Web: www.webLakes.com

Model Versions Used for Met Data Preprocessing

Parameter	Value
AERMET	Version 18081
AERMINUTE	Version 15272
AERSURFACE	Version 13016

Hourly Surface Station Met Data Information

Parameter	Value
Surface Station Name	SANTA MARIA PUBLIC, CA
Latitude, Longitude	34.89406 N, 120.45216 W
Station ID (WBAN)	23273
ASOS Station?	Yes
File Format	NCDC TD-3505 (ISHD)
Base Elevation	72.5 m
Adjustment to Local Time	8 hours
Anemometer Height	10 m

1-Minute & 5-Minute ASOS Wind Data Information

Parameter	Value
AERMINUTE Data Used?	Yes
Station Name	SANTA MARIA PUBLIC, CA
Latitude, Longitude	34.89406 N, 120.45216 W
Station Code	SMX
Station ID (WBAN)	23273
File Format	NCDC TD-6405
IFW Installation Date	June 6, 2007

Upper Air Station Met Data Information

Parameter	Value
Upper Air Station Name	VANDENBERG, CA
Latitude, Longitude	34.75 N, 120.57 W
Station ID (WBAN)	93214
File Format	FSL
Adjustment to Local Time	8 hours

Lakes Environmental Software
E-mail: sales@webLakes.com
Web: www.webLakes.com

AERSURFACE Parameters

Parameter	Value
Land Use Data File	USGS NLCD92 - Binary Format
Center Lat/Long	34.89406 N, 120.45216 W
Datum	NAD83
Radius for Surface Roughness	1km
Number of Sectors	12 sectors of 30° (starting at 0°)
Period	Monthly
Surface Moisture	Year 2014: Average Year 2015: Dry Year 2016: Average Year 2017: Average Year 2018: Average
Other Settings	Continuous Snow: No Airport Site: Yes Arid Region: No

Lakes Environmental Software
E-mail: sales@webLakes.com
Web: www.webLakes.com

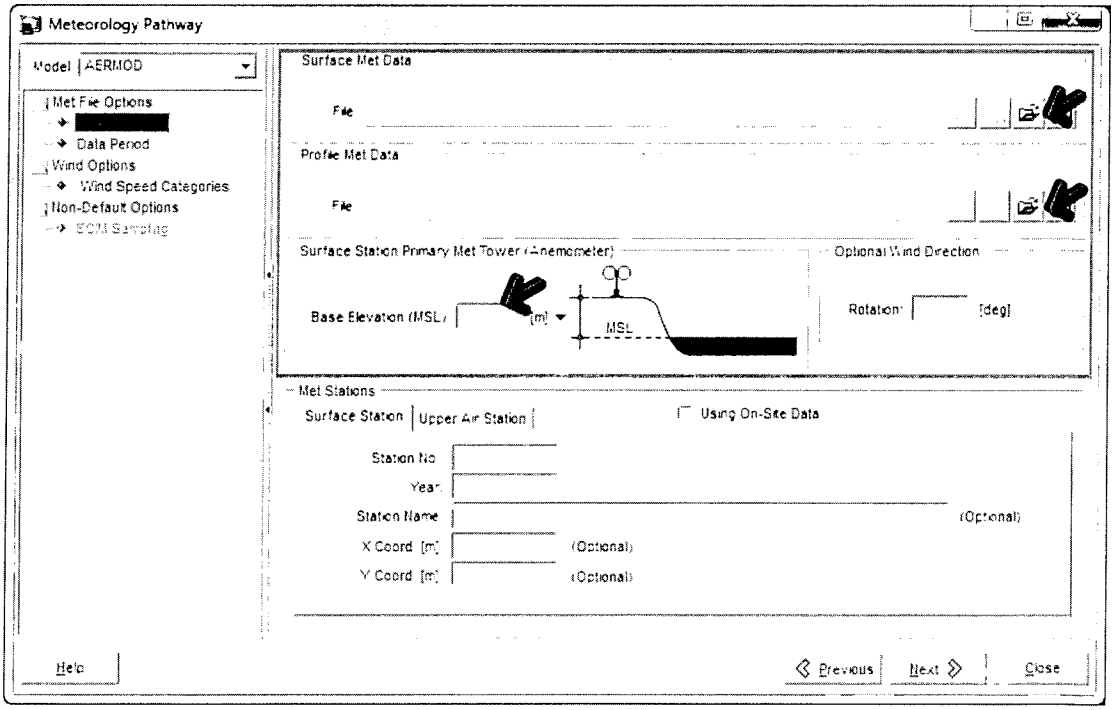
AERMOD View Instructions

Start your **AERMOD View** project and go to the **Meteorology Pathway – Met Input Data** window.

Under the **Meteorology Pathway – Met Input Data** window, specify the Surface Met Data file (*.SFC) and the Profile Met Data file (*.PFL) you received from Lakes Environmental according to table below:

AERMOD Parameters

Parameter	Value
Surface Met Data File	MET1914753_2014_2018.SFC
Profile Met Data File	MET1914753_2014_2018.PFL
Station Base Elevation (MSL)	72.5 m
Surface Station No.	23273
Surface Station Name	SANTA MARIA PUBLIC, CA
Start Year	2014
Upper Air Station No.	93214
Upper Air Station Name	VANDENBERG, CA
Start Year	2014



Lakes Environmental Software
E-mail: sales@webLakes.com
Web: www.webLakes.com

Having Problems?

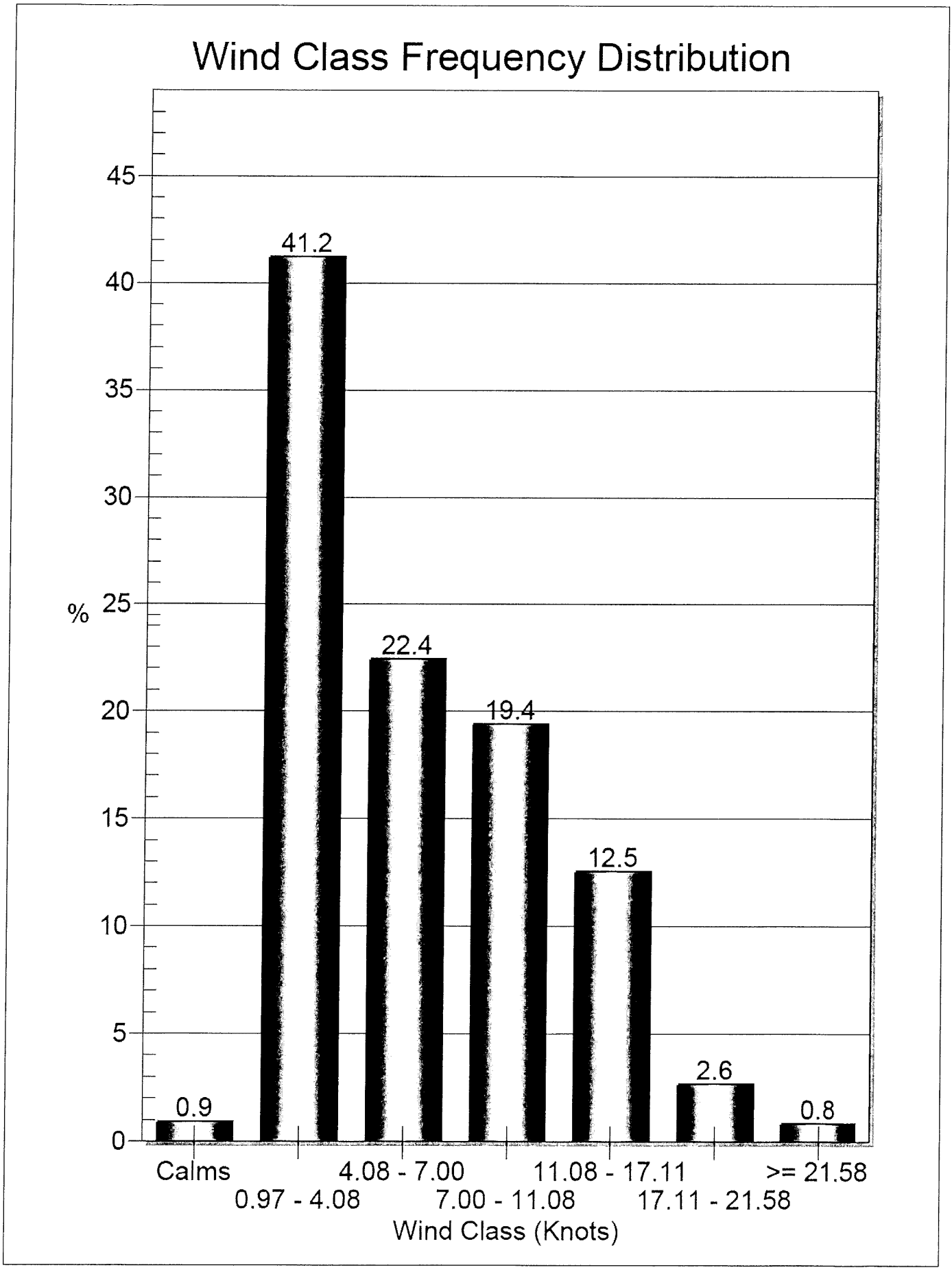
If you have any problems with the met data you received from us or need additional information on the above steps, please do not hesitate to contact us by sending an email to:

sales@webLakes.com

When contacting us, please provide:

- Met data Order # MET1914753
- Detailed description of the problem

Lakes Environmental Software
E-mail: sales@webLakes.com
Web: www.webLakes.com


Wind Class Frequency Distribution
45
40
35
30
25
20
15
10
5
0
%
41.2
22.4
19.4
12.5
2.6
0.9
0.8
Calms
0.97 - 4.08
4.08 - 7.00
7.00 - 11.08
11.08 - 17.11
17.11 - 21.58
>= 21.58
Wind Class (Knots)

Station ID: 23273
Start Date: 1/1/2014 - 00:00
End Date: 12/31/2018 - 23:59

Run ID:

Frequency Distribution
(Count)

Wind Direction (Blowing From) / Wind Speed (Knots)

	0.97 - 4.08	4.08 - 7.00	7.00 - 11.08	11.08 - 17.17	17.11 - 21.58	>= 21.58	Total
355-5	204	96	93	107	2	0	502
5-15	184	69	99	135	12	0	499
15-25	148	43	69	164	28	0	452
25-35	176	32	61	147	21	0	437
35-45	146	35	42	57	3	0	283
45-55	178	41	19	14	1	0	253
55-65	181	48	10	0	0	0	239
65-75	177	54	11	0	0	0	242
75-85	270	59	6	0	0	0	335
85-95	293	81	2	0	0	0	376
95-105	397	101	12	1	0	0	511
105-115	654	130	12	0	0	0	796
115-125	845	227	18	2	2	0	1094
125-135	1034	243	32	15	1	1	1326
135-145	1064	288	64	43	12	6	1477
145-155	1081	324	96	69	8	1	1579
155-165	977	353	75	91	9	1	1506
165-175	749	274	67	73	12	0	1175
175-185	616	189	70	39	1	0	915
185-195	446	120	53	29	0	0	648
195-205	403	76	30	10	1	0	520
205-215	351	49	21	7	0	0	428
215-225	307	66	33	7	0	0	413
225-235	319	83	52	9	0	0	463
235-245	366	97	87	21	1	0	572
245-255	397	116	132	33	2	0	680
255-265	468	145	107	28	0	0	748
265-275	593	204	102	9	1	0	909
275-285	782	449	138	34	3	0	1406
285-295	901	943	532	386	184	34	2980
295-305	934	1461	1820	1530	661	262	6668
305-315	800	1529	2570	1560	160	40	6659
315-325	613	944	1284	559	11	3	3414
325-335	422	463	382	153	3	0	1423
335-345	320	245	183	76	4	1	829
345-355	254	138	103	83	3	0	581
Total	18050	9815	8487	5491	1146	349	43824

Frequency of Calm Winds: 381
Average Wind Speed: 6.49 Knots

Station ID: 23273
Start Date: 1/1/2014 - 00:00
End Date: 12/31/2018 - 23:59

Run ID:

Frequency Distribution
(Normalized)

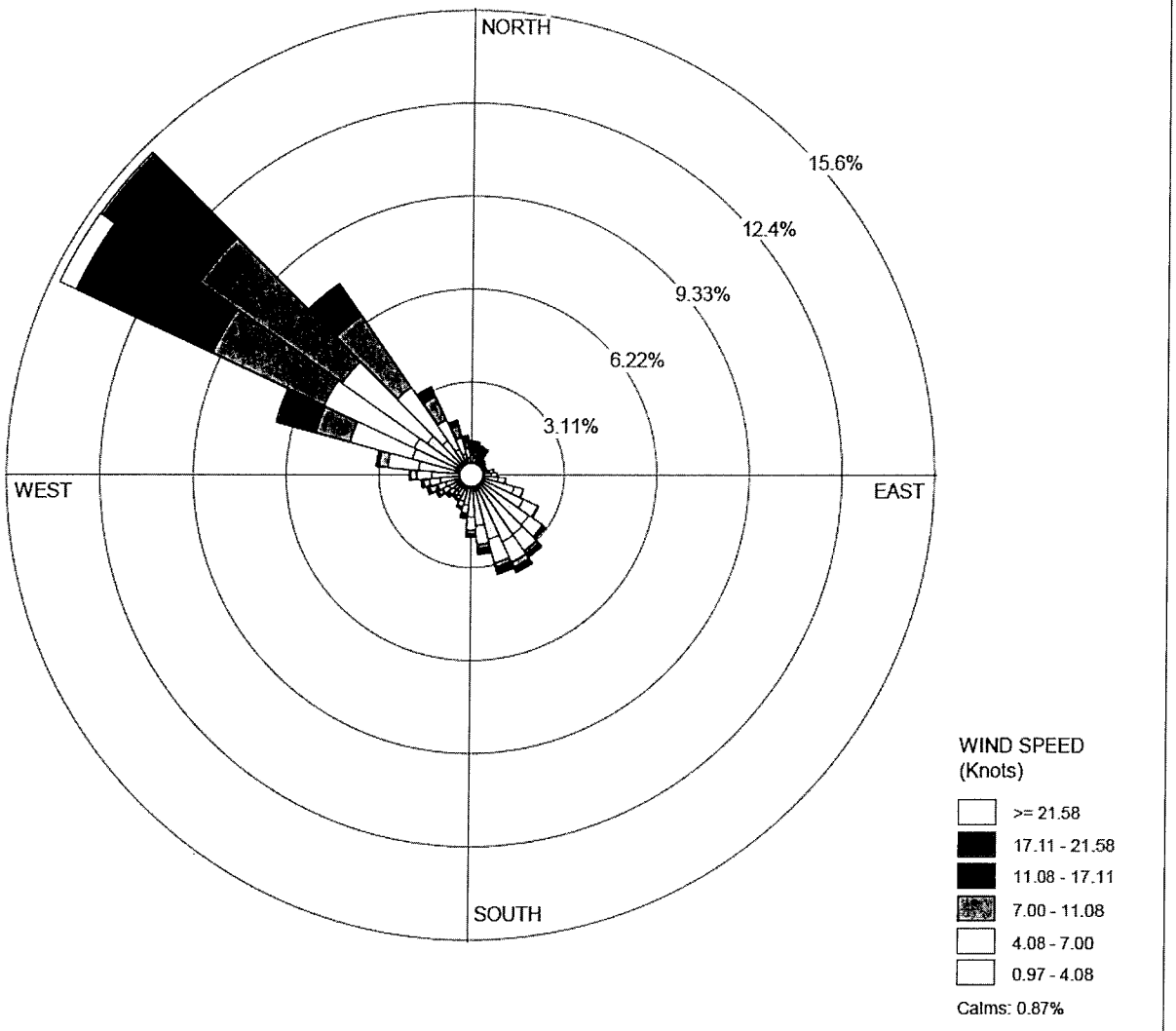
Wind Direction (Blowing From) / Wind Speed (Knots)

	0.97 - 4.08	4.08 - 7.00	7.00 - 11.08	11.08 - 17.17	17.11 - 21.58	>= 21.58	Total
355-5	0.004655	0.002191	0.002122	0.002442	0.000046	0.000000	0.011455
5-15	0.004199	0.001574	0.002259	0.003081	0.000274	0.000000	0.011386
15-25	0.003377	0.000981	0.001574	0.003742	0.000639	0.000000	0.010314
25-35	0.004016	0.000730	0.001392	0.003354	0.000479	0.000000	0.009972
35-45	0.003332	0.000799	0.000958	0.001301	0.000068	0.000000	0.006458
45-55	0.004062	0.000936	0.000434	0.000319	0.000023	0.000000	0.005773
55-65	0.004130	0.001095	0.000228	0.000000	0.000000	0.000000	0.005454
65-75	0.004039	0.001232	0.000251	0.000000	0.000000	0.000000	0.005522
75-85	0.006161	0.001346	0.000137	0.000000	0.000000	0.000000	0.007644
85-95	0.006686	0.001848	0.000046	0.000000	0.000000	0.000000	0.008580
95-105	0.009059	0.002305	0.000274	0.000023	0.000000	0.000000	0.011660
105-115	0.014923	0.002966	0.000274	0.000000	0.000000	0.000000	0.018164
115-125	0.019282	0.005180	0.000411	0.000046	0.000046	0.000000	0.024963
125-135	0.023594	0.005545	0.000730	0.000342	0.000023	0.000023	0.030257
135-145	0.024279	0.006572	0.001460	0.000981	0.000274	0.000137	0.033703
145-155	0.024667	0.007393	0.002191	0.001574	0.000183	0.000023	0.036030
155-165	0.022294	0.008055	0.001711	0.002076	0.000205	0.000023	0.034365
165-175	0.017091	0.006252	0.001529	0.001666	0.000274	0.000000	0.026812
175-185	0.014056	0.004313	0.001597	0.000890	0.000023	0.000000	0.020879
185-195	0.010177	0.002738	0.001209	0.000662	0.000000	0.000000	0.014786
195-205	0.009196	0.001734	0.000685	0.000228	0.000023	0.000000	0.011866
205-215	0.008009	0.001118	0.000479	0.000160	0.000000	0.000000	0.009766
215-225	0.007005	0.001506	0.000753	0.000160	0.000000	0.000000	0.009424
225-235	0.007279	0.001894	0.001187	0.000205	0.000000	0.000000	0.010565
235-245	0.008352	0.002213	0.001985	0.000479	0.000023	0.000000	0.013052
245-255	0.009059	0.002647	0.003012	0.000753	0.000046	0.000000	0.015517
255-265	0.010679	0.003309	0.002442	0.000639	0.000000	0.000000	0.017068
265-275	0.013531	0.004655	0.002327	0.000205	0.000023	0.000000	0.020742
275-285	0.017844	0.010246	0.003149	0.000776	0.000068	0.000000	0.032083
285-295	0.020560	0.021518	0.012139	0.008808	0.004199	0.000776	0.067999
295-305	0.021313	0.033338	0.041530	0.034912	0.015083	0.005978	0.152154
305-315	0.018255	0.034890	0.058644	0.035597	0.003651	0.000913	0.151949
315-325	0.013988	0.021541	0.029299	0.012756	0.000251	0.000068	0.077903
325-335	0.009629	0.010565	0.008717	0.003491	0.000068	0.000000	0.032471
335-345	0.007302	0.005591	0.004176	0.001734	0.000091	0.000023	0.018917
345-355	0.005796	0.003149	0.002350	0.001894	0.000068	0.000000	0.013258
Total	0.411875	0.223964	0.193661	0.125297	0.026150	0.007964	0.988910

Frequency of Calm Winds: 0.87%
Average Wind Speed: 6.49 Knots

W ND ROSE PLOT:

DISPLAY:
Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD: **Start Date: 1/1/2014 - 00:00** **End Date: 12/31/2018 - 23:59**	COMPANY NAME:	
		MODELER:	SESPE CONSULTING, INC.
	CALM W NDS: **0.87%**	TOTAL COUNT: **43719 hrs.**	
	AVG. W ND SPEED: **6.49 Knots**	DATE: **8/4/2019**	PROJECT NO.:

Wind Direction	0.00 - 2.62	>= 2.62	Total
348.75 - 11.25	544	1,018	1,562
11.25 - 33.75	145	862	1,007
33.75 - 56.25	154	459	613
56.25 - 78.75	189	385	574
78.75 - 101.25	259	648	907
101.25 - 123.75	433	1,524	1,957
123.75 - 146.25	563	2,668	3,231
146.25 - 168.75	621	2,665	3,286
168.75 - 191.25	590	1,436	2,026
191.25 - 213.75	471	637	1,108
213.75 - 236.25	370	658	1,028
236.25 - 258.75	427	1,009	1,436
258.75 - 281.25	501	1,787	2,288
281.25 - 303.75	568	8,792	9,360
303.75 - 326.25	440	10,818	11,258
326.25 - 348.75	232	1,846	2,078
Sub-Total:	6,507	37,212	43,719
Calms:			0
Missing/Incomplete:			105
Total:			43,824

Hours in Two Month Flowering Period:	1,084.5
Hours in Dataset:	43,719
Hours with Conditions Adverse to Inversion or Outside the Two Months Flowering Period:	97.5%

ATTACHMENT 3
Model Input File

(Download model output and other files at: https://www.dropbox.com/sh/pojq5jcm1zerj3v/AAB38t9vDVe0NxPjISH1I_EAa?dl=0).

```
**
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.8.0
** Lakes Environmental Software Inc.
** Date: 11/3/2019
** File: I:\z AERMOD\SA16 SBWCF\SA16 SBWCF.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE Santa Barbara West Coast Farms
   TITLETWO MM5 Site Specific MetData
   MODELOPT DFAULT CONC
   AVERTIME 1 PERIOD
   POLLUTID ODOR
   RUNORNOT RUN
   SAVEFILE SA16_SBWCF.sv1 5
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   752482.717  3834174.074       91.530
** DESCRSRC SE
   LOCATION PAREA2       AREAPOLY   752417.769  3834430.358       94.310
** DESCRSRC NW
** Source Parameters **
   SRCPARAM PAREA1       1.8469E-06     2.000        15     4.000
   AREAVERT PAREA1       752482.717 3834174.074 752580.125 3834257.567
   AREAVERT PAREA1       752730.400 3834453.664 752913.738 3834482.682
   AREAVERT PAREA1       752957.389 3834540.515 753258.891 3834563.708
   AREAVERT PAREA1       753271.260 3834548.246 753261.656 3834415.861
   AREAVERT PAREA1       753216.642 3834340.374 753103.873 3834304.249
   AREAVERT PAREA1       752987.144 3834338.706 752868.283 3834343.464
   AREAVERT PAREA1       752763.533 3834312.124 752632.131 3834206.330
   AREAVERT PAREA1       752544.829 3834023.135
   SRCPARAM PAREA2       9.0643E-07     2.000         3     4.000
   AREAVERT PAREA2       752417.769 3834430.358 752728.486 3834509.802
   AREAVERT PAREA2       752456.608 3834241.456
   SRCGROUP PAREA1   PAREA1
   SRCGROUP PAREA2   PAREA2
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
**
**
RE STARTING
   INCLUDED SA16_SBWCF.rou
RE FINISHED
**
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**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
   SURFFILE AERMOD_MET1914753_23273_93214_2014_2018\MET1914753_2014_2018.SFC
   PROFFILE AERMOD_MET1914753_23273_93214_2014_2018\MET1914753_2014_2018.PFL
   SURFDATA 23273 2014 Santa_Maria_Public,_CA
   UAIRDATA 93214 2014
   PROFBASE 72.5 METERS
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120
   125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200
   RECTABLE 1 1ST 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125
   130 135 140 145 150 155 160 165 170 175 180 185 190 195 200
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST SA16_SBWCF.AD\01H1GALL.PLT 31
   PLOTFILE 1 PAREA1 1ST SA16_SBWCF.AD\01H1G001.PLT 32
   PLOTFILE 1 PAREA2 1ST SA16_SBWCF.AD\01H1G002.PLT 33
   PLOTFILE 1 ALL 15 SA16_SBWCF.AD\01H15GALL.PLT 34
   PLOTFILE 1 PAREA1 15 SA16_SBWCF.AD\01H15G001.PLT 35
   PLOTFILE 1 PAREA2 15 SA16_SBWCF.AD\01H15G002.PLT 36
   PLOTFILE 1 ALL 20 SA16_SBWCF.AD\01H20GALL.PLT 37
   PLOTFILE 1 PAREA1 20 SA16_SBWCF.AD\01H20G001.PLT 38
   PLOTFILE 1 PAREA2 20 SA16_SBWCF.AD\01H20G002.PLT 39
   PLOTFILE 1 ALL 25 SA16_SBWCF.AD\01H25GALL.PLT 40
   PLOTFILE 1 PAREA1 25 SA16_SBWCF.AD\01H25G001.PLT 41
   PLOTFILE 1 PAREA2 25 SA16_SBWCF.AD\01H25G002.PLT 42
   PLOTFILE 1 ALL 30 SA16_SBWCF.AD\01H30GALL.PLT 43
   PLOTFILE 1 PAREA1 30 SA16_SBWCF.AD\01H30G001.PLT 44
   PLOTFILE 1 PAREA2 30 SA16_SBWCF.AD\01H30G002.PLT 45
   PLOTFILE 1 ALL 35 SA16_SBWCF.AD\01H35GALL.PLT 46
   PLOTFILE 1 PAREA1 35 SA16_SBWCF.AD\01H35G001.PLT 47
   PLOTFILE 1 PAREA2 35 SA16_SBWCF.AD\01H35G002.PLT 48
   PLOTFILE 1 ALL 40 SA16_SBWCF.AD\01H40GALL.PLT 49
   PLOTFILE 1 PAREA1 40 SA16_SBWCF.AD\01H40G001.PLT 50
   PLOTFILE 1 PAREA2 40 SA16_SBWCF.AD\01H40G002.PLT 51
   PLOTFILE 1 ALL 45 SA16_SBWCF.AD\01H45GALL.PLT 52
   PLOTFILE 1 PAREA1 45 SA16_SBWCF.AD\01H45G001.PLT 53
   PLOTFILE 1 PAREA2 45 SA16_SBWCF.AD\01H45G002.PLT 54
   PLOTFILE 1 ALL 50 SA16_SBWCF.AD\01H50GALL.PLT 55
   PLOTFILE 1 PAREA1 50 SA16_SBWCF.AD\01H50G001.PLT 56
   PLOTFILE 1 PAREA2 50 SA16_SBWCF.AD\01H50G002.PLT 57
   PLOTFILE 1 ALL 55 SA16_SBWCF.AD\01H55GALL.PLT 58
   PLOTFILE 1 PAREA1 55 SA16_SBWCF.AD\01H55G001.PLT 59
   PLOTFILE 1 PAREA2 55 SA16_SBWCF.AD\01H55G002.PLT 60
   PLOTFILE 1 ALL 60 SA16_SBWCF.AD\01H60GALL.PLT 61
   PLOTFILE 1 PAREA1 60 SA16_SBWCF.AD\01H60G001.PLT 62
   PLOTFILE 1 PAREA2 60 SA16_SBWCF.AD\01H60G002.PLT 63
   PLOTFILE 1 ALL 65 SA16_SBWCF.AD\01H65GALL.PLT 64
   PLOTFILE 1 PAREA1 65 SA16_SBWCF.AD\01H65G001.PLT 65
   PLOTFILE 1 PAREA2 65 SA16_SBWCF.AD\01H65G002.PLT 66
   PLOTFILE 1 ALL 70 SA16_SBWCF.AD\01H70GALL.PLT 67
   PLOTFILE 1 PAREA1 70 SA16_SBWCF.AD\01H70G001.PLT 68
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   PLOTFILE 1 ALL 75 SA16_SBWCF.AD\01H75GALL.PLT 70
   PLOTFILE 1 PAREA1 75 SA16_SBWCF.AD\01H75G001.PLT 71
   PLOTFILE 1 PAREA2 75 SA16_SBWCF.AD\01H75G002.PLT 72
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PLOTFILE 1 PAREA1 80 SA16 SBWCF.AD\01H80G001.PLT 74
PLOTFILE 1 PAREA2 80 SA16_SBWCF.AD\01H80G002.PLT 75
PLOTFILE 1 ALL 85 SA16 SBWCF.AD\01H85GALL.PLT 76
PLOTFILE 1 PAREA1 85 SA16_SBWCF.AD\01H85G001.PLT 77
PLOTFILE 1 PAREA2 85 SA16 SBWCF.AD\01H85G002.PLT 78
PLOTFILE 1 ALL 90 SA16_SBWCF.AD\01H90GALL.PLT 79
PLOTFILE 1 PAREA1 90 SA16 SBWCF.AD\01H90G001.PLT 80
PLOTFILE 1 PAREA2 90 SA16_SBWCF.AD\01H90G002.PLT 81
PLOTFILE 1 ALL 95 SA16_SBWCF.AD\01H95GALL.PLT 82
PLOTFILE 1 PAREA1 95 SA16 SBWCF.AD\01H95G001.PLT 83
PLOTFILE 1 PAREA2 95 SA16_SBWCF.AD\01H95G002.PLT 84
PLOTFILE 1 ALL 100 SA16 SBWCF.AD\01H100GALL.PLT 85
PLOTFILE 1 PAREA1 100 SA16_SBWCF.AD\01H100G001.PLT 86
PLOTFILE 1 PAREA2 100 SA16 SBWCF.AD\01H100G002.PLT 87
PLOTFILE 1 ALL 105 SA16_SBWCF.AD\01H105GALL.PLT 88
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PLOTFILE 1 PAREA2 115 SA16 SBWCF.AD\01H115G002.PLT 96
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PLOTFILE 1 PAREA2 120 SA16_SBWCF.AD\01H120G002.PLT 99
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PLOTFILE 1 PAREA2 125 SA16 SBWCF.AD\01H125G002.PLT 102
PLOTFILE 1 ALL 130 SA16_SBWCF.AD\01H130GALL.PLT 103
PLOTFILE 1 PAREA1 130 SA16 SBWCF.AD\01H130G001.PLT 104
PLOTFILE 1 PAREA2 130 SA16_SBWCF.AD\01H130G002.PLT 105
PLOTFILE 1 ALL 135 SA16 SBWCF.AD\01H135GALL.PLT 106
PLOTFILE 1 PAREA1 135 SA16 SBWCF.AD\01H135G001.PLT 107
PLOTFILE 1 PAREA2 135 SA16_SBWCF.AD\01H135G002.PLT 108
PLOTFILE 1 ALL 140 SA16 SBWCF.AD\01H140GALL.PLT 109
PLOTFILE 1 PAREA1 140 SA16_SBWCF.AD\01H140G001.PLT 110
PLOTFILE 1 PAREA2 140 SA16 SBWCF.AD\01H140G002.PLT 111
PLOTFILE 1 ALL 145 SA16_SBWCF.AD\01H145GALL.PLT 112
PLOTFILE 1 PAREA1 145 SA16 SBWCF.AD\01H145G001.PLT 113
PLOTFILE 1 PAREA2 145 SA16_SBWCF.AD\01H145G002.PLT 114
PLOTFILE 1 ALL 150 SA16 SBWCF.AD\01H150GALL.PLT 115
PLOTFILE 1 PAREA1 150 SA16_SBWCF.AD\01H150G001.PLT 116
PLOTFILE 1 PAREA2 150 SA16 SBWCF.AD\01H150G002.PLT 117
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PLOTFILE 1 PAREA1 155 SA16_SBWCF.AD\01H155G001.PLT 119
PLOTFILE 1 PAREA2 155 SA16 SBWCF.AD\01H155G002.PLT 120
PLOTFILE 1 ALL 160 SA16_SBWCF.AD\01H160GALL.PLT 121
PLOTFILE 1 PAREA1 160 SA16 SBWCF.AD\01H160G001.PLT 122
PLOTFILE 1 PAREA2 160 SA16_SBWCF.AD\01H160G002.PLT 123
PLOTFILE 1 ALL 165 SA16 SBWCF.AD\01H165GALL.PLT 124
PLOTFILE 1 PAREA1 165 SA16_SBWCF.AD\01H165G001.PLT 125
PLOTFILE 1 PAREA2 165 SA16 SBWCF.AD\01H165G002.PLT 126
PLOTFILE 1 ALL 170 SA16_SBWCF.AD\01H170GALL.PLT 127
PLOTFILE 1 PAREA1 170 SA16 SBWCF.AD\01H170G001.PLT 128
PLOTFILE 1 PAREA2 170 SA16_SBWCF.AD\01H170G002.PLT 129
PLOTFILE 1 ALL 175 SA16 SBWCF.AD\01H175GALL.PLT 130
PLOTFILE 1 PAREA1 175 SA16_SBWCF.AD\01H175G001.PLT 131
PLOTFILE 1 PAREA2 175 SA16_SBWCF.AD\01H175G002.PLT 132
PLOTFILE 1 ALL 180 SA16 SBWCF.AD\01H180GALL.PLT 133
PLOTFILE 1 PAREA1 180 SA16_SBWCF.AD\01H180G001.PLT 134
PLOTFILE 1 PAREA2 180 SA16 SBWCF.AD\01H180G002.PLT 135
PLOTFILE 1 ALL 185 SA16_SBWCF.AD\01H185GALL.PLT 136
PLOTFILE 1 PAREA1 185 SA16 SBWCF.AD\01H185G001.PLT 137
PLOTFILE 1 PAREA2 185 SA16_SBWCF.AD\01H185G002.PLT 138
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   PLOTFILE 1 ALL 190 SA16_SBWCF.AD\01H190GALL.PLT 139
   PLOTFILE 1 PAREA1 190 SA16 SBWCF.AD\01H190G001.PLT 140
   PLOTFILE 1 PAREA2 190 SA16_SBWCF.AD\01H190G002.PLT 141
   PLOTFILE 1 ALL 195 SA16 SBWCF.AD\01H195GALL.PLT 142
   PLOTFILE 1 PAREA1 195 SA16_SBWCF.AD\01H195G001.PLT 143
   PLOTFILE 1 PAREA2 195 SA16 SBWCF.AD\01H195G002.PLT 144
   PLOTFILE 1 ALL 200 SA16_SBWCF.AD\01H200GALL.PLT 145
   PLOTFILE 1 PAREA1 200 SA16 SBWCF.AD\01H200G001.PLT 146
   PLOTFILE 1 PAREA2 200 SA16_SBWCF.AD\01H200G002.PLT 147
   PLOTFILE PERIOD ALL SA16_SBWCF.AD\PE00GALL.PLT 148
   PLOTFILE PERIOD PAREA1 SA16 SBWCF.AD\PE00G001.PLT 149
   PLOTFILE PERIOD PAREA2 SA16_SBWCF.AD\PE00G002.PLT 150
   SUMMFILE SA16 SBWCF.sum
OU FINISHED
**
**************************************
** Project Parameters
**************************************
** PROJCTN  CoordinateSystemUTM
** DESCPTN  UTM: Universal Transverse Mercator
** DATUM    World Geodetic System 1984
** DTMRGN   Global Definition
** UNITS    m
** ZONE     10
** ZONEINX  0
**
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ATTACHMENT 4
Sespe Staff Resumes
And Project Briefs

SESPE
CONSULTING, INC.

1565 Hotel Circle South, Ste. 370 • San Diego, California 92108
Office: (619) 894-8669 Fax: (805) 667-8104

Andre Almeida, P.E.
Engineer II
aalmeida@sespe.com

EDUCATION

UNIVERSITY OF CALIFORNIA, SAN DIEGO — La Jolla, CA
B.S., Chemical Engineering — 2016

WORK HISTORY

SESPE CONSULTING, INC. — San Diego, CA
Engineer I, Engineer II — September 2016 – Present

UNIVERSITY OF CALIFORNIA, SAN DIEGO, FACILITIES MANAGEMENT — San Diego, CA
Energy Management Systems Engineer — January 2016 – September 2016

ALLIANCE TO SAVE ENERGY — San Diego, CA
Project Manager — February 2013 – December 2015

SCRIPPS INSTITUTION OF OCEANOGRAPHY — San Diego, CA
Thermodynamics Engineering Consultant — April 2013 – January 2014

EXPERIENCE

AIR QUALITY

Experience in modeling air pollutant diffusion from industrial projects and preparation of technical reports. Familiarity with applicable federal, state, and county guidance for air quality modeling, including guidance from 6+ California air districts.

Prepared air dispersion models using AERMOD and assessed health risk using CARB HARP software for many projects and purposes including as part of air permitting and CEQA impact analysis.

Proficiency writing Health Risk Assessments for CEQA Environmental Impact Reports that involve calculations of:

- The pollution output levels of facility devices;
- Resulting ground level concentrations of pollutants at various receptors;
- Health impact to receptors, including;
    - Acute impact,
    - Chronic impact,
    - Long term cancer risk.

Prepared various compliance reporting documents and provided consultation related to compliance issues. Specifically, emissions inventory (GHG, criteria and air toxics) protocols and reporting; violation response and negotiation, and annual compliance certifications/renewals.

COMPUTATIONAL MODELING

Experience modeling natural and industrial systems, including:

- Health risk assessment and criteria pollutant modeling using software including AERMOD, HARP2, and CalEEMod;
- Industrial project toxics, criteria pollutant, and GHG emissions estimating using CalEEMod software;
- Developing and implementing energy use optimization models for high energy use industrial equipment, including HVAC equipment, lab fume hoods, -80°C freezers ; and
- Preparing energy production potential calculations and reports on geological heat flow.

Data Science, Software Development, and Automation

Scripting Experience in the following languages:

Python (specialization in "NumPy" and "PANDAS" Modules)
Visual Basic for Applications (VBA)
Matrix Laboratory (MATLAB)

Successful design, production, and implementation of software for:

- Automated dataset analysis and manipulation;
- health risk assessment modeling; and
- stormwater chemical compliance assessment.

ENERGY AUDITING AND OPTIMIZATION

Experience analyzing office, laboratory, and industrial spaces and providing recommendations for reducing energy use and increasing efficiency, including:

- Behavioral changes;
- Process adjustments;
- Retrofits.

INDUSTRIAL HYGIENE

Experience in worker health and safety including:

- Sampling for Silica and Noise in mining environments;
- Conducting assessments of employee exposure to hazardous materials during industrial operations; and
- Providing safety training to lab occupants working with volatile reagents in a lab setting.

REGISTRATIONS AND CERTIFICATIONS

Registered Chemical Engineer: California CH6933

SESPE
CONSULTING, INC.

1565 Hotel Circle South, Ste. 370 • San Diego, California 92108
Office: (619) 894-8670 • Fax: (805) 667-8104

Scott D. Cohen, P.E., C.I.H.
Principal Engineer
scohen@sespe.com

EDUCATION

UNIVERSITY OF CALIFORNIA, SANTA BARBARA — Santa Barbara, CA
B. S. Mechanical Engineering — June 1993

WORK HISTORY

SESPE CONSULTING, INC. — Ventura, CA; San Diego, CA
Principal Engineer — May 2019 – Present
Project Manager III — June 2009 – May 2019

COUNTY OF SAN DIEGO. — San Diego, CA
Air Pollution Control District Hearing Board Member — September 2014 – September 2018

WEST COAST ENVIRONMENTAL AND ENGINEERING — Ventura, CA; San Diego, CA
Managing Engineer — 1996 – May 2009

LOS ALAMOS NATIONAL LABORATORY — Los Alamos, NM
Hazardous Waste Technician IV — 1994 – 1995
Graduate Research Assistant, Hydrology Group — 1993 – 1994

Recent work history includes:

- Provision of EH&S permitting and compliance services for industrial and municipal clientele.
- Management of southern California branch office(s) and staff including acquisition of office space, furniture, equipment, and consumables; installation and maintenance of network infrastructure and information systems; human resource functions such as hiring, firing, and policy enforcement; transitional duties during acquisition of another small consulting company; and interface with property manager(s).
- Management of multiple, simultaneous consulting projects of various sizes, durations, locations, complexities, and subject matter. Tasks include proposal scoping, costing, writing and interviewing; primary contact for client, agency staff and other stakeholders; budget and schedule tracking; invoice preparation and distribution.
- Interpretation and tracking of regulatory, planning and legal developments and documentation to identify potential opportunities and challenges; ensure that work product is prepared using the most current and defensible method available; and illuminate alternative and/or novel approaches that may be implemented.
- Marketing through active participation in various associations and other groups including volunteering to serve as chair, secretary, host, or another role in committees and for meetings; public speaking, booth attendance, and entertainment of clients during conferences; writing articles for trade journals; and donation of professional services as may be needed to track issues, attend meetings, strategize and communicate when an undesirable restriction has been proposed.

- Using and learning to use computers to most efficiently accomplish work at-hand including specialized software (e.g., AERMOD, HARP, EMFAC, CalEEMod, GIS, RTNM, SoundPlan, AggFlow); office productivity software (e.g., Word, Excel, Access, VBA); graphics software (e.g., Photoshop/Illustrator, 2D CAD, etc.); networking software (e.g., LAMP stack).
- Technical support and process development for publishing large environmental documents (EIRs).
- Core skill set includes:
  - Project Management
  - Technical Writing
  - Air Quality and Greenhouse Gases
  - Noise and Vibration
  - CEQA/NEPA
  - Dispersion Modeling and Health Risk Assessment
  - Construction and Mining
  - Industrial Hygiene

EXPERIENCE

Technical Analysis for CEQA/NEPA and Special Studies

- Practiced in the subject areas of air quality, health risk assessment, climate change, noise, vibration, and hazardous materials. Emphasis in assessing fugitive dust and diesel exhaust.
- Applied CEQA requirements in light of existing case law to assess baseline, cumulative effects, and project fair share of mitigation for cumulative effects.
- Developed feasible, enforceable mitigation measure language including some creative solutions.
- Successfully defended work-product through litigation of several project EIRs by supporting efforts of legal counsel in the analysis of opposition arguments and the development counter arguments.
- Experienced a variety of project types including mining, asphalt, ready mix concrete, residential/commercial developments, arterial-freeway interchange improvements, and a university long range development plan.

Industrial Environmental Compliance and Permitting

- Involved in most aspects of environmental compliance for industrial clients including development of management systems and policy.
- Permitted air emissions sources in local and federal (Title V) programs including all aspects of new source review, emissions calculations and modeling, health risk assessment, best available control technology (BACT) cost effectiveness, and portable equipment regulation.
- Permitted industrial process water discharge to land under National Pollutant Discharge Elimination System (NPDES) and to sewer.

- Prepared storm water pollution prevention plans (SWPPP) and related documents including notices of intent, annual reports, and notification to regional water board of illicit discharges.
- Performed services related to characterization and management of hazardous materials and wastes including:
  - Release investigation and sampling.
  - Storage, use and transport as regulated by EPA, OSHA, DOT and the Uniform Fire Code.
  - Risk management plans (RMPs) for facilities with acutely hazardous material.
  - Emergency response plans and spill pollution control and countermeasures (SPCC) plans for facilities with bulk petroleum storage.

Air Quality Expertise

- Prepared air permit applications and negotiated conditions on permits to construct and operate various types of sources and facilities (including those in Title V) in each major California air district, some smaller districts, and several states. Work included each facet of new source review including cost effectiveness and feasibility for BACT, offsets, modeling and coordination of start-up/initial source testing.
- Prepared air dispersion models using AERMOD and assessed health risk using CARB HARP software for many projects and purposes including as part of air permitting and CEQA impact analysis.
- Represented California Mining Association and provided consultation to Arizona Rock Products Association during fugitive dust rulemaking in South Coast AQMD (Rule 1157) and Maricopa County (Rule 316).
- Prepared various compliance reporting documents and provided consultation related to compliance issues. Specifically, emissions inventory (GHG, criteria and air toxics) protocols and reporting; violation response and negotiation, and annual compliance certifications/renewals under Title V.

Worker Safety and Industrial Hygiene

- Provided regulatory analysis and technical support to clients with issues in the areas of indoor air quality (IAQ) and other employee exposure investigations.
- Process hazard analysis, injury and illness prevention (IIPP), safety program management, OSHA violation response, employee training, hazard communication (HAZCOM), personal protective equipment (PPE) selection, confined space, lockout/tagout, health risk assessment, noise, and fall protection.

REGISTRATIONS AND CERTIFICATIONS

Registered Mechanical Engineer: California M30545

Certified Industrial Hygienist: 8162CP

County of San Diego CEQA Air Quality and Noise Consultant Lists

PUBLISHED ARTICLES AND PRESENTATIONS

California Construction and Industrial Mineral Association Education Conference or Meeting
The Air UP There – Positive Health Impacts from Industry's Investments in Diesel Truck Engines (2018).
Distance Matters – Assessing Regional Air and GHG Impacts of Mining Projects Under CEQA (2015).
Industrial Hygiene Statistics and Exposure Assessment (H&S Committee Meeting, 7/2015).
Navigating the Rocky Road to Portable Permitting in California (2013).
Community Noise Impact Assessment Primer (2011).
Portable Plant Air Permitting, What You Need to Know (2009).
Case Study – CEQA Analysis of Air Quality, Greenhouse Gas, and Health Risk Impacts (2008).

Industrial Environmental Association Education Conference or Meeting
Air Permitting 101 & 102 (2015 & 2016).
California Health Risk Assessment Methodology Changes (Air Committee Meeting, 4/2014).

California Asphalt Magazine
Health Risk Assessment – What to Expect and How to Prepare (July 2017).
Portable Equipment Air Permitting and Compliance Status Update (July 2012).
Can California Afford its Climate Change Policies? (July 2011).

California Precast Concrete Association (CPCA) Member Meeting
Current Air Quality Issues Facing Processors of Non-Metallic Minerals (November 2005).

AFFILIATIONS AND MEMBERSHIPS

California Construction and Industrial Materials Association Member and *Associate of the Year in 2015*

California Asphalt Pavement Association Environmental Committee Co-chair (2010 to present)

Industrial Environmental Association Member

Industrial Minerals Association of North America Member

American Industrial Hygiene Association Member

San Diego APCD Air Pollution Permit Streamlining Committee/Compliance Improvement Team (APPS/CIT) Meeting Chair (7/2012 to 7/2017)

SESPE
CONSULTING, INC.

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Rob Dal Farra, P.E.
Vice President
rdalfarra@sespe.com

EDUCATION

UNIVERSITY OF WINDSOR, — Windsor, Ontario, Canada
BASc, Chemical Engineering — 1981

REGISTRATIONS

- Professional Engineer, Chemical Engineering, California (#CH005847)
- South Coast Air Quality Management District Certified Permitting Professional (#B4317)

WORK HISTORY

SESPE CONSULTING, INC. — Ventura, CA
Vice President — Present

- Provide executive management and company quality assurance/quality control.
- Develop work product methodologies, procedures and formats for numerous company services including site assessment, regulatory compliance, hazardous materials, hazardous waste, etc.
- Hiring, training, developing, and managing junior staff.
- Client management.
- Project management including scheduling, coordination, budgeting, and quality control.

EXPERIENCE

35 years of professional experience including 30 years of wide ranging consulting experience covering all aspects of environmental compliance, assessment and management.

INDUSTRY EXPERIENCE

- Provided consulting services to a wide variety of industries, including:
  - Aggregate mining and processing
  - Ready mixed and asphaltic concrete production
  - Crude oil production and processing
  - Refined oil bulk storage, blending and distribution
  - Scrap metal recycling
  - Metal forging and forming
  - Food processing and agricultural
  - Water purveyors
  - Semiconductor manufacturing
  - Real estate development
  - Power generation
  - Glass production

WATER QUALITY

- National Pollutant Discharge Elimination System (NPDES) and Waste Discharge Requirements (WDR) permitting, monitoring, reporting and compliance support including evaluation of technical issues such as ion imbalance toxicity and mixing zones.
- Discharge treatment studies for various manufacturing facilities, in particular ion exchange pilot testing for removal of toxic metals to meet CTR/NPDES permit limits for inland surface waters.
- Industrial sewer discharge support including preparing baseline monitoring reports, obtaining local sewer permits, Notice of Violation (NOV) resolution and treatment system evaluations.
- Preparation of Storm Water Pollution Prevention Plans (SWPPPs) for a variety of industrial and manufacturing facilities.

SITE ASSESSMENT AND ENVIRONMENTAL AUDITS

- Completed environmental compliance audits for numerous manufacturing operations including construction materials, wastepaper recycling, circuit board manufacturing, electronics equipment manufacturing, and bottled water production.
- Conducted pre-acquisition due diligence compliance audits for aggregate mining, ready mixed and asphaltic concrete production facilities.
- Provided project management for more than 1,000 Phase I Site Assessment projects including agricultural parcels, heavy and light manufacturing sites, oil and gas production facilities, and commercial and residential lands.

HAZARDOUS MATERIALS

- Hazard Communication Program development and implementation including conducting hazardous material audits and creating MSDS tracking and reporting systems.
- Hazardous Material Business Plan preparation and Tier II reporting.
- Prepared and/or certified Spill Prevention Control and Countermeasure (SPCC)
- Prepared Facility Response Plans for large oil blending and packaging facilities.
- Prepared Toxic Release Inventory (TRI) reports for a variety of manufacturing facilities and reported emissions using Form R/Form A.
- Risk Management Plan (RMP) preparation for facilities storing anhydrous ammonia and chlorine gas.
- Facility design support for California Fire Code (CFC) and California Building Code (CBC) requirements.

HAZARDOUS WASTE

- Hazardous waste compliance support.
- Waste Minimization (SB14) Plan and Report preparation.
- California Tiered Permitting support including preparation of necessary reporting forms, developing closure cost estimates, and certifying hazardous waste treatment tanks and containment areas.

LAND USE PLANNING AND PERMITTING

- Conditional Use Permitting (CUP) support
- Managing the preparation of technical studies in support of environmental impact reports
- Permitting of new crude oil wells and production facilities

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Ventura 805.275.1515
San Diego 619.894.8669

Project: Azusa Rock Quarry Expansion Project EIR

Dates: 2006 to 2011

Air Quality and Climate Change Studies and Subsequent Litigation Support

Client: Vulcan Materials Company – Western Division

Location: City of Azusa

Contract Value: $ 150,000

Contact: Jim Gore, Permitting and Government Relations
323.474.3231
gorej@vmcmail.com

Description: Vulcan Materials Company was proposing to increase mining from approximately 1.5 million tons per year (MTPY) to an estimated 10.8 MTPY and increase material processing, which required amending the existing Reclamation Plan and Conditional Use Permit, and preparing an Environmental Impact Report (EIR). SESPE employees, while at another firm, were hired to prepare stand-alone technical reports in support of the EIR. This effort included developing impact reduction strategies and creating Project Design Features that were incorporated into the project to reduce potentially significant impacts to air quality.

The Project sought to process up to 6 MTPY at a rate of 50 percent above the average day on the peak day in a 312-day year (i.e. 28,800 tons per day on the peak day). This peak day amount coincided with the maximum throughput that could be processed by mining equipment and haul trucks that load the processing plant as determined by cycle time analysis for the process. Peak day assumptions are important because they are used to estimate regional air quality impacts in the South Coast Air Quality Management District.

Distinctive Characteristics: Several distinctive characteristics are associated with the Azusa Rock Quarry. Two residential neighborhoods are located within one and one-half miles from the site. The northern quarry boundary is adjacent to the Angeles National Forest. Reclamation included a new process known as "micro benching" that will allow for native vegetation to be planted in benches on the previously mined slopes thereby integrating the facility with the surrounding topography.

Outcome: Project Design Features were successfully developed that were incorporated in the EIR, which eliminated the need to develop mitigation measures.

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Project: Lebata Big Rock Creek Project Surface Mine Reclamation Plan and EIR Air Quality and Climate Change Impact Assessments

Dates: 2004-2014

Client: McGee and Associates

Location: Los Angeles County, CA

Contract Value: ≈ $150,000

Contact: Jim McGee, Esq.
McGee and Associates
949.640.0050
jimmcgee@mcgee-law.com

Description: A newly proposed mine, this project involves mining approximately 275 acres of a 310-acre site over a 50-year permit period. Approximately 42.3 million gross tons of sand and gravel would be excavated in two phases at an extraction rate ranging from 0.5 million and 2.5 million tons per year. In addition to aggregate surface mining and processing facilities, the project would include a ready-mixed concrete plant, a Vac-Lite plant (producing lightweight concrete), an asphalt mixing plant, a raw cement and aggregate transfer and distribution facility (via existing rail), and water reclamation and fines recovery facilities. The reclaimed end use for disturbed lands would be open space/groundwater recharge and/or stormwater retention basins. Beginning with a previous employer, SESPE staff members have been working on this project since 2004. Lebata submitted an application to the County for the Surface Mining Permit and Reclamation Plan in 2007. From 2009 to 2014, regulatory issues and project design changes led to numerous revisions to the Reclamation Plan, the environmental impact report (EIR), and supporting technical studies. SESPE was actively involved in addressing those changes, and circulated a Draft EIR for public review in February 2014.

A - Existing conditions

B - View after proposed facility is installed.

Distinctive Characteristics: At the conclusion of a pre-production phase of mining (up to 5 years), the project facilities pad would be about 25 to 35 feet below surrounding natural grade and thus shielded to reduce noise and to minimize visibility of processing facilities and off-site lighting impacts. In addition to minimizing distance setbacks and maintaining aggregate reserve volume, mining and reclamation phasing are timed so at least 71 percent of the site will be available as undisturbed and/or reclaimed habitat areas at any point in time.

Outcome: The County of Los Angeles certified the Final EIR in 2014 and approved the Draft EIR's "environmentally superior" alternative. SESPE finalized the Reclamation Plan consistent with the County approval.

EXHIBIT F

Estimated emissions, concentrations, and deposition of monoterpenes from an outdoor *Cannabis* farm

Final Report

Prepared for:
Brett Vapnek
The Hacienda Company, LLC
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Prepared by:
Dr. William Vizuete
Chief Scientific Officer
Pacific Environmental Analytics LLC
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December 6, 2019

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Executive Summary

The purpose of this study is to determine whether or not it is feasible for cannabis monoterpenes from the proposed project ('Hacienda' 3800 Baseline Avenue Santa Ynez California) to taint grapes on a neighboring property (Appellant, 3950 Baseline Avenue).

The appellants cite a peer reviewed publication ("Capone") which identifies 1,8-cineole (eucalyptol) as having a detrimental impact on grapes. (The monoterpene 1,8-cineole is present in eucalyptus trees and some, but not all, cannabis strains.) Averaging across three years of their reported data, the study determined amounts of eucalyptol per grape material of 2.6 ug/kg. We sought to determine if it is possible for cannabis monoterpenes from the Hacienda project to reach this same threshold value of eucalytpol per grape material – 2.6 ug/kg – at the neighboring farm.

It should be noted that 1,8 cineole (eucalyptol) is the only monoterpene to be identified as potentially causing wine taint. No other monoterpenes (such as beta-myrcene, alpha-terpinene, and terpinolene) have been found in peer reviewed studies to cause taint.

To run this model, we completed the following tasks over the last several months:

1) Determination of monoterpene emission factors using measurements from five Cannabis strains.
2) Creation of monoterpene emission rates using emission factors for the proposed Cannabis farm.
3) Prediction of gas-phase concentrations using the Cannabis farm's emission rates simulated over three seasons using local meteorology.
4) Determination of deposition rates from predicted gas-phase concentrations to grape material and comparison with the assumed threshold values.

Our model was based on the size and location of the proposed project – 3800 Baseline Ave – and utilized local meteorological data from the Santa Ynez airport.

The following work describes the results of the estimation of Cannabis farm emissions, the prediction of downwind concentrations, and the deposition to grape material of four monoterpenes produced by certain cannabis strains: 1,8-cineole, beta-myrcene, alpha-terpinene, and terpinolene. The modeled rates of deposition were then compared with certain assumed threshold values defined for these terpenes.

The major findings from the completion of these tasks are listed below.

- For the cannabis monoterpenes to reach threshold values (that potentially taint the grapes), they would have to emit at the highest rate, at the average predicted gas-phase concentrations, for 1,121 days straight for 1,8-cineole. Therefore, it is highly unlikely that cannabis from the Hacienda project would taint any grapes at 3950 Baseline Ave because

cannabis is only grown seasonally, not year-round, and grapes are grown seasonally, not all year long. Furthermore, the cannabis is only emitting monoterpenes for 21 days prior to harvest. And if Hacienda had a maximum of 3 harvests per year, that would roughly only result in 63 days of emissions – compared to the 1,121 that would be required to taint the grapes. In other words, it would take 1,121 continual days of cannabis strains that have eucalyptol (not all strains have eucalyptol) emitting at the highest rate, without real world deposition loss (such as photochemistry) to result in grape absorption of terpenes at the threshold level, identified in the Capone study (of 2.6 ug/kg).

- Assuming mature Cannabis plants are emitting monoterpenes for 21 days prior to harvest, we estimate the fraction of the threshold values reached would be 1.9% for 1,8-cineole.
- Our model was very conservative and did not include real-world losses of gas-phase concentrations due to photochemistry and deposition during transport and thus are upper bound estimations. In reality, gas-phase concentrations of monoterpenes in the atmosphere have an average lifetime of minutes to hours in full sunlight, further reducing the possibility that the emission would travel to the nearby farm and taint the grapes. Our study did not include the real world losses due to photochemistry.
- Only 3 out of the 5 cannabis strains we evaluated had emission factors of eucalyptol. No 1,8-cineole emissions were found in two strains – Banjo, Presidential OG. The remaining strains had very small emission factors of eucalyptol ranging from 0.001-0.01 ug /g/hr.

Background

There currently exists only one peer-reviewed study that has linked the influence of 1,8-cineole in vineyards to taint in corresponding red wines [1]. This study (Capone) examined the effects that eucalyptus trees had on nearby vineyard operations. The study found the largest concentrations of 1,8-cineole in samples closest to eucalyptus trees. The study results were used to determine a threshold value for 1,8-cineole against which modeled deposition rates from predicted gas-phase concentrations could be compared.

Data from this study in Figure 1 shows 1,8-cineole concentrations in grape tissue from four grapevine rows over three vintages. Triplicate sampling was conducted at each of the three positions within each row. Using the highest measured values closest to the eucalyptus trees, a three year average was calculated of 2.6 ug/kg of 1,8-cineole per grape material. This average concentration was used as the threshold value for 1,8-cineole in the present modeling analysis.

Similarly, at the County of Santa Barbara Board of Supervisors meeting on August 20, 2019, data was publicly presented as shown in Figure 2. The figure shows terpene concentrations in grape material from two farms, one near a cannabis farm, and the second without a cannabis farm. There are three monoterpenes highlighted in yellow that were only found in the grape tissue near the cannabis farm. The data suggests the source of the monoterpenes was from the cannabis farm. The data does not suggest these monoterpenes had a deleterious effect on the quality of grape tissue, or the resulting wine produced. Nevertheless, for purposes of the present modeling analysis, the data presented was used to determine threshold values for the three monoterpenes identified: (i) 0.3801 mg/kg for beta-myrcene, (ii) 0.1931 mg/kg for alpha-terpinene, and (iii) 0.5632 mg/kg for terpinolene.

The goal of this work was to determine the amount of deposition of gas-phase concentrations of 1,8-cineole, beta-myrcene, alpha-terpinene, and terpinolene that could occur on grape material located approximately 700 feet downwind, and then compare those concentrations with the assumed threshold values previously discussed. This goal was achieved by accomplishing the following tasks:

1) Determine emission factors using leaf enclosure measurements for five different strains of Cannabis;
2) Estimate emission rates for the proposed Cannabis farm based on the anticipated canopy size;
3) Predict gas-phase concentrations using EPA-approved dispersion modeling; and
4) Estimate deposition rates onto grape material located approximately 700 feet downwind.

Details on the methodology used in these tasks and results are described below.

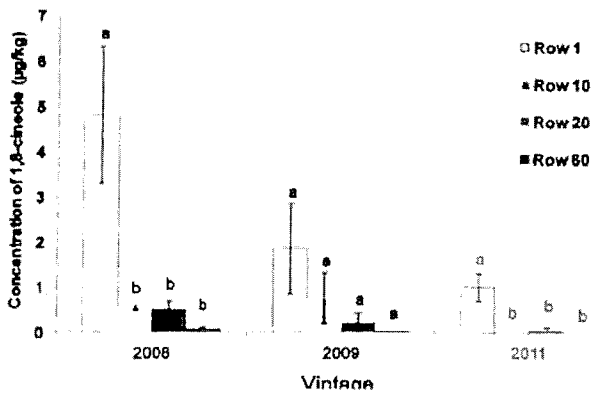

Figure 1. Concentration of 1,8 cineole (ug/kg) in grapes from different rows at set distances from the Eucalyptus trees over three vintages. Error bars represent the standard error of the mean for three replicates. Different letters indicate significant differences between the means ($p < 0.05$).

Round 1, Terpene Analysis on Grapevine Tissue near Hoop House Grow 9/3/2019

Date	Sample name	beta-Caryophyllene	alpha-Humulene	beta-Myrcene	alpha-Terpinene	Terpinolene	Values in PPM
6/8/2019	Site 1 SB	12.4066	12.9406	0.3801	0.1931	0.5632	mg/kg
6/8/2019	SL SB Control	7.5387	14.0317	0	0	0	mg/kg
				Found in Cannabis but not in grapes.			
	Literature Defined Terp Aroma Thresholds	3-250+	3-10	0-0.009	0.006-0.035	0.4-0.5	

NOTES: higher value in one VOC does not necessarily signify it is more likely to be perecieved.

Figure 2. Monoterpene analysis on grapevine tissue at two vineyards near a hoop house grow (Site 1 SB) and a second away from a Cannabis grow (SL SB Control).

1: Emission Factors Using Leaf Enclosure Measurements

The efforts to accomplish this task were completed by Synergy Environmental Solutions (SES) and led by Dr. Alex Guenther. Dr. Guenther is an international leader in atmospheric and terrestrial ecosystem research who has published more than 280 peer-reviewed journal articles. He has led more than 40 integrative field studies on six continents in tropical, temperate, and boreal ecosystems to provide observations to advance understanding of biogenic emissions and their role in air quality and climate. Dr. Guenther led Pacific Northwest National Laboratory's Environmental Molecular Science Laboratory and was Senior Scientist and Section Head at the National Center for Atmospheric Research (NCAR). The overall goal for SES was to quantify the emission capacities of five Cannabis strains at the mature growth stage to investigate their

potential impact on atmospheric distributions of specific biogenic volatile organic compounds (BVOCs). Although there are existing models available for estimating BVOC emissions from plants generally, the lack of emission factors for specific Cannabis strains limits accurate estimation of their emission rates. Therefore, the quantification of speciated emission factors is required to know the impact of a specific strain of Cannabis.

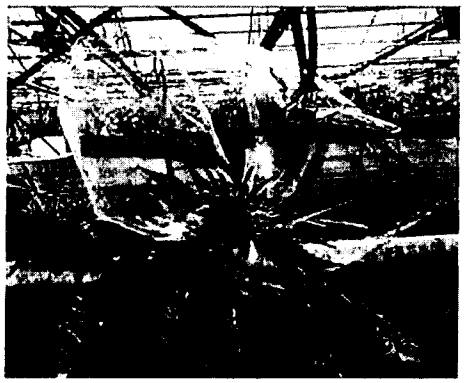

Figure 3. Example of leaf enclosure system used to develop emission factors.

To determine emission factors for 1,8-cineole, beta-myrcene, alpha-terpinene, and terpinolene we conducted enclosure measurements from five (5) different Cannabis strains growing in a greenhouse environment (Forbidden Fruit, Banjo, Wedding Cake, Presidential OG, and Gorilla Glue), and calculated emission factors in μg/g/h (at leaf conditions of temperature= 30° C and light = 1000 μmol visible light m^{-1} s^{-1}). An example of the leaf enclosure used in this study is shown in Figure 3. The primary output is a dataset of terpenoid emission factors that is suitable for use in biogenic emission models that drive air quality simulations. We found that a bag enclosure system with TD-GC-MS/FID analysis is a suitable approach for characterizing Cannabis terpenoid emission factors and leaf cuvette measurements generally agree with bag measurements. However, there are uncertainties associated with potential emission perturbations that should be further investigated. Our results found ninety-seven terpenoid compounds including: 1 homoterpene, 30 monoterpenes, 5 aromatic monoterpenes, 21 oxygenated monoterpenes, and 40 sesquiterpenes. On average, monoterpenes contributed 69% and sesquiterpenes 31% of the total terpenoid emission.

Based on measurement data emission factors were developed for 1,8-cineole, beta-myrcene, alpha-terpinene, and terpinolene. It is important to note that there was a complete lack of 1,8-cineole emissions from two strains: Banjo, Presidential OG. The other strains had relatively small emission factors ranging from 0.001-0.01 ug /g/hr.

2: Emission rates for *Cannabis* Farm

Hacienda reported 20,000 plants based on 2,000 plants per acre and a total canopy acreage of 10 (or 15 acres of cultivation area as defined by the County). The farm also reported that the 20,000 plants were evenly distributed (4,000 plants) among five strains: Forbidden Fruit, Banjo, Wedding Cake, Presidential OG, and Gorilla Glue. We were also provided, based on grower provided information, the dry plant weight of a mature plant in the outdoor grow for each strain. Using these data, and measured emission factors, emission rates of 1,8-cineole, beta-myrcene, alpha-terpinene, and terpinolene were determined from the proposed *Cannabis* farm.

3: Predicted Gas-Phase Concentrations

Air dispersion modeling was completed using AERMOD version 19191 to determine the 1-hour gas-phase concentration of 1,8-cineole, beta-myrcene, alpha-terpinene, and terpinolene using the emission rates described above. AERMOD is a U.S. EPA approved steady-state plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain [2].

Figure 4. The location of the farm, modeled as an area source, shown as a red shade. Also shown the receptor where model predictions were made denoted by a red cross.

It was assumed that 10 acres of canopy will be spread over roughly 15 acres as shown in red shade in Figure 4. All model predictions were completed for August through October in 2016, 2017, and 2018 using observed meteorological data derived from Santa Ynez airport monitoring station resulting in 2,160 simulated hours. September and October are also the days with the lowest wind speed, and the highest chance for deposition. Figure 4 provides the location of the farm at 3800 Baseline Avenue Santa Ynez, CA 93460 that was modeled as an area source denoted in a red shade. The receptor location where 1,8-cineole, beta-myrcene, alpha-terpinene, and terpinolene concentrations were predicted is at 34°37'57.4"N 120°04'09.8"W (located approximately 700 feet downwind) and is shown in Figure 4 as a red cross.

Table 1. Identified monoterpenes and their fraction of total monoterpene emissions from the Cannabis farm and the AERMOD predicted concentrations averaged over 2,160 hours.

Monoterpene	Fraction of total Emissions	Concentration (ug/m3)
1,8-cineole	1.0E-04	2.7E-04
Beta-myrcene	2.2E-01	5.8E-01
Alpha-terpinene	1.7E-02	4.4E-02
Terpinolene	1.6E-02	4.2E-02

The model predicted 2,160 hourly averaged model predictions of concentrations at the receptor location for 1,8-cineole, beta-myrcene, alpha-terpinene, and terpinolene. Table 1 shows the average concentrations for the entire modeling period. Beta-myrcene is the strongest emitter and thus had the largest predicted downwind concentrations. Given the relatively small emissions of 1,8-cineole, the predicted concentrations of this monoterpene were three orders of magnitude smaller than beta-myrcene.

4: Deposition Rates

Comparison with threshold values requires estimation of deposition rates of the gas-phase molecules into the grape tissue. Deposition from the gas-phase is an important process that has to be addressed in all air-quality models. Wesely (1989) developed a parameterization scheme for estimating gaseous dry deposition velocities, which has been widely used in a number of models [3]. A review of available dry deposition models has been reported by Wesely and Hicks (2000) [4]. Most existing dry deposition models utilize the multiple resistance analogy approach when parameterizing the deposition velocity to vegetation and other surfaces.

This analysis relied on the deposition velocities estimated in the Comprehensive Air Quality Model with Extensions, CAMx6.10 [5, 6] for this location. The model and protocols used in this study are based on the Western Air Quality Modeling Study (WAQS) for 2011 [6, 7]. The WAQS 2011b baseline model simulation period runs from June 15th to September 15th, 2011. All data and supporting documentation are publicly available via the Intermountain West Data Warehouse (IWDW) website [8]. At the location of the receptor this study predicted an average deposition velocity for the terpene (TERP) species of 6.7 e-5 m/s [6, 7]. Using this velocity, and predicted gas-phase concentrations, a flux of 1,8-cineole, beta-myrcene, alpha-terpinene, and terpinolene can be determined. Assuming a yield of 3 tons of grapes per acre [9] the rate of 1,8-cineole, beta-myrcene, alpha-terpinene, and terpinolene per mass of grape tissue was calculated. These results were then used to determine how long it would take to reach the threshold values and results are shown in Table 2.

It should be noted that although terpenes, once released, are highly reactive to sunlight and other environmental factors, the modeling did not account for photochemical or other types of degradation and loss that can often occur during transport. In addition, the modeling assumed a smaller plume rise than one would normally expect from a cannabis farm of this size, and for these reasons the modeling results should be considered very conservative.

As shown in Table 2 to reach threshold values would require, at the predicted average gas-phase concentrations, 1,121 days for 1,8-cineole, 75.9 days for beta-myrcene, 1,005 days for alpha-terpinene, and 1,486 days for terpinolene. Assuming that mature *Cannabis* plants are emitting for 21 days prior to harvest, the fraction of the threshold values reached would be 1.9% for 1,8-cineole, 27.7% for beta-myrcene, 4.1% for alpha-terpinene, and 1.4% for terpinolene.

Table 2. The identified monoterpenes and their reported threshold values (THV) used in this study. Also shown are the number of days to achieve the THV at average gas-phase concentrations. Assuming a 21-day growing season for emissions of a mature Cannabis plant, data is shown as the percentage of THV values that are achieved in that time period.

Monoterpene	Threshold Value (ug/kg)	Time to reach THV (days)	Season fraction of THV (%)
1,8-cineole	2.6	1121	1.9
Beta-myrcene	381	75.9	27.7
Alpha-terpinene	193	1005	4.1
Terpinolene	563	1486	1.4

Reference:

1. Capone, D.L., D.W. Jeffery, and M.A. Sefton, *Vineyard and Fermentation Studies To Elucidate the Origin of 1,8-Cineole in Australian Red Wine.* Journal of Agricultural and Food Chemistry, 2012. **60**(9): p. 2281-2287.
2. EPA. *AERMOD Modeling System.* 2019; Available from: https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models#aermod.
3. Wesely, M.L., *Parameterization of Surface Resistances to Gaseous Dry Deposition in Regional-Scale Numerical-Models.* Atmospheric Environment, 1989. **23**(6): p. 1293-1304.
4. Wesely, M.L. and B.B. Hicks, *A review of the current status of knowledge on dry deposition.* Atmospheric Environment, 2000. **34**(12-14): p. 2261-2282.
5. ENVIRON. *CAMx User's Guide Version 6.10.* 2013 2 May, 2019]; Available from: http://www.camx.com/files/camxusersguide_v6-10.pdf.
6. ENVIRON and Alpine., *Attainment Demonstration Modeling for the Denver Metro/North Front Range 2017 8-Hour Ozone State Implementation Plan.* 2017: Western Air Quality Study - Intermountain West Data Warehouse.
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8. WAQS, W.A.Q.S. *IWDW-WAQS Wiki.* 2017 2 May, 2019]; Available from: http://views.cira.colostate.edu/wiki/#WAQS.
9. EViticulture. *How many grapes can I produce per acre?* 2019; Available from: https://grapes.extension.org/how-many-grapes-can-i-produce-per-acre-how-much-yield-can-i-expect-when-they-are-in-full-production/.

EXHIBIT G

Certificate of Analysis

ICAL ID: 20190731-054
Sample: 1907ICA3745.11009
PENCE ESTATE PINOT
Strain: PENCE ESTATE PINOT
Category: Ingestible

Responsible AG Testing
Lic. #
None
San Diego, CA 92121

Lic. #

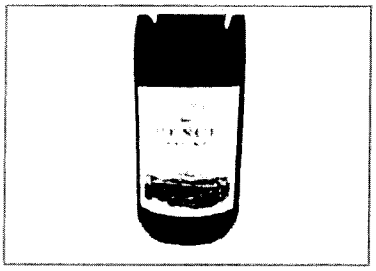
QA SAMPLE - INFORMATIONAL ONLY

Batch#:
Primary Size:
Total/Batch Size:
Collected: 08/01/2019; Received: 08/01/2019
Completed: 08/01/2019

Moisture	Δ9-THC	CBD	Total Cannabinoids	Total Terpenes
NT	NT	NT	NT	0.00 mg/g
Water Activity				
NT				

Summary

	SOP Used	Date Tested	
Batch			Pass
Terpenes	[illegible]	[illegible]	Complete
Pesticides	[illegible]	07/31/2019	Pass



Scan to see results

Cannabinoid Profile

Analyte	[illegible]	LOQ	%	mg/g	Analyte	[illegible]	LOQ	%	mg/g

Total THC=THCa * 0.877 + d9-THC;Total CBD = CBDa * 0.877 + CBD; NR= Not Reported, ND= Not Detected, *Reported by Dry Mass*; *analytical instrumentation used Cannabinoids:UHPLC-DAD, Moisture:Mass by Drying,Water Activity:Water Activity Meter, Foreign Material:Microscope*

Terpene Profile

Analyte	LOQ	LOD	%	mg/g	Analyte	LOQ	LOD	%	mg/g
α-Bisabolol			ND	ND	δ-Limonene			ND	ND
α-Humulene			ND	ND	Eucalyptol			ND	ND
α-Pinene			ND	ND	γ-Terpinene			ND	ND
α-Terpinene			ND	ND	Geraniol			ND	ND
β-Caryophyllene			ND	ND	Linalool			ND	ND
β-Myrcene			ND	ND	Ocimene			ND	ND
β-Ocimene			ND	ND	(-)-Guaiol			ND	ND
β-Pinene			ND	ND	(-)-Isopulegol			ND	ND
Camphene			ND	ND	p-Cymene			ND	ND
Caryophyllene Oxide			ND	ND	Terpinolene			ND	ND
cis-Nerolidol			ND	ND	trans-Nerolidol			ND	ND
δ-3-Carene			ND	ND	**Total**			**0**	**0**

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ), *analytical instrumentation used:HS-GC-FID-FID*

Infinite Chemical Analysis Labs
8380 Miramar Mall #102
San Diego, CA
(858) 623-2740
www.infiniteCAL.com
Lic# C8-0000019-LIC

Josh M Swider

Josh Swider
Lab Director, Managing Partner
08/01/2019

Certificate of Analysis

ICAL ID: 20190731-054
Sample: 1907ICA3745.11009
PENCE ESTATE PINOT
Strain: PENCE ESTATE PINOT
Category: Ingestible

Responsible AG Testing
Lic. #
None
San Diego, CA 92121

Lic. #

Batch#:
Primary Size:
Total/Batch Size:
Collected: 08/01/2019; Received: 08/01/2019
Completed: 08/01/2019

Residual Solvent Analysis

Category 1	Status	Category 2	Status	Category 2	Status

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ) ,*analytical instrumentation used=HS-GC-FID-FID*

Heavy Metal Screening

	LOQ	LOD	Limit	Status

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ) , *analytical instrumentation used:ICP-MS*

Microbiological Screening

	Result	Status

ND=Not Detected; *analytical instrumentation used:qPCR*

Infinite Chemical Analysis Labs
8380 Miramar Mall #102
San Diego, CA
(858) 623-2740
www.infiniteCAL.com
Lic# C8-0000019-LIC

Josh M Swider

Josh Swider
Lab Director, Managing Partner
08/01/2019

Certificate of Analysis

ICAL ID: 20190731-054
Sample: 1907ICA3745.11009
PENCE ESTATE PINOT
Strain: PENCE ESTATE PINOT
Category: Ingestible

Responsible AG Testing
Lic. #
None
San Diego, CA 92121

Lic. #

Batch#:
Primary Size:
Total/Batch Size:
Collected: 08/01/2019; Received: 08/01/2019
Completed: 08/01/2019

Chemical Residue Screening

Category 1		Status
	µg/g	
Aldicarb	ND	Pass
Carbofuran	ND	Pass
Chlordane	ND	Pass
Chlorfenapyr	ND	Pass
Chlorpyrifos	ND	Pass
Coumaphos	ND	Pass
Daminozide	ND	Pass
DDVP	ND	Pass
Dimethoate	ND	Pass
Ethoprophos	ND	Pass
Etofenprox	ND	Pass
Fenoxycarb	ND	Pass
Fipronil	ND	Pass
Imazalil	ND	Pass
Methiocarb	ND	Pass
Methyl Parathion	ND	Pass
Mevinphos	ND	Pass
Paclobutrazol	ND	Pass
Propoxur	ND	Pass
Spiroxamine	ND	Pass
Thiacloprid	ND	Pass

Mycotoxins		Status

Category 2		Status
	µg/g	
Abamectin	ND	Pass
Acephate	ND	Pass
Acequinocyl	ND	Pass
Acetamiprid	ND	Pass
Azoxystrobin	ND	Pass
Bifenazate	ND	Pass
Bifenthrin	ND	Pass
Boscalid	0.068	Pass
Captan	ND	Pass
Carbaryl	ND	Pass
Chlorantraniliprole	ND	Pass
Clofentezine	ND	Pass
Cyfluthrin	ND	Pass
Cypermethrin	ND	Pass
Diazinon	ND	Pass
Dimethomorph	ND	Pass
Etoxazole	ND	Pass
Fenhexamid	ND	Pass
Fenpyroximate	ND	Pass
Flonicamid	ND	Pass
Fludioxonil	ND	Pass
Hexythiazox	ND	Pass
Imidacloprid	ND	Pass

Category 2		Status
	µg/g	
Kresoxim Methyl	ND	Pass
Malathion	ND	Pass
Metalaxyl	ND	Pass
Methomyl	ND	Pass
Myclobutanil	ND	Pass
Naled	ND	Pass
Oxamyl	ND	Pass
Pentachloronitrobenzene	ND	Pass
Permethrin	ND	Pass
Phosmet	ND	Pass
Piperonyl Butoxide	ND	Pass
Prallethrin	ND	Pass
Propiconazole	ND	Pass
Pyrethrins	ND	Pass
Pyridaben	ND	Pass
Spinetoram	ND	Pass
Spinosad	ND	Pass
Spiromesifen	ND	Pass
Spirotetramat	ND	Pass
Tebuconazole	ND	Pass
Thiamethoxam	ND	Pass
Trifloxystrobin	ND	Pass

Unknown Analyte(s):

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ) , *analytical instrumentation used:LC-MSMS & GC-MSMS*

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Lab Director, Managing Partner
08/01/2019

Certificate of Analysis

QA SAMPLE - INFORMATIONAL ONLY

ICAL ID: 20190731-055
Sample: 1907ICA3745.11010
PENCE ESTATE CHARDONNAY
Strain: PENCE ESTATE CHARDONNAY
Category: Ingestible

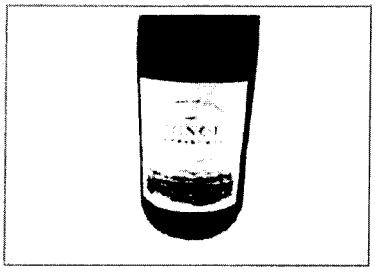
Responsible AG Testing
Lic. #
None
San Diego, CA 92121

Lic. #

Batch#:
Primary Size:
Total/Batch Size:
Collected: 08/01/2019; Received: 08/01/2019
Completed: 08/01/2019

Moisture	Δ9-THC	CBD	Total Cannabinoids	Total Terpenes
NT	NT	NT	NT	0.00 mg/g
Water Activity				
NT				

Summary	SOP Used	Date Tested	
Batch			Pass
Terpenes	SOP-TecRPMS-Terpenes-001	07/31/2019	Complete
Pesticides	PES.000.Edit	07/31/2019	Pass



Scan to see results

Cannabinoid Profile

Analyte	%	mg/g	Analyte	%	mg/g

Total THC=THCa * 0.877 + d9-THC;Total CBD = CBDa * 0.877 + CBD; NR= Not Reported, ND= Not Detected, *Reported by Dry Mass*; *analytical instrumentation used Cannabinoids:UHPLC-DAD, Moisture:Mass by Drying;Water Activity:Water Activity Meter, Foreign Material:Microscope*

Terpene Profile

Analyte	%	mg/g	Analyte	%	mg/g
α-Bisabolol	ND	ND	δ-Limonene	ND	ND
α-Humulene	ND	ND	Eucalyptol	ND	ND
α-Pinene	ND	ND	γ-Terpinene	ND	ND
α-Terpinene	ND	ND	Geraniol	ND	ND
β-Caryophyllene	ND	ND	Linalool	ND	ND
β-Myrcene	ND	ND	Ocimene	ND	ND
β-Ocimene	ND	ND	(-)-Guaiol	ND	ND
β-Pinene	ND	ND	(-)-Isopulegol	ND	ND
Camphene	ND	ND	p-Cymene	ND	ND
Caryophyllene Oxide	ND	ND	Terpinolene	ND	ND
cis-Nerolidol	ND	ND	trans-Nerolidol	ND	ND
δ-3-Carene	ND	ND	**Total**	0	0

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ), *analytical instrumentation used:HS-GC-FID-FID*

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PENCE ESTATE CHARDONNAY
Strain: PENCE ESTATE CHARDONNAY
Category: Ingestible

Responsible AG Testing
Lic. #
None
San Diego, CA 92121

Lic. #

Batch#:
Primary Size:
Total/Batch Size:
Collected: 08/01/2019; Received: 08/01/2019
Completed: 08/01/2019

Residual Solvent Analysis

Category 1	Status	Category 2	Status	Category 2	Status

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ) ,*analytical instrumentation used=HS-GC-FID-FID*

Heavy Metal Screening

	LOQ		Status

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ) , *analytical instrumentation used:ICP-MS*

Microbiological Screening

	Result	Status

ND=Not Detected; *analytical instrumentation used:qPCR*

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Sample: 1907ICA3745.11010
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Strain: PENCE ESTATE CHARDONNAY
Category: Ingestible

Responsible AG Testing
Lic. #
None
San Diego, CA 92121

Lic. #

Batch#:
Primary Size:
Total/Batch Size:
Collected: 08/01/2019; Received: 08/01/2019
Completed: 08/01/2019

Chemical Residue Screening

Category 1		Status
	µg/g	
Aldicarb	ND	Pass
Carbofuran	ND	Pass
Chlordane	ND	Pass
Chlorfenapyr	ND	Pass
Chlorpyrifos	ND	Pass
Coumaphos	ND	Pass
Daminozide	ND	Pass
DDVP	ND	Pass
Dimethoate	ND	Pass
Ethoprophos	ND	Pass
Etofenprox	ND	Pass
Fenoxycarb	ND	Pass
Fipronil	ND	Pass
Imazalil	ND	Pass
Methiocarb	ND	Pass
Methyl Parathion	ND	Pass
Mevinphos	ND	Pass
Paclobutrazol	ND	Pass
Propoxur	ND	Pass
Spiroxamine	ND	Pass
Thiacloprid	ND	Pass

Mycotoxins	Status

Category 2		Status
	µg/g	
Abamectin	ND	Pass
Acephate	ND	Pass
Acequinocyl	ND	Pass
Acetamiprid	ND	Pass
Azoxystrobin	ND	Pass
Bifenazate	ND	Pass
Bifenthrin	ND	Pass
Boscalid	0.167	Pass
Captan	ND	Pass
Carbaryl	ND	Pass
Chlorantraniliprole	ND	Pass
Clofentezine	ND	Pass
Cyfluthrin	ND	Pass
Cypermethrin	ND	Pass
Diazinon	ND	Pass
Dimethomorph	ND	Pass
Etoxazole	ND	Pass
Fenhexamid	ND	Pass
Fenpyroximate	ND	Pass
Flonicamid	ND	Pass
Fludioxonil	ND	Pass
Hexythiazox	ND	Pass
Imidacloprid	ND	Pass

Category 2		Status
	µg/g	
Kresoxim Methyl	ND	Pass
Malathion	ND	Pass
Metalaxyl	ND	Pass
Methomyl	ND	Pass
Myclobutanil	ND	Pass
Naled	ND	Pass
Oxamyl	ND	Pass
Pentachloronitrobenzene	ND	Pass
Permethrin	ND	Pass
Phosmet	ND	Pass
Piperonyl Butoxide	ND	Pass
Prallethrin	ND	Pass
Propiconazole	ND	Pass
Pyrethrins	ND	Pass
Pyridaben	ND	Pass
Spinetoram	ND	Pass
Spinosad	ND	Pass
Spiromesifen	ND	Pass
Spirotetramat	ND	Pass
Tebuconazole	ND	Pass
Thiamethoxam	ND	Pass
Trifloxystrobin	ND	Pass

Unknown Analyte(s):

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ) , *analytical instrumentation used:LC-MSMS & GC-MSMS*

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Josh M Swider

Josh Swider
Lab Director, Managing Partner
08/01/2019

Certificate of Analysis

ICAL ID: 20190731-056
Sample: 1907ICA3745.11011
PENCE UNUM PINOT
Strain: PENCE UNUM PINOT
Category: Ingestible

Responsible AG Testing
Lic. #
None
San Diego, CA 92121

Lic. #

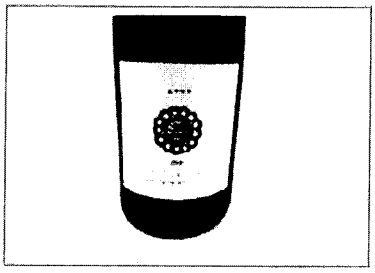
QA SAMPLE - INFORMATIONAL ONLY

Batch#:
Primary Size:
Total/Batch Size:
Collected: 08/01/2019; Received: 08/01/2019
Completed: 08/01/2019

Moisture	Δ9-THC	CBD	Total Cannabinoids	Total Terpenes
NT	NT	NT	NT	0.00 mg/g
Water Activity				
NT				

Summary

Batch			Pass
Terpenes	[illegible]	[illegible]	Complete
Pesticides	[illegible]	[illegible]	Pass



Scan to see results

Cannabinoid Profile

Analyte	[illegible]	[illegible]	%	mg/g	Analyte	[illegible]	[illegible]	%	mg/g

Total THC=THCa * 0.877 + d9-THC;Total CBD = CBDa * 0.877 + CBD; NR= Not Reported, ND= Not Detected, "Reported by Dry Mass"; "analytical instrumentation used Cannabinoids:UHPLC-DAD, Moisture:Mass by Drying,Water Activity:Water Activity Meter, Foreign Material:Microscope"

Terpene Profile

Analyte	[illegible]	[illegible]	%	mg/g	Analyte	[illegible]	[illegible]	%	mg/g
α-Bisabolol	[illegible]	[illegible]	ND	ND	δ-Limonene	[illegible]	[illegible]	ND	ND
α-Humulene	[illegible]	[illegible]	ND	ND	Eucalyptol	[illegible]	[illegible]	ND	ND
α-Pinene	[illegible]	[illegible]	ND	ND	γ-Terpinene	[illegible]	[illegible]	ND	ND
α-Terpinene	[illegible]	[illegible]	ND	ND	Geraniol	[illegible]	[illegible]	ND	ND
β-Caryophyllene	[illegible]	[illegible]	ND	ND	Linalool	[illegible]	[illegible]	ND	ND
β-Myrcene	[illegible]	[illegible]	ND	ND	Ocimene	[illegible]	[illegible]	ND	ND
β-Ocimene	[illegible]	[illegible]	ND	ND	(-)-Guaiol	[illegible]	[illegible]	ND	ND
β-Pinene	[illegible]	[illegible]	ND	ND	(-)-Isopulegol	[illegible]	[illegible]	ND	ND
Camphene	[illegible]	[illegible]	ND	ND	p-Cymene	[illegible]	[illegible]	ND	ND
Caryophyllene Oxide	[illegible]	[illegible]	ND	ND	Terpinolene	[illegible]	[illegible]	ND	ND
cis-Nerolidol	[illegible]	[illegible]	ND	ND	trans-Nerolidol	[illegible]	[illegible]	ND	ND
δ-3-Carene	[illegible]	[illegible]	ND	ND	**Total**			0	0

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ), "analytical instrumentation used:HS-GC-FID-FID"

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Josh M Swider

Josh Swider
Lab Director, Managing Partner
08/01/2019

Certificate of Analysis

ICAL ID: 20190731-056
Sample: 1907ICA3745.11011
PENCE UNUM PINOT
Strain: PENCE UNUM PINOT
Category: Ingestible

Responsible AG Testing
Lic. #
None
San Diego, CA 92121

Lic. #

Batch#:
Primary Size:
Total/Batch Size:
Collected: 08/01/2019; Received: 08/01/2019
Completed: 08/01/2019

Residual Solvent Analysis

Category 1	Status	Category 2	Status	Category 2	LOQ	Limit	Unit	Status

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ) ,*analytical instrumentation used=HS-GC-FID-FID*

Heavy Metal Screening

	LOQ	Limit	Status

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ) , *analytical instrumentation used:ICP-MS*

Microbiological Screening

	Result	Status

ND=Not Detected; *analytical instrumentation used:qPCR*

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Certificate of Analysis

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PENCE UNUM PINOT
Strain: PENCE UNUM PINOT
Category: Ingestible

Responsible AG Testing
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None
San Diego, CA 92121

Lic. #

Batch#:
Primary Size:
Total/Batch Size:
Collected: 08/01/2019; Received: 08/01/2019
Completed: 08/01/2019

Chemical Residue Screening

Category 1	µg/g	Status
Aldicarb	ND	Pass
Carbofuran	ND	Pass
Chlordane	ND	Pass
Chlorfenapyr	ND	Pass
Chlorpyrifos	ND	Pass
Coumaphos	ND	Pass
Daminozide	ND	Pass
DDVP	ND	Pass
Dimethoate	ND	Pass
Ethoprophos	ND	Pass
Etofenprox	ND	Pass
Fenoxycarb	ND	Pass
Fipronil	ND	Pass
Imazalil	ND	Pass
Methiocarb	ND	Pass
Methyl Parathion	ND	Pass
Mevinphos	ND	Pass
Paclobutrazol	ND	Pass
Propoxur	ND	Pass
Spiroxamine	ND	Pass
Thiacloprid	ND	Pass

Mycotoxins	Status

Category 2	µg/g	Status
Abamectin	ND	Pass
Acephate	ND	Pass
Acequinocyl	ND	Pass
Acetamiprid	ND	Pass
Azoxystrobin	ND	Pass
Bifenazate	ND	Pass
Bifenthrin	ND	Pass
Boscalid	0.073	Pass
Captan	ND	Pass
Carbaryl	ND	Pass
Chlorantraniliprole	ND	Pass
Clofentezine	ND	Pass
Cyfluthrin	ND	Pass
Cypermethrin	ND	Pass
Diazinon	ND	Pass
Dimethomorph	ND	Pass
Etoxazole	ND	Pass
Fenhexamid	ND	Pass
Fenpyroximate	ND	Pass
Flonicamid	ND	Pass
Fludioxonil	ND	Pass
Hexythiazox	ND	Pass
Imidacloprid	ND	Pass

Category 2	µg/g	Status
Kresoxim Methyl	ND	Pass
Malathion	ND	Pass
Metalaxyl	ND	Pass
Methomyl	ND	Pass
Myclobutanil	ND	Pass
Naled	ND	Pass
Oxamyl	ND	Pass
Pentachloronitrobenzene	ND	Pass
Permethrin	ND	Pass
Phosmet	ND	Pass
Piperonyl Butoxide	ND	Pass
Prallethrin	ND	Pass
Propiconazole	ND	Pass
Pyrethrins	ND	Pass
Pyridaben	ND	Pass
Spinetoram	ND	Pass
Spinosad	ND	Pass
Spiromesifen	ND	Pass
Spirotetramat	ND	Pass
Tebuconazole	ND	Pass
Thiamethoxam	ND	Pass
Trifloxystrobin	ND	Pass

Unknown Analyte(s):

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ), *analytical instrumentation used:LC-MSMS & GC-MSMS*

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Josh M Swider

Josh Swider
Lab Director, Managing Partner
08/01/2019

Certificate of Analysis

QA SAMPLE - INFORMATIONAL ONLY

ICAL ID: 20190731-057
Sample: 1907ICA3745.11012
PENCE ROSA CHARDONNAY
Strain: PENCE ROSA CHARDONNAY
Category: Ingestible

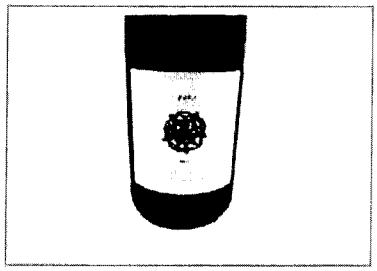
Responsible AG Testing
Lic. #
None
San Diego, CA 92121

Lic. #

Batch#:
Primary Size:
Total/Batch Size:
Collected: 08/01/2019; Received: 08/01/2019
Completed: 08/01/2019

Moisture	Δ9-THC	CBD	Total Cannabinoids	Total Terpenes
NT	**NT**	**NT**	**NT**	**0.00 mg/g**
Water Activity				
NT				

Summary	SOP Used	Date Tested	
Batch			Pass
Terpenes	SOP.TERP.MS.Developed	[illegible]	Complete
Pesticides	PEST.002.Edible	[illegible]	Pass



Scan to see results

Cannabinoid Profile

Analyte	[illegible]	[illegible]	%	mg/g	Analyte	[illegible]	[illegible]	%	mg/g

Total THC=THCa * 0.877 + d9-THC;Total CBD = CBDa * 0.877 + CBD; NR= Not Reported, ND= Not Detected, "Reported by Dry Mass"; "analytical instrumentation used Cannabinoids:UHPLC-DAD, Moisture:Mass by Drying,Water Activity:Water Activity Meter, Foreign Material:Microscope"

Terpene Profile

Analyte	[illegible]	[illegible]	%	mg/g	Analyte	[illegible]	[illegible]	%	mg/g
α-Bisabolol	[illegible]	[illegible]	ND	ND	δ-Limonene	[illegible]	[illegible]	ND	ND
α-Humulene	[illegible]	[illegible]	ND	ND	Eucalyptol	[illegible]	[illegible]	ND	ND
α-Pinene	[illegible]	[illegible]	ND	ND	γ-Terpinene	[illegible]	[illegible]	ND	ND
α-Terpinene	[illegible]	[illegible]	ND	ND	Geraniol	[illegible]	[illegible]	ND	ND
β-Caryophyllene	[illegible]	[illegible]	ND	ND	Linalool	[illegible]	[illegible]	ND	ND
β-Myrcene	[illegible]	[illegible]	ND	ND	Ocimene	[illegible]	[illegible]	ND	ND
β-Ocimene	[illegible]	[illegible]	ND	ND	(-)-Guaiol	[illegible]	[illegible]	ND	ND
β-Pinene	[illegible]	[illegible]	ND	ND	(-)-Isopulegol	[illegible]	[illegible]	ND	ND
Camphene	[illegible]	[illegible]	ND	ND	p-Cymene	[illegible]	[illegible]	ND	ND
Caryophyllene Oxide	[illegible]	[illegible]	ND	ND	Terpinolene	[illegible]	[illegible]	ND	ND
cis-Nerolidol	[illegible]	[illegible]	ND	ND	trans-Nerolidol	[illegible]	[illegible]	ND	ND
δ-3-Carene	[illegible]	[illegible]	ND	ND	**Total**			0	0

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ), "analytical instrumentation used:HS-GC-FID-FID"

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Certificate of Analysis

ICAL ID: 20190731-057
Sample: 1907ICA3745.11012
PENCE ROSA CHARDONNAY
Strain: PENCE ROSA CHARDONNAY
Category: Ingestible

Responsible AG Testing
Lic. #
None
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Lic. #

QA SAMPLE - INFORMATIONAL ONLY

Batch#:
Primary Size:
Total/Batch Size:
Collected: 08/01/2019; Received: 08/01/2019
Completed: 08/01/2019

Residual Solvent Analysis

Category 1					Status	Category 2					Status	Category 2					Status

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ) ,*analytical instrumentation used=HS-GC-FID-FID*

Heavy Metal Screening

				Status

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ) , *analytical instrumentation used:ICP-MS*

Microbiological Screening

	Result	Status

ND =Not Detected; *analytical instrumentation used:qPCR*

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Strain: PENCE ROSA CHARDONNAY
Category: Ingestible

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San Diego, CA 92121

Lic. #

Batch#:
Primary Size:
Total/Batch Size:
Collected: 08/01/2019; Received: 08/01/2019
Completed: 08/01/2019

Chemical Residue Screening

Category 1	µg/g	Status
Aldicarb	ND	Pass
Carbofuran	ND	Pass
Chlordane	ND	Pass
Chlorfenapyr	ND	Pass
Chlorpyrifos	ND	Pass
Coumaphos	ND	Pass
Daminozide	ND	Pass
DDVP	ND	Pass
Dimethoate	ND	Pass
Ethoprophos	ND	Pass
Etofenprox	ND	Pass
Fenoxycarb	ND	Pass
Fipronil	ND	Pass
Imazalil	ND	Pass
Methiocarb	ND	Pass
Methyl Parathion	ND	Pass
Mevinphos	ND	Pass
Paclobutrazol	ND	Pass
Propoxur	ND	Pass
Spiroxamine	ND	Pass
Thiacloprid	ND	Pass

Mycotoxins	Status

Category 2	µg/g	Status
Abamectin	ND	Pass
Acephate	ND	Pass
Acequinocyl	ND	Pass
Acetamiprid	ND	Pass
Azoxystrobin	ND	Pass
Bifenazate	ND	Pass
Bifenthrin	ND	Pass
Boscalid	0.162	Pass
Captan	ND	Pass
Carbaryl	ND	Pass
Chlorantraniliprole	ND	Pass
Clofentezine	ND	Pass
Cyfluthrin	ND	Pass
Cypermethrin	ND	Pass
Diazinon	ND	Pass
Dimethomorph	ND	Pass
Etoxazole	ND	Pass
Fenhexamid	ND	Pass
Fenpyroximate	ND	Pass
Flonicamid	ND	Pass
Fludioxonil	ND	Pass
Hexythiazox	ND	Pass
Imidacloprid	ND	Pass

Category 2	µg/g	Status
Kresoxim Methyl	ND	Pass
Malathion	ND	Pass
Metalaxyl	ND	Pass
Methomyl	ND	Pass
Myclobutanil	ND	Pass
Naled	ND	Pass
Oxamyl	ND	Pass
Pentachloronitrobenzene	ND	Pass
Permethrin	ND	Pass
Phosmet	ND	Pass
Piperonyl Butoxide	ND	Pass
Prallethrin	ND	Pass
Propiconazole	ND	Pass
Pyrethrins	ND	Pass
Pyridaben	ND	Pass
Spinetoram	ND	Pass
Spinosad	ND	Pass
Spiromesifen	ND	Pass
Spirotetramat	ND	Pass
Tebuconazole	ND	Pass
Thiamethoxam	ND	Pass
Trifloxystrobin	ND	Pass

Unknown Analyte(s):

NR= Not Reported thus no analysis was performed, ND= Not Detected thus the concentration is less then the Limit of Quantification (LOQ), *analytical instrumentation used:LC-MSMS & GC-MSMS*

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08/01/2019

EXHIBIT H

ECONOMIC FORECAST PROJECT

UNIVERSITY OF CALIFORNIA, SANTA BARBARA

July 8, 2019

Disclaimer: This report does not represent the views of the University of California Santa Barbara or the University of California system. Data and results are preliminary and subject to revisions.

Estimated impacts of the cannabis industry

Non-payroll expenses

Using detailed expenditure and vendor data from multiple growers in Santa Barbara County, we estimate that cannabis growers in the county make approximately 51% of their expenses locally. That is, out of their expenses, approximately 51% goes to vendors in Santa Barbara County. On a per-acre basis, we estimate that local growers spend about $785,000 per year. This amount is direct spending on local goods and services, and does not include payroll-related expenses, taxes, licensing and other fees.

Currently in Santa Barbara County, an estimated 156 acres are legally cultivated.[1] Based on our estimated annual cost per acre cultivated, this represents industry-wide expenses of $122.5 million per year (and again, does not include payroll-related expenses, taxes, licensing and other fees).

Payroll expenses

Based on information from multiple growers in Santa Barbara County, we estimate that cannabis growers in the county currently employ approximately 16 people per cultivated acre. Average wages are around $65,000 per year. That is, the annual cost per cultivated acre is about $1.0 million. For the 156 legally-cultivated acres, this would imply 2,458 jobs with annual compensation of $161.0 million.

Preliminary economic impact estimates

As indicated above, we estimate that the cannabis industry buys locally (in Santa Barbara County) goods and services (output) worth $785,000 per year per cultivated acre. With an estimated 156 acres legally cultivated in the county, this amounts to direct purchases from the local economy of $122.5 million, which

[1] Board of Supervisors Draft Agenda Letter for July 9, 2019

directly supports approximately 2,400 jobs across a large number of industries in the county.

In addition, each cultivated acre in the county requires about 16 (full-time equivalent) jobs.[2] With an estimated 156 acres legally cultivated in the county, this amounts to direct employment of 2,458 jobs per year. These jobs lead to an estimated $215.8 million worth of output produced by the cannabis industry.

In describing the economic impact associated with the cannabis industry, we consider three separate channels: the direct impact, the indirect impact, and the induced impact; these sum to represent the total economic impact. The **direct impact** represents initial expenditures, such as a payment to a local company for raw materials. The entity receiving the payment of that initial expenditure is expected to buy some of its inputs locally. Those purchases by the impacted entity attributable to the increase in business generated by the initial expenditure are referred to as an **indirect impact**. Finally, employees of the firms that are impacted both directly and indirectly are expected to spend a large fraction of their income locally. The additional local spending by these employees generated through this mechanism is referred to as the **induced impact**. Lastly, all the expenditures (direct, indirect, and induced) also generate federal, state, and local tax payments.

The modeling software used for the economic analysis was IMPLAN Pro™, an input-output model first developed by the U.S. Forest Service, the Bureau of Land Management and the Federal Emergency Management Agency for use in land planning and resource management. Input-output models are accounting tables tracing the linkages of interindustry purchases and sales in a specific study area, and they are used to calculate the effects per dollar of spending on jobs, income, and additional expenditures in that specific area. These models produce estimates of local spending impacts (referred to as multipliers) using these inter-industry linkages.

IMPLAN uses information about the types and amounts of production factors - raw materials, labor, and intermediate goods - needed to produce any given output. IMPLAN uses dollar valuations of these inputs, and traces the currency flows from the original purchases of goods as they work their way through the study area economy. Table 1 below presents our preliminary estimated impacts on employment and output for Santa Barbara County for 2018.[3]

Table 1: Economic Impact Summary

	Employment	**Output**
Direct	4,889	$291,797,827
Indirect	181	$27,218,800
Induced	942	$139,298,571
Total	6,012	$458,315,198

Key preliminary findings of our analysis include

- We estimate that the legal cannabis industry spent approximately $122 million in 2018 in purchases of goods and services from local (Santa Barbara County) vendors, and generated approximately $169.3 worth of output, for a total direct output impact of $291.8 million.

[2]The estimated 16 jobs per acre is an average based on data available and may not fully reflect the fact that greenhouse cultivation generally requires more workers per acre than outdoor cultivation annually, but greenhouse operations in the county tend to be smaller (fewer acres). The 16 jobs per acre estimate is based on all jobs in the industry, not only cultivation.

[3]These economic impacts are calculated without any consideration of potential costs, such as complaints about odor, law enforcement expenditures, judicial costs, etc.

- The total economic impact of the industry is estimated at $458.3 million. Of this total impact, $291.8 million (63.7 percent of total impact) is from the direct effect and $27.2 million (5.9 percent of total impact) from the indirect effect. The induced effect accounts for $139.3 million (30.4 percent of total impact). The associated output multiplier is roughly 1.6. That is, for every dollar directly contributed by the cannabis industry, another 60 cents would be generated by the activity of suppliers and employees directly impacted.

- We estimate that the legal cannabis industry generates approximately 2,500 jobs within the industry, while purchases by the industry from local vendors supports an additional 2,400 jobs, for a total direct employment impact of 4,889 jobs.

- The total impact of the cannabis on employment is 6,012 jobs. Of this total impact, 4,889 jobs (81.3 percent of total impact) is from the direct effect and 181 jobs (3.0 percent of total impact) from the indirect effect. The induced effect accounts for 942 jobs (15.7 percent of total impact). The associated employment multiplier is roughly 1.2. That is, for every job directly supported by the cannabis industry, a fifth of an additional job is supported by the activity of suppliers and employees directly impacted.

Analysis of demand estimates for cannabis have suggested that the amount of acres needed to satisfy the demand are consistent with county-wide cultivation of approximately 1,100 acres, roughly seven times more than the estimated current legal cultivation in Santa Barbara County. The inputs for the industry can be directly scalable, with the exception of employment, which may benefit from economies of scale (administrative employment required for the cultivation of seven times as many acres may not require seven times as many employees, for example).