Public Comment

LATE DIST #3

Brianda Negrete

From:	Laughlin, Jessica (SFO - X56995) <Jessica.Laughlin@hklaw.com>
Sent:	Monday, December 12, 2022 4:15 PM
To:	sbcob; Brianda Negrete
Subject:	RE: Ceres Farm, LLC Appeal of the Planning Commission Approval of the 6030 Casitas Pass Mixed-Light Cannabis Cultivation Project, Case Nos. 22APL000000-00028 and 19CDP-00000-00015
Attachments:	Appeal of 6030 Casitas Pass(182138693.1).pptx; Letter in Opposition to Appeal 6030 Casitas Pass (12.13.22). final.pdf

Good afternoon,
My name is Jessica Laughlin and I will be presenting tomorrow on behalf of Rose Story Farm through Danielle Dall'Armi and William V. Hahn, M.D., Mimi Mauracher, and Tim Bliss. I plan to use the attached powerpoint presentation and will appear remotely. Can you please send me a calendar invite link at your convenience? Can you also please let me know how much time we will be allocated? I would like to allot 10 mins for my presentation, if possible. My clients wish to comment as members of the public separately also -- I believe the time limit is 3 minutes, but can you confirm?

Lastly, it appears that the version of our letter that was uploaded on the County's website here added 20 blank pages interspersed through the attachments. The PDF document I sent has 58 pages, but the one on the County's website has 78. Could you please replace the version online with the corrected version? I've attached the same version I sent yesterday.

Thank you,

Jessica Laughlin | **Holland & Knight**
She/Her/Hers
Senior Counsel
Holland & Knight LLP
50 California Street, Suite 2800 | San Francisco, California 94111
Phone 415.743.6995 | Fax 415.743.6910
jessica.laughlin@hklaw.com | www.hklaw.com

Add to address book | View professional biography

From: Laughlin, Jessica (SFO - X56995)
Sent: Monday, December 12, 2022 12:00 PM
To: sbcob@co.santa-barbara.ca.us; Brianda Negrete <bnegrete@countyofsb.org>
Subject: Ceres Farm, LLC Appeal of the Planning Commission Approval of the 6030 Casitas Pass Mixed-Light Cannabis Cultivation Project, Case Nos. 22APL000000-00028 and 19CDP-00000-00015

Good morning,
Attached please find the comment letters of my clients Rose Story Farm through Danielle Dall'Armi and William V. Hahn, M.D., Mimi Mauracher, and Tim Bliss. Please let me know if you have any issues accessing the attached documents.
Thank you,

Jessica Laughlin | **Holland & Knight**
She/Her/Hers
Senior Counsel
Holland & Knight LLP
50 California Street, Suite 2800 | San Francisco, California 94111
Phone 415.743.6995 | Fax 415.743.6910
jessica.laughlin@hklaw.com | www.hklaw.com

Add to address book | View professional biography

From: Laughlin, Jessica (SFO - X56995)
Sent: Friday, December 9, 2022 12:02 PM
To: sbcob@co.santa-barbara.ca.us; Brianda Negrete <bnegrete@countyofsb.org>
Subject: Ceres Farm alley Crest, LLC Appeal of the Planning Commission Approval of the 5980 Casitas Pass Mixed-Light Cannabis Cultivation Project, Case Nos. 22APL000000-00028 and 19CDP-00000-00015

Good morning,
Attached please find the Letter in Opposition to the Ceres Farm, LLC Appeal of the Planning Commission Approval of the 6030 Casitas Pass Mixed-Light Cannabis Cultivation Project, Case Nos. 22APL000000-00028 and 19CDP-00000-00015, First Supervisorial District on behalf of our clients Rose Story Farm through Danielle Dall'Armi and William V. Hahn, M.D., Tim Bliss, and Mimi Mauracher Brown and Anthony Brown, M.D. Please contact me if you have any questions or have any issues accessing the attachment.
Thank you,

Jessica Laughlin | **Holland & Knight**
She/Her/Hers
Senior Counsel
Holland & Knight LLP
50 California Street, Suite 2800 | San Francisco, California 94111
Phone 415.743.6995 | Fax 415.743.6910
jessica.laughlin@hklaw.com | www.hklaw.com

Add to address book | View professional biography

Holland & Knight

50 California Street, Suite 2800 | San Francisco, CA 94111 | T 415.743.6900 | F
415.743.6910 Holland & Knight LLP | www.hklaw.com

December 9, 2022

Hon. Joan Hartman, Chair
Santa Barbara County Board of Supervisors
105 E. Anapamu Street
Santa Barbara, California 93101

RE: Appeal of Planning Commission Approval of the

6030 Casitas Pass, Ceres Farm – Mixed-Light Cannabis Cultivations, Case No.: 22APL-00000-00028 and 19CDP-00000-00015

Chair Hartman and Honorable Supervisors:

Our offices represent Rose Story Farm through Danielle Dall'Armi and William V. Hahn, M.D. (referred to as the "Hahns"), Mimi Mauracher (referred to as "Ms. Mauracher"), and Tim Bliss, each of whom by knowledge and belief have been potentially adversely impacted by the present grow operation located at 6030 Casitas Pass Road in Carpinteria ("Project") and will be negatively impacted if the above-referenced appeal of the Coastal Development Permit ("CDP" or "Permit") is granted. We respectfully urge the Board of Supervisors to uphold the Santa Barbara Planning Commission decision and deny the appeal in the above-referenced matter.

On October 8, 2021, the County Planning and Development Department approved the Permit to construct and operate a 9,5 acre cannabis cultivation and processing facility located in Carpinteria. On October 18, 2021, four parties, including Cate School, the Hahns and Ms. Mauracher appealed the issuance of the Permit and submitted letters supporting their respective appeals. On August 31, 2022, the Planning Commission considered the appeals and voted to approve the Project, subject to a condition of approval that requires the Applicant to install carbon scrubbers within 12 months of project approval (referred to as "Condition 37"). Condition 37 was imposed after careful consideration, arguments from numerous parties, applicant and community members..[1] The Project Applicant then appealed the Planning Commission's August 31st approval, specifically taking issue with the inclusion of Condition 37[2] Mr. Bliss the Hahns, and Ms. Mauracher (collectively, "Neighbors" or "Commenters") hereby submit this letter in opposition to the instant appeal.

The neighbors are located as close as 725 feet to the Ceres Farm LLC, cannabis grow and processing operation ("Facility"). Collectively they have suffered, and continue to suffer, serious

[1] *See* August , 2022 Planning Commission Minutes, available at https://cosantabarbara.app.box.com/s/q97rv82305oyfnbdjhcyxrrdhu3dgkqy/file/986452785748, last accessed on September 27, 2022.

[2] A similar condition of approval was also implemented for the cannabis facilities located at 4532 Foothill Road in Capinteria, Santa Barbara County and 5980 Casitas Pass.

health and economic impacts, and substantial impairment to their longstanding use of their property for agricultural, teaching, recreation, and general welfare. These impacts by are associated with cannabis odors from the Facility, potentially in concert with others, and/or the Facility's use of the Benzaco Scientific Odor-Armor ® 420 EPA chemical deodorizer. While the exact chemical make-up of the deodorizer has not been disclosed and states that it is protected by trade secret, the Chemical Safety Sheet included with Odor Abatement Plan (OAP) identifies that the deodorizer uses "essential oil" chemicals. This class of chemicals is capable of causing nausea, headaches, asthma, among other symptoms experienced by the neighbors. In the absence of additional information, and based on the Hahns and Ms. Mauracher's experience, this deodorant improperly masks odors, and is not effective at neutralizing odors as required by the County's cannabis ordinance.

Consistent with the Planning Commission's condition of approval, requiring the use of carbon scrubbers within one year, we urge the Board of Supervisors to impose the same requirement, to: (1) remove the odor causing compounds in the first place; (2) avoid adding new, trade secret chemicals, which as a class can cause the exact adverse health effects experienced by the neighbors; (3) respect the investment that others have made in installing carbon scrubbing technology at their facilities and not placing them at an economic disadvantage by allowing a cheaper, less effective technology to be implemented; and (4) protect the integrity of agricultural operations from non-compatible uses, consistent with the Agricultural Element of the Count of Santa Barbara Compressive Plan.

The parties agree, including Appellant, that carbon scrubbers are effective at reducing cannabis odors if properly implemented; and the one year window for implementation provided by the Planning Commission provides the time for successful implementation. Indeed, the Appellant stated before the Planning Commission that "we are an advocate of the use of [carbon scrubbers] within a certain distance of receptors..." However, in the case of these Neighbors, the Appellant stated that he did not see the need. *See, YouTube Archive of Planning Commission Hearings, July 13, 2022.*[3]

The operator has agreed to install scrubbers in twenty-four months, however offers no evidence or reason why this delay is appropriate. The Hahns and Ms. Mauracher would prefer that scrubbers were installed immediately to abate odors that are currently adversely impacting their quiet enjoyment of their properties and interfering with each of their agricultural businesses. On information and belief we contend that there is adequate electrical supply for the immediate installation of carbon scrubbers and the only impediment is the operator's and owner's lack of will.

Carbon scrubbers are presently in operation at three permitted cannabis facilities in Santa Barbara[4], and four other facilities have agreed in their Odor Abatement Plans (OAPs) to implement carbon scrubber technology. As stated by the Independent, "[a]ccording to the National Cannabis Industry Association, carbon filtration is 'the most commonly used and recommended control technology' for reducing odors in cannabis facilities. Such filters have been routinely used for years in cannabis processing buildings where marijuana plants are dried, cured and trimmed, the smelliest stage of cannabis production." *Independent (June 19, 2022), available online at https://www.independent.com/2022/06/19/carpinteria-valley-cannabis-approaches-a-milestone/.*

---

[3] Available online at https://www.youtube.com/watch?v=_VQN8go6HP0&list=PL8SyQGix1i-X3uejIPma0wl5NDdJSUiTW&index=7 , last accessed September 28, 2022.

[4] Ever-Bloom, at 4701 Foothill Road, 3684 Via Real; and CVW Organic Farms, at 1400 Cravens Lane, Each of the three properties is owned by members of the Van Wingerden family, which also owns the property at 5980 Casitas Pass Road.

Consistent with applicable law, policy, and the use of proven technology, we respectfully urge denial of the Facility's appeal and either the requirement of immediate carbon scrubber installation, or at the least, support of the Planning Commissions reasoned decision to require use of carbon scrubbers within one year of permit issuance.

I. Background

The Commenters include long-time members of the Carpinteria community and are located proximate to the subject grow and processing facility. The Commenters are not trying to eliminate the cannabis industry, but want to protect the health and well-being of their community, families, and students and the continued use of their properties for long-standing agricultural use. The Commenters include:

The Hahns are the owners of Rose Story Farm and live near the subject facility and have suffered significant personal and financial loss due to offensive odors cannabis odors. Since the development of the facility Ms. Hahn has suffered from respiratory issues and headaches. They have moved out of their primary home and relocated to another dwelling on their property in an attempt to escape the cannabis odors and health effect. They own rental homes on their property and all residents have complained of the smell. For example, a lessee (family including two doctors and their children), who rented the primary residence, left with no notice after their daughter became repeatedly nauseated due to the odors and/or the Bezaco chemical deodorant.

Moreover, the Hahns are no longer able to conduct vital aspects of their rose-growing business, including giving tours and distilling rose petals for hydrasols and perfumes because of the odors. The personal and financial cost has been large and consequential. The Hahns both recently spoke of the impacts of the cannabis odor at the August 31, 2022 appeal of the adjacent cannabis grow facility, 6030 Casitas Pass, which is also owned and operated by the Appellants.[5] *Attached as Exhibit A is a letter describing "Nuisance Odors at Rose Story Farms."*

Dr. and Ms. Mauracher-Brown also live near the subject facility in a family ranch. Ms. Mauracher also experiences both nuisance cannabis odors and has health concerns about the Facility's use of the Benzaco chemical deodorant. Ms. Mauracher-Brown no longer bikes as she used to, due to odor issues. Ms. Mauracher-Brown has submitted numerous complaints, but those complaints result in no change in odors or in the behavior of operators. She has largely stopped submitting complaints because they do not result in change. Ms. Mauracher-Brown recently spoke of the impacts of the cannabis odor at the August 31, 2022 appeal of 6030 Casitas Pass. *Attached as Exhibit B is a letter describing the impacts of the cannabis odors on Ms. Mauracher-Brown.*

Mr. Tim Bliss and his family have lived in Santa Barbara for years and has commercially grown avocados there for many years. The Bliss family has suffered with persistent and ongoing cannabis odors from Ceres Farm and other local grow operations for years. The odor can be unbearable especially when the wind is blowing toward their home and there is an inversion layer. As explained in his testimony, Mr. Bliss does not oppose the cannabis industry, but believes the County must also protect the agricultural businesses that have been here for years and are trying to operate alongside the cannabis industry in the County of Santa Barbara.

II. The County and Applicant Did Not Properly Address and Analyze the BACT in the Odor Abatement Plan.

[5] Cate, the Hahns and Ms. Mauracher all presented about the impacts of the cannabis odors as part of the appeal of 6030 Casitas Pass, which is available at https://www.youtube.com/watch?v=vDeCObJZQqc&list=PL8SyQGix1i-X3uejIPma0wl5NDdJSUiTW&index=3, last accessed September 27, 2022.

The Board of Supervisors, on consideration of appeal, cannot approve a project that does not meet the requirements of local ordinances, including the Coastal Zone Ordinance. CZO § 35-144U.A.2. The Coastal Zone Ordinance requires applicants to prepare and submit an Odor Abatement Plan ("OAP"). CZO § 35-144U.C.6. The County must review and approve the OAP, and the OAP must be implemented prior to the issuance of final building and/or grading inspection and/or throughout the operation of the project. *Id.* The CZO sets forth "*minimum* land use requirements for medicinal and adult use cannabis activities, including cultivation, processing, distribution, manufacturing, testing and sales." (emphasis added).

Importantly, here, the OAP must include "[a] description of all equipment and methods to be used for reducing odors." CZO § 35-144U.C.6.d. "A Professional Engineer or a Certified Industrial Hygienist **must review and certify** that the equipment and methods to be used for reducing odors are consistent with **accepted and available industry-specific best control technologies and methods designed to mitigate odor**." CZO § 35-144U.C.6.d.

Under California law, BACT is known to be a "technology-forcing standard" meaning it is "designed to compel the development of new technologies to meet public health goals." *Am. Coatings Assn. v. S. Coast Air Quality Mgmt. Dist.*, 54 Cal. 4th 446, 465 (2012). As a "technology-forcing" standard, BACT encompasses technology that is projected to become available by the effective date of the regulation, not only technology that is readily available when the regulation is promulgated." *Id.*

Carbon Scrubbing Technology ("Carbon Scrubbers") has been identified as BACT in at least seven recent applications approved by the County. As described in the OAPs for those recent applications, the Carbon Scrubbers are intended to sustain a substantial reduction in detectable cannabis odors within greenhouses prior to fresh air exchange, which occurs when greenhouses are deliberately roof-vented, or when air escapes during opening and closing of access doors, or through fugitive air losses which occur even when the greenhouse is predominantly sealed (roof vents closed and black-out curtains drawn).[6]

Importantly, carbon scrubbing technology "scrubs" the air and removes the chemicals as opposed to masking odors. Therefore, with the use of Carbon Scrubbers, other scents, such as roses at the Rose Story Farm, will retain their character. Moreover, according to the National Cannabis Industry Association, carbon filtration is "the most commonly used and recommended control technology" for reducing odors in cannabis facilities.[7]

The County has recently approved, at least, seven (7) separate cannabis cultivation permits, excluding the subject facility, that included Carbon Scrubber technology. These include:

- International, Condition of Approval, May 31, 2022;
- Everbloom Odor Management Plan, prepared by SCS Engineers, January 14, 2022;
- Maximum Nursery Odor Management Plan, prepared by SCS Engineers, January 5, 2022.
- Cresco/SLO Cultivation, Carpentaria, Odor Management Plan, prepared by SCS Engineers, August 10, 2021;

---

[6] *See,* Everbloom Odor Management Plan, SCS Engineers, January 14, 2022; Cresco/SLO Cultivation- Carpinteria, Odor Management Plan, prepared by SCS Engineers, August 10, 2021; Creekside Blooms Odor Management Plan, prepared by SCS Engineers, January 20, 2022; CW Organic Farms Cannabis Odor Abatement Plan, prepared by Nate Seward, PE, October 26, 2020; Everbloom Odor Management Plan, prepared by SCS Engineers, January 14, 2022; and Maximum Nursery Odor Management Plan, prepared by SCS Engineers, January 5, 2022.

[7] https://www.independent.com/2022/06/19/carpinteria-valley-cannabis-approaches-a-milestone/, last accessed September 27, 2022.

- Creekside Blooms, Odor Management Plan, prepared by SCS Engineers, January 20, 2022; and
- CW Organic Farms, Cannabis Odor Abatement Plan, prepared by Nate Seward, PE, October 26, 2020;
- Vista Verde Farms, LLC, Odor Abatement Plan, prepared by AdvancedGEO, Rev. 05 May 2022

It is noted that the OAP for the mixed light cannabis cultivation facility located at 3450 Vista Verde Farms, LLC, proposes to use carbon scrubbing technology under its proposed OAP. The OAP expressly states that, "'Carbon Scrubbing' is considered the best industry practice to mitigate odors." *See, Odor Control Plan for Vista Verde Farms, LLC, 3450 Via Real, Carpinteria, (AdvancedGeo, Rev. 05 May 2022).*

The OAP for the subject facility at 6030 Casitas Pass Road does not distinguish itself from, nor even address, the seven applications approved with Carbon Scrubbing technology. The OAP did not analyze the use of Carbon Scrubbers, and instead only rejected it on the incorrect premise that it is still in "its infancy and not yet commercially available." (OAP, p. 6).

However, it is not credible to argue that Carbon Scrubber technology is not commercially available, when Carbon Scrubbers technology: (1) has been actually deployed in similar mixed light greenhouse operations in Santa Barbara County and at the very properties owned by family members that own the subject property; (2) has been approved by the County as BACT; and (3) has been determined by an expert industrial hygienists to be "considered the best control technologies and methods to mitigate odors." The fact that the Appellant stated that they would advocate for the use of Carbon Scrubber technology at grow operations if sensitive receptors were close enough, further underscores the availability and efficacy of Carbon Scrubber technology and the lack of analysis included in the OAP.

In an important recent development, Envinity (the Dutch company who manufactured and installed one hundred and one Carbon Scrubbers at EverBloom) announced a Carbon Scrubber leasing program, thus reducing the cost of entry to use the BACT technology. This also demonstrates that the OAP's rejection of Carbon Scrubbers because it is allegedly an "emerging technology," "still in its infancy and not yet commercially available" is contradicted by the record and thus, the County's decision cannot be supported by substantial evidence. (OAP, p. 6).

Because the record with respect to the OAP was not supported by substantial evidence, and evidence was introduced at the Planning Commission meeting that Carbon Scrubbers were appropriate and constitute BACT at the subject facility, the appeal should be denied and the Planning Commission decision should be supported.

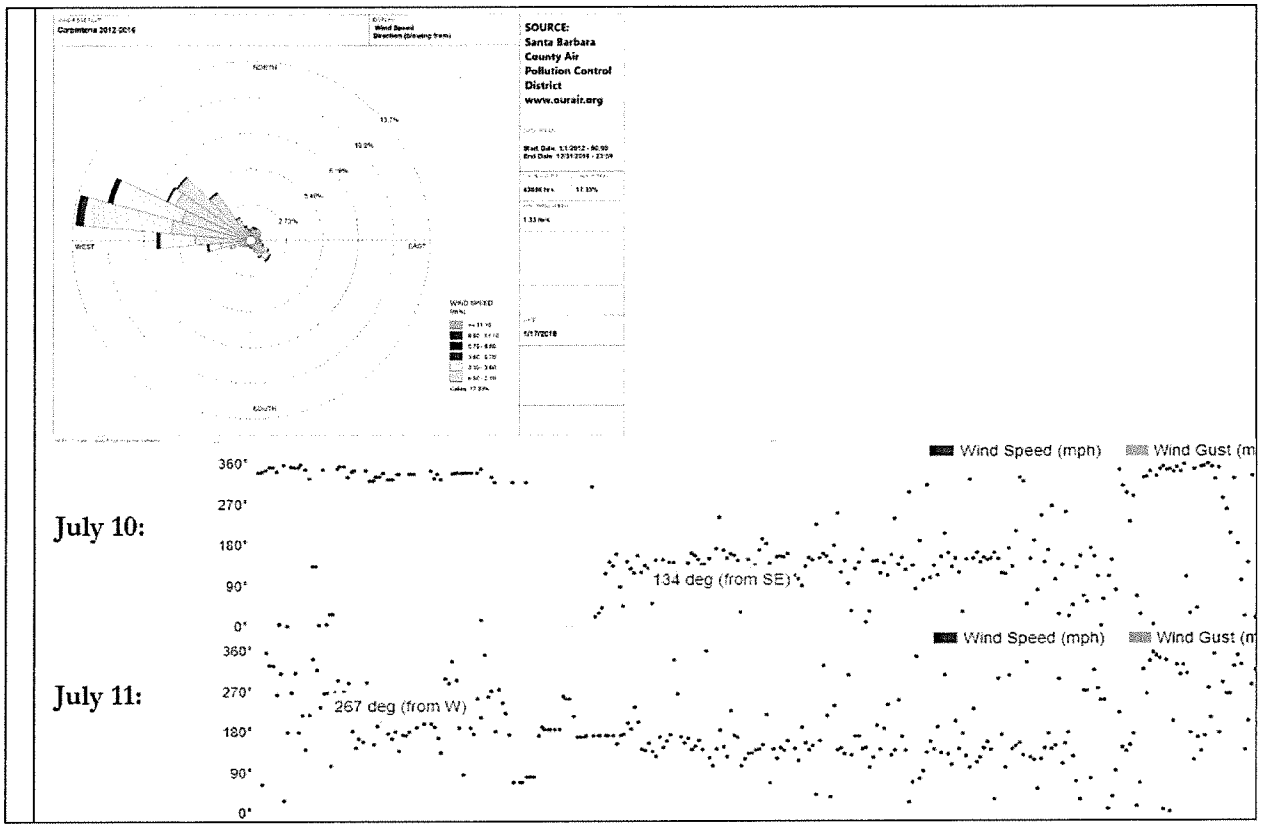
III. The Proposed Fogco/Benzaco Technology Does Not Have a Record of Success

The odor abatement system used and proposed by Appellant, Fogco technology (*See, OAP, p. 3-4*), does not have a record of success, as demonstrated by the numerous odor complaints the County has received from facilities using this technology. Twenty-five distinct odor complaints, as of August 30, 2022, have been filed with the County for the 5980 Casitas Pass facility and an additional 24 odor complaints were filed with the County for the instant 6030 Casitas Pass facility that also uses Fogco technology. Attached as Exhibit "C" are the reported odor complaints pertaining to 5980 and 6030 Casitas Pass Road. It is clear from these odor complaints, as well as the testimony of the Neighbors that this technology is not working and may well be causing additional harm.

Local, rapid wind direction variation may be creating operational issues for the Fogo system. The

OAP states that the Fogco Odor System will be split into individual zones and then "depending on wind direction and speed, only the zones on the directly down-wind side of the buildings will be activated to mitigate the transient odors." (*Valley Crest OAP, p. 2*). The OAP includes a wind-rose of Carpinteria asserting that "the predominant wind directly in Carpinteria is from the west-northwest." (*OAP, p. 4*). The wind-rose represents an average over a five-year average, and show. However, when compared to a daily average, significant variation is evident. *See, Figure 1, below.* Thus, this five-year *average* of an a different location in Carpinteria (not at the facility location) does not address the variability of winds on a daily basis at the Proposed Project location and thus, cannot constitute substantial evidence the County can rely upon to support the approval of this Project. Even assuming the Benzaco chemical deodorant is effective, rapid wind variability is may well be the cause for the ongoing and persistent odors experienced by the neighbors.

Figure 1 Wind Direction and Speed Variability



Finally, some of chemicals used in the Benzaco Scientific Odor-Armor ® 420 EPA deodorizer are part of a class of chemical known to cause may of the symptom experienced by the neighbors. While the chemical safety sheets included in the OAP identify that the that the Benzaco solution is covered by "trade secret," they do state that a mixture of essential oils acts as an "odor eliminator".[8] The Asthma and Allergy Foundation of America concluded that essential oils can be detrimental to people with asthma because "breathing in the particles released by the oils may trigger an asthma attack."[9]

[8] https://fogco.com/misting-systems/odor-control/cannabis/

[9] https://community.aafa.org/blog/asthma-are-essential-oils-harmful-or-helpful; *see also,* https://www.aaaai.org/Allergist-Resources/Ask-the-Expert/Answers/Old-Ask-the-Experts/oil-diffusers-asthma, last accessed September 28, 2022.

As a result, people with respiratory issues or allergies to essential oils may suffer not only from the impacts of cannabis odors, but also the essential oils used in Fogco's odor system.

IV. The Recent Scrubber Efficacy Assessment and Odor Study at Roadside Blooms ("Scrubber Study") Demonstrates that Carbon Scrubbers are the BACT[10]

The recent Scrubber Study, dated November 14, 2022, demonstrates that Carbon Scrubbers are BACT technology. Notably, the study shows the "clear benefit of scrubber technology" and "had a measured single pass through efficacy of approximately 95% on average." (Scrubber Study, p. 16). Specifically, the Scrubber Study made the following key findings (in addition to others):

- The operation of the CFS-3000 scrubbers clearly reduces the emissions of odor-causing compounds and emissions in general from cannabis greenhouses. This is **in contrast to vapor phase technology which can only treat emissions/odors once they have left the greenhouse through ridge vents. Vapor phase odor control systems result in a net increase of total emissions.**
- Scrubbers operating at the Roadside greenhouse (test) significantly reduced odor emissions by an average of approximately 83.9% compared to an unscrubbed (reference) greenhouse when concentrations are adjusted for ventilation rate and wet weight ratios.
- Given adequate spatial density of scrubbers, as demonstrated by this study, the CFS-3000 scrubbers **are capable of reducing odor emissions to a level that would result in no perceivable cannabis odors downwind from the subject facility.** (Scrubber Study, p. 16, emphasis added).

In light of this evidence, the County cannot rely on the OAP's conclusion that Carbon Scrubbers are nascent, unknown technology to grant the appeal.

V. Approval of the Permit Without Condition 37 Runs (Carbon Scrubbers) Counter to the County's Environmental Impact Report and the County Comprehensive Plan.

Not only is such an approval at odds with the CZO, but it also runs counter to Objective 10 of the County's Adopted Final PEIR Cannabis Land Use Ordinance and Licensing Program ("PEIR") and the Agricultural Element of the Santa Barbara County Comprehensive which aims to:

> Limit potential for adverse impacts on children and sensitive populations by ensuring compatibility of commercial cannabis activities with surrounding existing land uses, including residential neighborhoods, agricultural operations, youth facilities, recreational amenities, and educational institutions.

PEIR, at ES-3. Requiring Carbon Scrubber technology would support Objective 10 of the PEIR by protecting Commenters surrounding existing land uses, including residential, agricultural, and school uses.

Similarly, the approval of the Permit without Condition 37 is at odds with the County Comprehensive Plan. The County's Comprehensive Plan, Land Use Element provides that "existing agriculture should be preserved above Foothill Road and east above Casitas Pass Road" (where the instant cannabis grow facility and the Hahn's Rose farm is located). *See, County of Santa Barbara Comprehensive Plan, Land Use Element, at p. 90; see, also, County of Santa Barbara Comprehensive Plan, Agricultural Element Policy I.F at p. 7* (requiring "maintenance of buffer areas around agricultural areas.") As identified in Ms. Hahn's testimony, the cannabis

[10] A true and correct copy of the Scrubber Study is attached at Exhibit D.

odors and/or the Benzaco chemical deodorant are significantly adversely impacting her rose growing business by impairing the blending of rose scents and the experience of the roses' fragrance.

V. Conclusion

As a matter of law and policy, the Applicant's appeal should be denied and the Permit amended to require immediate imposition of scrubbers, or if not, left in place, including the use of Carbon Scrubbers, as required by the Planning Commission. The County has approved Carbon Scrubbing technology for, at least, seven recent permit approvals to address cannabis odor issues, and one additional facility has proposed Carbon Scrubbers in its OAP, as the "best industry practice to mitigate odors." Thus, Carbon Scrubbers should be required for the 5980 Casitas Pass Road facility to: (1) curb existing, strong, pervasive and damaging cannabis odors; (2) protect the community in the eastern end of Carpinteria Valley; (3) maintain a level economic "playing field" within the local cannabis industry; and (4) follow best industry practices to mitigate odors.

Sincerely yours,

HOLLAND & KNIGHT LLP

/S/
Jessica Laughlin

EXHIBIT "A"

Proposed Revised Condition of Approval

37. Odor Abatement Plan Revision. Prior to issuance of the Coastal Development Permit, the applicant shall submit an updated Odor Abatement Plan that incorporates the following language:

Given the research and development state of ventilated greenhouse scrubbers, the Applicant commits to utilizing internal greenhouse odor scrubbers/filters such as the Regenerative Carbon Scrubbing System (RCSS) or equivalent internal greenhouse scrubbers/filters as the means of primary odor control technology no later than *twenty-four (24) months* from *Coastal Development Permit issuance*. Consequently, upon installation and testing of the internal scrubber/filtration system, the facility operator shall also reduce or eliminate the use of vapor-phase neutralizing systems to the maximum extent feasible based upon the ability to prevent fugitive odors from reaching residentially zoned receptors.

The deployment ...

PLAN REQUIREMENTS AND TIMING: *Applicant shall submit grid-like distribution of the odor control technology to P&D within six (6) months after issuance of Coastal Development Permit.*

Exhibit B: Nuisance Odors at Rose Story Farm

My name is Danielle Dall'Armi. I live at 5950 Casitas Pass Road, Rose Story Farm. Rose Story Farm is an internationally acclaimed small model farm, growing fragrant roses for the cut flower industry. We have been farming roses for 25 years and have been featured in multiple national publications including Martha Stewart, Better Homes & Gardens, and the Wall Street Journal. Our business model included selling cut roses, distilling petals to make hydrosols and oils, and selling rose buds and petals to the food industry for use in confections and syrups.

I was honored as a Great Rosarian of the World in 2014, joining an elite group of 19 international recipients, including only 5 Americans and 3 women. I earned this honor because of our educational outreach program which encouraged people to grow and enjoy roses through a series of ongoing tours and seminars at our rose farm, for people of all ages, ranging from groups of school children to retirees. We have had to disband these tours due to the maliforous odors and masking materials emanating from the cannabis operation directly adjacent (300 feet) to our farm. We can no longer distill rose petals nor sell them to the food industry and they are contaminated.

Not only are the cannabis odors masked with fogco, but the incredible rose fragrances are masked as well. Our tenants and guests complain constantly about the stench and the physical reactions which are triggered by the exposures. My employee in charge of all rose sales is leaving after working with us for nine years due to her recurrent pulmonary problems all of which started after the use of the fogco agents. At our sons wedding this summer, several quests who were opera singers, as is he, had immediate respiratory reactions, one requiring an ER visit for an asthma attack.

We have multiple houses on the property and my husband and I have had to move to the guest house furthest from the pot greenhouse in an attempt to avoid the intense stench and cover up material. We have been renting our 100 year old farm house to provide additional farm revenue. We have lost two sets of tenants over the stench. The last to leave was a family of two medical doctors and their four young children. They loved the farm and had enrolled their children in Crane School and were planning to stay for a year. Two months into their stay, their four year old daughter began to vomit every morning. We tried an air purifier, resealing the windows and doors (in an old house virtually impossible), and made several other attempts to mitigate the smell. Finally after an entire day of vomiting, the family gave notice, packed up and left within 24 hours. They consulted with their pediatrician who told them her GI upset was related to her exposure to the fumes. This was understandably a huge disappointment to us, not to mention a significant financial impact. Rental income from this 9000 square foot home has been a major contributor to the economic viability of the farm, since disbanding the tours.

Meanwhile, I personally have been struggling with severe allergies and respiratory difficulties. There is not a day that goes by without severe coughing and shortness of breath. We've been here for 30 years, and prior to the pot, I did not have any issues. I spent a month this summer away from the farm and within 3 days, had no cough nor allergy issues. My most recent consult was with Dr. Brian Garber, a local pulmonologist. After describing my symptoms, he told me they were identical to two other patients of his who live immediately adjacent to cannabis greenhouses. We are continuing to try various medications, however he believes moving out of the area may be the only long term solution. I have an incessant cough which comes on in the middle of the night interrupting my sleep and causing intense headaches. The repercussions of this have severely affected the quality of my life and my work here at the farm.

The presence of the cannabis odors and now the fog masking has dramatically impacted my health and has altered my business model significantly. We are currently not able to sustain our rose growing business which has been flourishing for over 20 years. Our farm income is significantly diminished and my health has deteriorated. The proliferation of cannabis growing operations has clearly impacted the Carpinteria Valley. As such, the Board of Supervisors

should do anything in their power to mitigate the negative effects. A requirement for state of the art carbon scrubbers is a great start.

Dr. William Hahn
Comment Letter Opposing Appeal

My name is Dr. William Hahn. I have been a medical doctor trained in internal medicine for over 50 years and have practiced locally at the Sansum Clinic for the last 45 years. I have lived with my wife Danielle Dall'Armi at Rose Story Farm located at 5950 Casitas Pass Road for over 30 years. We have raised our 2 sons there and in addition to growing avocados commercially we have developed the largest fragrant rose farm in America. It is, unfortunately, located approximately 300 feet downwind from the Valley Crest Cannabis greenhouse.

People are getting sick, including my wife, my tenants, and my guests at our farm. The sickness-- headaches, nausea, fatigue and respiratory distress,— started after the Fogco system was installed.

To my knowledge, the Benzaco chemical deodorant used in the Fogco system has not been tested in human subjects to ascertain whether inhalation can cause the type of symptoms we are experiencing. The Chemical Safety Sheet included with the facility's Odor Abatement Plan (OAP) states that the chemicals are not on a list of known toxic chemicals; however, as a physician, I know that this statement does not mean the compound could not be responsible for our symptoms. Recall that DDT, Round Up, and a variety of plastics, and many other products now understood to be highly toxic were at one time thought to be entirely safe for human exposures. Despite being characterized as non- toxic the EPA assessment of the Benzaco product notes that exposure may cause irreversible tissue damage and blindness, plus significant toxicity to aquatic life.

The chemical testing identifies only a single inhalation toxicity test. (Rick O'Sadnick Senior Scientist Benzaco May 19, 2020 letter to Greenbrier Holdings Valley Crest Farms, LLC). In that study, 10 rats were exposed to high levels of the product for 4 hours to assess mortality-- the rats did not die, which is a good thing. There were not however, any observations or data on any non-lethal effect on the rats, specifically no information as to untoward reactions such as vomiting, pulmonary congestion, respiratory distress or wheezing. In addition, Benzaco provides no data concerning the health effects of long-term inhalation of this product. Claiming that a 4 hour exposure of 10 rats provides sufficient data to determine the long-term effects of this product on humans is clearly ridiculous. People, perhaps much more than rats, have a broad range of sensitivities and underlying health conditions which can predispose them to unexpected respiratory reactions.

The Benzaco deodorant represents a risk to those who are sensitive to the trade secret protected essential oils. Persons with asthma have hyperreactive airways that respond to even low concentrations of atmospheric irritants, including essential oils. The result can be anything from shortness of breath to a full blown asthma attack. Indeed, the American Asthma and Allergy Foundation of America has concluded that essential oils can be detrimental to people with asthma because "breathing in the particles released by the oils may trigger an asthma attack." AAFA Explains: Can Essential Oils Help Asthma? | Asthma and Allergy Foundation of America.

People can have a wide array of adverse physiologic reactions to odors including headache, nausea, fatigue, and even vomiting, given different circumstances and underlying health conditions. My wife's pulmonary doctor is certain that her respiratory reactions are a result of exposures to the chemicals in the fogging agents.

Since the facility started fogging, my wife and others at our farm have been getting sick with the symptoms one would expect from exposure to an inhaled environmental irritant. Although not the intent of the technology, it is unfortunately the result. Carbon scrubbers are available, and are clearly a superior approach that mechanically removes odors, as opposed to creating new odors. As such it is not responsible to allow this fogging experiment to continue and expand. I respectfully ask that you deny the appeal for the protection of the community, my farm, and my family.

Exhibit C:
Letter of M. Mauracher

To Whom It May Concern:

I am living on my family's ranch at 6200 Casitas Pass Road in Carpinteria, CA that my parents bought in 1951. I have 46 acres and 42 of them are planted in avocados. The other four acres are dedicated to housing. There are three houses on this property and two of them are rented. My tenants have commented on the odor of pot and how awful it is.

We all live next door to Case Van Wingerden's greenhouses filled with marijuana plants. Sometimes I can smell it quite badly and other times I cannot. I have taken videos of the emitters on the vents at his roofline. These emitters are letting something mask the smell of the marijuana so I will be tricked into thinking that all is right in Carpinteria. What is being released in the air to cover this odor? How is it affecting my lungs? Is it cancer causing? What is it doing to my avocado trees which is my financial livelihood and that of my daughter and her husband and four children?

The odor is so bad coming up Casitas Pass Road. I no longer ride my bike or walk into town because of the odor. I have gone to the County website and filed complaints. I have enclosed one response I received from Planner Kevin De Los Santos. I used to file complaints more often but I wouldn't get a response and it takes time that I don't really have to spare. More importantly, it seems like it doesn't matter. The County is going to do whatever they want to do and the citizens have to buck up and smell this odor every single day.

The cannabis business has certainly put Carpinteria on the map. This might be good news for the growers but not for the rest of us that are growing avocados or lemons, etc. I have heard that the cannabis growers donate lots of money to different local causes. This is also good news for some but for the rest of us we get to continue to smell the pot odor. If they can afford to donate all this money to local causes why can't they afford to install carbon scrubbers? This contribution to the local air and odor would lessen their negative feedback and hopefully their time in court. This is not going away. If one is going to cause problems with the air we breath, why wouldn't one want to make an effort to keep it clean and clear for all? It's hard to be a good neighbor when your neighbor cares more about his money than you.

Please at least have the cannabis growers use carbon scrubbers. The odor is too much. The future is important and our air is key.

Thank you for your time.
Mimi Mauracher
August 31, 2022

Exhibit D: Scrubber Efficacy Study

Initial Scrubber Efficacy Assessment and Odor Study at Roadside Blooms

3684 Via Real
Carpinteria, CA 93013

SCS ENGINEERS

24219240.02 | November 14, 2022

2370 Skyway Dr.
Santa Maria, CA 93455
805-346-6591

Table of Contents

Section Page

Figures

Tables

Appendices

1.0 PROJECT DESCRIPTION

The purpose of this sampling campaign was to measure and determine the efficiency of Envinity Group scrubbers inside a greenhouse relative to reducing odors and odor-responsible molecules. A secondary goal was to assess the potential of trace level Total Reduced Sulfur (TRS) measurements to be used as a surrogate for odor emission potential from a cannabis greenhouse. Ultimately, the goal is to significantly reduce nuisance odors escaping greenhouse facilities. Two greenhouses of similar size, climate control methodologies, location—and thus, environmental factors—and plant composition were used in this study: one equipped with fifteen (15) operating scrubber units, and one with no scrubber units in operation. To determine the efficiency of the scrubbers, differences between the two greenhouses in terms of odor and Total Reduced Sulfate (TRS) concentration were assessed, identified, and analyzed.

The scrubbers are Evinity Group's CFS-3000 scrubber, with the specs listed in the table below.

Table 1. CFS-3000 Specifications

Product Name	CFS-3000
Start	Slow start
Capacity	3,000 m^3/h
Size	2,271 x 800 x 800 mm
Weight	350 kg
Materials	Powder coated steel
Power input	480 VAC -3 Phase delta

The project was carried out in a collaborative manner with the following Team Members:

SCS Engineers: Test Planning, Data Analysis, TRS System Provision, Field Sampling, Odor Panelists, Data Analysists, Reporting

Coastal Blooms: Test Planning, Field Installations of Sample Locations, Operation of Olfactometer, Odor Panelists

Envinity Group: Provision of Scrubbers, Field Support, Odor Panelists

Environmental Monitoring Systems (EMS): Test Planning, Sequential Tube Sampler Provision, Field Sampling, Analytics, Data Analysis

Olfasense: Provision of Olfactometer, Training on Odor Assessments, Screening Odor Panelists

This collaboration was essential for the execution of such a large scale project with significant sample saturation both spatially and temporally. The planning process took several months where weekly planning meetings took place. The results were a well-executed study with an unprecedented data set for the evaluation of the effectiveness of scrubbers within a greenhouse space.

The following sections detail the sampling methods employed, the location and type of samples collected, summarize the data collected, and assess the relative effectiveness of the scrubbers for reducing odor emissions from a greenhouse facility. The data collected spans 48 hours and includes Harvesting operations.

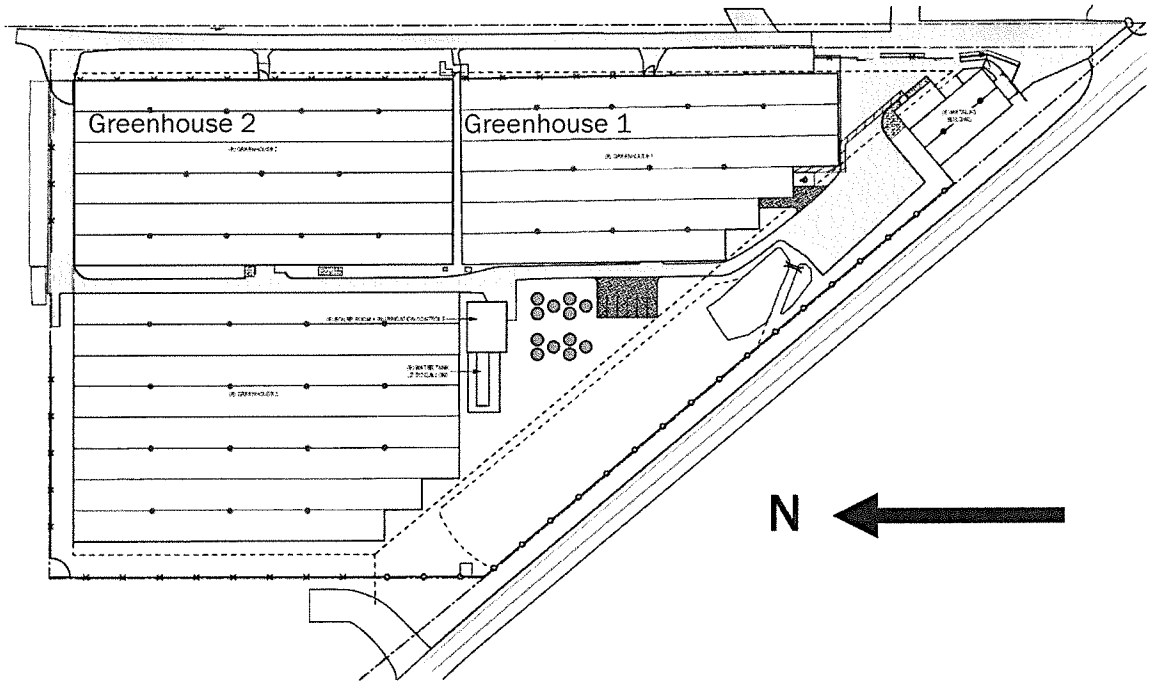
2.0 TEST LOCATION

The study was conducted over a two (2) day, 48-hour period at Roadside Blooms, located at 3680 Via Real, Carpinteria, CA 93013 from 24-August 2022 at 0800 to 26-August 2022 0800. The study location was chosen for several factors:

1. distance from nearby cannabis farms (thereby reducing their influence on up and downwind concentrations),
2. proximity to the ocean (a source of low emissions),
3. CFS-3000 Scrubbers already installed and operational at the Facility,
4. its semi-identical separated greenhouses to use as a test and control greenhouse, and
5. a preexisting state-of-the-art climate computer for data logging environmental data.

The southern greenhouse (Greenhouse 1) was used as the test greenhouse, consisting of 15 operating scrubber units; and the northern (Greenhouse 2) as the control, consisting of zero operating scrubbers. The two greenhouses are physically separated by an alley, and the contents of the greenhouse are largely the same, both in strain variation and age. The scrubber configuration within the greenhouse space is provided in Figure 1.

Figure 1. Scrubber Configuration: Greenhouse 1 (Scrubbed) and 2 (Unscrubbed)



A total of 240 samples were collected at fourteen (14) sample locations, which can be categorized into five (5) location types. The sample locations are mapped in Figure 2, and explained in Table 2 below.

1. Upwind: Background air coming onto the facility prior to reaching the greenhouses.
2. Downwind: Air on the downwind side of the greenhouses that would include greenhouse emissons.
3. **Crop Area**: air at plant level within the crops
4. **Roofvent Samples**: air above the plant canopy and near the greenhouse vents
5. **Environmental Area**: air leaving from the open vents being mixed and diluted with outside air and transported towards the fenceline

Air exchange in the Crop Area depends on greenhouse operational parameters. Samples taken in this area can identify what compounds are directly emitted by the crop as well as when periods of highest emissions occur. Air exchanged in the roof vent area is heavily influenced by environmental temperature, radiation, wind speed, and wind direction. Samples taken in this area can identify concentrations of emissions leaving the greenhouse. Air exchanged in the Environmental Area, on top of general environmental factors, needs to take into account up- and downwind concentrations, as well as how wide the vent is open. Samples taken in this area can identify the effects of transport dynamics.

Figure 2. Sampling locations in and around scrubbed and unscrubbed greenhouses

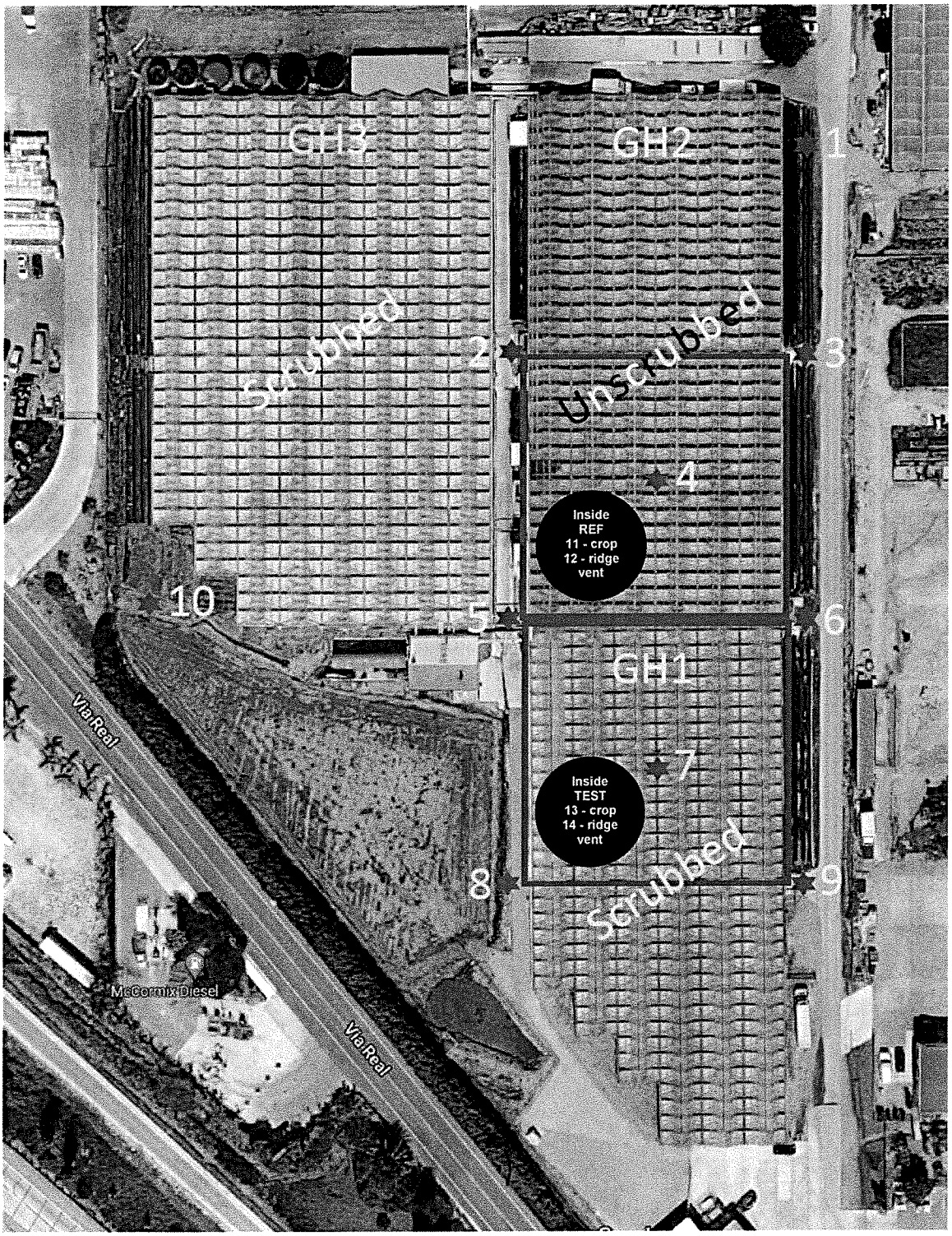


Table 2. Sample Locations

Sample Point	Sample Location	Function	Sample Collection Height
1	Outside North-East	Downwind	17.9 ft.
2	Outside North-West	-	17.9 ft.
3	Outside East-1	Downwind	17.9 ft.
4	Outside above GH2V3	Environment REF	17.9 ft.
5	Outside center GH1 - GH2 - GH3	Upwind	17.7 ft.
6	Outside East-2	Downwind	17.7 ft.
7	Outside above GH1V2	Environment TEST	17.7 ft.
8	Outside South-West	Upwind	17.7 ft.
9	Outside South-East	Downwind	17.7 ft.
10	Outside West	Upwind	17.7 ft.
11	Plants - GH2V3	Crop REF	6.0 ft.
12	Window - Ridge vent - GH2V3	Greenhouse REF	Cross Section of Ridge Vent
13	Plants - GH1V2	Crop TEST	6.0 ft.
14	Window - Ridge vent - GH1V2	Greenhouse TEST	Cross Section of Ridge Vent

Figure 3. Sample tubing was run up the pole to collect air at roof vent elevation

3.0 PROJECT SET UP

The two locations inside each greenhouse (Crop and Ridge vent samples 11, 12, 13, 14) and the one location above each greenhouse (Outside above, samples 4, 7) were sampled over 2-hour periods and every two (2) hours for a total of twenty four (24) samples per location. All other outdoor samples were taken once every four (4) hours (4 -hr. sample periods) for a total of twelve (12) samples per location. This results in 240 total samples collected. See Table 3.

Every sample location had the same length of tubing from sample point to sample collection point for uniformity. Sample locations were predetermined through careful planning of project goals as well as logistical factors. Every sample bag was pre-labeled and placed at their respective sampling points prior to the study. Samples inside the greenhouse were encased in plastic trash bags to prevent contact or contamination between the sample bag and the crops.

Trained personnel conducted the sampling by operating sampling pumps, periodically checking for potential malfunctions, and troubleshooting. An app was created to track and check every sample to ensure they were analyzed within the 36-hour holding time. Tenax tubes were also collected at the same times and locations and are currently being analyzed by EMS in the Netherlands. This report will not discuss those samples as the data is not currently available. Immediately following each 2-hr sampling period, the sampled bags were collected by field personnel. The 4-hr samples were collected at the completion of their respective sampling period. During sample bag collection, field parameters were recorded on the sampling bag as well as within the app for data tracking and confirmation in real time.

Once samples were collected they were immediately placed into a black trash bag to avoid exposure to sunlight and contact with cannabis plants. A sample courier then transported the sample bags to the Coastal Blooms office on Eugenia. At the office, the bags were checked into the facility using the same app and lined up for analysis in sequential order. Samples were then analyzed via the odor panel and Olfactometer System in the order they were sampled. Odor panel analysis took place from approximately 10:30 am on the 24th through hour 12 on the 26th. All samples were analyzed under 36 hours following sample collection.

Following odor panel analysis, each odor bag was also analyzed as a discreet sample using SCS's proprietary TRS monitoring system. At first, this was accomplished manually and various operators connected the sample bag to the system and waited for a stable reading prior to collecting a concentration reading. As this was incredibly time consuming, a multiplexer sampling system was connected to the TRS system which automatically switched the sample bags every 25 minutes. Real time data from the analyzer was then used to determine the concentration of each bag during its 25 minutes of sampling time.

In addition to the full test plan above, discreet samples from the influent and effluent of select scrubber systems were also collected for the determination of single pass odor removal efficiency by the scrubber units. These samples were analyzed by the odor panel in the same manner described above and in detail in Section 5.0.

Table 3. Sample Collection Times

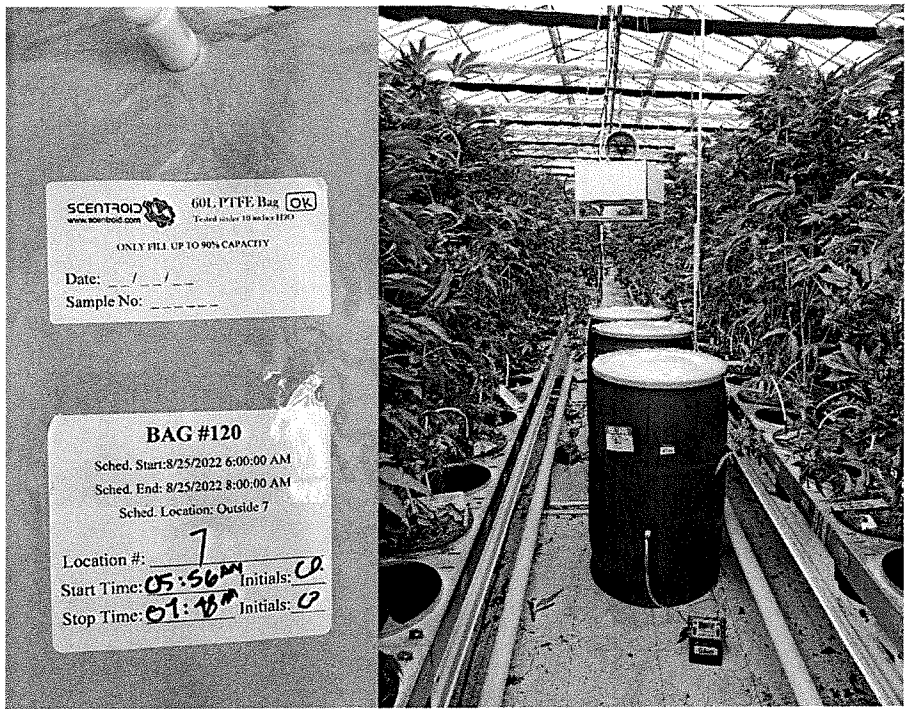
Date	Time	Sample Location														Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	
8/24/2022	8:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	10:00	-	-	-	X	-	-	X	-	-	-	X	X	X	X	
	12:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	14:00	-	-	-	X	-	-	X	-	-	-	X	X	X	X	
	16:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	18:00	-	-	-	X	-	-	X	-	-	-	X	X	X	X	
	20:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	22:00	-	-	-	X	-	-	X	-	-	-	X	X	X	X	
8/25/2022	0:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	2:00	-	-	-	X	-	-	X	-	-	-	X	X	X	X	
	4:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	6:00	-	-	-	X	-	-	X	-	-	-	X	X	X	X	
	8:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	10:00	-	-	-	X	-	-	X	-	-	-	X	X	X	X	
	12:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	14:00	-	-	-	X	-	-	X	-	-	-	X	X	X	X	
	16:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	18:00	-	-	-	X	-	-	X	-	-	-	X	X	X	X	
	20:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	22:00	-	-	-	X	-	-	X	-	-	-	X	X	X	X	
8/26/2022	0:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	2:00	-	-	-	X	-	-	X	-	-	-	X	X	X	X	
	4:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	6:00	-	-	-	X	-	-	X	-	-	-	X	X	X	X	
Total Per Location		12	12	12	24	12	12	24	12	12	12	24	24	24	24	240

4.0 SAMPLING METHODS

4.1 ODOR SAMPLES

Odor samples were collected with the objective of defining the odor concentration in terms of odor units. The same sample bag was also analyzed for the corresponding TRS concentration. Odor samples were collected into 60L PTFE bags using an air displacement sampling system. See Figure 4. This method was utilized to eliminate any influence that an air pump would have on the sample collected. The sample bag is placed into the sealed lung sampler and connected through a feed-through fitting to the sampling inlet. A second fitting is located in the wall of the lung sampler and is connected to a vacuum pump. The container is then closed and sealed. As the pump withdraws air from the sealed container, an equal volume of sample air is drawn into the sample bag without ever making contact with the pump.

Figure 4. Sampled 60L PTFE Bag and ≈35 Gallon Lung Sampler with GilAir Pump



4.2 TRS SAMPLES

Odor samples were also analyzed for TRS concentration utilizing SCS's custom built trace level TRS analyzer. The thermal oxidizer oxidizes sulfur compounds and converts them to sulfur dioxide (SO_2), which is then measured by the TRS analyzer—essentially an SO_2 counter. Real-time minute averaged readings of TRS concentrations were logged into an internal data logging system in the analyzer. Multi-point calibrations were conducted before and after the field test to calibrate baseline levels of TRS.

5.0 ODOR ANALYSIS

5.1 ODOR PANEL

Collected samples were transported to the Coastal Blooms Office space away from any cannabis operations and related odors to be analyzed. Odor samples were analyzed by dynamic dilution olfactometry using a trained and screened odor panel consisting of SCS personnel, members of the community, and Coastal Blooms staff.

Figure 5. Odor Panel Analyzing Collected Sample

For this study, four odor panelists were utilized to analyze each sample. The odor panel is presented with two sniff ports: one provides a stream of odor-free air, and the other a known dilution of the odor sample. The port providing the diluted sample air is randomly selected by the provided olfactometer software. The panel is then subsequently presented with rounds of ascending concentrations of odor until the detection level is determined.

The following is a list of the odor panelists and their affiliations:

Table 4. Odor Panelists

NAME	AFFILIATION
Panelist #1	SBCRC
Panelist #2	Community
Panelist #3	SBCRC
Panelist #4	Community
Panelist #5	Community
Panelist #6	Community
Panelist #7	CARP Growers
Panelist #8	Community
Panelist #8	Community
Panelist #9	Community
Panelist #10	Community

NAME	AFFILIATION
Panelist #11	Community
Panelist #12	Community
Panelist #13	Community
Panelist #14	Community
Panelist #15	Coastal Blooms Nursery
Panelist #16	Coastal Blooms Nursery
Panelist #17	Coastal Blooms Nursery
Panelist #18	Coastal Blooms Nursery
Panelist #19	Coastal Blooms Nursery
Panelist #20	Coastal Blooms Nursery
Panelist #21	Coastal Blooms Nursery
Panelist #22	Coastal Blooms Nursery
Panelist #23	Coastal Blooms Nursery
Panelist #24	Coastal Blooms Nursery
Panelist #25	SCS Engineers
Panelist #26	SCS Engineers
Panelist #27	Envinity Group
Panelist #28	SCS Engineers

5.2 OLFACTOMETER

An Olfasense T09 Travel 2005 olfactometer was used for this study and was calibrated by, setup by, and training was given by Olfasense personnel. The olfactometer is compliant to the European Standard EN 13725:2022 and has an 85% to 99% recovery rate of odorants. The full description of the olfactometer laboratory is available in Appendix B.

Analyzed samples are measured in European odor units per cubic meter (ou/m^3). The odor concentration is measured by determining the dilution factor required to reach the detection threshold, at which point, by definition, is 1 ou/m^3. The odor concentration is then expressed in terms of multiples of the detection threshold. Measurements typically range from 10^1 ou/m^3 to 10^7 ou/m^3.

It's important to note that the method, although comparable, is different than previous odor studies performed by SCS utilizing OS&E for the odor panel analysis. The units for odor concentration generated by OS&E were in terms of Dilutions to threshold ratio (D/T). Typically background concentrations from OS&E are between 7-12 D/T compared to 50-150 ou/m^3 using the T09 olfactometer.

6.0 CHALLENGES

6.1 HARVEST

In order to compare the two greenhouses under similar load, plans were made to harvest both greenhouses on the same day at the same time. This required immense amounts of planning, man-hours, and coordination amongst Roadside greenhouse staff as harvests are typically staggered for production purposes.

6.2 ODOR PANEL AND ANALYSIS

In the past, SCS sent odor samples to an odor lab in Connecticut which could only handle 12 -14 bags a day. Due to the lab's sample restriction and the ASTM required 36 hour holding time of the samples, the maximum number of samples previously collected per day (24-hour window) was twenty four (24). For this sampling campaign, the Project Team obtained an olfactometer along with an expert from Olfasense and screened a number of members of the community to build an odor panel. Of the nearly 90 people screened, only 29 fell within the acceptable odor sensitivity range to become an odor panelist. The odor panel operated in roughly 4 hour shifts from August 24th at 10:00 am until August 27th at 10:00 am. This allowed for more than ten (10) times the usual number of samples to be analyzed. In addition, the local odor panel eliminated the need for overnight sample shipping and the inherent issues that come with relying on courier companies.

6.3 SAMPLE BAGS

The bags used in this study were made from polytetrafluoroethylene, or PTFE, which is a synthetic fluoropolymer of tetrafluoroethylene. It is a hydrophobic material resistant to high temperatures and is best known for its chemical inertness. Select benefits of PFTE bags include exceptional sample preservation, low sample absorption, zero background odor, and they're recommended for samples with high humidity. In previous studies, Tedlar bags with PTFE fittings were used. A study by Kasper et al. compared the retention percentage of odorous compounds in bags of three different materials. It was found that the sample retention of PTFE bags was highest, with Tedlar having the second highest rate of recovery (source).

The bags were sourced from Scentroid and manufatured upon order. While they do offer custom bag sizes, 60L bags were not a customarily offered option, so manufacturing these bags were also a challenge, along with customs and other international shipment issues.

7.0 DATA ANALYSIS

The following sections provide an analysis of the data collected during this study. Each section will take a different approach to the review and assessment of data collected during this project. It should be noted that the data set from this study will continue to undergo further analysis. This is especially true relative to the tube samples collected for analysis in the Netherlands. This data will further speciate the compounds emitted from cannabis and allow the project team to further correlate the measured compounds with odor levels. However, the sections below have provided significantly meaningful information relative to the effectiveness of the CFS-3000 scrubbers deployed in the greenhouse environment as an odor control system.

7.1 SINGLE PASS EFFECIENCY

The following data tables present data relative to the collection of influent and effluent samples for the determination of single pass odor removal efficiencies of the CFS-3000 scrubbers.

Table 5. Single Pass Efficiency, Statistically Most Viable

Time Analyzed	7:36	8:12	8:47
Influent	2423	1843	1829
Effluent	159	78	52
Efficiency	93%	96%	97%
Average efficiency *		**95%**	

* statistical most viable value, influent and effluent average of 8 ITE data points

Since the odor measurements, like any measurements, have a degree of uncertainty, the following tables (6 and 7) provide the best case and worst case single pass efficiency calculations given the response variation in odor panelists for each sample.

Table 6. Single Pass Efficiency, Best Case

Time	7:36	8:12	8:47
Influent variation	1390-4199	1390-2024	943-4199
Influent	4199	2024	4199
Effluent	75	36	36
Effluent variation	75-314	36-151	36-109
Efficiency	98%	98%	99%
Average efficiency		**99%**	

Table 7. Single Pass Efficiency, Worst Case

Time	7:36	8:12	8:47
Influent variation	1390-4199	1390-2024	943-4199
Influent	1390	1390	943
Effluent	314	151	109
Effluent variation	75-314	36-151	36-109
Efficiency	77%	89%	88%
Average efficiency		**85%**	

7.2 RAW ODOR DATA

The raw odor data from all sites and all sampling periods is presented in time series plots provided in Appendix C. Sites 11 and 13 are comparative sampling locations at the crop level within the reference and test greenhouses respectively. Sites 12 and 14 are comparative sampling locations at the ridge vents within the reference and test greenhouses respectively. Sites 12 and 14 are the most critical locations for the scrubber assessment as they represent the concentrations of odor leaving the greenhouses. Therefore, a time series plot for just Sites 12 and 14 is presented.

7.3 BACKGROUND CORRECTED ODOR DATA

The following Table provides averaged data for the comparative sites within the greenhouse for three scenarios: 1) all periods, 2) harvest only, and 3) nighttime. This data has been adjusted for background such that background odor concentrations were subtracted from each sites odor concentration for the same sampling period.

Table 8. Background Corrected Averaged Odor Data

	Partner Sites - Crop			Partner Sites - Ridge		
	Site #11-Ref	Site #13 - Test	% Benefit	Site #12-Ref	Site #14 - Test	% Benefit
Raw Odor - Background Corrected, All periods	7,522.13	5,495.95	26.94%	2,864.15	1,135.93	60.34%
Raw Odor - Background Corrected, Harvest	24,148.11	18,389.24	23.85%	8,650.56	3,554.46	58.91%
Raw Odor - Background Corrected, Night	3,667.15	2,501.49	31.79%	2,748.36	455.16	83.44%

7.4 BACKGROUND AND WET WEIGHT CORRECTED ODOR DATA

Since the biomass of cannabis in a greenhouse space affects the emission rate of odor within that space, SCS has adjusted the benefit calculations based on the ratio of wet mass in each greenhouse respectively. The wet mass was measured following harvest for each greenhouse independently. From the start of the study until harvest began on August 25th the wet mass in the Test greenhouse was 5889 pounds vs. 4883 pounds in the reference greenhouse resulting in a ratio of approximately 1.21. During the 6-8:00am hours on the 25th 60% of the crops in both greenhouses were removed and the ratio was adjusted to 1.08. 100% of the crop was removed by 12:00pm on the 25th so the ratio was 1.0 from that point forward.

Table 9. Background and Wet Weight Adjusted Averaged Odor Data

	Partner Sites - Crop			Partner Sites - Ridge		
	Site #11-Ref	Site #13 - Test	% Benefit	Site #12-Ref	Site #14 - Test	% Benefit
Odor - Background corrected, Wet Weight corrected, All Periods	7,522.13	4,556.38	**39.43%**	2,864.15	941.73	67.12%
Odor - Background corrected, Wet Weight corrected, Harvest	24,148.11	15,245.47	**36.87%**	8,650.56	2,946.80	65.94%
Odor - Background corrected, Wet Weight corrected, Night	3,667.15	2,073.84	**43.45%**	2,748.36	377.34	86.27%

7.5 VENTILATION RATE CORRECTED EFFECIENCY

A variable that can significantly affect greenhouse concentrations is the greenhouse ventilation rate. Therefore, the relative ventilation rate during each monitoring period relative to each greenhouse was assessed. The ventilation rate for each greenhouse was provided to SCS. This data was calculated through the use of a proprietary model. SCS cannot verify the relative accuracy of the model calculations. However, the data is still presented here as when ventilation rates are applied to

the efficiency calculations, the scrubber effectiveness is even more pronounced. The odor removal efficiency when comparing the test and reference greenhouses are provided in the table below. This table is background, wet weight, and ventilation rate adjusted. A graph of the same data is presented in Appendix C.

Table 10. Scrubber Efficiency By Sampling Period

Test Date & Time	Scrubber Efficiency
8/24/2022 8:00:00	87.31%
8/24/2022 10:00:00	90.64%
8/24/2022 12:00:00	31.01%
8/24/2022 14:00:00	83.21%
8/24/2022 16:00:00	73.80%
8/24/2022 18:00:00	83.71%
8/24/2022 20:00:00	96.71%
8/24/2022 22:00:00	88.50%
8/25/2022 0:00:00	97.13%
8/25/2022 2:00:00	65.57%
8/25/2022 4:00:00	52.61%
8/25/2022 6:00:00	86.17%
8/25/2022 8:00:00	95.01%
8/25/2022 10:00:00	93.61%
8/25/2022 12:00:00	46.82%
8/25/2022 14:00:00	99.96%
8/25/2022 16:00:00	98.36%
8/25/2022 18:00:00	99.98%
8/25/2022 20:00:00	99.99%
8/25/2022 22:00:00	93.34%
8/26/2022 0:00:00	78.36%
8/26/2022 2:00:00*	N/A
8/26/2022 4:00:00	99.68%
8/26/2022 6:00:00	99.35%
Average =	**83.94%**

**Odor Values are too low relative to standard deviation of odor concentrations between test vs. reference values to utilize.*

7.6 AVERAGE TRS REDUCTION COMPARED TO ODOR

Similar to Sections 7.3 and 7.4, TRS data was also assessed and compared relative to test and reference sample locations. The following Table provides similar data but replaces the relative odor concentration with TRS concentration.

Table 11. Background and Wet Weight Adjusted Averaged TRS Data

	Partner Sites - Crop			Partner Sites - Ridge		
	Site #11-Ref	Site #13 - Test	% Benefit	Site #12-Ref	Site #14 - Test	% Benefit
Raw TRS- Background Corrected, All periods	1.15	0.44	61.47%	0.49	0.13	74.00%
Raw TRS - Background Corrected, Harvest	1.19	0.41	65.09%	0.29	0.09	70.34%
Raw TRS - Background Corrected, Night	2.07	0.87	58.01%	1.13	0.15	86.55%
TRS - Background corrected, Wet Weight corrected, All Periods	1.15	0.37	68.05%	0.49	0.11	78.45%
TRS - Background corrected, Wet Weight corrected, Harvest	1.19	0.34	71.06%	0.29	0.07	75.41%
TRS - Background corrected, Wet Weight corrected, Night	2.07	0.72	65.19%	1.13	0.13	88.85%

Time series plots of background corrected odor and TRS concentrations for Sites 11 and 13 are provided in Appendix C. These plots are provided to show the relative correlation between TRS and odor concentrations during the study period. The correlation between TRS and odor concentrations was only apparent for samples collected within the greenhouse space.

8.0 CONCLUSIONS

The odor study presented in this report was a very ambitious undertaking. SCS is not aware of another odor study ever conducted that collected and analyzed this many odor samples in such a short period. This resulted in a robust sample density and thus confidence that the results presented in this report are reflective of the real-world operation of the CFS-3000 Scrubbers provided by Envinity Group for operation in cannabis greenhouses. The following bullet points provide some of the pertinent conclusions SCS has developed based upon the data generated within this project:

- The scrubbers tested in this study had a measured single pass through efficiency of approximately 95% on average. One sample was collected from a scrubber that has been in operation for over 1-yr without any maintenance and/or filter changes indicating the efficiency is still over 90% even after 1-yr of operation.
- Time series comparisons of comparable sample sites show a clear benefit of scrubber operations in reducing peak odor emissions as well as reducing the period of time concentrations of odors are elevated following plant agitation or harvest in the test greenhouse vs. the reference.
- The overall percent difference of TRS concentration between the Test and Reference greenhouse is in line with the calculated reduction of odor concentration. In addition, for samples collected within the greenhouse, odors and TRS concentrations track relatively well over time. This correlation between odor reduction and TRS removal supports the utilization of TRS measurements within a cannabis greenhouse as a potential surrogate for odor. However, this correlation is dependent on the composition of emitted sulfur compounds which can be variable. The correlation between TRS concentration and odor does not hold well outside of the greenhouse space as background levels of ambient sulfur dominate the measurement and ambient levels are near the analyzers limit of detection.
- Previous studies performed by SCS regarding the effectiveness of vapor phase odor control systems calculated odor reduction between odor concentration within the greenhouse and odor concentration downwind of the facility. The study presented herein measured the percent benefit of a scrubbed greenhouse relative to an unscrubbed greenhouse, and therefor, these studies are not directly comparable. In addition, downwind samples in this study were at the ridge vent level, within 20-feet of the perimeter of the greenhouse, and potentially influenced by the unscrubbed greenhouse. Still, not a single outdoor sample collected on the downwind side of the facility was higher than 10% of the indoor concentration at crop level for the same measurement period.
- The operation of the CFS-3000 scrubbers clearly reduces the emissions of odor-causing compounds and emissions in general from cannabis greenhouses. This is in contrast to vapor phase technology which can only treat emissions/odors once they have left the greenhouse through ridge vents. Vapor phase odor control systems result in a net increase of total emissions.
- Scrubbers operating at the Roadside greenhouse (test) significantly reduced odor emissions by an average of approximately 83.9% compared to an unscrubbed (reference) greenhouse when concentrations are adjusted for ventilation rate and wet weight ratios.
- Given adequate spatial density of scubbers, as demonstrated by this study, the CFS-3000 scrubbers are capable of reducing odor emissions to a level that would result in no perceivable cannabis odors downwind from the subject facility.

Appendix A

Project Maps

PACIFIC STONE

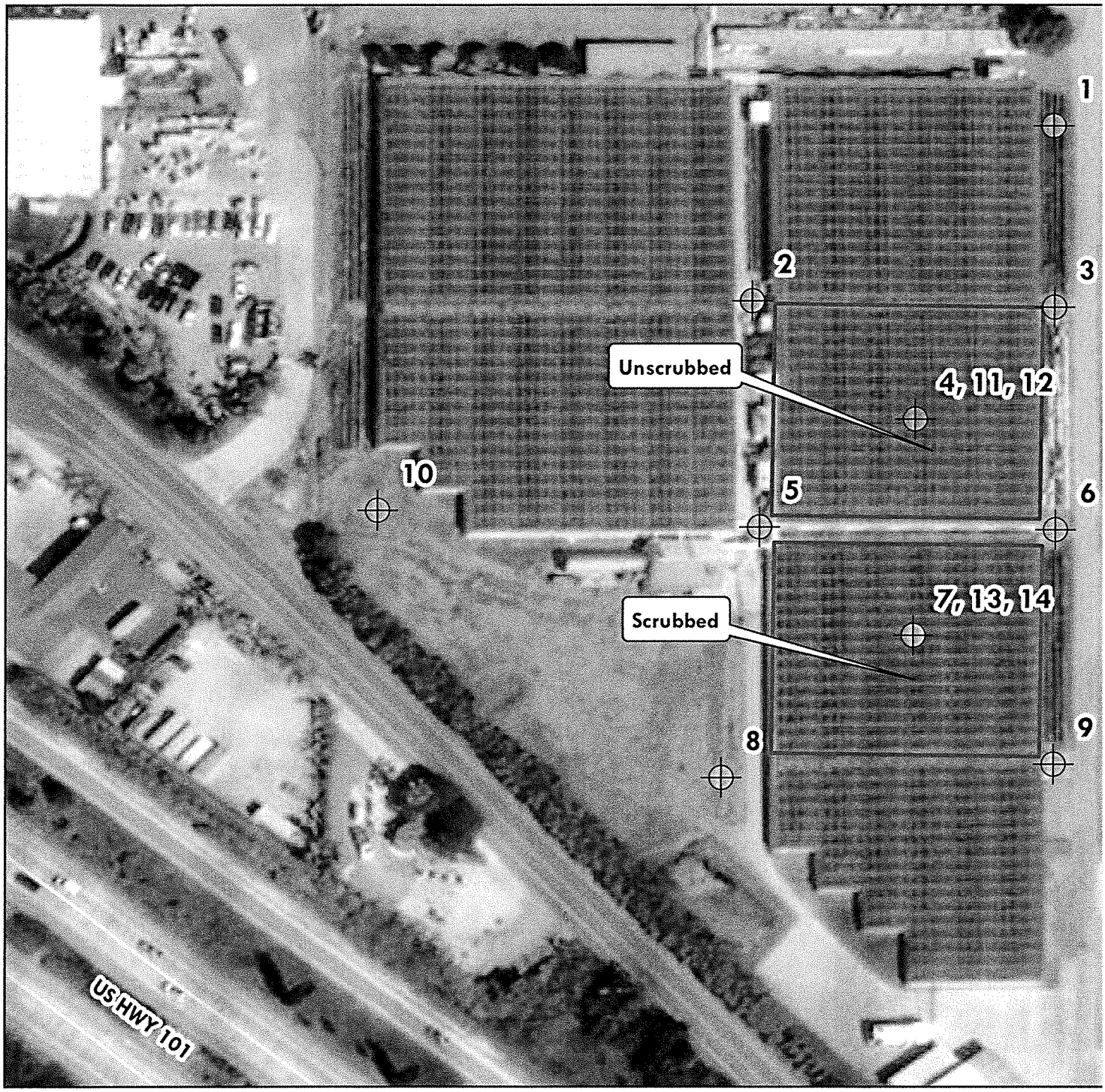
SCS ENGINEERS

Scale

0 0.2 0.4 0.8 1.2 Miles

N W E S

Prepared For: Pa
Prepared By: SC
Carpinteria, CA
November 2022



PACIFIC STONE

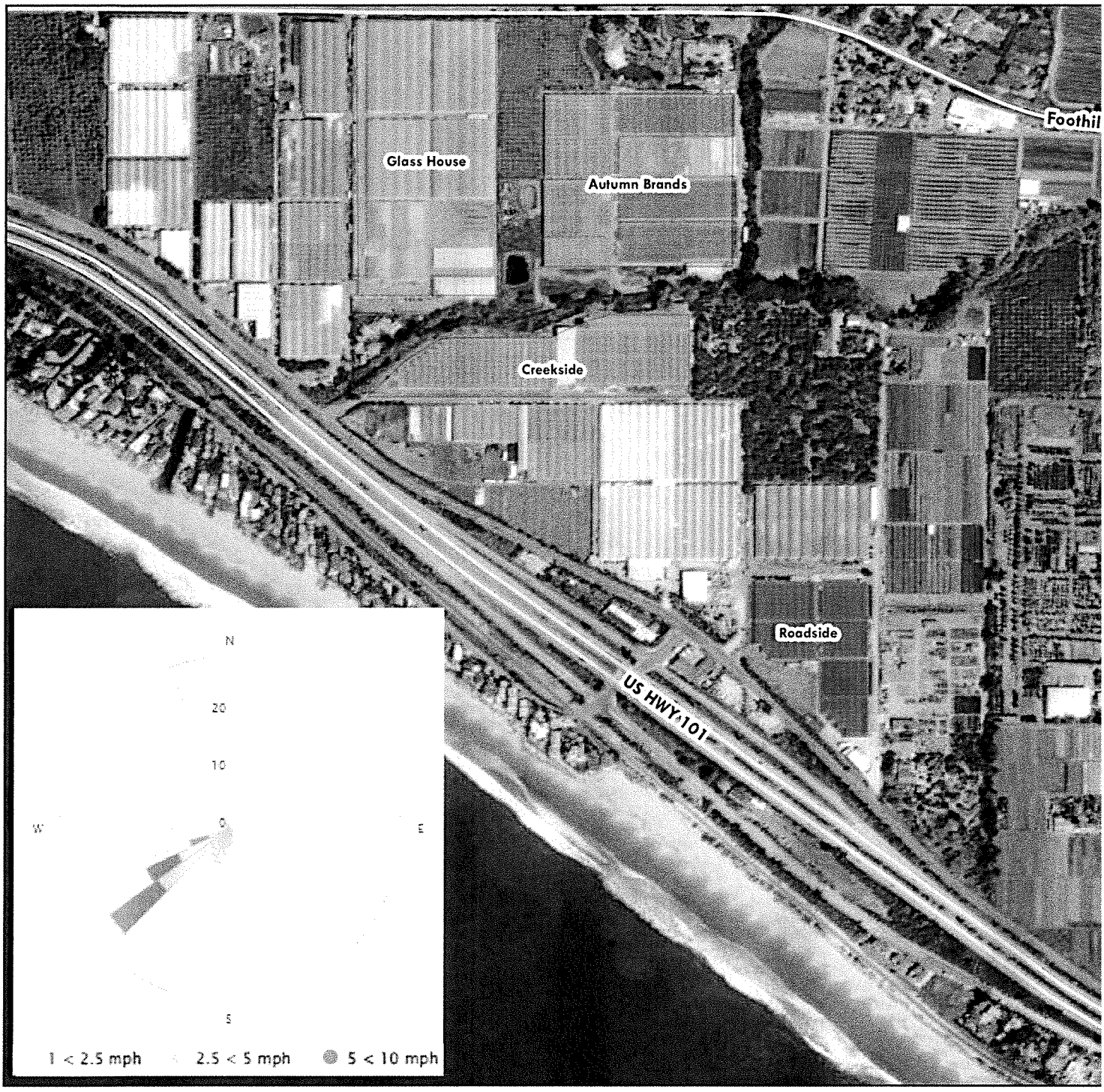
SCS ENGINEERS

Scale

0 50 100 200 300 Feet

N W E S

Prepared For: Pa
Prepared By: SC
Carpinteria, CA
November 2022



PACIFIC STONE

SCS ENGINEERS

Scale

0 250 500 1,000 1,500 Feet

N
W E
S

Prepared For: Pa
Prepared By: SC
Carpinteria, CA
November 2022

Appendix B

Olfactometer Laboratory Description

olfasense

The Olfactometry Laboratory

Requirements and Useful Tips

Guideline for setting up an odour lab
according to EN 13725:2022

olfasense

Index

The Odour Lab - Introduction

Welcome to the world of odours at Olfasense.

We, Olfasense, as pioneer of the dynamic olfactometry since more than 35 years are happy to giving you a short overview what you need to setup a professional odour lab in accordance with the latest revision of the most relevant odour standard in the world: **The EN 13725**.

At this stage you may have some interest in setting up an odour laboratory.

Olfactometry deals with the measurement and evaluation of odour emissions with an olfactometer. An olfactometer is a compact measurement system for odour measurements in a dedicated permanent lab or in a mobile lab like a caravan.

The human nose act as a sensor in a computer controlled measurement system.

Olfactometry is an effect related measurement method. The effect on the human sense of smell is the unit of measurement.

The effect relation cannot be represented with physical sensors.

Odour originates from a wealth of chemical substances. The effect to the sense of smell can vary enormously, depending on the different components and on their proportion.

The odour sensation cannot be described by the quantity of the odourants.

Due to the large numbers of different substances an analysis of these odourous substances is exceptionally difficult. By measuring guide components a correlation to the odour intensity and concentration can – in most cases – not be found.

Technical sensors are unsuitable for a qualitative evaluation of pleasure and hedonic tone.

* The human nose is the only possible sensor for odour measurement.

The sensitivity of different human noses, which naturally differs greatly from another, also depends on the human life cycle.

Longer exposure (some seconds to some minutes) effects an adaptation. The nose (the sensor) becomes less sensitive.

An appropriate recovery time is necessary to obtain the original sensitivity.

Base for the olfactometric measurement method constitutes to the European standard EN 13725:2022.

The Odour Lab - General

The general requirements for an odour room are mentioned in chapter 6.6.1 and 6.6.2 in the EN 13725:2022:

- *The working environment for assessors shall be comfortable and odourless. The working environment consists of the olfactometry room and optionally an associated waiting room. Any odorant release from equipment, furnishings and materials installed (i.e. paints, wall and floor coverings, furniture etc.) into the olfactometry room shall be avoided, as well as any avoidable release of the odorous sample gas.*

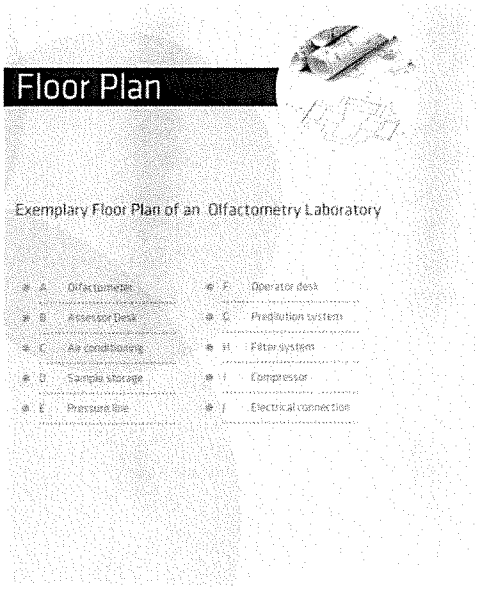
- *The olfactometry room shall be kept well aired. When the assessors are equipped with a sensory mask, constantly being flushed with neutral gas, the requirements for the olfactometry room air to be odourless are of secondary importance.*

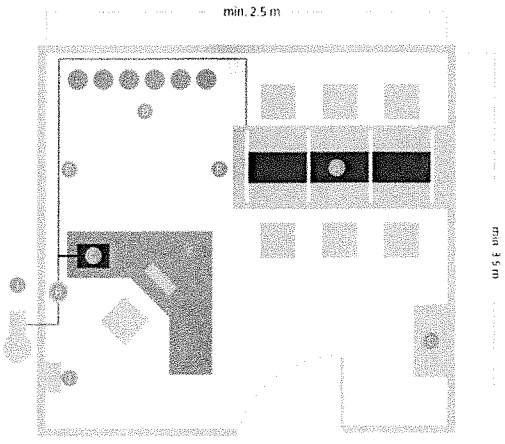
- *The temperature and the relative humidity of the olfactometry room air shall be measured during the odour measurements and recorded.*

- *A set-point temperature shall be defined for the olfactometry room air, in order to ensure the thermal comfort of the assessors. The set-point temperature may vary depending on the season, on the climate, on the air velocity in the room, on the humidity of the room air. The temperature of the olfactometry room air shall be within ± 2 °C around the set-point temperature. The minimum set-point temperature shall be 21 °C. The maximum set-point temperature in the room shall be comfortable in the context of the outdoor conditions and sufficiently cool to avoid perspiration. If the outdoor temperature is very high, temperatures that are considered uncomfortably low by the assessors shall be avoided.*

Beside the information you find there we would like to give you more information from a more practical point of view.

The below graphic gives you a complete overview what you need to setup an olfactometry laboratory.





The Odour Lab - What do we need?

A – The Olfactometer

The olfactometer is indeed the heart of the odour lab. The decision which olfactometer is the most suitable one depends on various criteria.

Nowadays most commercial olfactometers do or claim to fulfil the technical requirements for a dynamic olfactometer according to the EN 13725:2022. Only olfactometers used in the field (so called field olfactometers) are not within the scope of the EN 13725:2022. So beside the question if an olfactometer does fulfil the technical requirements or not,
even more important is the question which size the olfactometer should have and what software will be provided together with it.

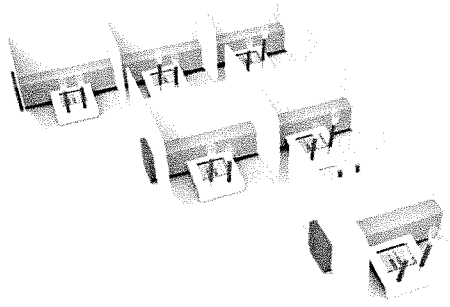
This question aims to get an answer to the greatest possible efficiency and reliability. So what does the EN 13725:2022 say here? Nothing about the size of an olfactometer, but if you take a close look into chapter 6.7.4 you read following:

> *The panel size in any measurement of odour concentration shall be* ***no less than four*** *after retrospective panel screening.*
>
> *Increasing the panel size is an effective approach for reducing the overall measurement uncertainty (see 10.2).*

That does not mean that an olfactometer should have at least 4-stations, because it is not mentioned that the panelists have to work simultaneously. So you can also work with a single station olfactometer but then all panelists need to work successively which increases the analysis time and panelist/operator wages dramatically.

Therefore, in order to meet the minimum requirements as efficiently as possible, at least a 4-station system should be used. Using a 6-station olfactometer can improve the repeatability limit and accuracy a bit, but not so much that it would be really worthwhile to use one.

A real advantage of working with more than 4 panelists is that you can continue to work with 5 panelists if one panelist got excluded after retrospective screening. But this happens rarely.



Background information:

About 80% of all professional EN 13725 laboratories world wide work with 4-station olfactometers.

Only in Czech Republic at least 8 panelists are required and in the Netherlands 6 panelists are required.

Due to software settings you can also work with 8 or 6 panelists on a 4-station olfactometer, but then of course not simultaneously.

olfasense

The Odour Lab - What do we need?

B – Assessor desk

The assessor desk is the table where you put the olfactometer on it. It shall have enough space for the olfactometer and giving the panel members a comfortable working position. We recommend also chairs which you can adjust in height.

We can also offer you a tailormade solution.

C – Air conditioning

Chapter 6.6.2:
The olfactometry room shall be ventilated to maintain an odourless environment and to provide fresh air to the panel members. In order to maintain a comfortable working environment, the CO2 volume fraction in the olfactometry room shall be less than 0,15 %.

When an adequate neutral gas supply is not available from ventilation, air should be passed through an effective odour reduction treatment (e.g. active carbon filter) before entering the room.

D – Sample storage

You should store the samples for the analysis either directly in the lab or in a room close to the lab.
If the samples / sample bags do smell to much (due to getting in touch with mud or any other dirt during sampling) it is recommended to store them in another room to avoid cross contamination of the lab or negative influences on the panelists.

E – Pressure line

The pressure line is the connection between the compressor (and filter system) and the olfactometer. It should be installed so that the examiners do not trip over it and injure themselves or even pull the olfactometer off the table.

Important: The longer the compressed air line between the olfactometer and the compressor, the higher the back pressure and the olfactometer is not supplied with sufficient air. Here compressed air lines with a larger diameter should be used.

Please contact us here!

olfasense

The Odour Lab- What do we need?

F – Operator desk

The desk for the operator of an olfactometer should have enough space for the controlling computer (notebook or PC) and documents. In case that you want to use a pre-dilution unit to pre-dilute odour samples (in case of very high concentrations) we recommend to place it alos on this desk.

According to chapter 3.1.37 of the EN 13725:2022 the olfactometry operator is the person directly involved in operating the olfactometer and instructing the panel in olfactometry. He is not part of the panel.

G – Predilution system

A pre-dilution device (EPD) is a system for pre-diluing high concentrated odour samples which exceed the dilution factor of the olfactometer (>~70.000 OU/m^3).
A predilution system allows you fast and reiable dilutions of any odour samples. It also fulfils the requirements for a dilution system according to the EN 13725:2022. Typical predilution factors are 1:10 and 1:100. Others factors also available.

H – Filter system

The filter system shall be connected between the compressor and the olfactometer and serves for the clean preparation of the compressed air.
It is filled with silica gel to separate humidity, with activated carbon to precipitate organic compounds (as for example odours), with cotton wool and a micro filter as dust precipitator.
The silica gel should be removed frequently before the orange pearls get completely white. If this happens you have a humidity breakthrough and the activated carbon filter starts to smell. This may lead to strange or bad answers from your panelists on the olfactometer.

You can either replace the silica gel with new one or you can reactivate it by taking it out and baking it in an oven.

I – Compressor

Without clean air you can´t run an olfactometer. There are two common possibilities to run the olfactometer with clean air. You can either use synthetic air gas bottles or an oil-free compressor.

We always recommend oil-free dental air compressors with a volume delivery of 235 l/min at 5 bar, even if some models need much less air supply.

J – Electrical connection

The olfactometer needs one power connection as well as the controlling computer (230 V, Type F)

n-Butanol for panel screening

Beside the olfactometer your panel (group of panelists) is crucial to the work as odour laboratory. Honestly, having a good panel is even more important than the olfactometer itself.

For some laboratories it is a real challange to get a good panel for their lab work as only about 50% of all screened people get qualified as panelist. Sometime this can be a bit frustrating.

The EN 13725:2022 says:

> *In order to obtain a reliable sensor, composed of a number of panel members, assessors with specific qualities shall be selected from the general population to serve as panel members.*

The calibration of the sensor of the sensory measurement, in this case the odour panel, shall be done on the basis of a reference odorant. Thus traceability to the accepted reference odorant is achieved.

This reference odourant is called **n-Butanol (CAS-Nr. 71-36-3).** The process for the panelist screening with n-Butanol is described in chapter ***6.7.2 Selection of assessors on individual variability and sensitivity***

The recommended concentration for a gas bottle of n-Butanol is 60,00 ppm.

As the typical delivery time of n-Butanol takes about several weeks to months, you should order it in time.

n-Butanol suppliers are: Westfalen AG, Linde, Air Liquide. Please ask us for further assistance.

In practice we advise not to start screening your panelists immediately with n-Butanol as the experience shows that the qualifying rate will be much less then 50% of the screened panelists. This have various reasons. One reason is that the panelists should get used to the work on an olfactometer.

Therefore we always advise to make a training with your panelists with a well-known odour before starting to screening them.

A smell that has been found to be particularly suitable is coffee, as it is a mixure of many different odourous compounds and each one knows it. It is very easy to take a coffee sample. Either you can use a sampling device and take a sample from the headspace of a coffee pack or you can open a sample bag, put a spoon full of coffee inside, close it and fill the back with clean air from the compressor.

As coffee of course has no reproducable concentration it may be possible that the concentration is higher than the dilution range of the olfactometer. In this case you can easily push out some air from the bag and fill it with fresh air again

It is not important what results the panelists create when they smell coffee on the olfactometer. It is just important that they get used to the olfactometer work flow.

olfasense

Code of behaviour for assessors and panel members

In chapter 6.7.1 of the EN 13725:2022 there is mentioned a code of behavior when recruiting panelists.

When recruiting panels the assessors shall be at least 16 years of age and willing and able to follow instructions.

But not even for recruiting this CoB is important. To qualify as a panel member, assessors shall observe the following code of behaviour.

- the panel member shall be motivated to carry out his/her job conscientiously
- the panel member shall be available for a complete panel session
- the panel member shall be engaged for a sufficient period to build up and monitor a measurement history
- from 30 minutes before and during olfactometric analysis, panel members shall not be allowed to smoke, eat, drink (except water) or use chewing gum or sweets
- panel members shall take great care not to cause any interference with their own perception or that of others in the olfactometry rooms by lack of personal hygiene or the use of perfumes, deodorants, body lotions or cosmetics
- panel members suffering of a cold or any other ailment affecting their perception of smell (e.g. allergic fits, sinusitis) shall not participate in measurements
- panel members shall be present in the olfactometry room or in a waiting room with comparable conditions 10 minutes before the analysis start in order to get adapted to the actual odour environment of the measuring room
- during measurements panel members shall not communicate with each other about the results of their choices.

The olfactometry operator shall ensure that the code of conduct is fully known to each panel member. The enforcement of the code of conduct is a direct influence on the measurement results, and therefore of great importance.
The olfactometry operator shall ensure that the motivation of panel members is maintained throughout the analysis, and corrective action shall be taken when required. The olfactometry operator shall not inform panel members of the correctness of their choices, before the end of one odour concentration measurement.

Remarks

Setting up an odour lab is a complex work and it becomes more complex if you aim to get an accreditation according the ISO 17025.

But don´t worry! We at Olfasense are happy to accompany you in this process!

With our experience of more than 35 years in olfactometry with more than 350 sold olfactometers around the world you are in best hands.

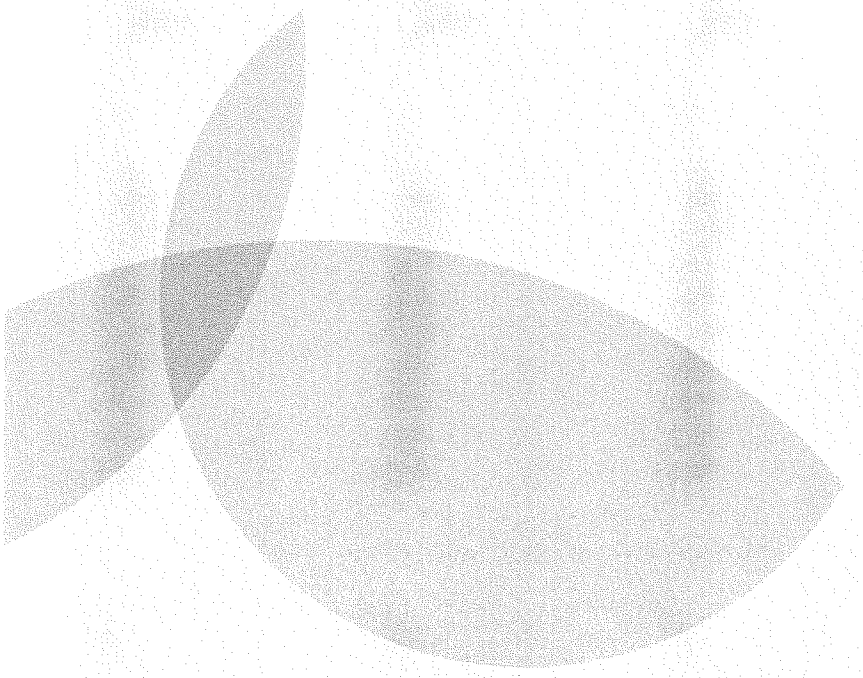
At Olfasense we employ experts which are either assessor for the German Accreditation Body DAkkS or member of various working groups such as EN 13725:2022, VDI 3880, EN 16841, ISO 16000-28 and many more.

We are your one-stop-shop in olfactometry!

olfasense

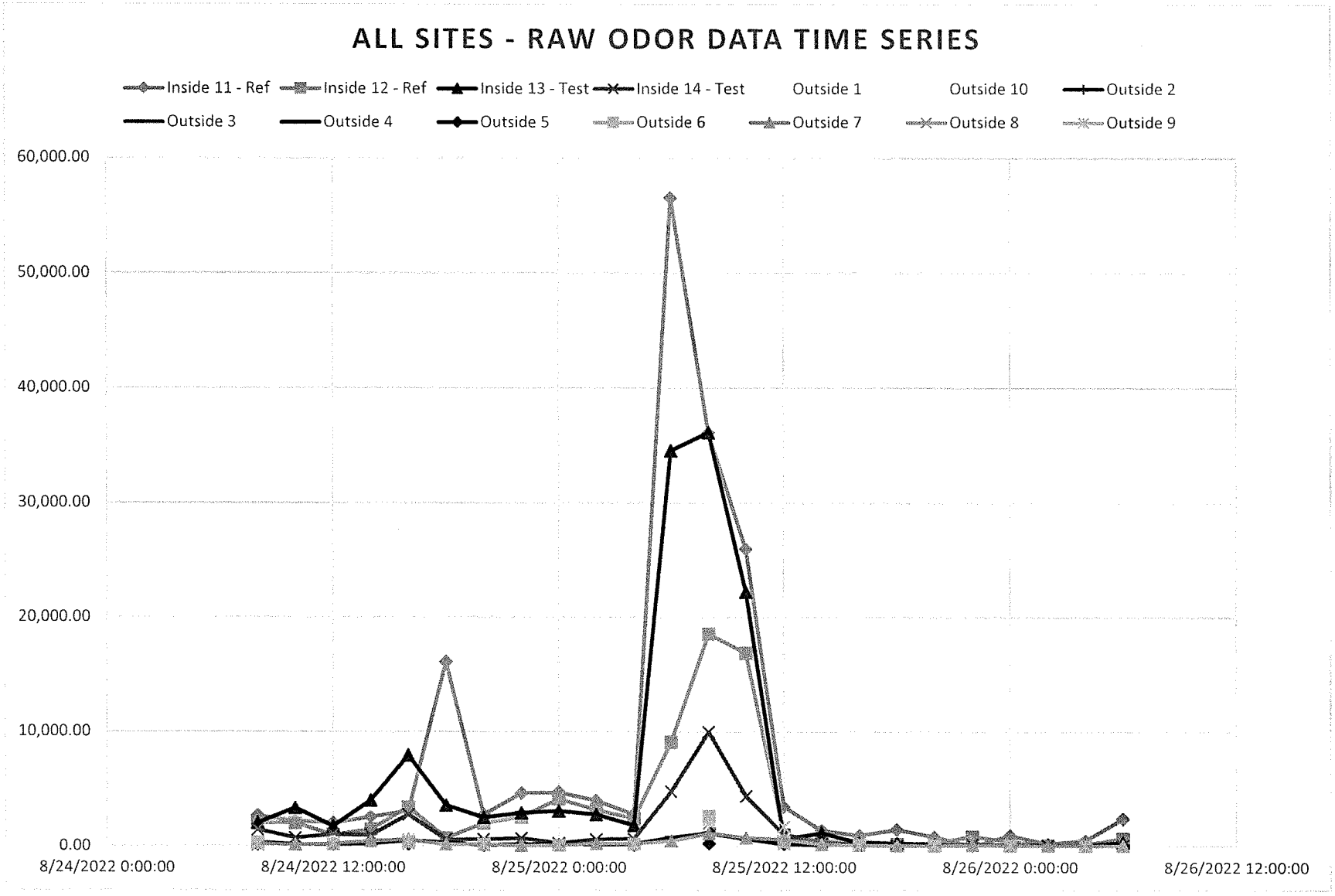
Olfasense GmbH

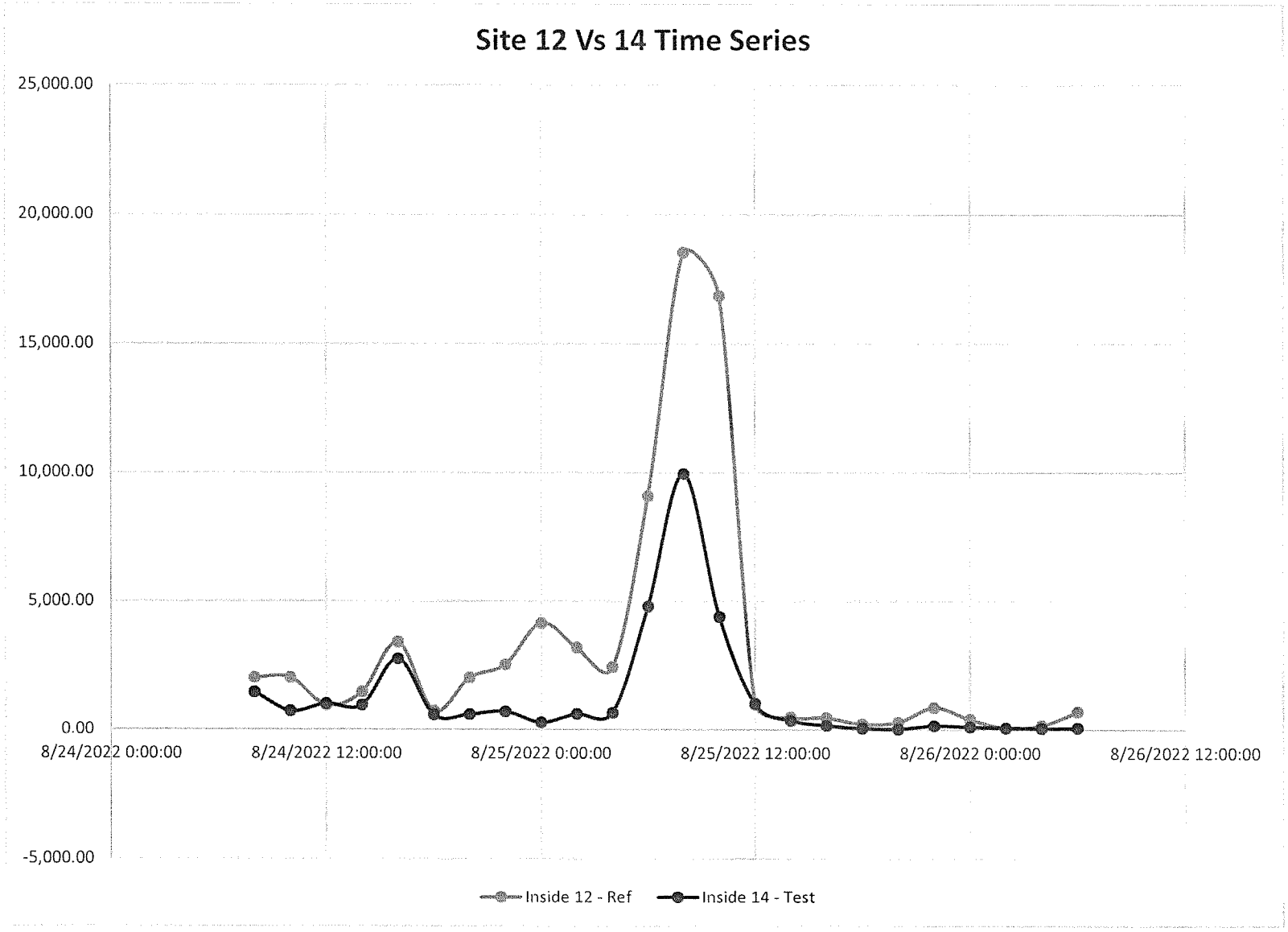
Schauenburgerstr. 116 · 24118 Kiel · Germany
T +49 431 22012-0
F +49 431 22012-17
sales@olfasense.com
www.olfasense.com

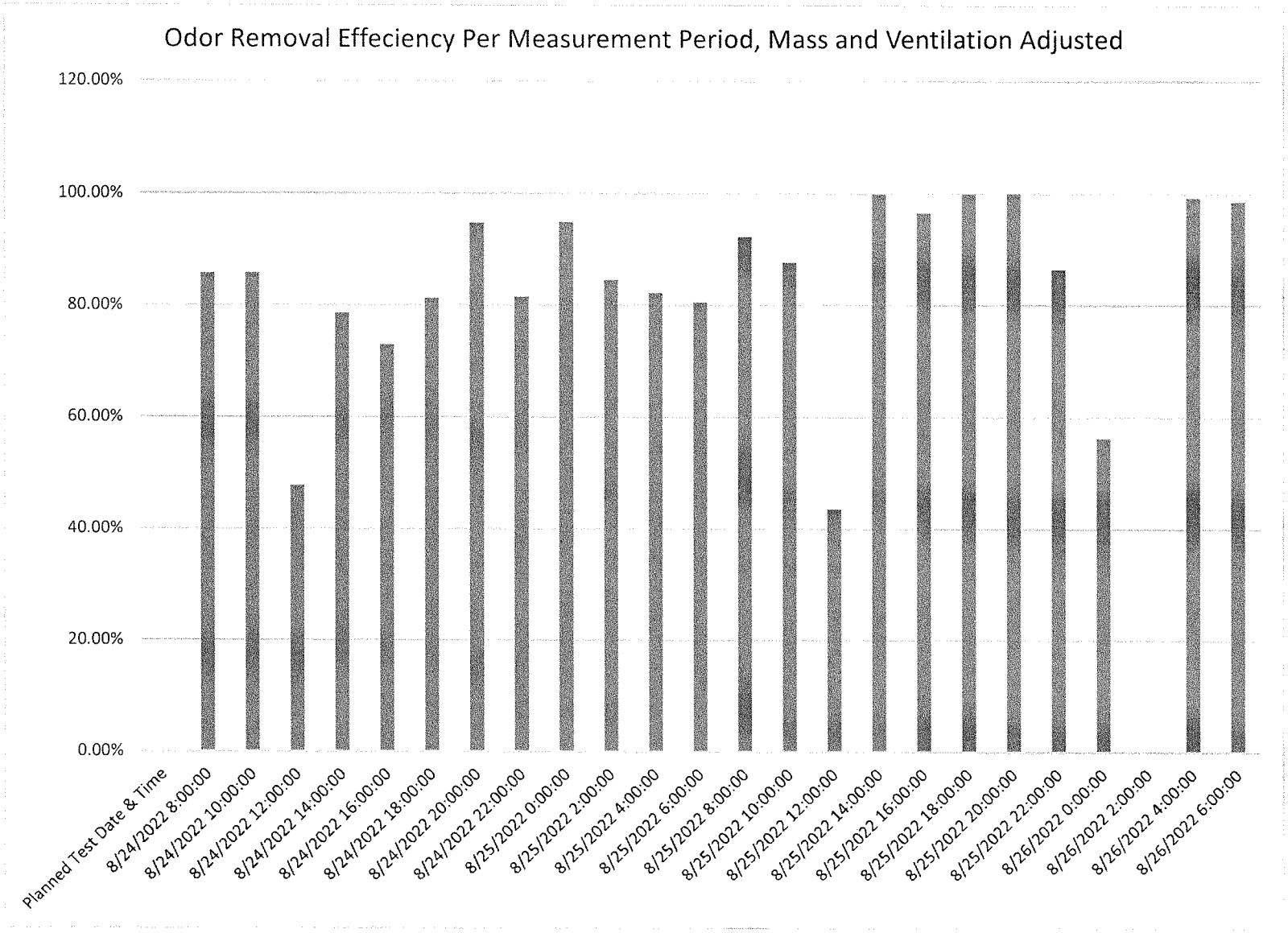


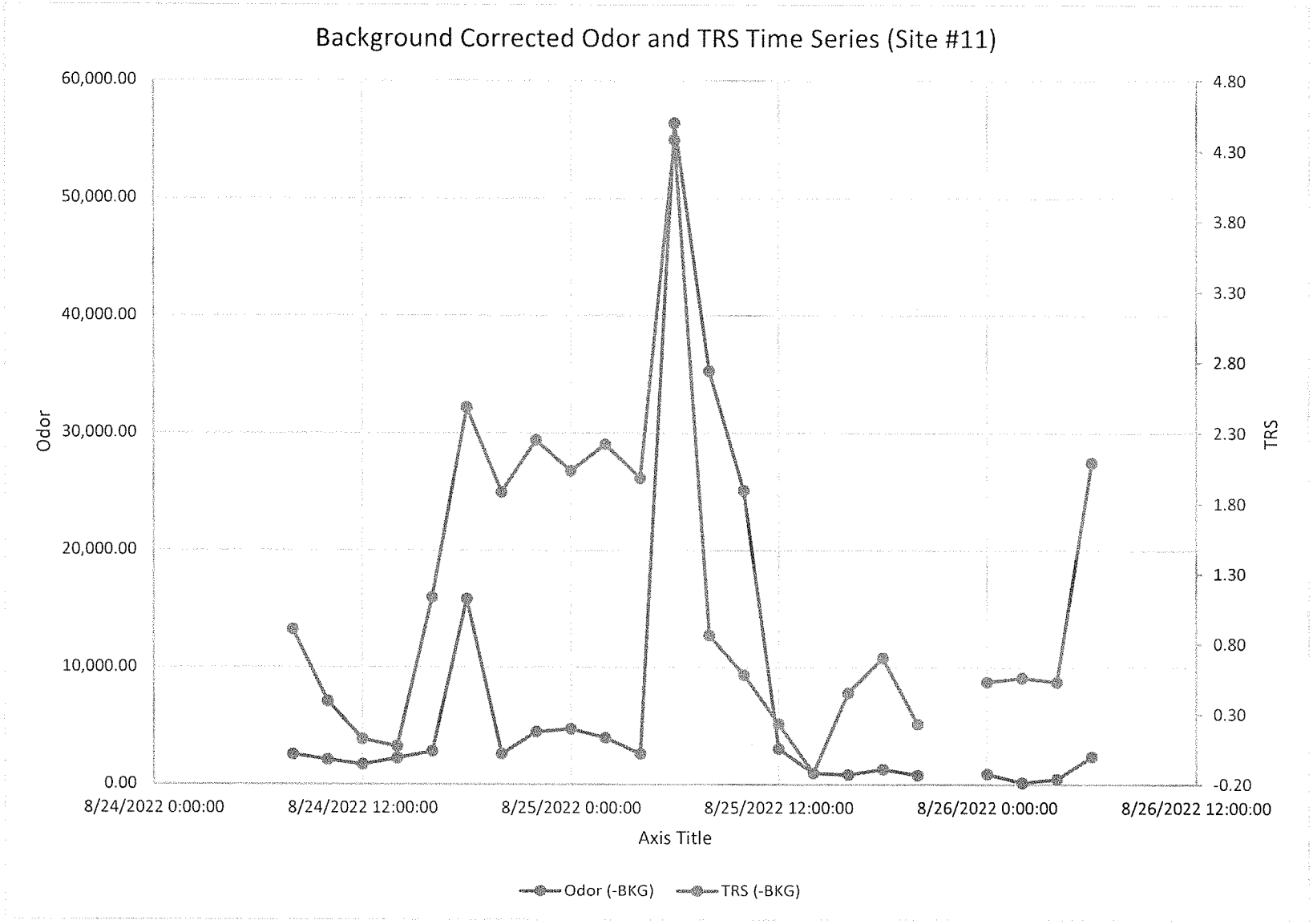
Appendix C

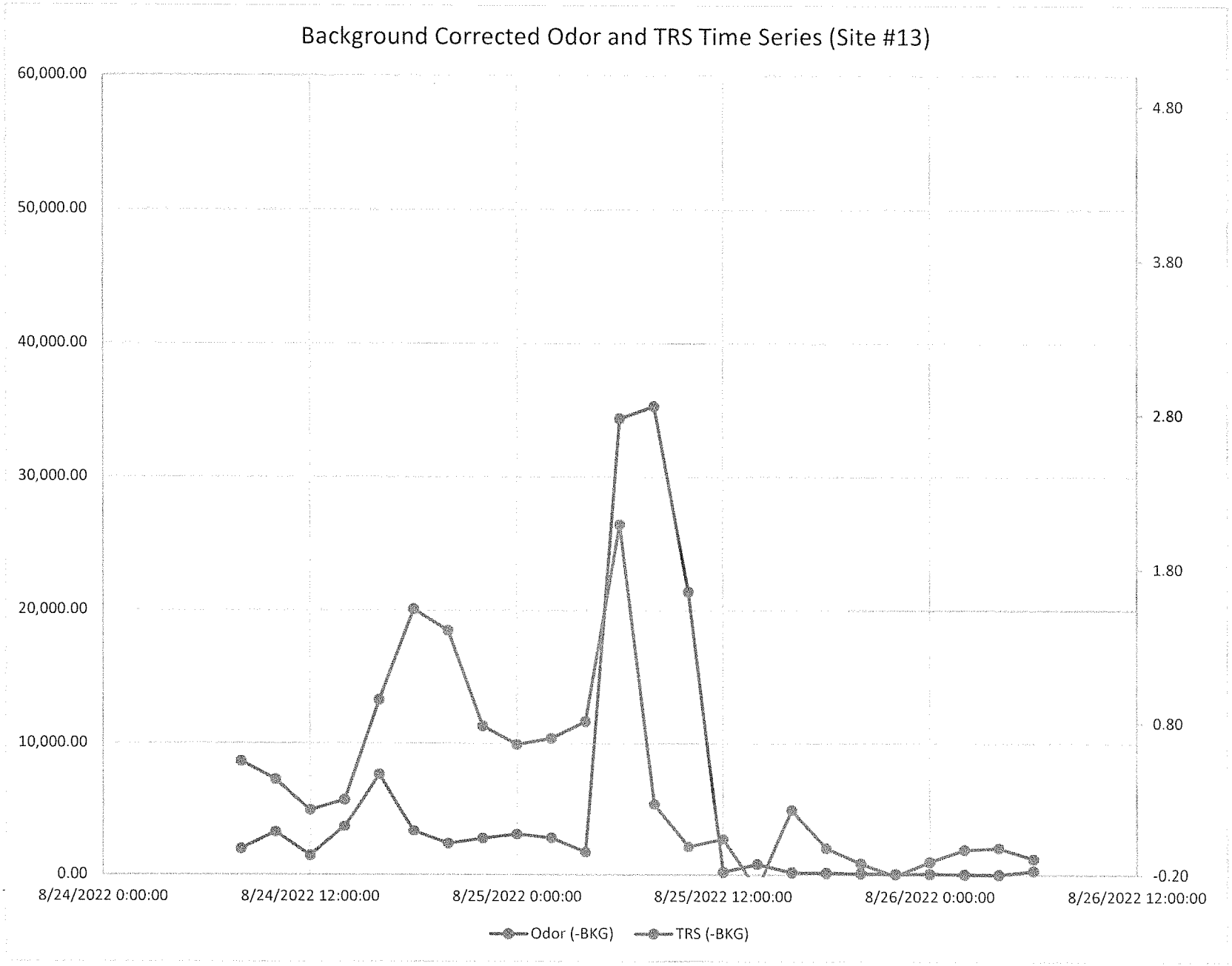
Time Series Plots and Graphs


ALL SITES - RAW ODOR DATA TIME SERIES
Inside 11 - Ref
Inside 12 - Ref
Inside 13 - Test
Inside 14 - Test
Outside 1
Outside 10
Outside 2
Outside 3
Outside 4
Outside 5
Outside 6
Outside 7
Outside 8
Outside 9
60,000.00
50,000.00
40,000.00
30,000.00
20,000.00
10,000.00
0.00
8/24/2022 0:00:00
8/24/2022 12:00:00
8/25/2022 0:00:00
8/25/2022 12:00:00
8/26/2022 0:00:00
8/26/2022 12:00:00


Site 12 Vs 14 Time Series
25,000.00
20,000.00
15,000.00
10,000.00
5,000.00
0.00
-5,000.00
8/24/2022 0:00:00
8/24/2022 12:00:00
8/25/2022 0:00:00
8/25/2022 12:00:00
8/26/2022 0:00:00
8/26/2022 12:00:00
Inside 12 - Ref
Inside 14 - Test


Odor Removal Effeciency Per Measurement Period, Mass and Ventilation Adjusted
120.00%
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
Planned Test Date & Time
8/24/2022 8:00:00
8/24/2022 10:00:00
8/24/2022 12:00:00
8/24/2022 14:00:00
8/24/2022 16:00:00
8/24/2022 18:00:00
8/24/2022 20:00:00
8/24/2022 22:00:00
8/25/2022 0:00:00
8/25/2022 2:00:00
8/25/2022 4:00:00
8/25/2022 6:00:00
8/25/2022 8:00:00
8/25/2022 10:00:00
8/25/2022 12:00:00
8/25/2022 14:00:00
8/25/2022 16:00:00
8/25/2022 18:00:00
8/25/2022 20:00:00
8/25/2022 22:00:00
8/26/2022 0:00:00
8/26/2022 2:00:00
8/26/2022 4:00:00
8/26/2022 6:00:00


Background Corrected Odor and TRS Time Series (Site #11)
60,000.00
50,000.00
40,000.00
30,000.00
20,000.00
10,000.00
0.00
Odor
4.80
4.30
3.80
3.30
2.80
2.30
1.80
1.30
0.80
0.30
-0.20
TRS
8/24/2022 0:00:00
8/24/2022 12:00:00
8/25/2022 0:00:00
8/25/2022 12:00:00
8/26/2022 0:00:00
8/26/2022 12:00:00
Axis Title
Odor (-BKG)
TRS (-BKG)


Background Corrected Odor and TRS Time Series (Site #13)
60,000.00
50,000.00
40,000.00
30,000.00
20,000.00
10,000.00
0.00
4.80
3.80
2.80
1.80
0.80
-0.20
8/24/2022 0:00:00
8/24/2022 12:00:00
8/25/2022 0:00:00
8/25/2022 12:00:00
8/26/2022 0:00:00
8/26/2022 12:00:00
Odor (-BKG)
TRS (-BKG)

Appeal of 6030 Casitas Pass Road
Case No. 22APL-00000-00028

Mimi Mauracher, Anthony Brown, M.D.
Danielle and William Hahn, M.D.
Rose Story Farm
Tim Bliss

Jessica Laughlin, Esq.
Holland & Knight, LLP

County of Santa Barbara
Board of Supervisors
December 13, 2022

Holland & Knight

Our experience

- Tim Bliss
  - He and family commercially grow avocados.
  - Aware that odor has had an effect on the value of his property.
  - Cannabis odors have impacted their daily life.

Our experience

- Danielle and Dr. William Hahn
- Thirty year residents living near the 6030 facility, and owners of Rose Story Farms.
- Odors began when the cannabis operations began.
- The Hahns have moved out of their primary home and relocated to another dwelling on their property in an attempt to escape the cannabis odors.
- Five rental units on their property and all residents have complained about the smell.
- No longer able to conduct vital aspects of their rose growing business, including giving tours and distilling rose petals for hydrasols and perfumes. The personal and financial cost has been large and consequential.
- Cannabis odor and Fogco affect people differently, but what we are seeing here – headaches, stomach aches, nausea, asthma, coughing – are some of the ways the odors affect people.

Our experience

- Mimi Mauracher and Dr. Anthony Brown
- Lives nearby in family ranch purchased 70+ years ago.
- Cannabis odors have impacted their daily life. Ms. Mauracher no longer bikes as she used to due to odors and parking caused by the facility.
- Submitted numerous complaints, but no change in odors or in behavior of operators.
- Largely stopped submitting complaints because it doesn't seem to make a difference.
- These cannabis issues are changing the whole culture of the Carpinteria Valley- the farmers used to be on the same page and respectful of each other and residents. Now they are fighting because of odors and cost of compliance.
- We are being divided because of these odor issues.

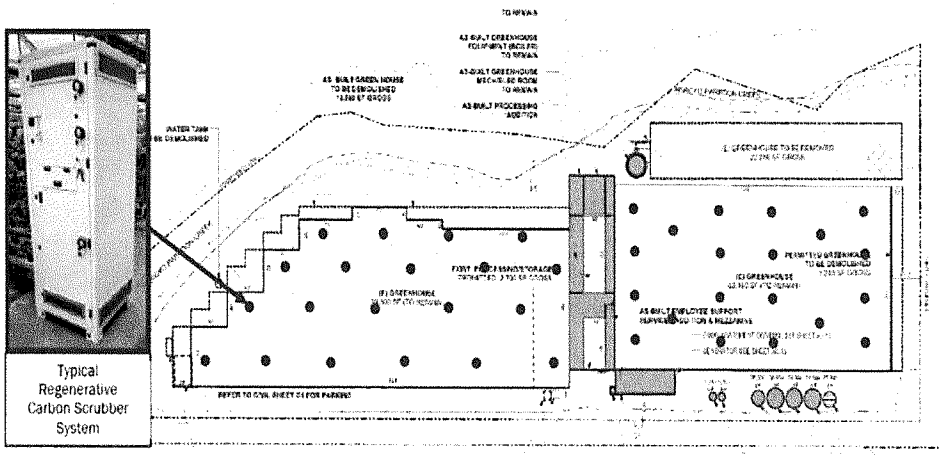
This is NOT about opposition to recreational or medicinal cannabis

It's about detrimental impacts to neighboring agriculture and adverse health effects to the community

Issue on Appeal: BACT Control of Odors

Regenerative Carbon Scrubbing Technology

Figure 5- Regenerative Carbon Scrubber System



Typical Regenerative Carbon Scrubber System

RCSS is a technology intended to sustain a substantial reduction in detectable cannabis odors within greenhouses prior to fresh air exchange which occurs when greenhouses are deliberately roof-vented, or when air escapes during opening and closing of access doors, or through fugitive air losses which occur even when the greenhouse is predominantly sealed (roof vents closed and black-out curtains drawn).

Legal Argument: BACT is known to be a "technology-forcing standard" meaning it is "designed to compel the development of new technologies to meet public health goals"

Under California law, BACT is known to be a "technology-forcing standard" meaning it is "designed to compel the development of new technologies to meet public health goals." *Am. Coatings Assn. v. S. Coast Air Quality Mgmt. Dist.*, 54 Cal. 4th 446, 465 (2012).

As a "technology-forcing" standard, BACT encompasses technology that is projected to become available by the effective date of the regulation, **not only technology that is readily available when the regulation is promulgated**." *Id. (emphasis added)*.

Legal Argument:

The plain language of the Coastal Zone Ordinance (CZO) requires the submission and approval of an Odor Abatement Plan (OAP) certified to be the BACT

- The Planning Commission may not approve a project that does not meet the requirements of local ordinances, including the Coastal Zone Ordinance. CZO § 35-144U.A.2.

- The Coastal Zone Ordinance requires applicants to prepare and submit an Odor Abatement Plan ("OAP"). CZO § 35-144U.C.6.

- An OAP must include "[a] description of all equipment and methods to be used for reducing odors." CZO § 35-144U.C.6.d. "A Professional Engineer or a Certified Industrial Hygienist **must review and certify** that the equipment and methods to be used for reducing odors are consistent with **accepted and available industry-specific best control technologies and methods designed to mitigate odor**." CZO § 35-144U.C.6.d.

Why did the OAP reject Carbon Scrubbers?

5.0 Regenerative Carbon Scrubbers and Traditional Carbon Filters

Criterion has evaluated a variety of best available odor-control technologies (BACT) and, as of the date of this report, currently recommends vapor phase systems for odor control in venting greenhouses and traditional carbon filters (TCF) for odor control in sealed structures like the Processing Building.

Traditional carbon filters (TCF) are a proven technology for air-tight, enclosed buildings where partial vacuum can be achieved but have little efficacy in controlling odor in large, porous and venting greenhouses. TCF systems work by forcing (or pulling) air through the carbon to neutralize malodor. In addition to the porous nature of the structures themselves, greenhouse environments pose other unique challenges for TCF systems (e.g., volume of air needing scrubbing, humidity, etc.). Excess humidity causes TCF systems to degrade prematurely rendering such systems nonviable and unsustainable in humid greenhouse environments.

Unlike traditional carbon filters, regenerative carbon scrubbers (RCS) are an emerging technology that promises to control odor in large, porous and venting greenhouses. RCS systems combine several different technologies (e.g., pre-filters, ionization, catalytic carbon filtration, multi-stage filtration, etc.) to achieve a result not possible with TCF systems. RCS systems will employ a series of individual RCS "towers" throughout a greenhouse to continually scrub cannabis-related odors prior to venting. The quantity and placement of RCS "towers" is under active research and development. While preliminary data shows promise, RCS technology is still in its infancy and not yet commercially available.

Ceres Farm
OAP, p. 3

ODOR CONTROL ON NORTH SIDE OF THE "CONLEY" GREENHOUSE AT CERES FARMS

The proposed Fogco technology does not have a record of success

- 17 distinct Odor Complaints filed with County for 6030 Casitas Pass Road;
- 23 distinct Odor Complaints filed with the County for nearby 5980 Casitas Pass Road;
- The Hahn's have documented ongoing, significant, nuance-type odors.
- Lack of Safety Data for Fogco

Legal Argument: The technology at issue, here, Regenerative Carbor Scrubbing Technology ("Carbon Scrubbing"), is feasible and has been included or required in similar projects within the County in, at least, seven (7) recent cannabis cultivation permit applications

- **International**, Condition of Approval, May 31, 2022;
- **Creekside Blooms,** Odor Management Plan ("OMP") prepared by SCS Engineers, January 20, 2022;
- **Everbloom,** OMP, prepared by SCS Engineers, January 14, 2022;
- **Maximum Nursery,** OMP, prepared by SCS Engineers, January 5, 2022;
- **Cresco/SLO Cultivation,** Carpinteria, OMP, prepared by SCS Engineers, August 10, 2021; and,
- **CW Organic Farms,** Cannabis OAP, prepared by Nate Seward, PE, October 26, 2020.
- **Vista Verde Farms, LLC**, OAP, prepared by AdvancedGEO, Rev. 05 May 2022

Vista Verde Farms OAP

Odor Control Plan
VISTA VERDE FARMS, LLC
3450 Via Real, Carpinteria, California
Cannabis Cultivation and Processing

Rev. 05 May 2022
Project No. 20-6021

PREPARED FOR:

VISTA VERDE FARMS, LLC

PREPARED BY:

AdvancedGeo
An Employee-Owned Company

Environmental • Compliance • Industrial Hygiene • Geotechnical
Phone: 800-511-9300
Fax: 888-445-8786
www.advancedgeo.biz

"Working in Partnership with People, Business and the Environment"

The OAP for the mixed light cannabis cultivation facility located at 3450 Vista Verde Farms, LLC, proposes to use carbon scrubbing technology under its proposed OAP.

The OAP expressly states that, "'Carbon Scrubbing is considered the best industry practice to mitigate odors." See, Odor Control Plan for Vista Verde Farms, LLC, 3450 Via Real, Carpinteria, (AdvancedGeo, Rev. 05 May 2022

4.2. ENGINEERING CONTROLS

The Facility will be employing the currently available "state-of-the-art" odor control technology and methods. "Carbon Scrubbing" will be utilized at the facility and will be employed from the initial start of operations. The number of odor control units required will be dependent on the production process in each greenhouse.

The Facility has created and will be employing engineering controls for odor mitigation and control that are sufficient and effective in mitigation of odors that will meet the following criteria:

- Consistent with accepted and "state-of-the-art" industry-specific odor control technologies designed to effectively mitigate and control odors from all sources.
- An Odor Abatement Plan developed by a Certified Industrial Hygienist (CIH) as sufficient to effectively mitigate and control cannabis odors at the Facility.
- An Odor Abatement Plan that has been approved by municipalities as being sufficient to effectively mitigate odors of cannabis production.

Initial Scrubber Efficacy Assessment and Odor Study at Roadside Blooms

3684 Via Real
Carpinteria, CA 93013

SCS ENGINEERS

24217240.02 | November 14, 2022

2370 Skyway Dr.
Santa Maria, CA 93455
805-346-8851

The "Scrubber Study" Conclusions:

- The scrubbers tested in this study had a measured single pass through **efficiency of approximately 95% on average.** One sample was collected from a scrubber that has been in operation for over 1-yr without any maintenance and/or filter changes indicating the **efficiency is still over 90% even after 1-yr of operation**.
- Time series comparisons of comparable sample sites show a **clear benefit of scrubber operations** in reducing peak odor emissions as well as reducing the period of time concentrations of odors are elevated following plant agitation or harvest.
- The operation of the CFS-3000 scrubbers clearly reduces the emissions of odor-causing compounds and emissions in general from cannabis greenhouses. This is **in contrast to vapor phase technology which can only treat emissions/odors once they have left the greenhouse** through ridge vents. **Vapor phase odor control systems result in a net increase of total emissions**.
- Given adequate spatial density of scrubbers, as demonstrated by this study, the CFS-3000 **scrubbers are capable of reducing odor emissions to a level that would result in no perceivable cannabis odors downwind from the subject facility.**

Legal Argument: The County can impose requirements, such as the condition of approval.

- Cannabis Regulations establish "minimum land use requirements for medicinal and adult use cannabis activities, including cultivation, processing, distribution, manufacturing, testing and sales." CZO § 35-144U.A.1. (emphasis added).

- Creates a floor, not a ceiling.

Legal Argument: The County cannot make the required findings to approve the permit.

- County must find that proposed development "conforms to the applicable provisions of the Comprehensive Plan." (Attachment 1: Findings, p. 1).
  - The Project does not conform to the County's Comprehensive Plan, Land Use Element, which provides that "**existing agriculture should be preserved above Foothill Road and east above Casitas Pass Road.**" This is exactly where the Hahn's Rose Story Farm is located. Their pre-existing agricultural enterprise should be protected consistent with the Comprehensive Plan.

Legal Argument: The County cannot make the required findings to approve the permit.

- County must find that the project is "within the scope of the [PEIR]." (Attachment 1: Findings, p. 1).
  - The Project runs counter to Objective 10 of the County's Adopted Final PEIR Cannabis Land Use Ordinance and Licensing Program ("PEIR"), which aims to:
    - "Limit potential for adverse impacts on children and sensitive populations by ensuring compatibility of commercial cannabis activities with surrounding existing land uses, including residential neighborhoods, **agricultural operations**, youth facilities, recreational amenities, and educational institutions." PEIR, at ES-3.
    - Approval of the permit would contribute to continued impacts to school kids, residents, agriculture and other business, and quality of life.