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Dear Stakeholders of California,

This paper presents arguments for establishing a terroir-based appellation of origin (AO) regime for California cannabis. We are at a critical global crossroads in cannabis policy reform, and the world is looking to California's precedent in developing a model for cannabis AO. We must thoroughly consider all of the impacts of how we define and implement this policy, not just to stakeholders in California but to all legacy cannabis producing cultures worldwide.

- AO designations are based upon the *exclusive or essential causal link* between the quality of the product and its place of origin.
- These designations *codify these causal links* between the natural environment, practices and standards of the producing region and the exceptional qualities of the product.
- Terroir, a French term, which has been eloquently translated as the '*taste of place*', acknowledges the natural environment as foundational to this exclusive or essential causal link.
- Because terroir-based AO *are tied to the land itself*, they elevate regional land value and secure farmer's land holdings.
- The value of this designation to consumers is that it ensures an authentic provincial product. *Consumers worldwide relate AO to terroir.*

- This policy can *differentiate California cannabis within emerging international cannabis commodities markets*, but only if it holds up authentic, internationally recognized, terroir-based AO designations that are *legally defensible*.
- Terroir-based cannabis AO are a commitment on the part of California cannabis to *confront global climate change* and secure our collective future through meaningful and immediate action.
- *Producing communities* differentiating their cannabis based upon the causal link of their terroir are *deeply invested in stewarding their environment*, which would be implemented and guaranteed through the land management and production practices codified within the appellation standards.
- Researching, defining and codifying California's cannabis terroir will be *pioneering* work. It will build the acclaim of California as a global leader in sustainability policy, environmentally related cannabis production research and the preservation and advancement of cannabis genetics.
- If the legal protections and market opportunities of California's cannabis AO program are *NOT tied to terroir, NOT tied to the land itself*, then the causal claims of essential and exclusive will be *indefensible*, and all of the above deliverables will be severely compromised, rendering the program ineffective.

1. Terroir and the Taste of Place

The following is the internationally recognized definition of appellation of origin, found within the [Lisbon Agreement for the Protection of Appellations of Origin and their International Registration](#):

“Appellation of origin” means the geographical denomination of a country, region, or locality, which serves to designate a product originating therein, the quality or characteristics of which are due exclusively or essentially to the geographical environment, including natural and human factors.

Terroir speaks to this *exclusive or essential causal link* between the quality of the product and the environment.

The definition of terroir as defined by [The French National Institute of origin and quality - Institut national de l'origine et de la qualité \(INAO\)](#)

A terroir is a specific geographical area where production takes its originality directly from the specific nature of its production area. Terroir is based on a system of interactions between physical and biological environment, and a set of human factors within a space which a human community built during its history with a collective productive knowledge. There are elements of originality and typicality of the product.

Terroir has been eloquently translated as the '*taste of place*' :

The taste of volcanic, iron rich minerality in the flavor of the wine from Napa's Atlas Peak AVA.

The dank aroma and flavor of dry farmed, native alluvial soil grown cannabis from Holmes Flat, Humboldt, that carries the palate of the Eel river within it.

The taste of the sweet grasses of Western Marin and Sonoma Counties in the milk produced by the grazing cows of the Straus Dairy of the North Coast of California.

Appellation of Origin regimes codify these *causal links* between the environment, the unique practices, standards and crops of the producing region and the exceptional qualities of the product.

This standards-based designation is then leveraged for market position, fostering consumer loyalty by guaranteeing an authentic provincial product that truly embodies reputable, unique and consistent quality.

2. Terroir and Defensibility of the Causal Link

Farming practices that weaken or call into question the exclusive or essential causal link between product and place should not qualify for this distinctive designation. Appellation of Origin designations *must be defensible* in order to have value.

Below is an excerpt of a decision of the Conseil d'Etat (Council of State, which acts both as legal advisor to the French executive branch and as the supreme court for administrative justice) upholding the refusal of the Institut national de l'origine et de la

qualité (INAO) to allow the use of tarps in vineyards. This is a translation from the French text:

"Considering that the National Committee [of INAO] has refused to propose the authorization of the tarping of the vines during periods of frost insofar as, on the one hand, this process has an influence on the meso-climate of the vine and modifies artificially and temporarily the fundamentals of the terroir, and on the other hand, this method did not prove to be entirely effective against frost; that based on these grounds, the National Committee of the INAO has not tainted its decision by a manifest error of assessment." (Conseil d'Etat No. 260691 November 2, 2005).

This concession may have been considered a threat to the integrity and reputation of the entire appellations system of France by challenging the *system's integrity* in authenticating and codifying causal link claims.

3. Terroir-based Appellations and Land Holdings

There are historic and pragmatic motivations behind these terroir based delimitations, such as regional unification and the need to hold ground for agricultural communities, particularly small holders. Small holders are farms supporting a single family with a mixture of cash crops and subsistence farming.

By holding ground we mean the epochal fight for farmers to literally hold onto the ownership of their land, their home and their livelihood in the face of consolidation, climate change, regulation, market pressures, etc., These are not new challenges to agrarian peoples, though magnified to a crisis pitch at present for the legacy cannabis producing regions of California. It was from these types of challenges that the French gave birth to this brilliant and poetic standards-based regulatory system that is producer driven and producer benefiting, *because it is tied to the land itself.*

Appellation of origin policy is a living tradition. The system evolves every occasion a new farming community, with their unique products of place, seeks to define and protect their farmlands and culture under appellation of origin. As they do so, they add their unique agriculture to the global story of how we legally define and protect a product of place and secure land holdings for future generations of agrarian communities.

If the legal protections and market opportunities of appellation of origin were NOT tied to the terroir, NOT tied to the land itself, then the causal claims of essential and exclusive and hence the value of the designation would be so weakened as to be ineffectual.

The designation would be a facsimile of this renown global policy, and the international market play of it could actually degrade the value of the associated product within the global context, particularly as other domestic and global regions come forward with authentic appellation of origin designations from policy regimes that are based on the essential or exclusive link to terroir.

By failing to tie the value of the product to the land itself we *would not fortify smallholder land security* and this opportunity to elevate the value of our regional real estate would be lost.

4. The International Cannabis Commodities Threat

Appellation of origin systems are rules for the ages. They are designed to support regional craft producers in retaining their culture, resources and values while enduring the storms of nature, market and man throughout generations.

In March of 2020, the United Nations Commission on Narcotic Drugs will vote on the recent unprecedented [recommendations of the World Health Organization Expert Committee on Drug Dependence to reschedule cannabis](#) within international treaties, based on their findings that cannabis has significant medical value.

The findings of the WHO ECDD alone will trigger significant global policy reform related to medical cannabis access. If the UN CND reschedules cannabis in the treaties, the global trade and market impacts to cannabis will be enormous, [one of the possible reasons the member states of the United Nations Commission on Narcotic Drugs delayed the vote](#), so that these impacts could be analyzed for respective domestic impacts before potentially triggering the tidal change.

With international cannabis commodities trading on the horizon, global production costs and market factors will recontextualize the market footing of California cannabis commodities production, which will have to compete with foreign market pressures.

It is only through differentiating policy tools that California cannabis will set itself apart as unique and valuable within the global market; environmental production standards, consumer safety testing standards, geographic indication programs, social equity programs, cannabis cooperatives, the organic equivalency program. These are the tools that will improve California's traction with consumers engaging in a global cannabis market.

Of all of these policy instruments, appellation of origin designations are designed for the very purpose of international market differentiation and trade. This policy can carry California's regional renown for cannabis production forward into the maelstrom of the emerging international market, but only if it holds up authentic, internationally recognized, terroir-based appellation designations that are legally defensible.

5. Climate Change can be Mitigated, but We Must Act Now

The environmentally beneficial deliverables of terroir-based cannabis appellation of origin designations are: building topsoils, improvement of soil health, [supporting native microbiological populations](#), sequestration of carbon, watershed restoration, locally sourced inputs, consensus defined standards, farm systems innovation, sustainable land management, collective resource management. The impact of this program could be monumental in incentivising and economically supporting sustainable agriculture, globally.

Ensuring that California cannabis appellation of origin designations are based upon terroir positions this program to be financially supported through existing *and future* funding opportunities related to California commitments to supporting [conservation agricultural management practices that sequester carbon, reduce atmospheric greenhouse gases and improve soil health](#).

Terroir based cannabis appellations are a commitment on the part of California cannabis to confront global climate change and secure our collective future through meaningful and immediate action.

6. Terroir and Medicinal Metabolomic Expression

THCV – tetrahydrocannabinol is a fairly rare cannabinoid, though it has become less rare through recent breeding accomplishments. THCV has exceptional and broad medical value. [It is associated with tropical land race sativa cultivars such as Durbin Poison](#). The market potential of this cannabinoid is significant. Early exploration of this cannabinoid showed that it only expressed significantly when the cultivar flowered under the sun. Artificial lighting did not strongly potentiate this cannabinoid, and eventually it was understood to be the [UV light spectrum which was enhancing expression of THCV](#).

Subsequently, over the last few years advances in breeding have taken us from cultivars expressing in 0.5%THCV to 15%THCV. The point here is that this very valuable cannabinoid revealed its *causal link* within the context of outdoor cultivation. The dynamics and biodiversity of nature is the most potent potentiator of epigenetic expression due to the diversity of triggers and the complex interconnected systems exercising their influence. Cannabis in particular is extremely responsive to environmental influence and subject to adaptation. The superior context to support, sustain and explore the biodiversity of cannabis and its metabolomic expressions are in natural, biodiverse environments where the plant is fully engaging with the terroir.

The microbiome of a place has been proven to significantly influence the expression and organoleptic qualities of products produced there. The [intimate exchange between the microbiome and the plant drive the metabolomic expression of the plant](#).

As an example, the [biodiversity of the native microbiome](#) in the coastal foothills of Mendocino is significant and [high on the fungal spectrum of the microbial succession due to the redwood forests](#).

[High fungal populations in soil microbiome have been shown to potentiate terpene expression](#). Terpene expression in cannabis is an important contributor to the ‘[entourage effect](#)’ of [whole plant medicine](#), where the medical benefits are enhanced due to the confluence and diversity of active constituents.

In this example, the microbiome of the redwood environment is a *causal link* for this differentiating terpene expression. A terroir based appellation community that is differentiating their cannabis based upon the causal link of the microbiome is invested in protecting this shared habitat, which would be implemented and guaranteed through the land management and production standards of the appellation community. It is in this way that terroir-based appellations of origin designations are a powerful tool

driving regenerative agriculture and sustainable rural economic development, while also protecting our natural resources. Our local farmers can and should be the primary stewards of our regional environments.

The historic prohibition of cannabis cultivation research, coupled with the current host of threats facing legacy cannabis producing regions in California is endangering this precious and undiscovered regional knowledge base and pool of genetic resources.

Researching, defining and codifying California's cannabis terroir will be pioneering work. It will build the acclaim of California as a global leader in sustainability policy, environmentally related cannabis production research and the preservation and advancement of cannabis genetics.