

Resumen del formulario

Applicant Name and Title	[REDACTED], Chief Scientist
Applicant Address	[REDACTED] Arcata CA 95521
Applicant Phone	[REDACTED]
Applicant Email	tom@manna-well.com
Applicant interest in project/site	Owner
Business/Association Name	MannaWell LLC
Are you applying as a Humboldt County based business, cooperative, association, or nonprofit organization?	Yes
Are 75% or more of its operations based in Humboldt County?	Yes
Are you currently licensed and registered to operate in Humboldt County?	Yes
If you are not licensed or registered to operate in Humboldt County, are you in the process of doing so?	
Are the activities of your business, association, or organization, specific to the cultivation, processing, manufacturing, distribution or retail of cannabis, or whose organization provides support and/or services to the cannabis industry?	Yes
\$10,000 Eligibility	Manufacturing
Cultivation Lighting (as defined in Humboldt County Code 719-3)	
\$50,000 Eligibility	
[[]]	
If Other, please explain	Microbusiness
What amount of the business is Humboldt-owned? "Humboldt-owned" is defined by registered residency of owners	1%-50% Humboldt-owned

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Ownership Structure and Owners	This is a California LLC. (48% of owners living in Humboldt) SCHEDULE A: Members and Sharing Ratios Last First Membership Units Sharing Ratio Hollister [REDACTED] [REDACTED]
# of FTE Employees	2
Summarize the business/association and its activities Word Limit: 250	<p>MannaWell LLC was formed in 2016 to address the local and state requirements for permit applications in California but took until late 2018 to be permitted. 48% of the owners live in Humboldt County but control over 80% of the voting rights of the company (proxy votes). MannaWell built and received local approval within the Arcata Innovative Cannabis Park. It operates a Microbusiness (C12-0000242-LIC) that permits a small R&D research nursery and includes manufacturing, distribution, and non-storefront activities. The main focus of the operation is the incorporation of the fractalized cannabis into a unique line of cannabis products: particularly edibles and tablets. We selected Humboldt County for not only being one of the best cannabis cultivation regions, but for the Cottage (Small Farmer) permitting regulations that will allow the continued cultivation of unique medicinal cultivars or strains we believe has/will be demonstrated in future research.</p> <p>The proprietary FRACTALIZATION process that implodes the cannabis into powder without shearing, grinding, or milling opens up a new marketing venue for all cannabis biomass. This proposal focuses on an unexpected characteristic of the powder- it improves the oil extraction from cannabis biomass in solvent extraction systems. MannaWell can economically fractalize cannabis for less than \$6 per pound of biomass.</p>
Program / Project Name	Increasing Solvent Extraction Using Fractalized Cannabis
Requested Amount	USD 10000.00
Total project cost/funding needed:	USD 19812.00
Additional Funding Sources	Owners and Investors
Type of project	Implementation
If Other, please explain	
Project Address	[REDACTED] Arcata, CA 95521
Project Assessor's Parcel Number (APN):	507-430-002

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<p>Does the project/business consist of a qualified outdoor cultivating operation (as per Humboldt County Land Use Ordinance) that produces less than 10,000 sq. ft. of cannabis (not including co-ops and associations whose cumulative area may exceed 10,000 square feet)?</p>	<p>No</p>
<p>Licenses & Permits</p>	<p>Jurisdiction Business License, California Department of Tax and Fee Administration tax permit, Articles of Incorporation, Federal Employer Identification Number (FEIN), Bureau of Cannabis Control Commercial Cannabis License</p>
<p>Licenses, Permits, & Agreements</p>	<p>archive-1.zip</p>

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MannaWell LLC, a Microbusiness R&D facility, has introduced an inexpensive fractalization process that has demonstrated a 20-25% increase in the extraction of cannabis oil from trim while allowing the operator to pack at least 40% more of this dense material in traditional columns. These improvements could increase the overall operational efficiency by 70-80%. This does not require upgrades or enhancement to existing equipment but demonstrations did suggest the need for a more efficient and economical management of the biomass and waste disposal. This proposal would support the demonstration of this biomass management technology for review by all interested parties. Since existing extractors in Humboldt may process over 35-40% of all biomass in the county, this increase in oil extraction would translate to more income to all growers that sell/toll their trim biomass based on yields and at the same time improves the operational return for these local extraction companies. The fractalization process reduces the biomass or whole flowers into a fine powder without grinding or shearing so that it can be used in edibles and tablets. However, the company developed a technique that increases the porosity of the matrix to eliminate the channeling or blockages seen when using over-ground biomass prepared by hammermills, grinders, or shredders. In three demonstration runs in a butane extraction facility (one batch involved over 1,200 pounds of fractalized cannabis), the company demonstrated this technology and proved increased efficiency. However, the finely fractalized powder after extraction was difficult to contain or handle when handling and transporting to waste vessels or bags.

This proposal is to demonstrate an innovative biomass handling system designed by the company, in an operational cannabis extraction facility, that efficiently removes the waste biomass from the tubes and deposits the waste plant material into containers for transport to an approved waste management location. The equipment, that meets all UL and Category 1 regulations (Explosion proof), was on-loan and tested using waste cannabis biomass and demonstrated a 99.99% capture of biomass with no generation of dust - but this needs to be evaluated in an operational cannabis facility. The equipment is economical and can be installed without interruption of facility operations and would meet all code requirements. This proposal request is submitted to continue development of this technology in Humboldt because it will be shelved due to other financial commitments for our current Microbusiness activities. The Project Objectives (are) to assemble and install a waste biomass management system that safely removes the spent plant material from the extraction equipment to waste containers, without the exposure or generation of dust into the environment or exposure to employees. Target metrics would be to reduce the time and exposure to the waste plant material (currently this is done by hand), move the material easily to the waste collection site, and deposit the waste material in a container or supersack without the generation of dust in the environment.

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Economic impact of a successful demonstration of the biomass management system would be immediately reflected in a 25% or more (increased extraction rate) by increasing the amount of revenue generating cannabis oils in each run and a more efficient operation (lower operating costs) for the extractors. The sustainability of the project is reflected in results generated by MannaWell during the use of the fractalized cannabis in the initial trials.

The process appears to help stabilize the cannabis oils (less oxidation), increasing the shelf life, and minimizing the inventory storage space requirements by 50-60%. This would allow growers or extractors to effectively store the fractalized cannabis biomass to target the more profitable marketing periods between harvests. The extraction demonstrations (with butane extraction) showed a larger amount of oil was extracted with less volatile organic solvents per pound of biomass extracted.

Toll processing of the trim for extraction is estimated at less than \$5 per pound of cannabis and would help sustain the operations of MannaWell. MannaWell has always focused on the medicinal aspect of cannabis and supports families and research projects focused on treatment and cure. The Company was a lifetime member of the Lost Coast Botanicals Cooperative (before the new regulations), member of the Humboldt County Growers Alliance, and has participated in public hearings and committees affecting the local cannabis industry. Although this innovative extraction process provides an economical and profitable increase in revenue within the industry, it is only through this grant proposal that MannaWell will be able to continue this development. However, we recognize how this will enhance the competitive edge of local extractors and increase the returns of all growers that extract or toll process their trim. This competitive edge improves the sustainability of both extractors and growers. Increased extraction rates with a higher production capacity of existing extractor (facilities) will allow more economical processing of cannabis produced in Humboldt. Estimates suggest an extractor should be able to increase overall production by (as much as) 70-80% with a subsequent increase in Cannabis Excise Tax collections. This technology would keep production and jobs within Humboldt County. These funds would be used to support this research technology and improve the long-term sustainability of MannaWell LLC and participating growers and extractors.

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MannaWell LLC is a Microbusiness facility built in the Arcata Cannabis Innovation Zone from recycled refrigerated cargo containers, recycled redwood, and used galvanized roofing to minimize our environmental impact. We subscribe to the PG&E 100% Renewable Energy Program and operate our R&D Nursery with LED lights to minimize our energy signature. Our fractalized powder requires fewer organic solvents for extraction per pound of cannabis biomass, while its increased density requires fewer waste containers and less composting area

The company has thus far identified several local farmers that recognize the unique characteristics of the used biomass and have offered to recycle/compost all materials and reducing the load on local waste management facilities- this could reduce the environmental impact from the industry. MannaWell is already minimizing the environmental impact of our Microbusiness operations.

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MannaWell has already conducted three extraction trials the last quarter of 2020 with permitted Manufacturers. Because the industry has assumed that smaller particle size in column extraction was detrimental (channeling and blockages), our first demonstration of 30 pounds each of our fractalized cannabis vs unprocessed biomass surprised the collaborators. A second demonstration of 40 pounds of our fractalized cannabis was compared to the average of the entire trim batch and again it demonstrated no technical problems, no effect on the quality of the oil, but enhanced the capacity of the extraction tubes (more cannabis per tube with increased per pound yield). This was followed by a larger demonstration comparing 1,200 pounds of our fractalized cannabis trim with an equal amount of traditional ground trim. This also demonstrated over a 2% increase in oil extracted (25% more oil by weight) but also identified the difficulty of handling the dry, extracted powder from the extraction equipment (columns) to waste bags.

MannaWell was required to design a waste biomass handling system that would remove the extracted cannabis plant material, move it to(through) a waste handling station, and deposit into transport container or bags, without the exposure or release of the powder. MannaWell has designed a system we feel can meet all these requirements and tested individual components on loan at an off-campus site using fractalized cannabis. A complete installation needs to be installed and evaluated. MannaWell is a small R7D operation and has less than 2 full-time employees and 4 part-time employees. It provided to the BCC an attestation, as required by AB 1291, to initiate a Labor Peace Agreement at the time the 20th employee is hired. MannaWell has been operational in cannabis since 2016 and moved to Humboldt in 2018.

Standard operating procedures submitted for the Microbusiness permit outlined best manufacturing practices, quality control, and cultivation practices that were accepted by the BCC. The research will be directed by [REDACTED], Chief Scientist, and supported by engineering and equipment manufacturing expertise of company staff. The Company employs a Project Manager that has developed an operational timeline, milestones, and target metrics. The funds are necessary to support this research effort that has a strong benefit to the Humboldt industry (and community) but requires support because of financial limitation on this project with our limited research budget.

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Word Limit: 250	<p>Mannawell LLC has evaluated and developed a process to fractalize cannabis full flower and trim into a micronized powder for less than \$6 per pound. This process does not grind or shear the plant material but implodes (or fractalizes) the biomass at room temperature along cellular membranes while keeping most of the organelles intact. This reduces the volume of plant material to 25% of the original volume and has demonstrated to improve shelf-life of stored material. Another unexpected result of incorporating the fractalized cannabis into dissolvable oral tablets (DOTs) is the response by many patients of a rapid onset and affects. This is something we cannot explain yet but is the main focus of our Microbusiness retail business plan and research. MannaWell is a Microbusiness licensed in the Arcata Cannabis Innovation Zone with permits for the R&D Nursery, Manufacturing, Distributor, and Non-Storefront Dispensary activities.</p>
Project Budget	archive-2.zip
Select each item being uploaded.	Timeline with expected project milestones and completion dates, Brief resumes of key personnel, Business Plan, Associated Research
File upload	archive-3.zip