

ATTACHMENT 1B

Cultivation and Operations Plan

Cultivation and Operations Plan
for
Denali Farm, LLC

APN 210-250-008

CUP16-10989

Commercial Cannabis Cultivation Facility

Lead Agency:

Humboldt County Planning Department

3015 H Street
Eureka, CA 95501



Revised August 2022

Project Summary

Denali Farm, LLC., or the “Applicant”, has applied for a Conditional Use Permit for pre-existing cultivation under the Commercial Medical Marijuana Land Use Ordinance (1.0). The Applicant is applying for 17,813 square feet of “outdoor” cultivation, primarily within greenhouses, and 7,713 square feet of “mixed light” cultivation. The mixed light cultivation will consist of low intensity “string lights” used for a short duration in the spring to promote plant vegetation. The greenhouses will utilize light deprivation covers to produce up to two (2) flowering cycles per year. Juvenile plant propagation, for on-site use, will occur within the footprint of the cultivation greenhouses. Drying will occur in the existing 512 sf drying and storage shed and the 1,120 sf barn. Processing will occur by a third-party licensed processor off site. The project includes relocating approximately 10,000 sf of cultivation located within a SMA and remediating the area. To minimize new impacts, the relocated cultivation will be integrated into the existing cultivation areas by lengthening select greenhouses and erecting three (3) greenhouses within previously developed areas.

Water for irrigation will be supplied entirely by a rainwater catchment system utilizing catchment surfaces from rooftops, greenhouses, and HDPE tanks. The estimated annual water use for irrigation is 255,000 gallons per year. Water storage tanks totaling 264,700 gallons will provide storage for irrigation water. Water for domestic use is provided by the existing point of diversion in the winter/spring, and the well in the summer/fall. Electricity is provided by an onsite generator which is used mostly for residential purposes and for short durations in the spring for “string lights” in the mixed light greenhouses and to power drying fans after harvest. Cultivation operations will be conducted by five (5) family members. Restroom facilities will be provided by portable toilets until such time the septic system is fully permitted. There are no schools, bus stops, places of worship, or parks within 600 feet of the cultivation site, and no residences within 300’ of the cultivation site.

Property Description

The Project is located at APN 210-250-008 in the community of Larabee Valley. The parcel is approximately 66.3 acres in size (per the County of Humboldt’s WebGIS) and is characterized by hardwood and conifer forest in the north extent of the property and mixed grasslands in the southern half. The majority of the property is on a south facing aspect and drains to Butte Creek and the Van Duzen river watershed. The property is developed with an approximately 1,500 sf residence, 512 sf shed, and 1,120 sf barn. The parcel has a General Plan designation of Residential Agriculture (RA40) and Timber (T) and is zoned Agriculture Exclusive (AE) and Timber Production (TPZ). The neighboring properties surrounding the parcel have similar zoning and land use classifications.

Cultivation Plan

Cultivation will occur in previously developed areas where existing clearings and natural benches in the topography exist. The plants will be grown in 10 to 15 gallon pots located within a range of greenhouse sizes. The cultivation will be concentrated into four (4) garden areas within the footprint of existing cultivation gardens and disturbed areas. The north-east cultivation area “A” is located in a large clearing next to the residence. It will have six (6) greenhouses, five (5) of which will have mixed light (ML) cultivation, for a total of 7,713 square feet ML. All other cultivation on the property will solely use natural light. The south-east cultivation area “B” will have five (5) greenhouses and a small “full sun” garden near the drying and storage barn. The north-east cultivation area “C” has four small hoop

houses located on a ridge-line. And the south-west cultivation area “D” is a single long greenhouse situated on a bench. See the table below for a detailed list of greenhouse dimensions. The cultivation greenhouses may utilize light deprivation covers to produce up to two (2) flowering cycles per year. Cultivation operations are anticipated to require 5 staff, noted by the applicant as family members. The attached monthly Cultivation Operations Schedule details the cultivation activities for a typical two-cycle year.

Cultivation Relocation

Approximately 10,000 sf of cultivation located in the south-west corner of the property exists within riparian setbacks. A class III stream originates immediately south of the cultivation area, and the area drains east toward a class II watercourse within 75’. In an effort to comply with CDFW, County, and Waterboard setback requirements, the cultivation will be relocated to an environmentally superior location. The property was surveyed for a suitable relocation site for the entire 10,000 sf as a single conglomerate; however, due to topography constraints it will be markedly less impactful to integrate the square footage into the existing cultivation areas. This will be achieved by lengthening select greenhouses and erecting three (3) greenhouses within previously developed areas. Two of the greenhouses will be within the footprint of the south water bladder, once removed, and a third small greenhouse will be placed along the shoulder of the road in the north-east cultivation area. Using this approach will eliminate the need for new grading and land disturbance to accommodate the relocated cultivation. See the table below for details on the dimensions of the existing greenhouses and the proposed increases in length.

GARDEN AREA	GREENHOUSE NUMBER	EXISTING DIMENSIONS	PROPOSED DIMENSIONS	SQUARE FOOTAGE TOTAL
A.	1	30x70	30x80	728 ML/ 1,672 OD
	2	24x70	24x90	2,160 ML
	3	24x80	SAME	1,920 ML
	4	30x60	SAME	1,800 ML
	5	13x60	13x85	1,105 ML
	6	NEW	16x85	1,360 OD
B.	7	OD POTS	SAME	951 OD
	8	30x50	SAME	1,500 OD
	9	30x75	30x95	2,850 OD
	10	24x40	24x75	1,800 OD
	11	NEW	24x60	1,200 OD
	12	NEW	24x60	1,200 OD
C.	13	10x33	SAME	330 OD
	14	10x46	SAME	460 OD
	15	13x50	SAME	650 OD
	16	12x60	SAME	720 OD
D.	17	20x96	20x156	3,120 OD
	18	10,000 sf	REMEDiate	x
			TOTAL:	17,813 Outdoor (OD) 7,713 Mixed Light (ML)

Nursery Propagation Operations

Juvenile plants will be produced in a mother room/nursery located in the 16'x32' (512 sf) drying shed. Juvenile plants will be propagated from 'mother plants' that demonstrate the desired genetics for the specific cannabis strain. Cuttings will be sampled from the mother plants and then rooted into a growing medium to produce 'clones,' and once fully rooted they will be transplanted directly into plastic containers. Mother plants in the will remain in the vegetative stage solely for propagation. When ready, the juvenile plants will be moved into outdoor greenhouses where they continue the 'vegetative' cycle. The juvenile plants will be irrigated using hand watering methods.

Harvest Operations

Plants that are ready for harvest have their flowering branches removed by hand and will be transported to the 512 sf drying shed and 1,120 sf barn. Drying will take approximately two weeks before the flowers can be trimmed. Processing will occur off-site at a licensed processing facility.

Water Source and Water Storage

Water for cannabis irrigation will be supplied entirely by a rainwater catchment system. The system will utilize a combination of catchment from rooftops, greenhouses, and HDPE rainwater catchment tanks. Rainwater will be captured from the residence (1,500 sf), drying barn (1,120 sf), greenhouses (10,745 sf), and 40 rainwater tanks (2,270 sf). The greenhouses will be outfitted with a gutter system to collect and convey rainwater from the covers. Water from these locations will be used supplement the HDPE rainwater tanks (200,000 gallons) and fill the standard HDPE tanks. The combination of rainwater sources will provide nearly 344,00 gallons of water, plenty to meet the 255,000 gallon projected water need. See the attachment on Rainwater Irrigation and Storage for calculations.

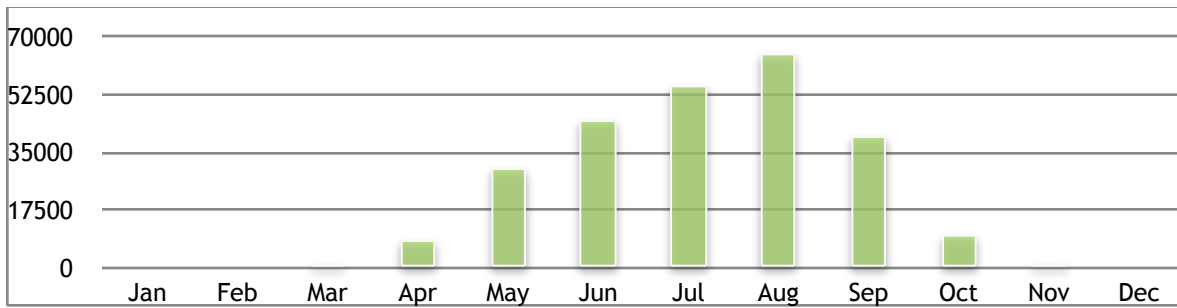
Currently on site there are (19) 3,100g tanks, (1) 4,800g tank, (1) 1,000g tank for a total of 64,700 gallons of storage. The added 200,000 gallons in rainwater catchment tanks will provide 264,700 gallons of storage total.

Irrigation Plan and Water Conservation

Irrigation and fertigation of plants will occur using a combination of drip emitters and top-feed hand watering methods, depending on the growth stage of the plants. Irrigation and fertigation will be efficiently managed at agronomic rates to conserve water and eliminate runoff. The daily inspection of each plant by the cultivator will allow for tailored irrigation and nutrient application depending on the needs of each individual plant. Water meters will be installed to monitor water use.

The estimated annual water need for irrigation is 255,000 gallons per year. The table below outlines the estimated irrigation water usage for cultivation during a typical year. Variables such as weather patterns may have a slight effect on water use. Water for the residence will be provided by a combination of the existing well installed in 2016 and the permitted point of diversion with riparian claim dating to 1962.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	1,000	8,000	30,000	45,000	55,000	65,000	40,000	10,000	1,000	0



Summary of Specific Measures for Compliance with SWRCB Order

Upon approval of the Use Permit, the property will be re-enrolled with the State Water Resources Control Board (SWRCB) Cannabis General Order for coverage as a *Tier 2 low risk* site. A Water Resource Protection Plan (WRPP) and Site Management Plan (SMP) have been developed for the site and include erosion and sediment control BMPs designed to prevent, contain, and reduce sources of sediment as well as best practices for controlled product storage and use. Surveys of the site were conducted by Pacific Watershed Associates (PWA) to evaluate existing road conditions, erosion issues, and discharge threats to watercourses. Details on road conditions and erosion concerns are discussed at length in the SMP, including specific measures for compliance with the SWRCB General Order.

Roads: The existing road network has a rocked surface and will be maintained per the recommendations outlined in the SMP. A number of culverts are scheduled for replacement per the LSAA with CDFW.

Exposed surfaces: Exposed soil surfaces are minimal and do not pose an active sediment delivery concern, but are recommended to be covered with seed and straw to prevent sediment transport. The proposed development will require minimal surface disturbance since the greenhouses will be within the footprint of existing disturbed areas. No grading will be necessary.

Riparian setbacks: Watershed and habitat protections: Adherence to the Site Management Plan will ensure that the watershed and surrounding habitat are protected. The cultivation activities will be greater than 50 feet from the nearest class III watercourse, providing a suitable buffer between the cultivation operation and habitat. Additionally, site development and maintenance activities will utilize BMPs in accordance with the SWRCB’s recommendations.

Stream Crossings and Riparian Features: Per the SMP, there are eight (8) small class III stream crossings and one (1) class II stream crossing on the property. The crossings will be repaired/maintained per the CDFW agreement and to specifications in the “Handbook for Forest Ranch, and Rural Roads.”

Fertilizers, Pesticides, and Regulated Products: Regulated products such as fertilizers and pesticides will be stored in storage in the barn and drying shed. Products will be located within secondary containment to prevent contamination with runoff. All fertilizers, pesticides, herbicides and rodenticides will be mixed or prepared in locations where they cannot enter a waterbody (surface or groundwater). Fertilizers, pesticides, herbicides and rodenticides will be applied at

agronomic rates specified on the product label and the enrollee will keep a log of use for annual reporting. All labels will be kept, and directions followed when amendments and fertilizers are applied. Disposal of unused products will be consistent with labels on containers. Empty containers will be disposed of at an authorized recycling center. A spill clean-up kit will be stored in the sheds. No restricted materials or pesticides will be used or stored on site. A list of anticipated fertilizers and pesticides are provided below:

Fertilizers:

- Biomarine NPK 2-3-1
- Fulvex
- Maxsea NPK 16-16-16
- Silica
- Kelp NPK 1-0-4
- Cal Mag NPK 2-0-0
- BudLoad

Pesticides used to control mites and powdery mildew are:

- Plant Therapy
- Suffoil X
- H2O2
- Dr. Bronners soap

Up to 450 gallons of diesel are stored in a fuel trailer along with a Spill Prevention, Countermeasures, and Cleanup (SPCC) kit. As a safety measure, kits provide a supply of clean-up materials in the event of accidents, and are kept within fuel storage areas. CERS registration will be filed with the Department of Environmental Health.

Stormwater Management Plan

Site Drainage: The property is well drained, with surface flow in the wet season generally draining south. The proposed developed areas are outside of riparian zones, the closest being a greenhouse located 55' from the nearest class III ephemeral watercourse.

Runoff Assessment: An investigation of the property revealed surface runoff potential associated with the existing roads, but no concerns pertaining to the proposed cultivation development. The areas proposed for cultivation use are well established and are generally flat. The cultivation greenhouses add just over half an acre of impervious surface; however, removal of the greenhouse covers in the winter (except those used for rainwater catchment) will considerably reduce impervious surfaces and runoff. Mulching and seeding the garden pots with cover crop will prevent sediment transport. Moreover, the proposed cultivation areas are located outside of riparian areas, providing a sufficient buffer to prevent sediment and nutrient delivery. To further prevent runoff to riparian areas, water conservation and containment measures will be implemented including the use of drip irrigation to prevent excessive water use, and the maintenance of a stable, vegetated buffer between the cultivation area and riparian zone. There will be no net increase in the volume of stormwater runoff from the property as a result of the development.

Monitoring and Maintenance: Regular monitoring will be conducted to ensure site development does not affect drainage patterns, to confirm the effectiveness of measures listed in the Site Management Plan, and to determine if the site meets all standard conditions of the General Order. Inspections will include photographic documentation of any areas of erosion or sediment transport to be monitored and prescribed recommendations for corrective action. Visual inspection will occur on roads and developed areas where surface flow may concentrate causing sediment transport, as well as areas where pollutants or wastes, if uncontained, could be transported into receiving waters. The inspection will also document the progress of any plan element subject to a time schedule, or in the process of being implemented.

Onsite monitoring shall occur:

- Before and after any significant alteration or upgrade to a given stream crossing, road segment, or other controllable sediment discharge site. Inspection should include photographic documentation, with photo records to be kept on site.
- Prior to October 15 and December 15 to evaluate site preparedness for storm events and stormwater runoff.
- Following any rainfall event with an intensity of 3 inches precipitation in 24 hours.

Maintenance of roads, stream crossings, soils piles, garden beds, and all exposed surfaces will occur at intervals listed in the cultivation operations schedule. Generally, work in riparian areas such as stream crossing repairs will occur over the summer dry season. Prior to the onset of the rainy season, all roads will be graded and rocked where necessary to reduce sheet flow and surface runoff. Any inboard ditches will be maintained, culverts cleared of debris, and soils piles contained to prevent sediment transport. After periods of peak rain events, culverts and roads will be maintained with hand tools as necessary.

Materials Management Plan

Solid Waste Management: Trash and recycling containers will be located in an enclosed, covered area adjacent to the residence and barn to prevent storm water contamination. Solid waste and recycling is hauled off-site in trailers to the Recology transfer station at least once biweekly. Cultivation equipment such as hoop house covers and irrigation equipment will be reused each season and stored away as necessary over the winter to reduce damage to the equipment. Any equipment that is in disrepair and no longer viable to use will be removed from the site and will either be recycled or disposed of at the landfill.

Organic Cultivation Waste and Spent Soil: Cultivation vegetative matter such as root balls, branches, and leaves will be composted at the designated area located near the barn. Potting soil will generally be left in the garden pots post cultivation season and will be covered with straw and seeded with nitrogen fixing cover crop. Any unusable soil will be stockpiled in a designated location and will be contained with straw wattles until the soil is either hauled off-site, or amended with organic matter and inoculated with mycorrhiza and beneficial bacteria so it can be reused. Prior to the rainy season, all spoils piles will be secured with wattles to prevent sediment mobilization.

Fertilizers, Pesticides, and Regulated Products: Best Management Practices (BMPs) will be employed when storing, handling, mixing, applying and disposing of all fertilizers, pesticides and fungicides. All nutrients, pesticides and fungicides will be located in the drying shed and barn. All regulated products are contained within the manufactures sealed containers within secondary containment. Application rates will be tracked and reported

with the end of the year monitoring report required in the Site Management Plan. Employees responsible for application are trained to handle, mix, apply or dispose of pesticides/fungicides with proper hand, eye body and respiratory protection in accordance with the manufacturer's recommendations.

Sewage Disposal Plan

The existing septic system will be evaluated to determine if it has adequate capacity for the residence and added farm workers. If it is undersized, an appropriately sized septic system will be designed by Pacific Watershed Associates and installed adjacent to the residence. In the meantime, a portable restroom will be brought on site for use by staff.

Soil Management Plan

The cultivation pots will be placed on top of the native soil. Once the last plants have been harvested in the fall, the cultivation soil will remain in place in the pots. The pots will be covered with straw and seeded with nitrogen fixing cover crop. Any unusable soil will be stockpiled at the compost locations. The spent soil will be contained with straw wattles until the soil is either hauled off-site or amended with organic matter and inoculated with mycorrhiza and beneficial bacteria so it can be reused. Prior to the rainy season, all spoils piles will be secured with wattles to prevent sediment mobilization. In the spring, the soil will be tested and amended with organic nutrients and compost as needed. No more than a few yards of new soil will be needed each spring to top off the garden pots.

Energy Plan

The site uses (1) 45kW MultiQuip Diesel Power generator and battery banks to power the residence, drying buildings, and the mixed light greenhouses in the spring. The generator is rated by the manufacturer at maximum 60dB or lower, meeting perimeter noise restrictions required by environmental regulations. Solar panels will power the water pumps and greenhouse fans.

Security Plan

The cultivation area will have a locked access gate at the entry road. The gate will remain locked at all times and access to the cultivation area will be limited exclusively to employees. Restricted access signs will be posted conspicuously at the entry gate. The barn will have low intensity exterior lighting to illuminate the entrance and will include a small number of motion activated security lights. All lighting will be designed and located so that direct rays are confined to the property. Security cameras will be installed at the main access gate and at the entrance to the barn. Activities associated with cultivation (watering, transplanting, and harvesting) generally occur during daylight hours. The farm will be in operation 7 days a week, spring through fall.

Light Pollution Plan

Any greenhouse or propagation area with supplemental lighting will be properly maintained to avoid being visible from any neighboring property between sunset and sunrise. The site will comply with International Dark Sky Association standards for Lighting Zone 0, and prevent light spillage which may impact local wildlife. The residence will have normal lighting associated with domestic use. The low intensity exterior lighting will be designed and located so that direct rays are confined to the property.

Cultivation Operations Schedule

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Juvenile plant propagation												
Plant outdoor greenhouses												
Light Deprivation Cycle												
Full-term Outdoor Cycle												
Harvest Operations												
Drying (Processing off-site)												
Winterization of Garden Beds												
Winterization of Roads												
Road/Culvert Maintenance												
BPTC maintenance												