

Water Resources

- A. Noble Gardens intends to minimize adverse affects on surface and groundwater resources.
- B. This section shall include:
 - A. The primary sources of ground water on the property are:
 - A. Storm water drainage
 - B. A private well
 - A. see attached well permit from department of environmental health
 - B. Currently there is only minimal seasonal watershed seen on the easement roads on either side of the property, (Ponderosa Trail and Black Oak Ridge) during rainy periods small shallow levels of drainage flows down the steep grade of the mountain located about 600-1000 feet south east of the furtherest boundary from the cultivation site, this only occurs during moderate to severe rainfall periods and generally only occurs after at least .5" of rainfall has occurred in the season. These surface water drainages are generally gone within 24 hours of heavy rainfall and do not
 - C. The property topography drops about 200 feet in elevation from 2200 feet in elevation to 2000 feet of elevation at an estimated 22-23% grade.
 - A. Noble Gardens cultivation site is located on a nearly flat portion of the parcel where the grade is less than 5%.
 - D. Aside from cultivation engineering in the form of swales on contour, no efforts have been made thus far to manage watershed from the property. There are no structures which create opportunity to capture or manage stormwater. Thus far there is no history of flooding on the property, or at surrounding properties.
- C. There are numerous ways in which Noble Gardens already attempts to minimize impact on the groundwater; and future plans are aimed at positively impacting watershed on the property, through managing storm water drainage from proposed buildings and greenhouses.
 - A. Noble Gardens already has some installations in place to minimize water usage:
 - A. Water for irrigation is not drawn directly from the supply well. Water is drawn at lower pressure for short periods of time into a storage tank, then the irrigation is drawn from the tank.
 - A. Permittee understands that it is detrimental to the overall capacity of the aquifer in which a production well pumps from to have water drawn in large quantities using the full capacity of the pump. When pressure drops in the aquifer and air bubbles are created, their is a high risk of erosion inside the cavity of the aquifer, when this occurs it reduces the overall capacity of the aquifer. When this happens repeatedly it can shorten the life of the well, and damage the well's production.
 - B. Swales are planted on contour; meaning surface water is captured naturally in the soil helping improve drainage within the garden bed

- C. Cultivation occurs in shallow trenches instead of in individual holes making watering more efficient and preventing irrigation efforts from being lost into surrounding soil needlessly.
- D. Numerous aspects of the garden bed are added with the specific intent to capture, hold, and disperse irrigated water sources more slowly and to prevent evaporation of irrigated water in the garden beds;
 - A. Wheat straw is layered around the garden beds to help hold irrigated water,
 - B. wood chips inoculated with mycelium are also added to the garden beds because the mycelium creates a symbiotic relationship with the plants to exchange sugar with the plants in exchange for water and other nutrients that roots cannot reach, but mycelium can, because the mycelium network reaches farther and more densely than the plant's root structure can in a given period of time,
 - C. 3 yards of Perlite have been added to the existing 5000 square foot cultivation area as part of the amendment to help capture and disperse water more slowly throughout the soil.
- B. Immediately upon commencing early activation Noble Gardens will install and implement the following methodology to improve water management in the cultivation process:
 - A. Installation of a well meter to track water drawn from the well and to track the well's water level and recovery rate.
 - B. Installation of a timer to prevent water from being used or drawn from the well for periods longer than 30 minutes at a time.
 - C. Installation of water monitors which measure soil's water levels and tell definitively if irrigation is required and where. These will be checked manually daily and data on gallons of water used to achieve and maintain optimal water levels will be closely charted on a daily basis.
 - A. At this time, only manual monitors will be used, as automatic systems tend to be inconsistent and incorrect. Users of automatic meters which trigger irrigation systems have reported problems with massive over/under watering, neither of which is desirable.
- C. Noble gardens also plans to add a rain water catchment system on all proposed buildings, which will drain into a water storage tank for irrigation. A meter will also be placed on the tank to provide data on how much water is capture, stored, and applied from the tank to the cultivation site.
 - A. Noble Gardens has other more advanced systems in planning to capture evaporated water within the greenhouses, and in the drying room and to utilize that water as well, rather than allowing it to drain needlessly to the ground.
 - B. Pending approval Noble Gardens hopes to capture and treat some of the grey water from other buildings on the property and to store and utilize that water in irrigation as well. These are proposed buildings for which the applicant holds active building permits and work on that project is in progress currently.

- D. As mentioned above numerous parameters will be measured and charted;
 - A. Water levels in the supply well will be measured by a meter, A well watch 660. Information on this device can be found at; <http://www.enoscientific.com/well-watch-600.htm>
 - B. Several soil moisture meters will be placed in every garden bed placed 10' apart. These meters will give us valuable information that will tell our cultivation staff how much water to apply to a given area and the meter will tell them when the optimal level of moisture has been achieved. More information on the type of meter can be found here; https://www.amazon.com/Moisture-Dr-meter-Hygrometer-Outdoor-S10/dp/B00PTLGKSQ/ref=sr_1_4?s=lawn-garden&ie=UTF8&qid=1527973023&sr=1-4&keywords=water+moisture+meter
 - C. Staff will chart the following information at the prior to watering;
 - A. Moisture level according to each water meter in in a given row/ greenhouse in the cultivation operation.
 - B. How long water was applied and what the starting reading was on the meter from the tank, and what the reading was when water meters read optimal levels, to gain an understanding of how much water is needed to maintain optimal levels.
 - C. At the time applicant is granted permits to erect greenhouses and other structures within the cultivation area, and rain water catchment system is complete, permittee will also chart how much rain water is captured each month and include this in annual reporting to the Department.
- E. There aren't any springs, creeks, seasonal streams, or lakes on the lot of record or within 200 feet of the lot of record. Please see sheet 2 for reference.
- F. Topographical map is attached showing elevation and contours.

Water Use

- A. It is the intention of the permittee to conserve water resources by minimizing the use of water.
- B. Noble Gardens understands that activities shall have a legal water source on the premises, and have all local, state and federal permits required to utilize the water source. Permittee is not utilizing water from a source off of the property, and does not require any additional written permission to use another water source for any activities Noble Gardens, or it's officers are engaged in on the property.
- C. Permittee understands that Noble Gardens shall not engage in unlawful or unpermitted drawing of surface water.
- D. Permittee is aware that the use of water provided by a public water supply, unlawful water diversions, transported by a water hauler, bottled water, a water vending machine, or a retail water facility is prohibited.
- E. Noble Gardens operations uses a private well for irrigation, the well is located on the premises and is not on an adjacent parcel.
 - A. A well meter will be purchased and installed on the production well immediately commencing activation of this permit, or as a condition of the early activation if that is a requirement of the Department.
 - B. Monitoring and record keeping of the well, water levels, production, and use will begin immediately. And reports made available upon request by any agency seeking this information.
- F. Permittee understands that water may be supplied by a licensed water supplier, as defined in Section 13575 of the Water Code, on an emergency basis. The applicant understands that the Department shall be notified within 7 days of the emergency and that the following information shall be provided:
 - A. A description of the emergency
 - B. Identification of the retail water supplier including license number
 - C. The volume of water supplied.
 - D. Actions to be taken to prevent the emergency in the future.
- G. Permittee understands that a prepared Water Use Management Plan is to be approved by the Lake County Water Resources Department.
 - A. The plan will identify the source of water, including the location, capacity, and documentation that it is a legal water source.
 - B. The irrigation system shall be clearly detailed and methodology provided.
 - C. The projected amount of water to be used on a monthly basis for irrigation shall be provided separately from other uses of water, additionally the amount of water drawn from each source of water on a monthly basis will be detailed.
 - D. Calculations as to the efficiency of the irrigation system using the methodology of the Model Water Efficient Landscape Ordinance (California Code of Regulations, Title 23 Division 2, Chapter 27).

Noble Gardens Water Use Management Plan shall describe the methodology that will be used to measure the amount of water used and required monitoring performed.

Please see attached Water Use Management Plan