

Environmental Resource Management
 Scott R. Butler, RPF #1851
 1128 Monaghan Ct.
 Idaho Falls, ID 83404
 Office: (707) 468-8466 Fax: (707) 220-0111
 email: scott.butler@sbcglobal.net

Tree Planting Plan (TPP)

Miller Vineyards
3906 Silverado Trail

7-18-23

Updated in italics and underlined.

This Tree Planting Plan (TPP) is the new planting of approximately 3.4 gross acres of forest on APN 021-030-006, a ±28 acre parcel located at 3906 Silverado Trail, Napa County. The planting meets the Canopy Mitigation proposed in #P22-00153 ECPA. See the ECPA map page EC8 attached.

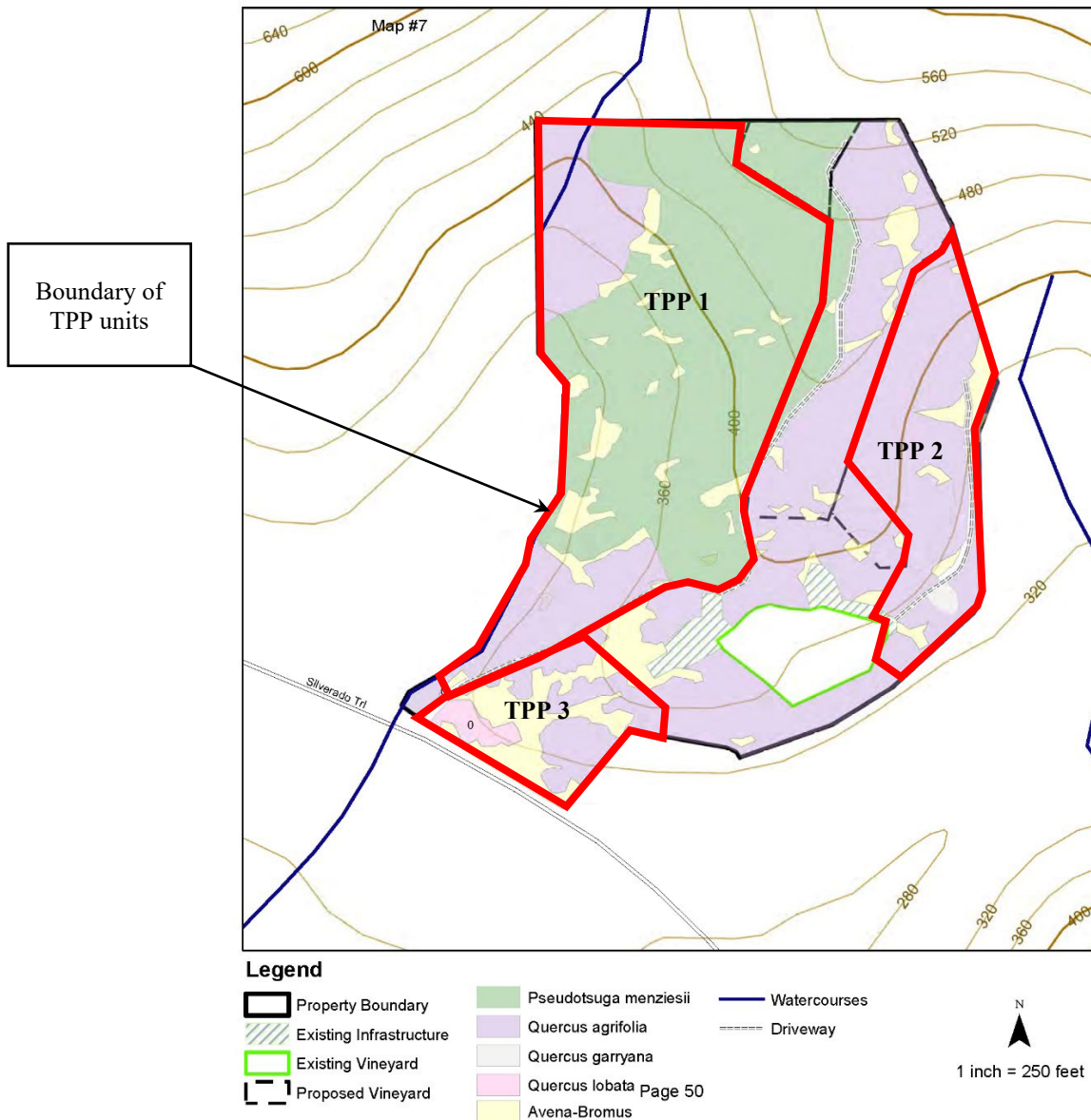
The property was severely impacted by the 2020 Glass Fire. Within the parcel boundaries the fire burned most of the ladder fuels and in some places the fire burned the forest crown. Equipment and some outbuildings were also damaged in the fire.

An emergency notice of timber operations was approved by Cal Fire to remove the dead and dying trees THP 1-21EM-00105-NAP. The THP was completed on 9-27-23. See the 2022 aerial photo taken post logging and showing the impact of tree removal. This removal impacted a small portion of the property and all of the potential vineyard ground proposed in #P22-00153 ECPA.

Planting area
2.2 acres on slopes <30%
1.2 acres on slopes >30-50%
Total 3.4 acres.

The 3.4 acres is composed of Douglas Fir (*Pseudotsuga menziesii*) and Coast Live Oak (*Quercus agrifolia*). Most of the Coast Live Oak also contained Douglas Fir, primarily in the understory. The presence of the Douglas Fir made large portions of the proposed vineyard block Commercial Timberland as defined by Cal Fire. Even though the fire consumed much of the small Fir in the understory it still meets the definition of Commercial Timberland.





Vegetation Map from Bio report page 2

Excerpt from Appendix B, Miller Biology Report 2022

Topography and Soils: The overall topography of the Study Area is relatively flat to over 60% slopes, ranging from approximately 300 to 530 feet above sea level. According to the Soil Survey (USDA 2021), the Study Area is underlain by four soil mapping units: Bale clay loam (0 – 2% slopes); Boomer loam, volcanic bedrock (2 – 35% slopes, MLRA 15); Boomer gravelly loam, volcanic bedrock (11 – 43% slopes, MLRA 15); and Boomer gravelly loam, volcanic bedrock (14 – 60% slopes, MLRA 15) (Attachment #7, previously submitted to Napa County).

Bale Clay Loam: The parent material is alluvium derived from rhyolite and/or alluvium derived from igneous rock. The drainage class is somewhat poorly drained with a low runoff class. The depth to the water table is about 48 to 72 inches. This is a prime farmland if irrigated.

Boomer Loam, Volcanic Bedrock: The parent material is residuum weathered from volcanic rock. The drainage class is well drained with a medium runoff class. The depth to the water table is more than 80 inches. This is listed as farmland of statewide importance.

Boomer Gravelly Loam, Volcanic Bedrock: The parent material is residuum weathered from volcanic rock. The drainage class is well drained with a high runoff class. The depth to the water table is more than 80 inches. This is listed as not prime farmland.

Tree Planting Goal

The goal of this tree planting is to mitigate the loss of forest canopy due to the conversion of forest to vineyard, maintain or improve water quality and benefit biological protections.

Preservation and replanting will take place on slopes from 0 to 50%. These planting areas are similar to the existing conversion areas and presently contain open areas that, when planted, will add additional forest canopy replacing what was lost to the conversion.

Water Quality

Water quality will be improved with the additional forest canopy intercepting raindrops and reducing the impact velocity of the raindrops and thus reducing the amount of energy transferred from the raindrops to the surface soils and in-turn reducing the amount of potential sediment dislodge and transport. Rainfall will momentarily be detained on the surface of the leaves and bark of the trees and will be released over a longer period of time that rainfall would otherwise be transferred directly to the ground. This metering will reduce overland flow of storm water runoff thereby reducing potential sediment transport and improving water quality. In addition, the root structures will aid in the retention of soils during heavy rainfall events and the overland flow of water.

The planting area is not being disturbed by the forest conversion to vineyard. As such no negative impact is expected on water quality in the planting areas. Improved water quality is expected with the metering of rain water to the ground.

Biological Benefits

The additional planting of forest trees will help protect and increase the health of the existing forest canopy by increasing the variability of the age and diameter classes presently found in the existing forest.

The Miller Property only has control over their ownership. As much of the surrounding landscape was burned. Planting Douglas Fir trees within the burned areas or adding more oaks within an existing "still living" small oak woodland stand; within the Miller ownership will help the re-establishment and/or enhancement of the forest canopy to levels of pre-Glass wildfire conditions. While managing ladder fuels to avoid future devastating wildfire damage, some tree species may resprout after a wildfire; however, due to lack of seed sources and competition from invasive weeds, planting is an effective tool to revegetate an area faster.

Replanting can achieve a multi-storied vegetative canopy which will increase terrestrial biodiversity, provide additional leaf litter which acts as a base level for the food chain, and allow for surviving native vegetation to thrive.

By improving the visible oak woodland habitat along Silverado Trail, this will eventually allow seed (acorns) to become available to wildlife and/or encourage neighbors to follow their lead in reforestation after a devastating wildfire. Oaks can provide a food source for wildlife, draw in pollinators and seed dispersers, provide nesting/roosting sites for birds and bats (structural complexity), store carbon, and can provide a stepping stone for birds and bats from different habitat types.

An ephemeral stream occurs along the western boundary of TPP1 and just east of the northern portion of TPP2. All riparian habitats have an exceptionally high value for many wildlife species. These areas provide water, thermal cover, migratory corridors as well as diverse nesting and foraging opportunities. The ephemeral streams may not connect unique habitats together; however, even in dry conditions, could provide localized movement and a shelter habitat for common wildlife species.

Natural areas interspersed within developed areas are important for animal movement, increasing genetic variation in plant and animal populations, reduction of population fluctuations, retention of predators of agricultural pests, and for movement of wildlife and plant populations. These natural areas have been demonstrated to not only increase the range of vertebrates, including avifauna between patches of habitat, but also facilitate two key plant-animal interactions: pollination and seed dispersal.

Tree Planting

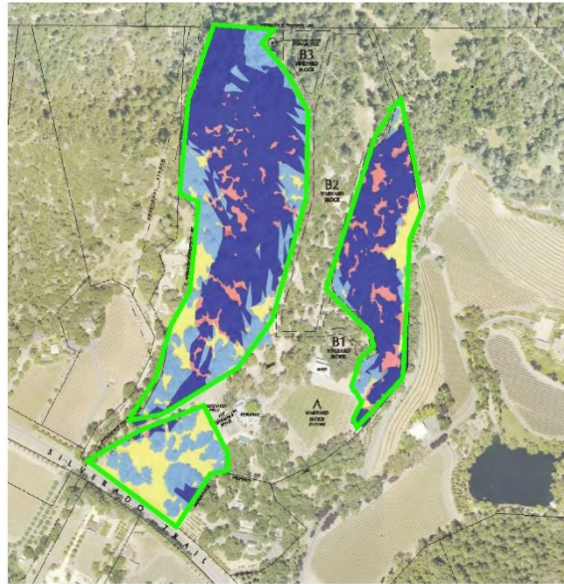
Douglas Fir, 70 trees per acre approximate 25' spacing, **TPP 1 and 2.**

Quercus, 20 trees per acre, approximate 50' spacing, **TPP 3.**

Due to the need to plant seedlings during the winter period and under wet and or saturated soil conditions, all planting shall be done by hand. This will reduce soil erosion and compaction.

TPP 1 and 2 will be planted with Douglas Fir seedlings, 1 or 2 year old bare root or plug seedlings. This will depend on where the seedlings are purchased. 70 trees per acre will be planted on a 25' spacing in open areas that resulted from the fire or in natural grassy areas. Seedlings must be planted between December and February the first winter after the vineyard has been planted. These seedlings are designed to survive without being watered and mimic natural regeneration. Their survival depends heavily on the moisture available during the first spring after planting.

TPP 3 will be planted with local native Quercus species depending on availability. Seedlings will be in at least 1 gallon containers. 20 trees will be planted in open grassy areas on a 50' spacing. Seedlings must be planted between December and February of the first winter after the vineyard has been planted. Seedlings will be watered hand watered. Water is expected to be one to 5 gallons per month during the late spring and summer. Fall watering may or may not be necessary and will be determined by a forester or biologist. Watering should be reduced for the second year and eliminated by the end of the third year.



Trees to be planted.

TPP 1 and 2 contain approximately 2.4 acres of open forest that will be planted with Douglas Fir. This area is primarily a Douglas Fir Alliance, see **page 21** of the Biological Report. 2.4 acres x 70 trees per acre = 170 trees.

TPP 3 contains approximately 1 acre of open forest that will be planted with Native oaks. This area is primarily an Oak Forest Alliance, see **page 21** of the Biological Report. 1 acre x 20 trees = 20 trees.

Scientific Name	Common Name	Acres to be planted	Total trees
Pseudotsuga Menziesii	Douglas Fir	2.4	170
Quercus	Native Oak	1	20
Totals		3.4	190

This table summarizes the species and number of trees to be planted.

Planting requirements

Planting shall be done with a maximum of 25' spacing between existing trees and planted trees in TPP 1 and 2. Planting shall be done with a maximum of 50' spacing between existing trees and planted trees in TPP 3. Planting will take place in open areas within the existing forest. Seedling size and species will be as specified above.

In order to assure survival and minimize water usage for **TPP 3**, the 20 oak seedlings direct root watering should be implemented. Each plant should have a 3" perforated pipe installed within 1' of the seedling. The pipe should be 2 to 3 feet in length, vertical to the ground surface and filled with drain rock. All watering should be done inside of the drainpipe. (Note, a 3' Long, by 3" wide perforated pipe ½ full of rock will hold approximately 1 gallon) Water usage is estimated at 10 gallons per plant the first year and 5 gallons per plant the second year. Once established, these wildland plants should not need additional watering. Seedlings must be watered by drip irrigation or hand watered. Water is expected to be one to 5 gallons per month during the late spring and summer. Fall watering may or may not be necessary and will be determined by a forester or biologist. Watering should be reduced for the second year and eliminated by the end of the third year.

The Douglas Fir seedlings should not need watering. Their survival will depend heavily on the first spring's wet weather conditions. This reliance may require additional replanting. Replanting will be directed by the Forester or Biologist as needed.

The plantings should maintain an on-center spacing as specified above but avoid planting in rows where possible. Planting will occur between December 1 and February 28, following precipitation to take advantage of moisture in soils. Because planting will occur during the wet season plantings should be conducted using hand tools with any associated vehicles parked on paved or rock roads. Plantings should be done on the north side of existing brush to take advantage of reduced temperature and increased soil moisture during the summer months. Competing brush, grass and vegetation should be monitored and removed if competition for shade, light and soil moisture impact the planted seedlings and the existing sprouting trees.

Leftover vegetative material from vineyard/property maintenance should be composted in a single area or removed from the site and not placed near newly planted seedlings. This material can be a fire hazard and hinder growth of native vegetation. Mowing or mulching (with weed free mulch) may have to be completed around newly established trees to reduce competitive grasses.

All seedlings shall have seedling protection in place. One example is the rigid seedling protection tubes shown below. These tubes are 3" in diameter and 36" tall. These tubes will protect the seedling from animal browsing for at least 5 years. The tubes are biodegradable and will disintegrate after 5 years. The tubes shall be held up with two bamboo stakes and zip ties to hold them in place. The whole property is fenced; however sheep are used periodically to help control grass competition on the property. These protectors should be reviewed periodically by the applicant to ensure seedling protection.



Rigid Seedling protection tubes.

Maintenance Specifications

Maintenance activities in the tree planting areas during the 5-year monitoring period following planting will include the following tasks as needed:

- 1) erosion control and repair should such be evident.
- 2) inspection for signs of vandalism or other disturbance of the tree planting area by people, grazing, weather (high winds or downpours) or wildlife; and
- 3) inspections for colonization of problematic non-native plants and action to control their spread. Removal of non-native species in the tree planting area will be conducted as needed and recommended in the annual Monitoring Report. Removal of non-native species may be conducted by applicant or vineyard manager during annual maintenance.
- 4) In order to assure survival and minimize water usage, **direct root watering** should be implemented. Each plant should have a 3' long, by 3" wide perforated pipe installed within 1' of the seedling. The pipe should be 2 to 3 feet in length, vertical to the ground surface and filled with drain rock. All watering should be done inside of the perforated pipe. (Note, a 3' Long, by 3" wide perforated pipe ½ full of rock will hold approximately 1 gallon) Seedlings must be hand watered. Water is expected to be one to 5 gallons per month during the late spring and summer. Fall watering may or may not be necessary and will be determined by vineyard manager, landscape contractor, forester, or similar. Watering should be reduced for the second year and eliminated by the end of the third year.
- 5) A watering schedule should be applied under the direction of the vineyard manager, landscape contractor, forester, or similar. The watering schedule should be reviewed by the vineyard manager and adjusted as needed. The goal is to get the planted seedlings to survive on their own in a timely manner. The watering schedule may require field adjustment based on weather, temperature, etc. under the advisement of the vineyard manager, landscape contractor, forester, or similar.

Annual water needs.

As mentioned above, the 170 Douglas fir seedlings will not need to be watered. Annual monitoring will need to be done and individual dead trees replaced annually as needed. The Native oak trees will need up to 5 gallons per month for up to 5 months depending on soil moisture during the spring and summer months. This equates to a potential usage of 20 plants x 5 gal per month x 5 months = +/- 500 gallons. The landowner has a 250 gallon portable water tank and pump. Seedling water needs will be purchased on the open market (such as Bingham's Potable water delivery) and will not impact the existing water usage on the property. The existing Water Availability Analysis will not need to address this additional 500 gallons. Water delivery is expected to be twice per year to fill the Miller's 250 gallon portable tank.

Annual monitoring and report letter

A brief letter report outlining the as-built conditions of the tree planting area will be prepared and submitted to the County of Napa within 45 days of the completion of planting. The report will document any deviations between this plan and final layout of the tree plantings (e.g., field-fitting planting is acceptable, irrigation system etc.). Monitoring of the tree planting area will occur annually over the five year period. Data will be collected during each annual monitoring visit to assess the successful establishment of the planted trees.

Monitoring will be performed by a vineyard manager, landscape contractor, forester, biologist, or similar. The monitoring will consist of traversing the entirety of the planting area and documenting survivorship of the trees, general observations of growth and vigor of the trees, and any threats to the overall success of the planting. Over topping of competing vegetation should take place annually for the 5 year period. This will help insure survival and success of the planted seedlings. **An annual monitoring letter shall be submitted to the county of Napa prior to the end of each of the 5 winter periods.** Pictures may be submitted with the annual monitoring letter.

Recommended success criteria are as follows:

- 80% survival in each of the 5 years. Any mortality of the planted seedlings should be replaced as soon as is practical, given soil and weather conditions and seedling availability.
- Year 5: Survival of the planted trees shall be 80%

Failure of success criteria

If annual or final success criteria are not met, the Applicant and/or their agent(s) will prepare an analysis of the cause(s) of failure and, if determined necessary by the County of Napa and the Applicant, propose remedial action. The Applicant will be responsible at that time for reasonably funding the contingency procedures necessary for completion of the re-establishment and restoration project.

Notification of Completion

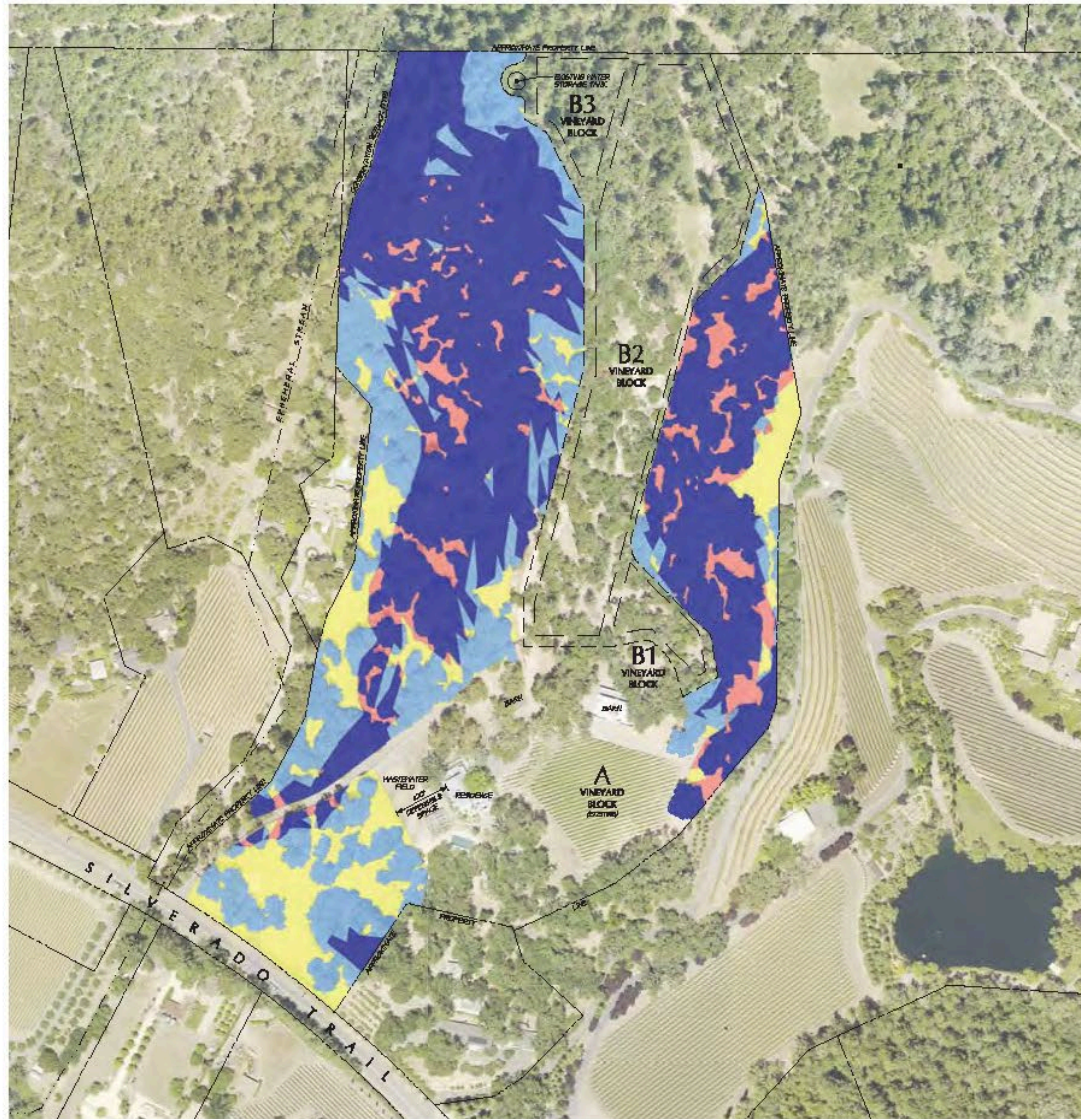
Upon completion of the fifth year of monitoring, a **final report will be provided to the County of Napa detailing the results of the final year of monitoring**. If the tree planting area has met the success criteria at the end of the five-year period, then the final report will recommend no further actions. If the tree planting area has not met the success criteria by the end of the five year period, then the final report may recommend additional corrective measures and/or extending the monitoring period. When the tree planting has met the success criteria or revised criteria agreed to by the County of Napa, the planting plan will be considered complete.

Thank you,

SRB

Scott R. Butler





- LEGEND:**
- PRESERVATION AREA ON STEEP SLOPES (STEEPER THAN 30%, 4.5+ AC) *
 - PRESERVATION AREA ON 20% - 30% SLOPES (20% TO 30%, 6.75+ AC)
 - REPLACEMENT AREA ON 10% SLOPES (10% TO 20%, 2.25+ AC) *
 - REPLACEMENT AREA ON 5% - 10% SLOPES (5% TO 10%, 1.5+ AC)
 - EDGE OF POTENTIAL VINEYARD AVENUE
 - EDGE OF POTENTIAL VINEYARD BLOCK
- * THIS PLAN PROPOSES TO CONVERT 5.4 ACRES OF USED CANOPY COVER TO VINEYARD. THE AREAS IDENTIFIED AS PRESERVATION AREA AND REPLACEMENT AREA ON LESS THAN 30% SLOPES IN THIS EXHIBIT WILL BE USED TO MEET THE "N" GREENHOUSE GASES MITIGATION REQUIREMENT FOR NAPA COUNTY.

CANOPY MITIGATION AREA EXHIBIT

SCALE: 1" = 100'

08-24-2023	147150087	AK
NO.	DATE	DESCRIPTION
		BY



PREPARED UNDER THE DIRECTION OF
 Richard Patton
 RICHARD PATTON 08-24-2023

BARTELT
 CIVIL, ENGINEERING, LAND PLANNING
 500 JEFFERSON STREET, SUITE 200
 NAPA, CALIFORNIA 94950
 Telephone: 707.259.5001

MILLER VINEYARD
 CANOPY MITIGATION AREA EXHIBIT
 CALIFORNIA
 NAPA COUNTY

DATE	BY
08/24/23	RFP/BJB
DATE	BY
08/24/23	RFP/BJB

EC8
 08-24-2023