

**Attachment 19**

May 5, 2021, Mitigation Proposal from Applicant  
And Ascent Report

Hall Brambletree Associates  
401 St. Helena Highway South  
St. Helena, CA 94574

May 5, 2021

David Morrison  
Director  
Planning, Building & Environmental Services  
Napa County  
1195 Third Street, 2nd Floor  
Napa, CA 94559

Re: Walt Ranch ECP – GHG Mitigation

Dear Mr. Morrison:

This letter is to provide Napa County with Hall Brambletree's proposal to address the greenhouse gas emissions from the Walt Ranch Erosion Control Plan ("ECP"). This letter is accompanied by a report prepared by Ascent Environmental quantifying the GHG emission reductions associated with this proposal. This proposal is intended to address the Court of Appeal's opinion concerning the project's GHG mitigation, and the trial court's subsequent issuance of a writ of mandate to the County.

**BACKGROUND**

The County certified the Environmental Impact Report ("EIR") and approved the Walt Ranch ECP in December 2016. The EIR concluded that the conversion of a portion of the property to vineyards would result in the emission of 27,528 metric tons of carbon dioxide equivalent ("MTCO<sub>2e</sub>"). Virtually all of these emissions were attributable to the removal of 28,616 trees to make way for the vineyard blocks. (Final EIR, Table 6-2.)

The GHG emissions from the ECP will be a small fraction of the EIR's estimate. There are two reasons why this is true:

- (1) The EIR based its estimate on the removal of 28,616 trees. This estimate is based on a tree survey report conducted in 2013 that assumed 507 acres would be cleared to accommodate the vineyards. Thereafter, the project shrank. As approved, the project encompasses clearing 316 acres. The County's EIR consultant estimated that the smaller, approved project would result in removing 14,281 trees, a reduction of approximately 50%. This reduction in the project's size warrants a comparable decrease in the project's GHG emissions.
- (2) The project site has burned twice, in 2017 and again in 2020. In one or the other fire, roughly 2,200 acres – approximately 97% of the property – burned. Some areas burned in both fires. The burn areas are shown on Figure 1 of the Ascent report. For these reasons, the inventory of trees and sequestered carbon on the property is a tiny fraction of what it was in 2016. Most of the sequestered carbon that would be emitted by clearing trees and planting vines is already in the atmosphere.

Although both of these factors would justify revising the EIR's estimate of the project's GHG emissions, we do not ask the County to do that. The Court of Appeal upheld the EIR's estimate of the project's GHG emissions; the Court's sole qualm was with the GHG mitigation adopted by the County. The EIR's estimate of GHG emissions is therefore final and beyond legal attack. If we were to revisit those calculations – which would clearly result in lowering them dramatically – then no matter how

conservative, those new calculations could be subject to further scrutiny and legal review, which we do not believe is necessary given the current circumstances. In addition, the fires have scarred the landscape, and we welcome the opportunity to use the Walt Ranch GHG mitigation as an opportunity to help repair it. Our proposal therefore continues to assume that the project must offset its GHG emissions totaling 27,528 MTCO<sub>2</sub>e.

### **PROPOSED GHG MITIGATION**

Hall's proposed GHG mitigation has two components. First, as before, Hall will record a conservation easement on a portion of the property. Second, Hall will implement a tree planting program. Each component is described below.

#### **Conservation Easement**

In approving the project, the County adopted Mitigation Measure 6-1. This measure requires Hall to "place into permanent protection no less than 248 acres of woodland habitat." The Court of Appeal held that there was insufficient evidence to show that recording an easement on 248 acres of such habitat would mitigate the project's GHG emissions. That was because the EIR did not identify the woodland habitat to be preserved, and because there was insufficient evidence that such habitat could be converted under existing County policy. (Slip op., pp. 51-53.)

Hall proposes to place a conservation easement on not less than 124 acres of developable woodland habitat on the Walt Ranch property. Hall is already required to place a conservation easement on 525 acres of the property to address the County's conservation policies. The 124 acres of developable woodland habitat is in *addition* to the 525 acres that will already be conserved. Taken together, a total of a minimum of 649 acres will be placed in conservation easements, an area that is well over double the size of the project footprint of 316 acres.

The additional acres of conservation of woodland habitat will generally be located within the area shown on Figure 1 attached to this letter; woodland habitat suitable for conservation is identified in Figure 1. Within the parcels shown on Figure 1, we estimate there will be at least 110 acres of woodland habitat that will be subject to the easement (note that 124 acres of woodland habitat exist there now).

Hall has identified additional acreage suitable for conservation that is located outside the parcels shown on Figure 1. This additional acreage will also consist of woodland habitat suitable for conservation. A total of over 35 acres of such suitable woodland habitat is available; this habitat is shown on Figure 2.

Taken together, the easement will encompass not less than 124 acres of suitable woodland habitat. All this acreage – both within the parcels identified in Figure 1, and those identified in Figure 2 parcels elsewhere on the property – provide appropriate mitigation for the project's GHG emissions, considering the concerns expressed by the Court of Appeal's opinion. Specifically:

- These acres are all mapped as woodland habitat.
- None of these acres are on slopes of 30% or greater.
- None of these acres are located in the Milliken Creek watershed.

Placing a conservation easement on not less than 124 acres of suitable woodland habitat land will therefore provide appropriate mitigation for the project's GHG emissions, even under the stringent standards established by the Court of Appeal's opinion.



Mitigation Measure 6-1 called for placing 248 acres in an easement. Hall now proposes to place not less than 124 acres of developable woodland habitat in an easement as GHG mitigation. Hall therefore requests that the County revise Mitigation Measure 6-1 to reflect this proposal. Specific edits to Mitigation Measure 6-1 are shown later in this letter.

Hall's proposed woodland habitat easement encompasses less acreage than the 248 acres originally included in Mitigation Measure 6-1. The current proposal – not less than 124 acres – represents 50% of Mitigation Measure 6-1. The balance will be mitigated by the tree planting program described below.

Hall has taken this approach because Walt Ranch is a complex mosaic of different landscapes and habitats. Identifying 248 acres of woodland habitat that is not otherwise restricted due to steep slopes, watersheds, or the existing easement requirement is possible, but it would result in a patchwork of small "blobs" of habitat scattered throughout the property. Hall's proposal instead focuses primarily on a large contiguous area that can be better-preserved, monitored and enforced through conservation easements. That is how Hall arrived at the not-less-than-124-acre proposal.

The balance of required mitigation can be provided by implementing a tree planting program, as described below.

### **Tree Planting**

Hall retained Ascent to investigate whether a tree planting program could serve to mitigate the project's GHG emissions, as an alternative to the recordation of a conservation easement. This approach appears to present significant opportunities because it has the potential to result in real-world, measurable sequestration of GHG emissions, as regulatory agencies have recognized.

We directed Ascent to identify the tree planting program that would be required to compensate for 27,528 MTCO<sub>2</sub>e of emissions. We did not ask Ascent to reduce the project's mitigation obligations due to its smaller size or to the effects of 2017 and 2020 wildfires. We also did not ask Ascent to account for the mitigation that would be provided by the conservation easement described above. Instead, we asked Ascent to identify the number of trees that would need to be planted in order to offset the entire 27,528 MTCO<sub>2</sub>e in emissions. Ascent's report is attached. The report concludes that 16,790 oak trees (as seedlings) would need to be planted and managed so as to ensure an 80 percent survival rate. The report also identifies areas on the property that would be appropriate for this program. The report concludes that there is more than enough suitable habitat on the property to carry out this program. Figure 2 of Ascent's report shows eligible planting areas.

As Ascent notes, the number of trees necessary to offset the GHG emissions may be considerably less than this total. We do not propose, however, to adjust downward this target. We are instead proposing to commit to a program requiring planting 16,790 oak trees.

As Ascent notes, the project entails removing 14,281 trees (assuming that the trees were still present, and that many of them were not consumed by fire in intervening years). Carrying out this replanting program would therefore result in a net increase of 2,509 trees.

We have contacted regulatory agencies and non-profits to assist us in determining the feasibility of this program. Through these discussions, we have learned that planting oak seedlings in this area can be successfully accomplished. Both Cal-Fire and the Putah Creek Council have offered technical expertise. They also manage tree nurseries that can provide appropriate seedlings for replanting on the property.

The replanting program will mitigate fully the project's GHG emissions. On top of that, the program will assist in stabilizing soils and reducing soil erosion in areas scarred by recent wildfires.

Based on Ascent's report, we could forego conservation easements, and rely exclusively on the replanting program. Hall does not propose to do that. Instead, we propose to do both. We recognize that this approach will result in over-mitigating the project's GHG emissions. We are willing to do that.

Hall also wishes to disincentivize the relentless opposition that has resulted in years of delay. We therefore propose to plant an additional 16,790 trees only if there is no administrative appeal of the Director's decision to the Board of Supervisors, and if no other challenge to this decision is filed with the Court. This would result in total mitigation of 68,820 MTCO<sub>2</sub>e, or 250% of the required mitigation as outlined in the EIR.

We therefore request that the County revise Mitigation Measure 6-1 as follows. Deleted text is shown in overstrike; new text is underlined. These revisions also include Hall's proposal concerning conservation easements, as described above.

**Mitigation Measure 6-1:** In order to offset the construction emissions from development of the Proposed Project, the Applicant shall place into permanent protection no less than ~~248~~ 124 acres of woodland habitat. The land to be protected under this measure shall consist of not less than 110 acres of suitable woodland habitat located within the parcels shown in Figure 1, attached to the Applicant's May 5, 2021, letter to the County, and not less than 35 acres of suitable woodland habitat located elsewhere on the property. To be suitable, the area within the easement shall be mapped woodland habitat, less than 30% slope, and outside of Milliken Creek watershed. All acreage designated for preservation shall be identified as such in a deed restriction, open space easement with an organization such as the Land Trust of Napa County as the grantee, or other means of permanent protection. Land placed in protection shall be restricted from development and other uses that would potentially degrade the quality of the habitat (including, but not limited to, conversion to other land uses such as agriculture or urban development, and excessive off-road vehicle use that increases erosion), and should otherwise be restricted by the existing goals and policies of Napa County.

In addition, the Applicant shall plant not less than 32,580 oak tree seedlings on the property. The tree planting program shall be carried out as described in the *Walt Ranch Erosion Control Plan: Greenhouse Gas Mitigation Report* (Ascent Environmental, April 2021). The trees shall be monitored and replanted as necessary to show a survival rate of not less than 80% after five years. The trees shall not be removed during the life of the project,

The measures set forth above shall apply in the event the County adopts this measure, and no administrative appeal of the Director's decision is filed, and no opposition or challenge to this decision is filed with the Court. In the event of such an appeal, opposition or challenge, then the measures set forth above shall still be carried out, subject to the following revision: The number of oak tree seedlings to be planted shall not less than 16,790 trees.

These reductions reflect the fact that the project, as approved, will result in removing half as many trees as the number to be removed when the County formulated Mitigation Measure 6-1.

These measures, as revised, still provide well more than full mitigation of the project's GHG emissions. The tree planting program alone would mitigate fully the project's impacts in light of its reduced size. Note, however, that even under this approach, Hall would *both* record an easement on woodland



habitat *and* implement the tree planting program. Even under this scenario, therefore, Hall would over-mitigate the project's GHG emissions.

We propose that the County prepare an addendum to the certified Final EIR for Walt Ranch to evaluate the environmental impacts associated with revising Mitigation Measure 6-1 as outlined above. Such an addendum need not be certified. Instead, under CEQA Guidelines section 15164, subdivision (d), the decision-maker – in this case, the Director – must “consider” the addendum together with the EIR that it supplements. We recommend that the addendum not revisit the analysis of the project's GHG emissions, or the estimate of GHG emissions generated by the project; all those aspects of the EIR have been upheld by the Court of Appeal, and the EIR remains certified. The sole issue to be addressed in the addendum is determining whether Mitigation Measure 6-1, as revised above, will provide sufficient mitigation for the project's GHG emissions. In fact, our proposal provides overwhelming mitigation. The addendum could note further that the tree planting program would have multiple beneficial effects, in that it would help revegetate the property following the 2017 and 2020 fires and would thereby reduce erosion and enhance water quality.

We appreciate your consideration of this request. Please let us know if you would like additional information or have any questions. We look forward to hearing from you.

Very truly yours,



Mike Reynolds

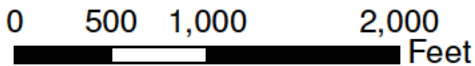
Hall Brambletree Associates

Attachments:

Figure 1 – location of conservation easement for woodland habitat for GHG mitigation

Figure 2 – additional acreage available for conservation easement for woodland habitat

Memorandum from Brenda Hom, Hannah Kornfeld and Honey Walters, Ascent Environmental, to Mike Reynolds, Hall Brambletree Associates, *Walt Ranch Erosion Control Plan: Greenhouse Gas Mitigation Report* (April 28, 2021)



**Legend**

- Proposed Easement Area
- Available Acceptable Woodland in Easement (124.2 acres)
- Acceptable Woodland Outside of Easement
- Walt Ranch Parcels
- Property Boundary

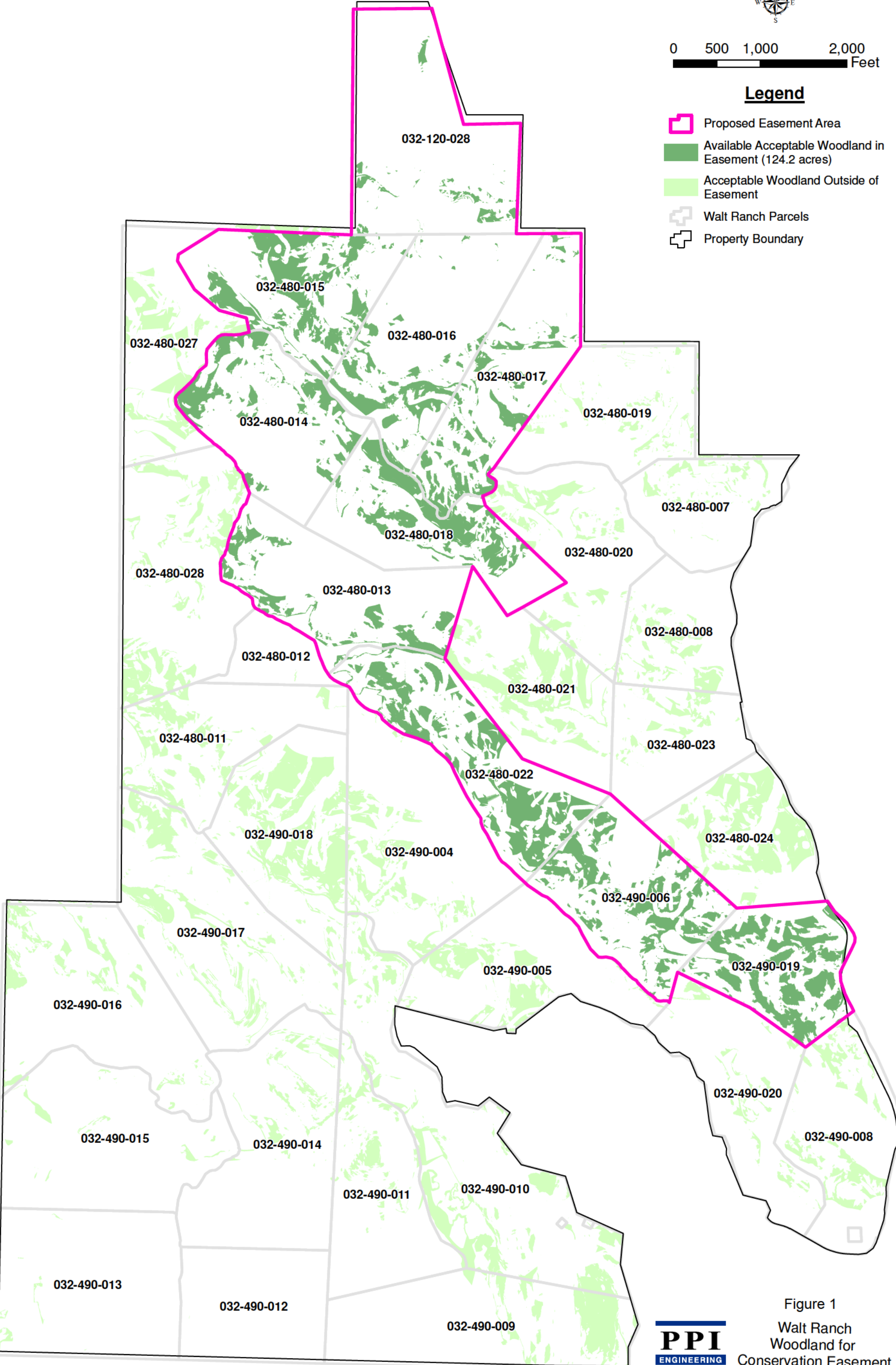
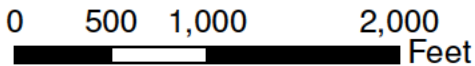


Figure 1  
Walt Ranch  
Woodland for  
Conservation Easement  
April 27, 2021

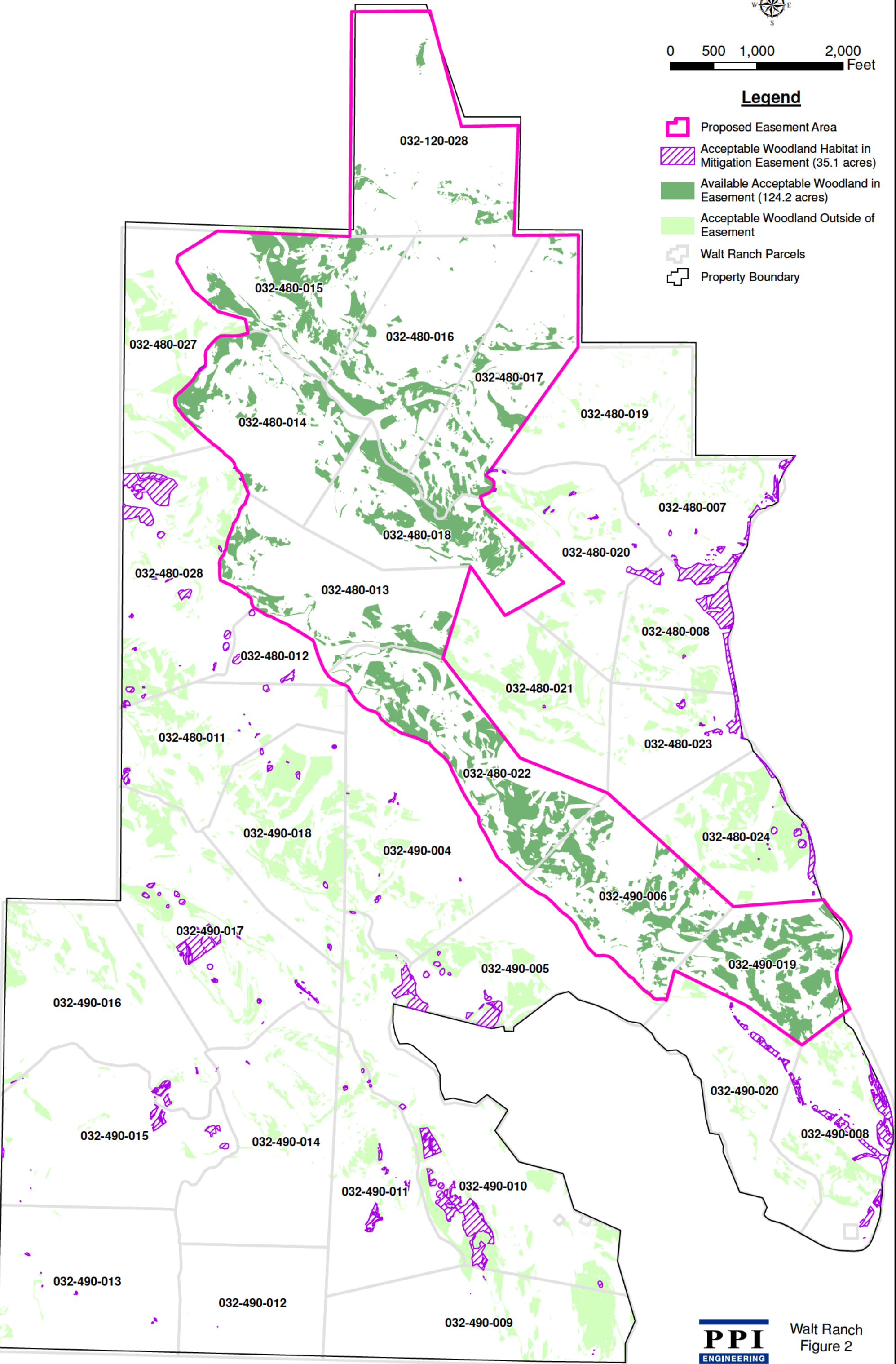






**Legend**

- Proposed Easement Area
- Acceptable Woodland Habitat in Mitigation Easement (35.1 acres)
- Available Acceptable Woodland in Easement (124.2 acres)
- Acceptable Woodland Outside of Easement
- Walt Ranch Parcels
- Property Boundary



1:10:36 PM 5/3/2021 R:\KH\WALT\IMAGES\000 Post-Approval maps\Conservation Easement\2021-05-03 Woodland in Mitigation Easement\2021-05-03 Figure 2.mxd



# Memo



455 Capitol Mall, Suite 300  
Sacramento, CA 95814  
916.444.7301

**Date:** April 28, 2021

**To:** Mike Reynolds (Hall Brambletree Associates)

**From:** Brenda Hom, Hannah Kornfeld, and Honey Walters (Ascent)

**Cc:** Whit Manley (Remy Moose Manley)

**Subject:** **Walt Ranch Erosion Control Plan: Greenhouse Gas Mitigation Report**

---

## INTRODUCTION

The County of Napa (County) approved a vineyard-conversion project at Walt Ranch (project), a 2,300-acre site located within the Howell Mountains of Napa Valley, approximately 7 miles northeast of the City of Napa. The project proposed the development of 356 net vineyard acres within 507 gross acres, including the development of 65 vineyard blocks on sloped terrain, which required an Erosion Control Plan (ECP) from the County. The Final Environmental Impact Report (FEIR) of the ECP was certified in 2016 (County of Napa 2016a).

Table 6-2 of the FEIR estimated that greenhouse gas (GHG) emissions would result from construction activities and the loss of carbon sequestration through tree removal, shown in Table 1 below. The FEIR assumed 28,616 trees would be removed to accommodate the vineyard blocks. Mitigation Measure 6-1 proposed to conserve 248 acres of woodland to reduce the project's emissions to a less-than-significant level. The estimated reduction in GHG emissions needed to mitigate to a less-than-significant level was 27,528 metric tons of carbon dioxide equivalent (MTCO<sub>2e</sub>). Mitigation Measure 6-1 from the FEIR is included below for reference.

**Mitigation Measure 6-1:** In order to offset the construction emissions from development of the Proposed Project, the Applicant shall place into permanent protection no less than 248 acres of woodland habitat. All acreage designated for preservation shall be identified as such in a deed restriction, open space easement with an organization such as the Land Trust of Napa County as the grantee, or other means of permanent protection. Land placed in protection shall be restricted from development and other uses that would potentially degrade the quality of the habitat (including, but not limited to, conversion to other land uses such as agriculture or urban development, and excessive off-road vehicle use that increases erosion), and should otherwise be restricted by the existing goals and policies of Napa County.

**Table 1: Walt Ranch Greenhouse Gas Construction Emissions (Table 6-2 of FEIR)**

Proposed Project	GHG Emissions (MTCO <sub>2</sub> e)
Construction Activities	732
Tree Removal	105,021 <sup>1</sup>
<i>Total Construction GHG Emissions</i>	<i>105,753</i>
<b>GHG Emission Reduction Measures</b>	
Preservation of 248 acres of Woodland	27,528 <sup>2</sup>
<i>Construction GHG Emissions after Woodland Preservation Measures</i>	<i>78,225</i>
Percent Reduction from Total Construction Emissions	26%

Notes: FEIR = Final Environmental Impact Report; GHG = greenhouse gas; MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent.

<sup>1</sup> Based on CalEEMod emissions factor for sequestration loss of 0.0367 MTCO<sub>2</sub>e/tree over 100 year for 28,616 trees.

<sup>2</sup> Based on CalEEMod emissions factor for land use change of 111 MTCO<sub>2</sub>e/acre for an estimated 248 acres.

Source: County of Napa 2016a:6-17

In January 2017, three petitions for writ of mandate were filed in the trial court. The trial court denied all three petitions, but all three petitioners appealed. In September 2019, the First District Court of Appeal affirmed the trial court's decision, with one exception. The Court of Appeal ruled that Napa County's finding regarding the project's GHG impact, with the adoption of Mitigation Measure 6-1, was not supported by substantial evidence. This mitigation measure was deemed inadequate by the Court of Appeal because the measure did not identify the acreage to be conserved, or otherwise show that the land to be conserved could be converted to other uses under County policy. The Court of Appeal noted that roughly 40 percent of the property cannot be converted to other uses without a use permit or other authorization because slopes exceed 30 percent, and because a portion of the property is in the Milliken Reservoir watershed. In May 2020, the trial court directed the County to reconsider the less-than-significant finding. The EIR remains certified, and the project remains approved. Under the trial court's judgment, however, the project cannot go forward unless and until the County reconsiders this finding.

Since the EIR was certified in 2016, two major wildfire events, the Atlas and Hennessey Fires, have occurred on the project area in 2017 and 2020, burning approximately 2,200 acres or 97 percent of the project area. Approximately 40 percent of the burned areas burned in both wildfire events. These events were not a result of the project and thus, new plantings on these burn areas can count toward the GHG mitigation in the EIR.

The County supports mitigating the project's GHG emissions through reforestation of areas burned in the recent wildfires. This memorandum presents a path for the project applicant to meet the GHG reduction equivalent previously attributed to preservation of woodlands in Mitigation Measure 6-1 (i.e., 27,528 MTCO<sub>2</sub>e).

## DATA, METHODS, AND ASSUMPTIONS

The Biological Resources Management Plan (BRMP) for the ERC recommends that any replanting efforts on the project site should follow the original dominant species (County of Napa 2016b). Ascent reviewed the acres of burned areas and estimated the number of oak trees destroyed in the wildfires, using average



oak woodland tree densities by species type, which dominated the original land cover. Ascent also reviewed the acreage of grassland destroyed in the wildfires. Oak woodlands accounted for over 87 percent of the burned area. Although other tree, grassland, and shrub species were also affected by the wildfires and could be considered for general replanting efforts, carbon sequestration rates and tree densities representative of these biomes within the project area were not available. The exclusion of these minority biomes results in a conservative carbon sequestration assessment as additional, though marginal, sequestration opportunities could result from replanting of non-oak woodland vegetation. Thus, only oak woodlands were evaluated as part of this analysis for the purposes of carbon sequestration to meet the necessary reductions under Mitigation Measure 6-1. The carbon sequestration rates for the oak tree plantings were calculated from the U.S. Department of Agriculture Forest Service's i-Tree Planting calculator (i-Tree) (Version 2.1.2) (USDA Forest Service 2020).

For the purposes of establishing a representative "tree" from which to estimate carbon sequestration potentials, Ascent evaluated the distribution of oak tree species in the areas affected by the Hennessey wildfire in 2020. The vegetated areas solely affected by the Atlas Fire in 2017 were not evaluated due to the regrowth already occurring on that land. Ascent overlaid the original vegetative cover data on the project site with the areas burned in the Hennessey Fire in 2020. The spatial data for the burn areas and original vegetative habitats were developed by PPI Engineering and available from the BRMP, respectively (PPI Engineering 2020, County of Napa 2016b). The cross section of these datasets was then further limited to vegetative land cover outside the identified conservation areas and planned vineyard development, which are areas unsuitable for new tree plantings. The results of this analysis are shown in Table 2 and Figures 1 through 3, and detailed in Appendix A.

**Table 2: Burned Areas by Original Vegetation Types**

Original Landcover	Area Burned in the Hennessey Fire (2020)		Burn Areas Eligible for Planting <sup>2</sup>	
	Acres	Percent of Total	Acres	Percent of Total
<b>Oak Woodland</b>	<b>954.30</b>	<b>85%</b>	<b>900.72</b>	<b>68%</b>
<i>Coast Live Oak</i>	318 19	28%	302 02	17%
<i>Mixed Oak</i>	302 50	27%	282 15	32%
<i>Blue Oak</i>	241 10	21%	226 74	13%
<i>Black Oak</i>	56 32	5%	55 29	3%
<i>Valley Oak</i>	29 20	3%	27 65	2%
<i>Interior Live Oak</i>	6 99	1%	6 88	0%
<b>Shrubland and Grassland</b>	<b>165.52</b>	<b>15%</b>	<b>122.44</b>	<b>32%</b>
<i>Shrubland</i>	51 31	5%	45 98	19%
<i>Grassland</i>	114 21	10%	76 46	13%
<b>Non-Vegetative Landcover</b>	<b>2.65</b>	<b>&lt;1%</b>	<b>0</b>	<b>0%</b>
<i>Rock Outcrop</i>	2 65	<1%	0	0%
<i>Urban</i>	0 32	<1%	0	0%
<b>Total</b>	<b>1,122.47</b>	<b>100%</b>	<b>1,023.16</b>	<b>100%</b>

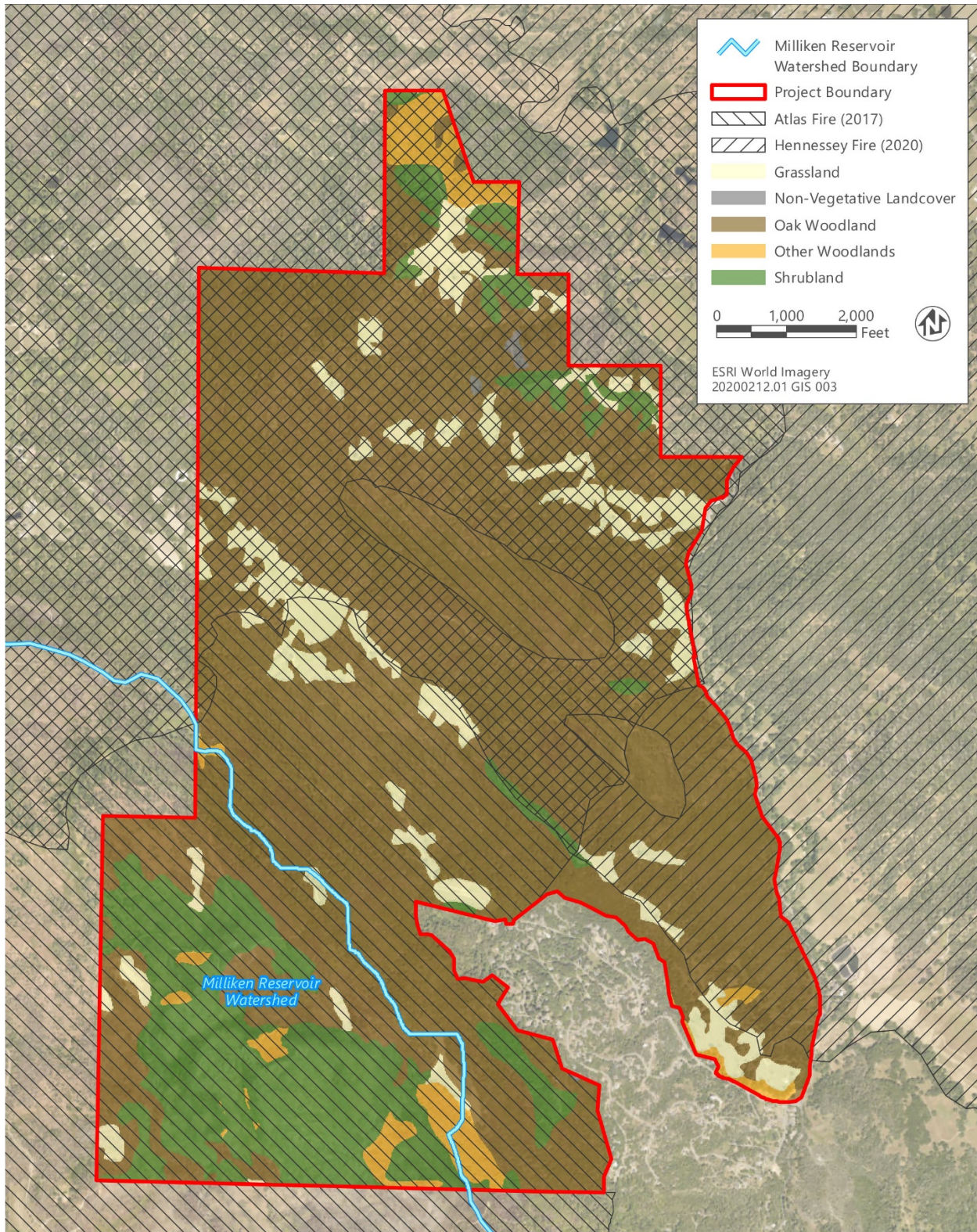
Notes:

<sup>1</sup> A mix of oak and non-oak tree species,

<sup>2</sup> Excludes areas within planned conservation areas, proposed vineyard development, and non-vegetative landcover.

Source: Data compiled by Ascent Environmental in 2021 using data from County of Napa 2016b and PPI Engineering 2020

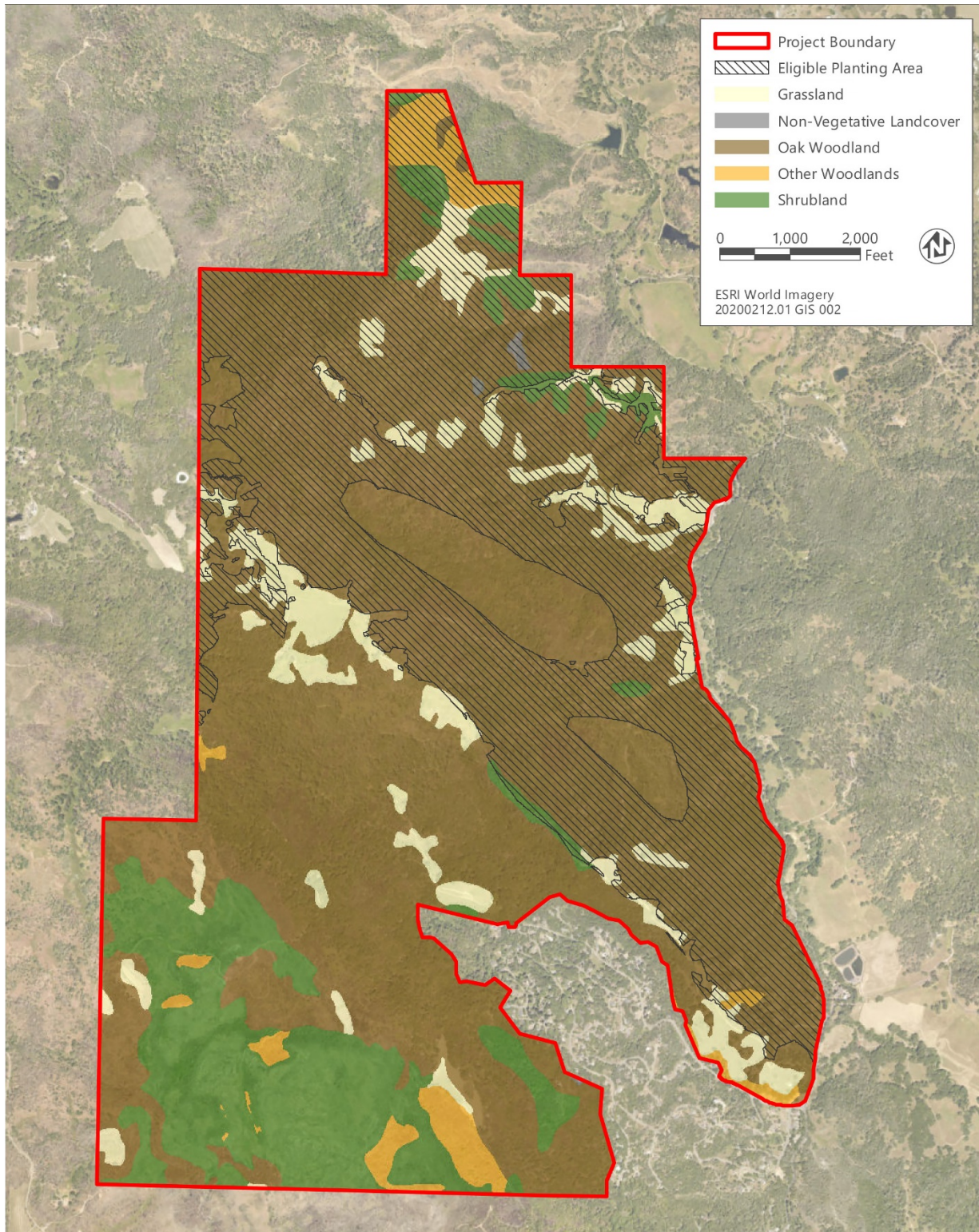




Source: Data received from County of Napa and PPI Engineering in 2020; adapted by Ascent Environmental in 2021

Figure 1 Burned Areas





Source: Data received from County of Napa and PPI Engineering in 2020; adapted by Ascent Environmental in 2021

Note: Eligible planting areas exclude conservation areas.

Figure 2 Eligible Planting Areas

Oak woodlands accounted for 85 percent of the burned area and 68 percent of the burned area eligible for planting. Oak woodland species consisted of black oak, blue oak, coast live oak, interior live oak, and valley oak species. The original tree populations were estimated using oak woodland tree densities from a ground-based survey study published by the California Oak Foundation (California Oak Foundation 2006). The relevant tree densities and resulting tree loss estimates from the study are shown in Table 3.

**Table 3: Oak Woodland Tree Densities and Estimate of Trees Lost**

Oak Tree Species	Trees per acre <sup>1,2</sup>	Trees Lost in the Hennessey Fire	Trees Lost in Eligible Planting Area <sup>3</sup>
Coast Live Oak	698	178,738	169,795
Mixed Oak	432	130,680	121,889
Blue Oak	311	118,343	111,526
Black Oak	1281	72,144	70,826
Valley Oak	156	4,555	4,313
Interior Live Oak	674	4,710	4,637
Total	NA	509,170	482,987

Notes: NA = not applicable.

<sup>1</sup> Includes oak trees of all sizes, including seedlings.

<sup>2</sup> California Oak Foundation 2006: Appendix B

<sup>3</sup> Excludes areas within the Milliken Reservoir watershed and proposed vineyard areas.

Source: Data compiled by Ascent Environmental in 2021 using data from County of Napa 2016b and PPI Engineering 2020

The identified list of tree species shown in Table 3 were input into i-Tree to estimate the average annual carbon sequestration rates (MTCO<sub>2</sub>e per tree per year) associated with plantings of oak seedlings. For a given planting project location, i-Tree estimates the total carbon sequestration potential for a list of given tree species over the lifetime of a project, depending on the size of the tree at planting. i-Tree's applicable list of oak species that matches the list in Table 3 is limited to "California Black Oaks," "Coastal Live Oaks," and "Oaks." Thus, oak species other than black and coastal live oaks were assumed to have the carbon sequestration rates of "Oaks" category. The BRMP states that all tree species would be best propagated from seed in tree tubes (County of Napa 2016b:79). As such, Ascent's i-Tree model inputs assumed the planted trees would start as seedlings with a stem diameter of 1/8<sup>th</sup> of an inch (0.125 inches). The model inputs also assumed a 20 percent mortality rate and a project lifetime of 99 years (maximum allowed by the model), consistent with the target survival rate and 100-year lifetime identified in the BMRP (County of Napa 2016b:79). These carbon sequestration rates are shown in Table 4. i-Tree inputs are provided in Appendix A.



**Table 4: Oak Tree Carbon Sequestration Rates**

Oak Tree Species	Carbon Sequestration Rate (kg CO <sub>2</sub> e/tree/year)
Black Oak	84
Blue Oak <sup>1</sup>	46
Mixed Oak <sup>1</sup>	46
Coast Live Oak	51
Interior Live Oak <sup>1</sup>	46
Valley Oak <sup>1</sup>	46
Average for Walt Ranch <sup>2</sup>	54.7

Notes: kg CO<sub>2</sub>e = kilograms of carbon dioxide equivalent

<sup>1</sup> This specific tree species was not available in i-Tree. Sequestration rate based on the general "Oaks" tree category in i-Tree.

<sup>2</sup> Weighted average based on population distribution of the listed oak tree species in the eligible planting area, as shown in Table 3.

Source: Data modeled by Ascent Environmental in i-Tree Planting calculator (Version 2.1.2) in 2021.

Based on the distribution of tree species in the eligible planting areas, the project would need to plant at least 16,790 oak trees (as seedlings) to sequester a total of 27,528 MTCO<sub>2</sub>e over a 30-year project lifetime, accounting for the 80 percent survival rate. This represents 3 percent of the trees burned in the Hennessey fire. As shown in Table 3, the total number of trees lost on areas eligible for planting is 482,987, which is far greater than the number of tree plantings needed to meet the GHG reduction target. Therefore, there is ample space on the project site to plant the number of oak trees needed to demonstrate compliance with Mitigation Measure 6-1.

The number of tree plantings needed to meet the annual carbon sequestration target is highly dependent on the types of trees being planted. The actual tree species planted will depend on recommendations from registered professional foresters, consistent with the BRMP. For example, if the profile of trees burned on lands affected by both the Atlas and Hennessey fires were considered, the average carbon sequestration rate would be 54.7 kg CO<sub>2</sub>e/tree/year, and 16,473 trees would be needed to be planted. Considering that areas outside the project could be considered for replanting, especially those also affected by recent wildfires, and considering that foresters generally recommend replacing lost native species with the same species, the final average carbon sequestration rate of trees replanted under this effort could vary considerably from the estimates in this memorandum. Thus, Ascent recommends the applicant establish a tree replanting target of 16,790 trees to meet its carbon sequestration target of 27,528 MTCO<sub>2</sub>e. The target may be adjusted pending further coordination with nearby partnering landowners and evaluation of the tree species profile on their lands.

As was discussed in the FEIR, it was estimated that 28,616 trees would be removed to accommodate the vineyard blocks. This estimate was based on a tree survey report conducted in 2013 that assumed 507 acres would need to be cleared to accommodate the project. The project at Walt Ranch that was approved by the Napa County Board of Supervisors in December 2016 reduced the project's intensity such that it would remove 316 acres. The estimated trees associated with the 316 acres for the approved project is 14,281. Therefore, the estimated trees to be replanted from compliance with Mitigation Measure 6-1 would result in a net increase of 2,509 trees.

The estimated break down of carbon sequestration by land cover type for the eligible planting areas in oak woodlands is shown in Table 5.

**Table 5 - Annual Carbon Sequestration from Replanting of Oaks in Eligible Planting Areas**

Original Landcover Type	MTCO <sub>2</sub> e/year	Percent of Target
<b>Oak Woodland</b>		
<i>Coast Live Oak</i>	11,169	41%
<i>Mixed Oak</i>	3,992	15%
<i>Blue Oak</i>	3,464	13%
<i>Black Oak</i>	4,796	17%
<i>Valley Oak</i>	56	<1%
<i>Interior Live Oak</i>	169	1%
<b>Total</b>	<b>23,646</b>	<b>86%</b>
Target Carbon Sequestration Rate	27,528	100%
Remaining Carbon Sequestration Needed	3,882	14%

Notes: MT CO<sub>2</sub>e = metric tons of carbon dioxide equivalent

Source: Data compiled by Ascent Environmental in 2021.

In summary, the project would need to plant a minimum of 16,790 oak seedlings (or the carbon sequestration equivalent) to meet the requirements under Mitigation Measure 6-1. Based on average tree densities, this planting target can be fulfilled entirely on the project site through the replanting of oak woodlands in the areas eligible for planting, as shown in Figure 1.

## VEGETATION PLANTING PROGRAM

All planting efforts should follow the replanting techniques and guidelines established by a registered professional forester familiar with oak woodland habitat similar to the ones on the project site, using the BRMP as a guide and resource. The recommendations between the BRMP and the registered professional forester may differ in areas, such as recommended tree densities. For example, the BRMP recommends that the density of plantings be determined by a qualified botanist, horticulturalist, or forester and similar to the density of the original landcover (County of Napa 2016b:80). However, the Napa Resource Conservation District's Forestry Program Manager and the California Native Plant Society's Fire Recovery Guide recommend that new plantings in burn areas consider planting at lower densities to facilitate fire resilience by lowering a forest's fuel content (Benton, pers. comm., 2021, California Native Plant Society 2019). The BRMP was written in 2016, prior to the Atlas and Hennessey Fires, and may not be considering the latest fire management guidance with respect to replanting woodlands affected by wildfire. Where the recommendations differ between the forester and BRMP in other non-fire-related subjects (e.g., tree planting size, protection of new plantings, planting schedules), the applicant shall discuss with the forester what the best recommended approach should be.

As the actual densities determined by the qualified specialist may differ from the average tree densities shown in Table 3, the applicant should prioritize planting trees within the eligible planting areas and identify if all required trees can be planted within the eligible planting area or if other planting areas need

to be considered. The applicant may consider working with the County to plant trees in the burned areas of the Milliken Reservoir Watershed or other local areas affected by wildfires to help with regional reforestation efforts such that the GHG reduction meets the requirements of Mitigation Measure 6-1 (i.e., 27,528 MTCO<sub>2</sub>e).

Ascent recommends that the applicant work with a registered professional forester and community organizations (e.g., Putah Creek Council) to develop a plan for replanting. This could involve volunteer assistance and educational opportunities for the community. For example, the Napa County Resource Conservation District organizes the “Acorn to Oaks” community volunteer planting days.

With respect to the timing of replanting, replanting can occur over a period of a few years, or shorter depending on the level of participation from partners (Liner, pers. comm., 2021).

## CONSERVATION EASEMENTS

Establishing conservation easements on all eligible planting areas will ensure the longevity of the replanted trees and that the carbon sequestered in those trees will not be displaced by future development. As shown in Table 2 and Figure 2, the total area of eligible planting areas is 1,025 acres, 901 acres of which were originally oak woodlands prior to the recent wildfires and would be eligible for planting new oaks. Conservation of these areas, especially the replanted oak woodlands, will ensure that sufficient carbon can be sequestered such that the provisions of Mitigation Measure 6-1 of the FEIR are met. Areas within the Milliken Reservoir watershed are already conserved under the County Code. A large portion of the potential planting area is located on land not developable due to County Code (i.e., slopes greater than 30 percent and riparian setbacks). Because these areas cannot be converted to other uses under County policy, a conservation easement is not needed to protect trees planted in these areas.



## REFERENCES

Benton, Amanda. Forestry Program Manager of the Napa Resource Conservation District. February 26, 2021.—Call with Hannah Kornfeld and Brenda Hom of Ascent Environmental regarding tree replanting efforts on the Walt Ranch site.

California Native Plant Society. 2019. Fire Recovery Guide. Available:  
<https://nature.berkeley.edu/matteolab/wp-content/uploads/2019/10/CNPS-fire-recovery-guide-LR-040618.pdf>. Accessed March 29, 2021.

County of Napa. 2016a (March). Walt Ranch Final Environmental Impact Report. Prepared by Analytical Environmental Services. #P11-00205-ECPA.

\_\_\_\_\_. 2016b (July). Biological Resources Master Plan. Walt Ranch P11-00205-ECPA. Prepared by Analytical Environmental Services.

Liner, Kenny. Executive Director of the Putah Creek Council.—Call with Hannah Kornfeld of Ascent Environmental regarding tree replanting efforts on the Walt Ranch site.

US Department of Agriculture Forest Service. 2020. i-Tree Planting. Version 2.1.2. Available:  
<https://planting.itreetools.org/app/location/>. Accessed February 5, 2021.

PPI Engineering. 2020 (December). Walt Ranch 2017 & 2020 Fires. Napa, CA.

# Appendix A

Replanting Ratio	3%
------------------	----

Species/Habitat	Categories	TOTAL acres burned in 2020 eligible for planting [1]	Oaks 2040 Tree Type	Trees per acre [2]	Estimated Number of Trees Lost to Wildfire	Trees to be replanted (based on replanting ratio)	iTree Tree Type	CO2 Sequestered (kg/tree/99 year)[3]	MTCO2 sequestered per year
(Carex spp. - Juncus spp - Wet Meadow Grasses) NFD Super Alliance	Grassland	-							
Black Oak Alliance	Black Oak	55.29	Black Oak	1281	70,826	2,462	California Black Oak	8,299	206
Blue Oak Alliance	Blue Oak	14.79	Blue Oak	311	4,600	160	Oak	4,588	7
California Annual Grasslands Alliance	Grassland	59.00							
California Bay/Coast Live Oak/(Madrone/Black Oak/Big Leaf Maple) N	Mixed Oak	31.70	Mixed Oak	432	13,694	478	Coastal Live Oak/Oak/Madrone /big Leaf Maple	9,36	45
California Buckeye/Poison Oak/Moss Woodland Alliance	Shrubland	-							
Chamise Alliance	Shrubland	41.40							
Chamise Shrubland Alliance	Shrubland	-							
Coast Live Oak - Blue Oak - (Foothill Pine) NFD Association	Coast Live Oak/Blue Oak	423.89	Coast Live Oak/Blue Oak	505	213,853	7,434	Coastal Live Oak/Oak	4,795	360
Coast Live Oak (Foothill Pine)	Coast Live Oak	90.07	Coast Live Oak	698	62,869	2,185	Coastal Live Oak	5,002	110
Common Manzanita Provisional Shrubland Alliance	Shrubland	-							
Madrone Forest Alliance	Pacific Madrone	-	[4]	100	-	-	Madrone	24,724	-
Mixed Manzanita - (Interior Live Oak -California Bay - Chamise) West	Shrubland	4.58							
Mixed Oak (Foothill Pine)	Mixed Oak	250.45	Mixed Oak	432	108,194	3,76	Oak	4,588	174
Rock Outcrop	Rock Outcrop	2.65							
Sclerophyllous Shrubland Formation	Shrubland	-							
Scrub Interior Live Oak - Scrub Oak - (California Bay - Flowering Ash -	Interior Live Oak	6.88	Interior Live Oak	674	4,637	16	Oak	4,588	7
Upland Annual Grasslands & Forbs Formation	Grassland	17.46							
Urban or Built-up	Urban	0.07							
Valley Oak - (California Bay - Coast Live Oak - Walnut - Ash) Riparian F	Valley Oak	27.65	Valley Oak	156	4,313	150	Oak	4,588	7
White Leaf Manzanita - Leather Oak - (Chamise - Ceanothus spp.) Xer	Shrubland	-							
<b>TOTAL</b>		1,025.88			482,987	16,790			918

Source:

[1] Burned area outside of Milliken Reservoir and clearing limits of proposed vineyards

[2] Oaks 2040 (California Oak Foundation) [www.californiaoaks.org/Oaks2040](http://www.californiaoaks.org/Oaks2040)

[3] iTree Planting (<https://planting.itreetools.org/app/report/>) (Assumes 20 percent mortality rate, consistent with survival target in the BRMP. Trees planted as 0.125 in DBH seedlings)

[4] <http://citeserx.ist.psu.edu/viewdoc/download?doi=10.1.1.395.9217&rep=rep1&type=pdf> (In forests categorized as pure madrone, madrone trees make up nearly 90% of the overstory canopy and have the highest densities at 186 trees per acre"

Target total sequestration	27,528
Project lifetime (years)	30
Target annual sequestration	918
Average Tree Sequestration Rate per year (kg/tree/year)	54.67628021



## Project Report - i-Tree Planting Calculator<sub>v2.1.2</sub>



**Location:** Napa, California 94559

**Electricity Emissions Factor:** 0.00 kilograms CO2 equivalent/MWh

**Fuel Emissions Factor:** 0.00 kilograms CO2 equivalent/MMBtu

**Lifetime:** 99 years

**Tree Mortality:** 20%

All amounts in the tables are for the full lifetime of the project.

Location		CO <sub>2</sub> (Carbon Dioxide) Benefits			
Group Identifier	Tree Group Characteristics	CO <sub>2</sub> (Carbon Dioxide) Avoided (kilograms)	CO <sub>2</sub> Avoided (\$)	CO <sub>2</sub> Sequestered (kilograms)	CO <sub>2</sub> Sequestered (\$)
1	<ul style="list-style-type: none"> <li>(1.0) Oak (Quercus species) at 0.3175 cm DBH (Diameter at Breast Height).</li> <li>Planted 0-6 meters and north (0°) of buildings that were built post-1980 with heat and A/C.</li> <li>Trees are in excellent condition and planted in full sun.</li> </ul>	0.0	\$0.00	4,588.1	\$235.24
2	<ul style="list-style-type: none"> <li>(1.0) Oak, California black (Quercus kelloggii) at 0.3175 cm DBH (Diameter at Breast Height).</li> <li>Planted 0-6 meters and north (0°) of buildings that were built post-1980 with heat and A/C.</li> <li>Trees are in excellent condition and planted in full sun.</li> </ul>	0.0	\$0.00	8,298.7	\$425.50
3	<ul style="list-style-type: none"> <li>(1.0) Oak, Coastal live oak; California live (Quercus agrifolia) at 0.3175 cm DBH (Diameter at Breast Height).</li> <li>Planted 0-6 meters and north (0°) of buildings that were built post-1980 with heat and A/C.</li> <li>Trees are in excellent condition and planted in full sun.</li> </ul>	0.0	\$0.00	5,001.7	\$256.45

Location		Energy Benefits			
Group Identifier	Tree Group Characteristics	Electricity Saved (kWh) (Kilowatt-Hours)	Electricity Saved (\$)	Fuel Saved (MMBtu) (Millions of British Thermal Units)	Fuel Saved (\$)
1	<ul style="list-style-type: none"> <li>(1.0) Oak (Quercus species) at 0.3175 cm <u>DBH (Diameter at Breast Height)</u>.</li> <li>Planted 0-6 meters and north (0°) of buildings that were built post-1980 with heat and A/C.</li> <li>Trees are in excellent condition and planted in full sun.</li> </ul>	6,714.0	\$1,374.35	21.7	\$280.78
2	<ul style="list-style-type: none"> <li>(1.0) Oak, California black (Quercus kelloggii) at 0.3175 cm <u>DBH (Diameter at Breast Height)</u>.</li> <li>Planted 0-6 meters and north (0°) of buildings that were built post-1980 with heat and A/C.</li> <li>Trees are in excellent condition and planted in full sun.</li> </ul>	6,256.4	\$1,280.69	20.2	\$261.47
3	<ul style="list-style-type: none"> <li>(1.0) Oak, Coastal live oak; California live (Quercus agrifolia) at 0.3175 cm <u>DBH (Diameter at Breast Height)</u>.</li> <li>Planted 0-6 meters and north (0°) of buildings that were built post-1980 with heat and A/C.</li> <li>Trees are in excellent condition and planted in full sun.</li> </ul>	8,962.1	\$1,834.54	45.6	\$590.20

Location		Ecosystem Services			
Group Identifier	Tree Group Characteristics	Tree Biomass (tonne)	Rainfall Interception (cubic meters)	Runoff Avoided (cubic meters)	Runoff Avoided (\$)
1	<ul style="list-style-type: none"> <li>(1.0) Oak (Quercus species) at 0.3175 cm <u>DBH (Diameter at Breast Height)</u>.</li> <li>Planted 0-6 meters and north (0°) of buildings that were built post-1980 with heat and A/C.</li> <li>Trees are in excellent condition and planted in full sun.</li> </ul>	2.2	606.2	114.2	\$269.51
2	<ul style="list-style-type: none"> <li>(1.0) Oak, California black (Quercus kelloggii) at 0.3175 cm <u>DBH (Diameter at Breast Height)</u>.</li> <li>Planted 0-6 meters and north (0°) of buildings that were built post-1980 with heat and A/C.</li> <li>Trees are in excellent condition and planted in full sun.</li> </ul>	4.2	624.1	117.5	\$277.47
3	<ul style="list-style-type: none"> <li>(1.0) Oak, Coastal live oak; California live (Quercus agrifolia) at 0.3175 cm <u>DBH (Diameter at Breast Height)</u>.</li> <li>Planted 0-6 meters and north (0°) of buildings that were built post-1980 with heat and A/C.</li> <li>Trees are in excellent condition and planted in full sun.</li> </ul>	2.5	518.6	97.7	\$230.56



Location		Air Benefits							
Group Identifier	Tree Group Characteristics	O <sub>3</sub> (Ozone) Removed (kilograms)	NO <sub>2</sub> (Nitrogen Dioxide) Avoided (kilograms)	NO <sub>2</sub> (Nitrogen Dioxide) Removed (kilograms)	SO <sub>2</sub> (Sulfur Dioxide) Avoided (kilograms)	SO <sub>2</sub> (Sulfur Dioxide) Removed (kilograms)	VOC (Volatile Organic Compound) Avoided (kilograms)	PM <sub>2.5</sub> (Particulate matter smaller than 2.5 micrometers in diameter) Avoided (kilograms)	PM <sub>2.5</sub> (Particulate matter smaller than 2.5 micrometers in diameter) Removed (kilograms)
1	<ul style="list-style-type: none"> <li>(1.0) Oak (Quercus species) at 0.3175 cm DBH (Diameter at Breast Height).</li> <li>Planted 0-6 meters and north (0°) of buildings that were built post-1980 with heat and A/C.</li> <li>Trees are in excellent condition and planted in full sun.</li> </ul>	40.9	0.2	4.2	0.8	1.0	1.6	1.0	0.4

2	<ul style="list-style-type: none"> <li>• (1.0) Oak, California black (Quercus kelloggii) at 0.3175 cm DBH (Diameter at Breast Height).</li> <li>• Planted 0-6 meters and north (0°) of buildings that were built post-1980 with heat and A/C.</li> <li>• Trees are in excellent condition and planted in full sun.</li> </ul>	40.5	0.2	4.1	0.7	1.0	1.5	0.9	0.4
---	---	------	-----	-----	-----	-----	-----	-----	-----

3	<ul style="list-style-type: none"> <li>• (1.0) Oak, Coastal live oak; California live (Quercus agrifolia) at 0.3175 cm DBH (Diameter at Breast Height).</li> <li>• Planted 0-6 meters and north (0°) of buildings that were built post-1980 with heat and A/C.</li> <li>• Trees are in excellent condition and planted in full sun.</li> </ul>	55.8	0.3	7.7	1.2	1.6	2.1	1.3	1.7
---	--	------	-----	-----	-----	-----	-----	-----	-----





[www.isa-arbor.com](http://www.isa-arbor.com)  
[www.caseytrees.org](http://www.caseytrees.org)  
[www.esf.edu](http://www.esf.edu)  
[www.northeasternforests.org](http://www.northeasternforests.org)

*Use of this tool indicates acceptance of the End-User License Agreement (EULA), which can be found at:*  
<https://help.itreetools.org/eula>