Attachment 3

Ascent Memorandum

November 2021

Memo

455 Capitol Mall, Suite 300
Sacramento, CA 95814
916.444.7301

Date: November 19, 2021

To: David Morrison, Department of Planning, Building, and Environmental Services, County of Napa

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

Subject: Walt Ranch Erosion Control Plan Greenhouse Gas Mitigation Report: Response to Greenhouse Gas Mitigation Appeal

---

INTRODUCTION

Ascent Environmental (Ascent) prepared a Greenhouse Gas Mitigation Report (GHG Report), dated April 28, 2021, that presented a path for the Walt Ranch Vineyards Agricultural Erosion Control Plan (project) to meet the greenhouse gas (GHG) mitigation requirements pursuant to Mitigation Measure 6-1 of the Environmental Impact Report (EIR). The GHG Report was submitted to the County of Napa (County) Department of Planning, Building, and Environmental Services as an attachment to a letter from the project applicant, Hall Brambletree Associates.

In light of the appeal challenging the approval of the amendment to Mitigation Measure 6-1 of the EIR, Ascent has prepared this memorandum to provide clarity and further substantiation to the GHG Report. The memo is organized by the types of comments received from the Appellant.

AREAS FOR REPLANTING

Comments received by the Appellant state that the GHG Report does not identify the specific areas where tree replanting can occur. The GHG Report describes and identifies the eligible tree planting areas on Page 3, in Figure 2, as indicated by the hashed areas, and in Table 2. As shown in Figure 2 of the GHG Report (and in Table 15 and Figure 23 of the Biological Resources Management Plan [BRMP]), approximately 73 percent of the project area is categorized as oak woodland, with the remainder categorized as grassland, non-oak woodland, shrubland, rock outcrop, or developed areas. These hashed areas represent areas that are outside of the Milliken Reservoir Watershed, that were previously burned in the 2020 Hennessey fire, and that are outside the areas that will be converted to vineyards. These limits were chosen in order to focus on areas that would not be converted to vineyards, on land suitable for oak woodlands, and on land that was burned during the 2020 Hennessey fire, where a tree planting program would have the greatest benefits in terms of both replacing burned trees and stabilizing soil.

It was pointed out by the Appellant that there was an error in Table 2 of the GHG Report. The percent of total burned areas eligible for planting were incorrect. The revised table is presented below in strikeout and underline to indicate

where edits were made. The edits increase the amount of oak woodland landcover that was burned and is eligible for replanting.

Table 2: Burned Areas by Original Vegetation Types

	Area Burned in the Hennessey Fire (2020)		Burn Areas Eligible for Planting[2]	
Original Landcover	Acres	Percent of Total	Acres	Percent of Total
Oak Woodland	**954.30**	**85%**	**900.72**	**~~68%~~ 88%**
Coast Live Oak	318.19	28%	302.02	~~17%~~ 30%
Mixed Oak	302.50	27%	282.15	~~32%~~ 28%
Blue Oak	241.10	21%	226.74	~~13%~~ 22%
Black Oak	56.32	5%	55.29	~~3%~~ 5%
Valley Oak	29.20	3%	27.65	~~2%~~ 3%
Interior Live Oak	6.99	1%	6.88	~~0%~~ <1%
Shrubland and Grassland	**165.52**	**15%**	**122.44**	**~~32%~~ 12%**
Shrubland	51.31	5%	45.98	~~19%~~ 4.5%
Grassland	114.21	10%	76.46	~~13%~~ 7.5%
Non-Vegetative Landcover	**2.65**	**<1%**	**0**	**0%**
Rock Outcrop	2.65	*<1%*	0	**0%**
Urban	0.32	*<1%*	0	0%
Total	**1,122.47**	**100%**	**1,023.16**	**100%**

Notes:
[1] A mix of oak and non-oak tree species,
[2] 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

In consideration of the actual suitable conditions for replanting, the GHG Report does not limit tree plantings under Mitigation Measure 6-1 to occur only within the eligible planting area but recommends that the applicant prioritize planting in the eligible planting areas and consider expanding plantings outside of the project area or in the Milliken Reservoir Watershed to support the carbon sequestration targets under Mitigation Measure 6-1. Page 7 of the GHG Report states that:

> *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.*

Additionally on pages 8 and 9, the GHG Report recommends that the applicant conduct the following:

> *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 $MTCO_2e$).*

An arborist certified by the International Society of Arboriculture visited the project area on November 16, 2021, to survey the area and take stock of potential regrowth. Currently, existing conditions within the eligible planting areas consists largely of fire-damaged and fire-destroyed oak woodlands with sporadic patches of annual grasslands and

chaparral. Dominant overstory species include coast live oak (*Quercus agrifolia*), blue oak (*Q. douglasii*), black oak (*Q. kelloggii*), interior live oak (*Q. wislizeni*), Pacific madrone (*Arbutus menziesii*), and foothill pine (*Pinus sabiniana*). The majority of the trees in the area display evidence of moderate to extensive damage from the fires, ranging from trees with minimal crown and trunk charring to complete loss of canopy and total destruction of the tree (see photos 1a through 1e). Burned oak trees in the area exhibited limited signs of basal resprouting and no epicormic sprouting. No oak saplings or natural recruitment of oaks have been observed since the Hennessey Fire in 2020. Scattered foothill pine saplings were noted within the burn areas. Pacific madrone exhibited considerable basal resprouting from burned stems. Common shrubs noted in the area include scrub oak (*Quercus berberidifolia*), manzanita (*Arctostaphylos* sp.), chamise (*Adenostoma fasciculatum*), ceanothus (*Ceanothus* sp.), and toyon (*Heteromeles arbutifolia*). These shrubs were for the most part completely burned during the wildfires. Currently, shrubs exhibit moderate levels of regeneration from remaining stumps and stems, in particular, toyon. Limited shrub sapling germination and recruitment was noted.

Immediately following the Hennessey Fire, the understory of these woodlands was completely burned to the soil (see photo 2). Understory species consisting of non-native annual grasses and native and non-native forbs have recolonized the area. Currently, the understory is dominated by non-native grasses including wild oat (*Avena* sp.), soft brome (*Bromus hordeaceus*), ripgut brome (*B. diandrus*), bristly dogstail grass (*Cynosurus echinatus*), and rattail fescue (*Festuca myuros*). Non-native forbs noted in the burned areas included yellow star-thistle (*Centaurea solstitialis*), redstem stork's bill (*Erodium cicutarium*), burclover (*Medicago polymorpha*), and hairy cat's ear (*Hypochaeris radicata*).

Although many of the oaks native to California are adapted to periodic wildfires, these adaptations function best when the intensity of the wildfire is low enough to cause minimal to moderate damage to the trees. The degree of crown scorch, foliage consumption, bud mortality, and stem damage to the bark and cambium layer determines tree mortality. While it is difficult to determine which oak trees may survive following damage from a wildlife, there are methods to assess fire damage to burned oaks. The most important factor influencing mortality for fire-burned oaks is the level of injury caused to the cambium, the tissue directly beneath the bark. This meristematic tissue is responsible for producing the vascular tissues of the tree. If this layer has been completely destroyed by the fire, the tree will eventually die due to the tree's inability to transport water and carbohydrates (McCreary and Nader 2011).

The majority of oak trees within the burned areas show moderate to extensive levels of damage to the cambium. Many trees show complete destruction of the cambium layer due to the wildfires (see photos 3a through 3c) These trees exhibited severely blackened or cracked bark or the complete loss of the outer bark layer. The cambium layer in these trees has been completely destroyed. Even if these trees' canopies were uninjured by the fires, the trees would not survive. Trees with some level of intact and functioning cambium may survive; however, trees with damaged cambium are likely to exhibit reduced vigor and canopy health and have the potential to develop extensive decay resulting in tree failure.

Due to the substantial damage to the oak woodlands and individual oak trees caused by the intensity of the fires, many of the oak trees within the burned areas are unlikely to survive. Those damaged trees that do survive through regeneration or epicormic sprouting are likely to exhibit reduced vigor and canopy health. Based on a recent site assessment, approximately 50 percent of the oak trees within the burned areas are unlikely to survive based on damage to or destruction of the cambium layer.

The project would need to plant 16,790 trees to sequester the amount of carbon required in Mitigation Measure 6-1. Based on recommendations by the certified arborist, trees should be planted at a density of approximately 200 trees per acre to accommodate future growth and to match the historic conditions of the project area that burned. This means that approximately 84 acres of eligible planting area is needed to accommodate the 16,790 trees. As indicated in Table 2 of the GHG Report (and the revised Table 2 in this memo), there is approximately 900 acres of eligible

replanting areas where various species oaks existed before the Hennessey and Atlas fires. Considering that approximately 50 percent of the trees in the burned areas are unlikely to survive, there is 450 acres available for replanting efforts. This represents over 5 times the amount of eligible and suitable land needed to support the planting of 16,790 trees.

CARBON SEQUESTRATION QUANTIFICATION

The comments submitted by the Appellant question the difference in carbon sequestration quantification methodologies between tree removal and tree planting. The EIR estimated that the removal of trees due to the proposed construction activities would result in the loss of 105,021 $MTCO_2e$ of stored carbon. To mitigate this loss, the EIR originally proposed the preservation of 248 acres of woodland under Mitigation Measure 6-1, which was estimated to be equivalent to the prevention of the loss of 27,528 $MTCO_2e$ of stored carbon, the amount required to reduce construction emissions to a less-than-significant level. Refer to the EIR for additional discussion of the quantification of this value. The estimated GHG reductions under Mitigation Measure 6-1 have been upheld by the Court of Appeal.

As discussed in the GHG Report, the Court of Appeal did not take issues with the amount of GHG emissions reduction needed but deemed the proposed implementation of Mitigation Measure 6-1, with respect to the preservation of 248 acres of woodland, to be inadequate. The recommendations in the GHG Report with respect to replanting estimates are intended to address the Court's concerns.

The comments submitted by the Appellant also state that the number of trees required to sequester the project's carbon emissions is undercounted in the GHG Report. The average of amount of carbon sequestered per tree per year (54.7 kg CO_2) was based on the modeled outputs in i-Tree, the U.S. Department of Agriculture Forest Service calculator. The calculation of this factor is shown in Table 4 of the GHG Report. The sequestration factor is the average of the carbon sequestration factors for each of the oak tree species originally present in the eligible planting area, weighted by the distribution of oak tree species in the area. The annual sequestration factors for individual tree species were calculated from i-Tree Version 2.1.2 for Napa County. The distribution of oak tree species was based on the original acres of oak woodland land cover multiplied by the average tree densities for each oak species category, as shown in Appendix A of the Report. The original land cover data was based on vegetation shapefiles provided by the project applicant. The EIR list the surveys that were performed to gather the data used to prepare these files. The average oak woodland tree densities were obtained from a ground-based survey study, *Oaks 2040: The Status and Future of Oaks in California,* published by the California Oak Foundation.

As shown in Appendix A, page 12, footnote 3 of the GHG Report, the i-Tree model was run with an assumption of a 20 percent mortality rate, or an 80 percent survival rate, consistent with the survival targets set in the BRMP (County of Napa 2016:81). Accounting for the 80 percent survival rate, the planting of 16,790 trees is estimated to result in the sequestration of 27,528 $MTCO_2e$ over the 30-year project lifetime.

Modeling runs in i-Tree assumed a maximum project lifetime of 99 years, the maximum allowed by i-Tree, in order to estimate the carbon sequestered per tree over a tree's lifespan, which can be much longer than 99 years. Once established, oaks in Napa County can live for 150 years or more. The maximum tree lifespan was chosen because the planted trees would be protected under a conservation easement, which would protect the trees from any removal or land use conversion. To reflect the permanence of the planting area, the average annual carbon sequestration rate across the lifespan of the planted trees (i.e., 99 years), and the portion of the trees' carbon sequestration attributable to the project's lifetime (i.e., 30 years), the total modeled carbon sequestered was amortized by 99 years and multiplied by the project lifetime of 30 years. Therefore, the project is only accounting for the carbon sequestered

during the project's lifetime rather than the trees' estimated lifespan, which would be a much greater amount of carbon sequestration.

TREE DENSITIES

The comments submitted by the Appellant claim that the tree densities shown in Table 3 of the GHG Report are unsubstantiated and do not differentiate between saplings, seedlings, and mature trees. The tree densities in Table 3, as discussed on page 6 of the GHG Report, were obtained from a ground-based survey study, *Oaks 2040: The Status and Future of Oaks in California*, published by the California Oak Foundation. The densities were calculated from Appendix B of Oaks 2040 and accounted for oak trees of all sizes from seedlings to trees with 1-inch diameter at breast height (dbh) to more than 32-inch dbh. The reference was inadvertently excluded from the GHG Report and is included below:

> California Oak Foundation. 2006. *Oaks 2040: The Status and Future of Oaks*https://www.chiccousa.com/nextfit/ *in California*. Available: https://www.fs.fed.us/psw/publications/documents/psw_gtr217/psw_gtr217_603.pdf. Accessed January 19, 2021.

SURVIVAL PERFORMANCE

The comments submitted by the Appellant assert that the 80 percent survival performance standard is not supported by substantial evidence. The 80 percent survival performance is the long-term goal of the oak planting mitigation and would be achieved through monitoring and replanting, as needed. 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 $MTCO_2e$ over a 30-year project lifetime, accounting for the 80 percent survival rate. If planting mortality reaches a level such that the success criteria will not be met, additional replanting will be required following the same methods and timing discussed in the BRMP in order to reach the 80 percent success criteria. Should additional replanting be needed for any reason, the new replants shall be monitored for 7 years following the same monitoring criteria discussed in the BRMP.

REFERENCES

County of Napa. 2016 (July). Biological Resources Management Plan Walt Ranch Erosion Control Plan Application No. P11-00205-ECPA. Prepared by Analytical Environmental Services.

McCreary, Doug and Glenn Nader. 2011 (January). Burned Oaks: Which Ones Will Survive? University of California, Agriculture and Natural Resources. ANR Publication 8445.

Appendix A

Walt Ranch Project Area Photos

Photo 1a
Source: Hall Brambletree Associates, November 14, 2020

Photo 1b
Source: Ascent Environmental, November 16, 2021

Photo 1c
Source: Ascent Environmental, November 16, 2021

Photo 1d
Source: Ascent Environmental, November 16, 2021

Photo 1e
Source: Ascent Environmental, November 16, 2021

Photo 2
Source: Hall Brambletree Associates, November 14, 2020

Photo 3a

Source: Hall Brambletree Associates, November 14, 2020

Photo 3b
Source: Ascent Environmental, November 16, 2021

Photo 3c
Source: Ascent Environmental, November 16, 2021