wra
Environmental
Consultants

October 14, 2024

Attn: Jason Williams
General Manager
Venge Vineyards & Winery | Croix Estate Winery

RE: Updated Biological Resources Assessment Letter Report for 1406 Wood Road Project, 1406 Wood Road (APNs 034-030-032), Fulton, Sonoma County, CA

Dear Mr. Williams,

The purpose of this letter report is to provide you the results of the habitat and biological resources assessment survey conducted at the site of the 1406 Wood Road Project (Project) a proposed development of multiple vineyard-related structures located at 1406 Wood Road (APN 034-030-032), in Fulton, Sonoma County, California (Study Area; Attachment A – WRA Figures). This letter is updated from the June 27, 2023 report and provides additional analysis to address comments made during the environmental review process by the California Department of Fish and Wildlife (CDFW) in a response letter with subject: *UPE17-0049 Croix Estate Winery Expansion, Subsequent Mitigated Negative Declaration, SCH No. 2024080048, Sonoma County,* dated August 29,2024. The additional information provided herein includes a change in determination of the likelihood of presence for California tiger salamander based on new information provided by CDFW, and additional discussion and evaluation related to the potential need for a Lake and Streambed Alteration Agreement (LSAA) and potential for the proposed project to adversely affect state and federal-listed plants associated with wetland habitats.

The Study Area consists of approximately 9.9 acres on the south side of Wood Road, about 1/3 mile west of Fulton Road, Sonoma County. Surrounding land uses include low density residential areas intermixed with agricultural areas and undeveloped lands and some wetland mitigation banks. Onsite conditions are characterized as developed with a lang-term vineyard, a residential structure and vineyard facilities.

The purpose of this assessment is to gather information necessary to complete a review of biological resources under the California Environmental Quality Act (CEQA). The habitat assessment site visit was conducted on June 7, 2023 by WRA senior biologists, Brian Freiermuth and Aaron Arthur. This assessment is based on information available at the time of the study and on-site conditions that were observed on the date of the site visit.

1.0 PROJECT DESCRIPTION

The project site is comprised of approximately 9.9 acres and contains an existing single family residential dwelling and several outbuildings and associated landscaping and an existing vineyard. The Project proposes to demolish some of the buildings and replace these with

improved structures within the developed footprint and add on additional structure in an area currently in active viticulture.

No protected trees are expected to be removed as part of the project. As part of the project implementation, preconstruction nesting bird surveys and bat surveys will be conducted if project work would potentially affect birds or bats. The methods for the surveys and criteria for determining their necessity are described in the "Summary and Recommendations" section of this letter.

2.0 REGULATORY BACKGROUND

The following natural resources are protected under one or more of several Federal, State and/or local regulations, and were considered when analyzing the Project.

Waters of the U.S.: protected under the Clean Water Act (CWA), administered by the Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (Corps):

- Includes wetlands, streams, rivers, and other aquatic habitats meeting the guidance issued by the Corps

Waters of the State: protected under the Porter-Cologne Act, administered by the Regional Water Quality Control Board (RWQCB):

- Includes surface water or groundwater, including saline waters, within the boundaries of the state, and are generally delineated following the guidance issued by the Corps.

Streams, Lakes, and Riparian Habitat: protected under the California Fish and Game Code (CFGC), administered by the CDFW:

- Includes creeks and rivers (badies where water flows at least periodically or intermittently through a bed or channel having banks and supports fish or ather aquatic life), and vegetation adjacent to associated with such (riparian habitat).

Sensitive Natural Communities: protected under the CFGC, administered by the CDFW:

- Includes terrestrial vegetation or plant communities that are ranked by NatureServe and considered "threatened" or "endangered" by the CDFW, lists af such are included in *List of Vegetation Alliances and Associations* (CDFG 2010).

Special-status Plant and Wildlife Species including Critical Habitat: protected under one or more of the Federal Endangered Species Act (ESA), California Endangered Species Act (CESA), California Environmental Quality Act (CEQA), administered by the U.S. Fish and Wildlife Service (USFWS), and/or CDFW:

- Includes plant listed under the ESA and/or CESA, or those plants ranked by the California Native Plant Society (CNPS) as Rank 1, 2, and (accasianally) 3, and 4.

- Includes wildlife listed under the ESA and/or CESA, and wildlife listed by CDFW as Species of Special Concern or Fully Protected Species, as well as bats listed as Medium or High Priority by the Western Bat Working Group (WBWG).
- In addition to regulations for special-status species, most birds, including non-status species, have baseline legal protections under both the CFGC. Under these laws/codes, the unauthorized and deliberate "take" (essentially, injury/harm or collection) of covered species is illegal; this protection includes active nests (those with eggs or young).

Sonoma County Tree Ordinance Relevant Details: A tree removal permit is required prior to removing covered trees, unless exempted. Most agricultural activities or activities requiring ministerial permits are exempted. Removal of valley oaks with a diameter at breast height of greater than 60 inches may require a permit (if not exempted) and/or associated mitigation, such as payment of an in-leu fee, if removed.

3.0 METHODS

Prior to the site visit, WRA reviewed background literature to determine potential presence of sensitive vegetation types, aquatic communities, as well as special-status plant and wildlife species. Resources reviewed for sensitive vegetation communities and aquatic features include aerial photography, mapped soil types (CSRL 2023), the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB; CDFW 2023), and the National Wetland Inventory (NWI; USFWS 2023). Background information regarding special-status plant and wildlife species was obtained through review of the CNDDB, California Native Plant Society (CNPS) Online Database (CNPS 2023), available aerial photography, and species habitat requirements as noted in available literature.

WRA conducted an assessment of the Study Area on June 7, 2023 to determine whether the Project will have a significant impact on land that has value as habitat for endangered, rare or threatened species, and/or whether these species would be otherwise affected by the development. The Study Area was examined for indicators of wetlands, streams, and areas with an Ordinary High Water Mark (OHWM) (i.e., streams, rivers, ponds) potentially under the jurisdiction of the Corps, RWQCB, and CDFW, as well as other sensitive biological communities.

In reviewing the aforementioned comment letter from CDFW, WRA reviewed the California Aquatic Resources Inventory (CARI) database, to determine if features described in the CDFW were present as described in the letter.

4.0 ASSESSMENT RESULTS

The Study Area is composed of a relatively flat property with a single-family residence, several facility buildings, a driveway, a few native trees, ornamental landscaping trees and shrubs, and a mix of common garden weeds and ornamental herbs in the developed areas. Land cover within the Study Area consists mostly of an active vineyard, landscaped and hardscaped areas. None of these land cover types are considered sensitive biological communities. Biological communities observed within the Study Area are described in greater detail below.

4.1 Sensitive Biological Communities

The Study Area was investigated for potential wetlands and waters of the U.S. and State, riparian habitat, and other sensitive biological communities. No potentially sensitive biological communities were observed in the Study Area. Though an aquatic feature is shown in the southeastern portion of the Study Area in the CARI database, on the ground data collection shows that this feature is not currently present and is in active agriculture. The CARI database is a remote sensing application and does not replace or supersede direct observations made by professional biologists.

4.2 Non-sensitive Biological Communities

The Study Area consists of developed areas (hardscape, landscape, vineyard).

4.3 Special-status Plant Species

Based upon a search of the databases described above, dozens of special-status plant species have documented occurrences within the vicinity of the Study Area, defined to include the Yountville and eight surrounding 7.5' USGS quadrangles. Of the nearby documented special-status species, all are either unlikely or have no potential to occur within the Study Area for one or more of the following reasons:

- The Study Area does not contain hydrologic conditions (e.g., freshwater, brackish, or salt marsh) necessary to support the special-status plant(s);
- The Study Area does not contain edaphic (soil) conditions (e.g., serpentine or volcanics) necessary to support the special-status plant(s);
- The Study Area does not contain vegetation communities (e.g., chaparral, vernal pools) associated with the special-status plant(s);
- The Study Area and surrounding area is developed and habitat for special-status plant species is limited;
- The species was not observed during the site visit which was conducted during the bloom period of the species.

4.4 Special-status Wildlife Species

Based upon a search of the databases described above, more than 50 special-status wildlife species have documented occurrences within the vicinity of the Study Area, defined to include the Sebastopol and eight surrounding 7.5' USGS quadrangles. Of these special-status wildlife species documented in the region, four species have a moderate or greater potential to occur and are discussed in detail below. Non-status nesting birds and bat maternity roosts, which are provided protections under various regulations are also discussed. One state and federal listed species, California Tiger Salamander (CTS; Ambystoma californiense) is discussed due to its listed status.

4.4.1 Townsend's western big-eared bat, (*Corynorhinus townsendii townsendii*), CDFW Species of Special Concern, Western Bat Working Group- High Priority. Moderate Potential.

This species ranges throughout western North America from British Columbia to central Mexico. Its local distribution is strongly associated with the presence of caves, but roosting also occurs

within man-made structures including mines and buildings. While many bats species wedge themselves into tight cracks and crevices, big-eared bats hang from walls and ceilings in the open. Males roost singly during the spring and summer months while females aggregate in the spring at maternity roosts to give birth. Females roost with their young until late summer or early fall, until the young become independent, flying and foraging on their own. In central and southern California, hibernation roosts tend to be made up of small aggregations of. Foraging typically occurs along edge habitats near streams and wooded areas, where moths are the primary prey. The buildings and trees on the site may support roosting by this species.

4.4.2 Fringed myotis (*Myotis thysanodes*), Western Bat Working Group- High Priority. Moderate Potential.

The fringed myotis ranges through much of western North America from southern British Columbia, Canada, south to Chiapas, Mexico and from Santa Cruz Island in California, east to the Black Hills of South Dakota. This species is found in desert scrubland, grassland, sage-grass steppe, old-growth forest, and subalpine coniferous and mixed deciduous forest. Oak and pinyon-juniper woodlands are most commonly used. The fringed myotis roosts in colonies from 10 to 2,000 individuals, although large colonies are rare. Caves, buildings, underground mines, rock crevices in cliff faces, and bridges are used for maternity and night roosts, while hibernation has only been documented in buildings and underground mines. The buildings and trees on the site may support roosting by this species.

4.4.3 Pallid bat (*Antrozous pallidus*); CDFW Species of Special Concern, Western Bat Working Group. High Priority.

Pallid bat is broadly distributed throughout much of western North America and typically occurs in association with open, rocky areas. Occupied habitats are highly variable and range from deserts to forests in lowland areas and include higher-elevation forests. Roosting may occur singly or in groups of up to hundreds of individuals. Roosts must offer protection from high temperatures and are typically located in rock crevices, mines, caves, or tree hollows; manmade structures are also used, including buildings (both vacant and occupied) and bridges. Pallid bats are primarily insectivorous, feeding on large prey that is usually taken on the ground but sometimes in flight. The buildings and trees on the site may support roosting by this species.

4.4.4 White-tailed kite (*Elanus leucurus*). CDFW Fully Protected Species. Moderate Potential.

The white-tailed kite is resident in open to semi-open habitats thraughout the lower elevations of California, including grasslands, savannahs, woodlands, agricultural areas and wetlands. Vegetative structure and prey availability seem to be more important habitat elements than associations with specific plants or vegetative communities. Nests are constructed mostly of twigs and placed in trees, often at habitat edges. Nest trees are highly variable in size, structure, and immediate surroundings, ranging from shrubs to trees greater than 150 feet tall (Dunk 1995). This species preys upon a variety of small mammals, as well as other vertebrates and invertebrates. This species is common in the area and has some potential to nest in the trees onsite.

4.4.5 California Tiger Salamander (Ambystoma californiense). California Endangered Species Act, Threatened; Federal Endangered Species Act, Endangered. Moderate Potential to Occur.

Regulatory Background
The Sonoma County Distinct Population Segment (DPS) of CTS was listed as endangered on March 19, 2003 (USFWS 2003), and final critical habitat was designated on August 31, 2011. The Central Valley DPS is Federal listed as threatened, and CTS is listed as threatened state-wide under the California Endangered Species Act.

Life History and Habitat Requirements
CTS require both wetland and adjacent upland habitat to complete their life cycle. Subadult and adult CTS spend the dry summer and fall months of the year in upland refugia habitat in the burrows of small mammals, such as California ground squirrels *(Otospermophilus beecheyi)* and Botta's pocket gopher *(Thomomys bottae)* or in soil cracks. Once fall or winter rains begin, they emerge from the upland sites on rainy nights to feed and to migrate to breeding pools. Historically, CTS utilized vernal pools, but the species also currently breeds in stockponds. Occurrence of CTS is significantly associated with occurrence of ground squirrels or other burrowing small mammals. CTS cannot persist without upland habitat. Adult CTS may migrate up to 2,200 meters (~1.4 miles) from their upland sites to breeding sites, but most CTS remain much closer to breeding sites, as was found in one study that showed 95% of salamanders remained within 630 meters of their breeding pool in Solano County (Trenham and Shaffer 2005).

Status of the Species in the Study Area
The Study Area is in Fulton, just outside the City of Santa Rosa, in an area that is dominated primarily by agriculture and undeveloped land. The Study Area contains lands that are developed via hardscape, landscaping and vineyard. Hardscaped and landscaped areas do not contain burrows that would be suitable to support CTS and no aquatic features that could support breeding are present in the Study Area. The nearest documented occurrence in the CNDDB for CTS is about 0.6 miles south of the Project Area (CDFW 2023), at the Alton Lane mitigation bank. CTS in this location were introduced in 1996 and 2003-2004. The species still persists on the bank, but no CTS from the bank had been documented outside of the bank in the CNDDB at the time of the original evaluation of the site. CDFW, in their letter, indicated that they have unprocessed data for a 2023 occurrence of CTS just south of the Study Area, at another mitigation bank. For the purposes of this analysis, WRA assumes that this record will be verified through the CNDDB vetting process and published in the CNDDB.

The nearest natural occurrence of CTS is more than three miles to the south of the Project Area, beyond the documented dispersal capability of the species and on the opposite side of Santa Rosa Creek, which appears to form a natural barrier for CTS because no natural CTS population has ever been documented north of it (CDFW 2023). Due to the Project Area not being within the documented natural range of occurrence for the species and because no CTS had ever been detected off the Alton Lane introduction site, there was not evidence to substantiate that a project within the Study Area would be reasonably expected to result in any impact to CTS. For this reason, the original report determined that it was unlikely that the species would be detected or impacted by Project work within the Study Area. Assuming that the new data showing a CTS occurrence in much closer proximity to the Study Area is verified, the updated determination for CTS occurrence in the Study Area is moderate potential.

Burrowing owl (*Athene cunicularia*). CDFW Species of Special Concern, Moderate Potential. The burrowing owl occurs as a year-round resident and winter visitor in much of California's lowlands, inhabiting open areas with sparse or non-existent tree or shrub canopies. Typical habitat is annual or perennial grassland, although human-modified areas such as agricultural lands and airports are also used. This species is dependent on burrowing mammals to provide the burrows that are characteristically used for shelter and nesting, and in northern California is typically found in clase association with California ground squirrels (*Otospermophilus beecheyi*). Manmade substrates such as pipes or debris piles may also be occupied in place of burrows. Prey consists of insects and small vertebrates. Breeding typically takes place from March to July. In Sonoma County, California, this species winters but has not been documented to breed in recent years.

The habitat within the Study Area lacks burrows or man-made refugia that this species would be likely to use. In addition, habitat on the site is unlikely to support foraging because the vineyards and developed areas obstruct views to prey, and the abundance of perches for other birds of prey make it unlikely that burrowing owls would use the site. Habitat adjacent to the Study Area, in some cases, is of higher quality and could support occasional foraging. Because habitat in adjacent areas may support foraging and because suitable habitat for underground refugia could develop in the Study Area, burrowing owl has a moderate potential to occur within the Study Area.

4.5 Non-status Nesting Birds and Maternity Roosting Bats

Non-status native birds may utilize the vegetation and structures in the Project Area for nesting and thus could be disturbed by Project activities if they occur during the nesting season. The nesting season is typically defined as approximately February 1 to August 15. Avoidance of impacts to nesting birds, including any actions that cause birds to abandon nests and/or hatchlings, is required by California Fish and Game Code. Similarly, impacts to bat maternity roosts, regardless of the species of bat, would be potentially significant and will be avoided by conducting demolition work outside the maternity roost season, which generally falls in the same February to August timeframe, as described above for nesting birds. If demolition of buildings, vegetation/tree removal or ground disturbance occurs during the nesting/roosting season, the measures described in the following section will reduce potential impacts to maternity roosting bats and nesting birds to less than significant.

5.0 SUMMARY AND RECOMMENDATIONS

5.1 Sensitive Biological Communities

The Study Area is comprised of non-sensitive, developed land cover types: hardscape, landscaping and vineyard. Consequently, there are no potentially sensitive biological communities present within the Study Area. No impacts to sensitive biological communities are anticipated; therefore, no further studies or recommendations are warranted for sensitive biological communities.

5.2 Protected Native Trees

The project is not expected to require removal of protected trees. If tree removal becomes necessary, with the obtainment of a tree permit and implementation of any conditions of

approval associated with the tree permit, impacts to protected native trees would be considered less than significant.

5.3 Special-status Plant Species

The Study Area does not contain special-status plant habitat. No special-status plants were observed in the Study Area during the site visit, nor have any special-status plants been documented in the Study Area previously. The project has been designed to have no substantial impact on hydrology onsite or offsite (Attachment C). The project is also sited several hundred feet from any aquatic features that are observable using remote resources. No impacts to special-status plants are reasonably anticipated; therefore, no further studies or recommendations are warranted for special-status plants.

5.4 Special-status and Non-status Wildlife Species

5.4.1 Recommendations to Avoid Special-Status Wildlife, Non-status Birds and Maternity Roosting Bats

COMMON NESTING BIRDS AND WHITE-TAILED KITE

If project work is scheduled to occur between September 1 and January 31, which is considered to be outside of the nesting bird season, impacts to nesting birds, including white-tailed kite will not occur. If work will occur between February 1 and August 31, the following actions to avoid impacts to active nests and white-tailed kite are recommended:

A survey for active bird nests will be conducted by a qualified biologist no more than 14 days prior to the start of Project activities (vegetation removal, grading, tree removal, building demolition or other initial ground-disturbing activities) if they commence during the nesting season (February 1 through August 31). The survey will be conducted in a sufficient area around the Study Area to identify the location and status of any nests that could potentially be directly or indirectly affected by project activities. Upon completion of the surveys, any nests discovered will be avoided through a work exclusion buffer determined by a qualified biologist to avoid impacts. Buffers will be sufficiently large and long in duration such that nest abandonment is avoided. The qualified biologist will determine the buffer based on the species and the type of disturbance anticipated to result from Project activities.

MATERNITY ROOSTING AND SPECIAL-STATUS BATS

Structures on the site may support roosting special status bat species including pallid bat, Townsend's big-eared bat, fringed myotis and maternity roosts of common bat species, which are protected under California Fish and Game Code. Building removal is proposed during the Project and it is recommended that the following be implemented to minimize effects to special status bats and all bat maternity roosts:

To avoid impacts to special status bats and all bat maternity roosts, removal of any large trees (greater than 24 inches diameter at chest height) will be conducted during the non-maternity roosting season, which coincides with the non-nesting season for birds during the months of September through January. Additionally, all trees that are felled, regardless of the time of year, will be left on the ground for 24 hours prior to cutting up or removing the trees from the Project Area, allowing any roosting bats potentially present to escape overnight. If buildings or trees

greater than 24 inches at chest height must be cut during the maternity roosting season, a qualified biologist will inspect the tree or structure for maternity roosting bats prior to removal. If active roosts are detected, they will be avoided until after they become inactive.

Based on this assessment, and with implementation of the above recommendations, the Project should be considered exempt from further environmental review because with implementation of these avoidance measures and observance of existing standards potential impacts to biological resources would be less than significant without mitigation.

CALIFORNIA TIGER SALAMANDER

Prior to commencing construction-related activities on the project site that could result in take of CTS, the project shall obtain a CESA ITP from CDFW for impacts to CTS and comply with the ITP, including mandated mitigation requirements. Copies of the ITP shall be provided to the County prior to the commencement of construction-related activities. The project shall also comply with the federal Endangered Species Act and gain take authorization from the United States Fish and Wildlife Service (USFWS), if such authorization is required by the USFWS.

BURROWING OWL

If the project occurs during the burrowing owl wintering season from September 1 to January 31, prior to project activities a qualified biologist shall conduct a habitat assessment several months prior to the start of construction, and if habitat is present shall conduct surveys, in accordance with the California Department of Fish and Game (now CDFW) 2012 Staff Report on Burrowing Owl Mitigation (CDFW 2012 Staff Report, available here: https://wildlife.ca.gov/Conservation/Survey-Protocols#377281284-birds) habitat assessment and survey methodology. The habitat assessment and survey area shall encompass a sufficient buffer zone to detect owls nearby that may be impacted, which shall be a minimum of ~~1,640~~ 500 feet where suitable habitat occurs and where access is granted, unless otherwise approved in writing by CDFW. Time lapses between surveys or project activities shall trigger subsequent surveys, as determined by a qualified biologist, including, but not limited to a final survey within 24 hours prior to ground disturbance and before construction equipment mobilizes to the project area. If the habitat assessment does not identify suitable habitat and surveys are not conducted, an additional habitat assessment shall be conducted within 14 days prior to construction and if new refugia are present surveys shall be conducted as described above, unless otherwise approved in writing by CDFW. The qualified biologist shall have a minimum of two years of experience implementing the CDFW 2012 Staff Report survey methodology resulting in detections of burrowing owl.

Detected burrowing owl shall be avoided pursuant to the buffer zone prescribed in the CDFW 2012 Staff Report, unless otherwise approved in writing by CDFW, and any eviction plan shall be subject to CDFW review. Eviction of burrowing owl (i.e., passive removal of an owl from its burrow or other shelter) alone is not considered as a "take" avoidance, minimization, or mitigation measure; therefore, off-site habitat compensation shall be included in the eviction plan. Final habitat compensation acreages shall be approved by CDFW, as the amount depends on-site specific conditions, and shall be completed before project construction unless otherwise approved in writing by CDFW. It shall also include placement of a conservation easement and preparation, implementation, and funding of a long-term management plan prior to project construction.

If you have questions or require additional information, please contact us.

Sincerely,
Brian Freiermuth

Senior Biologist
WRA, Inc.

List of Attachments

Attachment A. Figures
Attachment B. Observed Species
Attachment C. SWLID Report

6.0 REFERENCES

[CARI] California Aquatic Resources Inventory. 2023. San Francisco Estuary Institute and the Aquatic Science Center. Available at https://www.sfei.org/cari. Accessed October, 2023.

[CDFW] California Department of Fish and Wildlife. 2023. California Natural Diversity Database (CNDDB), Wildlife and Habitat Data Analysis Branch. Sacramento, CA. Accessed: June.

[CNPS] California Native Plant Society. 2023. Online Inventory of Rare, Threatened, and Endangered Plants of California. Available at: http://www.rareplants.cnps.org/. Accessed: June.

[CNPS] California Native Plant Society. 2023. A Manual of California Vegetation, Online Edition. Sacramento, California. Online at: http://vegetation.cnps.org/; Accessed: June.

[CSRL] California Soil Resources Lab. 2023. Online Soil Survey. Online at: http://casoilresource.lawr.ucdavis.edu/drupal. Accessed: June.

Google Earth. 2023. Aerial Imagery 1993-2023. Accessed: June.

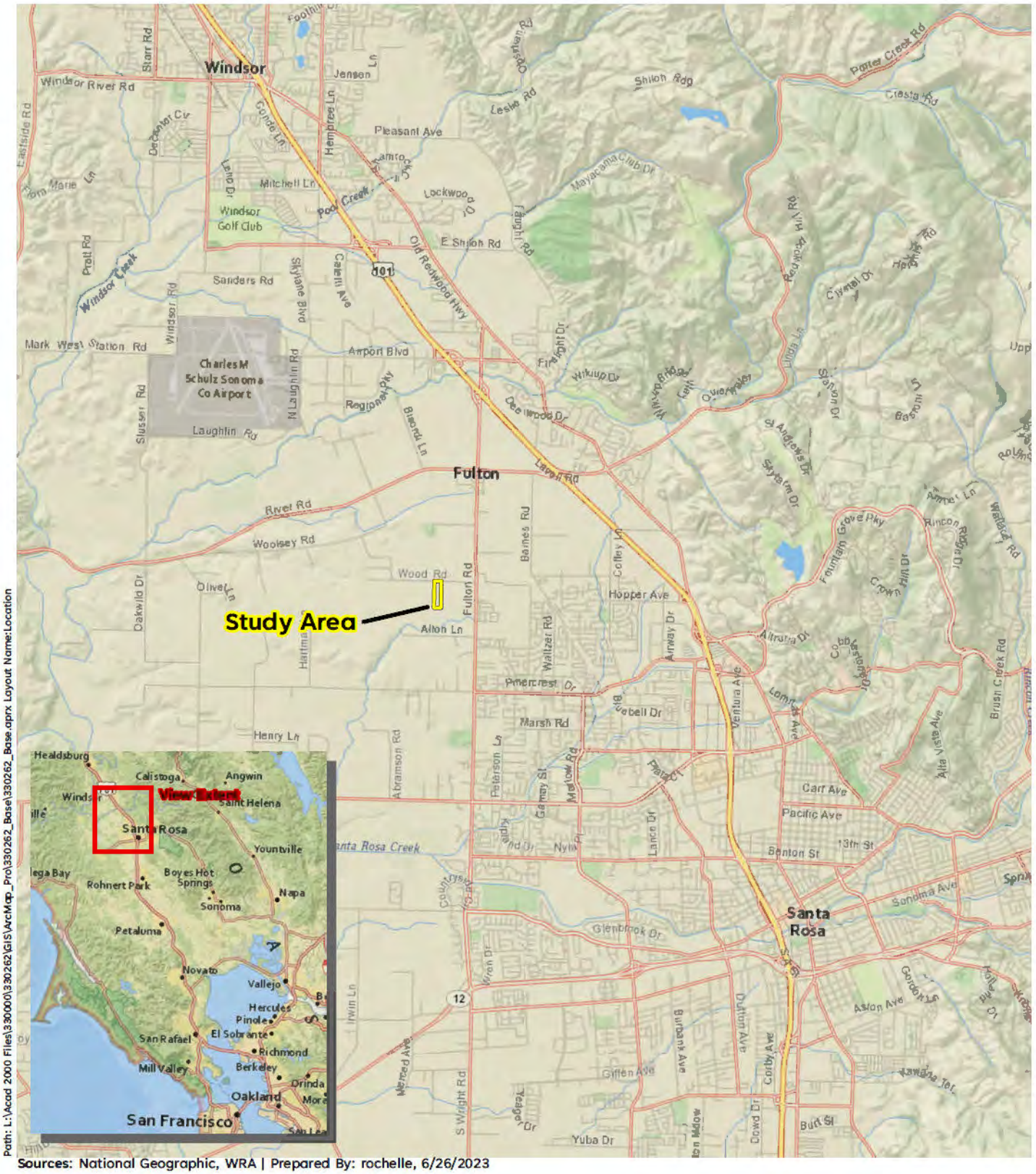
Trenham, P.C. and H.B. Shaffer. 2005. Amphibian upland habitat use and its consequences for population viability. Ecological Applications 15(4):1158-1168.

[USGS] U.S. Geological Survey. 1951. 7.5-minute Quadrangle Series: Napa, California. Photorevised 1980.

[USFWS] U.S. Fish and Wildlife Service. 2023. National Wetlands Inventory website. U.S. Department of the Interior, Washington, D.C. Online at: http://www.fws.gov/nwi/; most recently accessed: June.

Attachment A.

Figures



Path: L:\Acad 2000 Files\330000\330262\GIS\ArcMap_Pro\330262_Base\330262_Base.aprx Layout Name:Location

Sources: National Geographic, WRA | Prepared By: rochelle, 6/26/2023

Figure A-1. Study Area Regional Location Map

1406 Wood Avenue
Sonoma County, CA

0 1 2 Miles

N

wra Environmental Consultants

Figure A-2. Land Cover

1406 Wood Avenue
Sonoma County, CA

0 100 200 Feet

N

wra Environmental Consultants

Attachment B.

Observed Species

Attachment B-1. Plant species observed in the Study Area, June 7, 2023

FAMILY	SCIENTIFIC NAME	COMMON NAME	LIFE FORM	ORIGIN	RARE STATUS[1]	INVASIVE STATUS[2]	WETLAND INDICATOR[3]
Amaranthaceae	*Amaranthus albus*	pigweed amaranth	annual forb	non-native	--	--	FACU
Apiaceae	*Daucus carota*	Queen Anne's lace	perennial forb	non-native	--	assessed	UPL
Asteraceae	*Anthemis cotula*	stinking chamomile	annual forb	non-native	--	assessed	FACU
Asteraceae	*Calendula arvensis*	field marigold	annual forb	non-native	--	--	NL
Asteraceae	*Erigeron canadensis*	Canadian horseweed	annual forb	native	--	--	FACU
Asteraceae	*Helminthotheca echioides*	bristly ox-tongue	perennial forb	non-native	--	limited	FAC
Asteraceae	*Hypochaeris radicata*	rough cat's-ear	perennial forb	non-native	--	moderate	FACU
Asteraceae	*Lactuca serriola*	prickly lettuce	annual forb	non-native	--	assessed	FACU
Asteraceae	*Leontodon saxatilis* ssp. *longirostris*	hawkbit	annual forb	non-native	--	--	FACU
Asteraceae	*Sanchus asper*	prickly sow thistle	annual forb	non-native	--	assessed	FAC
Brassicaceae	*Brassica nigra*	black mustard	annual forb	non-native	--	moderate	NL
Brassicaceae	*Raphanus sativus*	wild radish	perennial forb	non-native	--	limited	NL
Caryophyllaceae	*Spergula arvensis*	corn spurry	annual forb	non-native	--	--	NL
Caryophyllaceae	*Spergularia rubra*	red sandspurry	perennial forb	non-native	--	--	FAC
Convolvulaceae	*Convalvulus arvensis*	field bindweed	perennial forb	non-native	--	assessed	NL
Cupressaceae	*Sequoia sempervirens*	coast redwood	evergreen tree	native	--	--	NL
Cyperaceae	*Cyperus eragrostis*	tall flat-sedge	perennial graminoid	native	--	--	FACW
Fabaceae	*Acmispon americanus*	American lotus	annual forb	native	--	--	NL
Fabaceae	*Medicago polymorpha*	bur medic	annual forb	non-native	--	limited	FACU
Fabaceae	*Trifolium fragiferum*	strawberry clover	perennial forb	non-native	--	--	FAC
Fabaceae	*Vicia sativa*	garden vetch	annual forb	non-native	--	--	FACU
Fabaceae	*Vicia villosa*	winter vetch	annual forb	non-native	--	assessed	NL
Fagaceae	*Quercus lobata*	valley oak	deciduous tree	native	--	--	FACU
Geraniaceae	*Erodium brachycarpum*	foothill filaree	annual forb	non-native	--	limited	NL
Lamiaceae	*Mentha pulegium*	pennyroyal	perennial forb	non-native	--	moderate	OBL
Lythraceae	*Lythrum hyssopifolia*	hyssop loosestrife	annual forb	non-native	--	moderate	OBL

FAMILY	SCIENTIFIC NAME	COMMON NAME	LIFE FORM	ORIGIN	RARE STATUS[1]	INVASIVE STATUS[2]	WETLAND INDICATOR[3]
Malvaceae	*Malva nicaeensis*	bull mallow	annual forb	non-native	--	--	NL
Myrsinaceae	*Lysimachia arvensis*	scarlet pimpernel	annual forb	non-native	--	--	NL
Oleaceae	*Olea europaea*	olive	evergreen tree	non-native	--	limited	NL
Onagraceae	*Epilobium ciliatum*	fringed willowherb	perennial forb	native	--	--	FACW
Orobanchaceae	*Parentucellia viscosa*	yellow glandweed	annual forb	non-native	--	limited	FAC
Plantaginaceae	*Kickxia elatine*	sharpleaf cancerwort	perennial forb	non-native	--	--	UPL
Poaceae	*Avena barbata*	wild oat	annual graminoid	non-native	--	moderate	NL
Poaceae	*Briza minor*	little rattlesnake grass	annual graminoid	non-native	--	--	FAC
Poaceae	*Bromus diandrus*	rip-gut brome	annual graminoid	non-native	--	moderate	NL
Poaceae	*Bromus hordeaceus*	soft chess	annual graminoid	non-native	--	limited	FACU
Poaceae	*Cynodon dactylon*	Bermuda grass	perennial graminoid	non-native	--	moderate	FACU
Poaceae	*Festuca perennis*	Italian rye grass	annual graminoid	non-native	--	moderate	FAC
Poaceae	*Glyceria declinata*	waxy manna grass	perennial graminoid	non-native	--	moderate	FACW
Poaceae	*Hordeum marinum*	Mediterranean barley	annual graminoid	non-native	--	moderate	FAC
Poaceae	*Hordeum murinum*	mouse barley	annual graminoid	non-native	--	moderate	FACU
Poaceae	*Poa annua*	annual bluegrass	annual graminoid	non-native	--	--	FAC
Polygonaceae	*Polygonum aviculare*	dooryard knotweed	perennial forb	non-native	--	--	FAC
Polygonaceae	*Rumex crispus*	curly dock	perennial forb	non-native	--	limited	FAC
Ranunculaceae	*Ranunculus muricatus*	spiny buttercup	perennial forb	non-native	--	--	FACW
Rosaceae	*Prunus cerasifera*	cherry plum	deciduous tree	non-native	--	limited	NL
Vitaceae	*Vitis vinifera*	wine grape	deciduous vine	non-native	--	--	NL

All species identified using the *Jepson Manual, 2nd Edition* (Baldwin et al. 2012), *The Jepson Flora Project* (eFlora 2023), and *A Flora of Sonoma County* (Best, et al. 1996); nomenclature follows *The Jepson Flora Project* (eFlora 2023) unless otherwise noted

Sp.: "species", intended to indicate that the observer was confident in the identity of the genus but uncertain which species
Cf.: "*confer*" or "compared with", intended to indicate a species appeared to the observer to be specific, but was not identified based on diagnostic characters

[1]Rare Status: The CNPS Inventory of Rare and Endangered Plants (CNPS 2023)

FE:	Federal Endangered
FT:	Federal Threatened
SE:	State Endangered
ST:	State Threatened
SR:	State Rare
LR	Locally Rare
CRPR 1A:	Plants presumed extirpated in California and either rare or extinct elsewhere
CRPR 1B:	Plants rare, threatened, or endangered in California and elsewhere
CRPR 2A:	Plants presumed extirpated in California, but more common elsewhere
CRPR 2B:	Plants rare, threatened, or endangered in California, but more common elsewhere
CRPR 3:	Plants about which we need more information – a review list
CRPR 4:	Plants of limited distribution – a watch list

[2]Invasive Status: California Invasive Plant Inventory (Cal-IPC 2006)

High:	Severe ecological impacts; high rates of dispersal and establishment; most are widely distributed ecologically.
Moderate:	Substantial and apparent ecological impacts; moderate-high rates of dispersal, establishment dependent on disturbance; limited moderate distribution ecologically
Limited:	Minor or not well documented ecological impacts; low-moderate rate of invasiveness; limited distribution ecologically
Assessed:	Assessed by Cal-IPC and determined to not be an existing current threat

[3]Wetland Status: National List of Plant Species that Occur in Wetlands, Arid West Region (Corps 2018)

OBL:	Almost always a hydrophyte, rarely in uplands
FACW:	Usually a hydrophyte, but occasionally found in uplands
FAC:	Commonly either a hydrophyte or non-hydrophyte
FACU:	Occasionally a hydrophyte, but usually found in uplands
UPL:	Rarely a hydrophyte, almost always in uplands
NL:	Rarely a hydrophyte, almost always in uplands
NI:	No information; not factored during wetland delineation

Attachment B-2. Wildlife species observed in and around the Study Area, June 7, 2023

SCIENTIFIC NAME	COMMON NAME
Mammals	
Thomomys bottae	Botta's pocket gopher (burrows)
Canis latrans	Coyote (scat)
Birds	
Aphelocoma californica	western scrub-jay
Buteo jamaicensis	red-tailed hawk
Calypte anna	Anna's hummingbird
Cathartes aura	turkey vulture
Corvus brachyrhynchos	American crow
Haemorhous mexicanus	house finch
Hirundo rustica	barn swallow
Petrochelidon pyrrhonota	cliff swallow
Sialia mexicana	western bluebird
Spinus psaltria	lesser goldfinch
Streptopelia auritus	Eurasian collared dove

Attachment C.

SWLID Report

MUNSELLE
CIVIL ENGINEERING
CIVIL ENGINEERING AND PLANNING

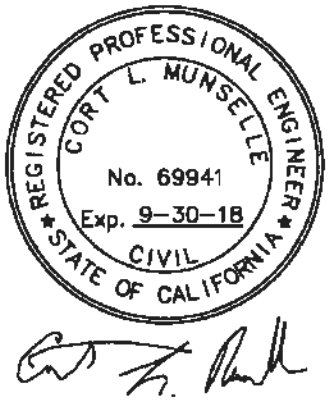
Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

INITIAL SWLID REPORT

For

CROIX ESTATE WINERY

1406 Wood Road
Fulton, CA
APN 034-030-032



Prepared for:
Croix Estate
Jason Williams
4708 Silverado Trail
Calistoga, CA 94515
(707) 942-9100

Prepared under the supervision of:
Cort L. Munselle
RCE #69941
License Expires 9/30/18

Report Date: March 22, 2018
Revised: January 14, 2020

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448
Phone (707) 395-0968
cell (707) 280-0474
cort@munsellecivil.com
www.munsellecivil.com

MUNSELLE
CIVIL ENGINEERING
CIVIL ENGINEERING AND PLANNING

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

Table of Contents

Drainage Narrative

1. Project Description
2. Level of Treatment and Volume Capture
3. Selected BMPs
4. BMP Maintenance and Funding Mechanism

Appendix

A. BMP Selection Table
B. Determination Worksheet
C. Storm Water Calculator Calculations
D. Reference Material:
    a. Soil Survey Map
    b. Soil Data
    c. TR-55 Runoff Curve Number Tables
E. Maintenance Declaration and BMP Checklist
F. Proposed Condition Exhibit

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448

Phone (707) 395-0968
cell (707) 280-0474
cort@munsellecivil.com
www.munsellecivil.com

MUNSELLE
CIVIL ENGINEERING
CIVIL ENGINEERING LAND PLANNING

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

Project Description:

The subject parcel is 10 acres and is located just west of Fulton Road on the south side of Wood Road. The property is zoned DA-B6-10, SR VOH (Diverse Agricultural and Scenic Resources Combining District, 10-acre minimum lot size) and has a Diverse Agricultural (DA) land use designation. The current structures present are a single-family residence, a gravel driveway with a connecting paved parking lot, a winery barn, bocce ball court and two buildings used for storage. The surrounding properties are mostly vineyard or other agricultural uses, some with single-family residences. The proposed project plans to renovate the single-family residence into a tasting room and construct a barrel storage building in the vicinity of the two existing storage buildings.

The site is essentially flat, but is slightly elevated sloping from the south side of the property to the north with an elevation variation of 3 feet. The soil is identified as Huichica Loam (hydrologic group C) by the NRCS Web Soil Survey. No sensitive water features are in the vicinity of the proposed project area and therefore will not affect any water features.

A SWLID (Storm Water Low Impact Development) report is required for this project because the amount of new impervious surface area is greater than 10,000 square feet.

Level of Treatment and Volume Capture:

As shown in the Overall Existing Condition and Proposed Condition Exhibits in Appendix F, the overall impervious area for the entire project will increase from 1.15 acres to 1.28 acres. Therefore, 100% volume capture and treatment is required for the entire project. All tributaries shown in Proposed Condition Exhibit will provide 100% capture and treatment (see treatment calculations in Appendix D). BMP's proposed will also act as runoff reduction measure since increase runoff will be intercepted from proposed impervious areas. Refer to Appendix G for tributary area locations.

Selected BMPs:

Priority-1 Swale with Bioretention was used for BMP-1 and BMP-2, which is designed for 100% capture and treatment. This is accomplished by a flat bottom vegetated swale allowing for ponding and percolation through vegetated areas. See Appendix C for details.

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448

Phone (707) 395-0968
cell (707) 280-0474
cort@munsellecivil.com
www.munsellecivil.com

MUNSELLE
CIVIL ENGINEERING
CIVIL ENGINEERING AND PLANNING

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

Pollution Prevention Measures:

The proposed impervious surfaces will flow to proposed BMP vegetated swales allowing for treatment prior to percolation into the surrounding ground.

Maintenance and Funding Mechanism:

BMPs will be inspected and maintained as described in the BMP Inspection and Maintenance Checklist provided in the Storm Water Low Impact Development Technical Design Manual for the BMP(s) selected for implementation on the lot. Inspection and Maintenance of all BMPs located on private property shall be the sole responsibility of the owner. The maintenance declaration and record keeping documents are included in Appendix F.

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448

Phone (707) 395-0968
cell (707) 280-0474
cort@munsellecivil.com
www.munsellecivil.com

MUNSELLE
CIVIL ENGINEERING
CIVIL ENGINEERING AND PLANNING

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448

Phone (707) 395-0968
cell (707) 280-0474
cort@munsellecivil.com
www.munsellecivil.com

APPENDIX A

BMP Selection Table

Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in priority selected?	Yes	No	Explanation of selection	Other notes:
Universal LID Features- to be considered on all projects.	Living Roof	N/A	N/A		x	x	x		x	x				X		
	Rainwater Harvesting	N/A	N/A		x	x	x			x				X		
	Interceptor Trees	N/A	N/A		x	x	x				x			X		
	Vegetated Buffer Strip	UN-01	Vegetated Buffer Strip								x			X		
	Bovine Terrace	UN-02	Bovine Terrace		x						x			X		
	Impervious Area Disconnection	N/A	N/A		x	x	x				x			X		

BMP Selection Table

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 1 and 1A BMPs- to be installed with no underdrains or liners. Must drain all stading water within 72 hours.	Rain Garden	P1-01	Rain Garden						x	x				X		
	Roadside Bioretention	P1-02	Roadside Bioretention - no C & G						x	x				X		
	Vegetated Swale-with Bioretention	P1-06	Swale with Bioretention						x	x				X		
	Constructed Wetlands	N/A	N/A						x	x				X		
	Infiltration Trench	P1-07	Infiltration Trench						x	x				X		

BMP Selection Table

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 2 BMPs- with subsurface drains installed above the capture volume.	Rain Garden	P2-01	Rain Garden						x	x				X		
	Roadside Bioretention	P2-02	Roadside Bioretinton - Flush Design Roadside						x	x				X		
		P2-03	Roadside Bioretenion- Contiguous SW						x	x				X		
		P2-04	Roadside Bioretenion- Curb Opening						x	x				X		
		P2-05	Roadside Bioretenion- No C & G						x	x				X		
	Pervious Pavement	P2-06	Vegetated Buffer Strip						x	x				X		
	Constructed Wetlands	N/A	N/A						x	x				X		

BMP Selection Table

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 3 BMPs- installed with subdrains and/or impermeable liner. Does not achieve volume capture and must be used as part of a treatment train.	Rain Garden	P3-01	Rain Garden		x	x	x		x					X		
	Bioretention	P3-02	Roadside Bioretinton - Flush Design Roadside		x	x	x		x					X		
		P3-03	Roadside Bioretenion- Contiguous SW		x	x	x		x					X		
		P3-04	Roadside Bioretenion- Curb Opening		x	x	x		x				X			
		P3-05	Roadside Bioretenion- No C & G		x	x	x		x	x				X		
	Flow Through Planters													X		
	Pervious Pavement	P1-04	Vegetated Buffer Strip		x	x	x		x	x			X			
	Vegetated Swale	P3-07	Vegetated Swale		x	x	x		x	x				X		

BMP Selection Table

	Best Management Practice (BMP)	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 4 BMPs- does not achieve volume capture and must be used as part of a treatment train.	Tree Filter Unit		x	x	x		x					X		
	Modular Bioretention		x	x	x		x					X		
Priority 5 BMPs- does not achieve volume capture and must be used as part of a treatment train.	Chambered Separator Units		x	x	x		x					X		
	Centrifugal Separator Units		x	x	x		x					X		
	Trash Excluders		x	x	x		x					X		
	Filter Inserts		x	x	x		x					X		
Priority 6 BMPs-	Offset Program						N/A	N/A	N/A			X		
Other	Detention		x									X		

MUNSELLE
CIVIL ENGINEERING
CIVIL ENGINEERING · LAND PLANNING

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448

Phone (707) 395-0968
cell (707) 280-0474
cort@munsellecivil.com
www.munsellecivil.com

APPENDIX B

FOR OFFICE USE ONLY:
Does this project require permanent storm water BMP's?

☐ Y ☐ N

Date Submitted: _____

Print Form

File No:	Quadrant
Related Files:	
Set:	
Department Use Only	

2017 Storm Water LID Determination Worksheet

PURPOSE AND APPLICABILITY: This determination worksheet is intended to satisfy the specific requirements of "ORDER NO. R1-2015-0030, NPDES NO. CA0025054 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES FROM THE MUNICIPAL SEPARATE STORM SEWER SYSTEMS." Additional design requirements imposed by Governing Agencies, such as local grading ordinances, CAL Green, CEQA, 401 permitting, and hydraulic design for flood control still apply as appropriate. Additionally, coverage under another regulation may trigger the requirement to design in accordance with the Storm Water LID Technical Design Manual.

Part 1: Project Information

Croix Estate Winery Project Name	Jason Williams Applicant (owner or developer) Name
1406 Wood Road Project Site Address	4708 Silverado Trail Applicant Mailing Address
Fulton, CA 95439 Project City/State/Zip	Calistoga, CA 94515 Applicant City/State/Zip
	(707) 942-9100 Applicant Phone/Email/Fax
Permit Number(s) - (if applicable)	
Munselle Civil Engineering Designer Name	513 Center Street Designer Mailing Address
Healdsburg, CA Designer City/State/Zip	(707) 395-0968 Designer Phone/Email

Type of Application/Project:

☐ Subdivison ☐ Grading Permit ☐ Building Permit ☐ Hillside Development

☐ DesignReview ☑ Use Permit ☐ Encroachment ☐ Time Extensions ☐ Other :_____

PART 2: Project Exemptions

1. Is this a project that creates or replaces *less than* 10,000 square feet of impervious surface[1], including all project phases and off-site improvements?

   ☐ Yes ☑ No

1 Impervious surface replacement, such as the reconstruction of parking lots or excavation to roadway subgrades, is not a routine maintenance activity. Reconstruction is defined as work that replaces surfaces down to the subgrade. Overlays, resurfacing, trenching and patching are defined as maintenance activities per section VI.D.2.b.

2. Is this project a routine maintenance activity[2] that is being conducted to maintain original line and grade, hydraulic capacity, and original purpose of facility such as resurfacing existing roads and parking lots?

☐ Yes ☑ No

3. Is this project a stand alone pedestrian pathway, trail or off-street bike lane?

☐ Yes ☑ No

4. **Did you answer "YES" to any of the questions in Part 2?**

☐ **YES:** This project will *not* need to incorporate permanent Storm Water BMP's as required by the NPDES MS4 Permit. **Please complete the "Exemption Signature Section" on Page 4.**

☑ **NO:** Please complete the remainder of this worksheet.

Part 3: Project Triggers

Projects that Trigger Requirements:
Please answer the following questions to determine whether this project requires permanent Storm Water BMP's and the submittal of a SW LIDs as required by the NPDES MS4 Permit order No. R1-2015-0030.

1. Does this project create or replace a combined total of 10,000 square feet or more of impervious surface[1] including all project phases and off-site improvements?

☑ Yes ☐ No

2. Does this project create or replace a combined total or 10,000 square feet or more of impervious streets, roads, highways, or freeway construction or reconstruction[3]? ☐ Yes ☑ No

3. Does this project create or replace a combined total of 1.0 acre or more of impervious surface[1] including all project phases and off-site improvements? ☐ Yes ☑ No

4. **Did you answer "YES" to any of the above questions in Part 3?**

☑ **YES:** This project will need to incorporate permanent Storm Water BMP's as required by the NPDES MS4 Permit. **Please complete remainder of worksheet and sign the "Acknowledgement Signature Section" on Page 4.**

☐ **NO:** This project will *not* need to incorporate permanent Storm Water BMP's as required by the NPDES MS4 permit. **Please complete the "Exemption Signature Section" on Page 4.**

---

1 Imprevious surface replacement, such as the reconstruction of parking lots or excavation to roadway subgrades, is not a routine maintence activity. Reconstruction is defined as work that replaces surfaces down to the subgrade. Overlays, resurfacint, trenching and patching are defined as maintenance activities per section VI.D.2.b.

2 "Rountine Maintenance Activity" includes activities such as overlays and/or resurfacing of existing roads or parking lots as well as trenching and patching activities and reroofing activities per section VI.D.2.b.

3 "Reconstruction" is defined as work that extends into the subgrade of a pavement per section VI.D.2.b.

Part 4: Project Description

1. Total Project area: 1.93 ○ square feet ◉ acres

2. Existing land use(s): (check all that apply)

☐ Commercial ☐ Industrial ☑ Residential ☐ Public ☑ Other

Description of buildings, significant site features (creeks, wetlands, heritage trees), etc.:

Existing residence and storage buildings for winery/vineyard.

3. Existing impervious surface area: 1.14 ○ square feet ◉ acres

4. Proposed Land Use(s): (check all that apply)

☐ Commercial ☐ Industrial ☑ Residential ☐ Public ☑ Other

Description of buildings, significant site features (creeks, wetlands, heritage trees), etc.:

Reuse of current residence and reconstruction of current storage buildings.

5. Proposed impervious surface area: 1.19 ○ square feet ◉ acres

Acknowledgment Signature Section:

As the property owner or developer, I understand that this project is required to implement permanent Storm Water Best Management Practices and provide a Storm Water Low Impact Development Submittal (SW LIDS) as required by the City's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4) Permit Order No. R1-2015-0030. *Any unknown responses must be resolved to determine if the project is subject to these requirements.

_____ _____

Applicant Signature Date

Exemption Signature Section:

As the property owner or developer, I understand that this project as currently designed does not require permanent Storm Water BMP's nor the submittal of a Storm Water Low Impact Development Submittal (SW LIDS) as required by the City's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4) Permit*. I understand that redesign may require submittal of a new Determination Worksheet and may require permanent Storm Water BMP's.

_____ _____

Applicant Signature Date

* **This determination worksheet is intended to satisfy the specific requirements of "ORDER NO. R1-2015-0030, NPDES NO. CA0025054 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES FROM THE MUNICIPAL SEPARATE STORM SEWER SYSTEMS." Additional design requirements imposed by Governing Agencies, such as local grading ordinances, CAL Green, CEQA, 401 permitting, and hydraulic design for flood control still apply as appropriate. Additionally, coverage under another regulation may trigger the requirement to design in accordance with the Storm Water LID Technical Design Manual.**

_____

Implementation Requirements: *All calculations shall be completed using the "Storm Water Calculator" available at: www.srcity.org/stormwaterLID*

Hydromodification Control/100% Volume Capture: Capture (infiltration and/or reuse) of 100% of the volume of runoff generated by a 1.0" 24-hour storm event, as calculated using the "Urban Hydrology for Small Watersheds" TR-55 Manual method. This is a retention requirement.

Treatment Requirement: Treatment of 100% of the flow calculated using the modified Rational Method and a known intensity of 0.20 inches per hour.

Delta Volume Capture Requirement: Capture (infiltration and/or reuse) of the increase in volume of storm water due to development generated by a 1.0" 24-hour storm event, as calculated using the "Urban Hydrology for Small Watersheds" TR-55 Manual method. This is a retention requirement.

MUNSELLE
CIVIL ENGINEERING
CIVIL ENGINEERING LAND PLANNING

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448

Phone (707) 395-0968
cell (707) 280-0474
cort@munsellecivil.com
www.munsellecivil.com

APPENDIX C

Composite Runoff Coefficients and Curve Numbers
Croix Winery
1406 Wood Road, Fulton
1/14/2020

Average Annual Precipitation:	35 "	k factor:	1.17

Surface Description	C-Value, 85th Percentile (Based on City of Santa Rosa Storm Water Calculator Table 6-1)	CN-Value (Based on TR-55 Table 2-2, Hydrologic Soil Group c)
Concrete/Roof	0.8	98
Asphalt	0.7	98
Vegetated or Pervious Pavers	0.1	74

Pre-Development

BMP ID	Concrete/Roof Surface Area (sf)	Asphalt Surface Area (sf)	Vegetated/ Pervious Area (sf)	Total Tributary Area (sf)	Total Tributary Area (ac.)	Composite C-Value, 85th Percentile	Composite Curve Number
1	42486	0	15931	58417	1.341	0.61	91
2	7119	0	0	7119	0.163	0.80	98

Post-Development

BMP ID	Concrete/Roof Surface Area (sf)	Asphalt Surface Area (sf)	Vegetated/ Pervious Area (sf)	Total Tributary Area (sf)	Total Tributary Area (ac.)	Composite C-Value, 85th Percentile	Composite Curve Number
1	33771	0	10650	44421	1.020	0.63	92
2	17921	0	21540	39461	0.906	0.42	85

Composite Runoff Coefficient Equation:

$$C_T = C_V \frac{A_V}{A_T} + C_P \frac{A_P}{A_T}$$

City of Santa Rosa WATER

STORM WATER CALCULATOR

LID BMP Summary Page & Site Global Values

Project Information:

Project Name:	CROIX WINERY
Address/Location:	1406 WOOD RD, FULTON
Designer:	MUNSELLE CIVIL ENGINEERING
Date:	1/14/2020

Site Information:

Mean Seasonal Precipitation (MSP) of Project Site:	35.00	(inches)
K=MSP/3(K=	1.17	
Impervious area - pre development:	49,604.8	ft²
Impervious area - post development:	51,692.0	ft²

Based upon the pre and post development impervious area, the post construction BMP requirement is:

100% Capture & Treatment

Summary of Saved BMP Results:

		Tributary Area		Requirements		BMP Design Results						
							Hydromodification Control		Flow Base Treatment		Delta Volume Capture	
	BMP ID:	Tributary Area (ft².)	Runoff Reduction Measures (Y/N)	Type of Requirement Met	Type of BMP Design	Percent Achieved	Required $V_{Hydromod}$ (ft³)	Achieved (ft³)	Required Q Treatment (cfs)	Achieved (ft³)	Required Vdelta (ft³)	Achieved (ft³)
1	BMP-1	44,421	No	Delta Volume Capture	Priority 1: P1-06 Swale with Bioretention	105.8					184.7914	425.0000
2	BMP-2	39,461	No	Delta Volume Capture	Priority 1: P1-06 Swale with Bioretention	-4.5					-2298.6033	261.0000
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												

STORM WATER CALCULATOR

BMP Tributary Parameters

Project Name: CROIX WINERY

BMP ID:	BMP-1
BMP Design Criteria:	100% Capture & Treatment
Type of BMP Design:	Priority 1: P1-06 Swale with Bioretention
BMP's Physical Tributary Area:	44,421.0 ft^2
Description/Notes:	

Delta Volume Capture; V_{Delta}

V_{DELTA} = 184.79 ft^3

Hydrologic soil type within tributary area:	A: greater than 0.30 in/hr infiltration (transmission) rate
Predevelopment ground cover description:	Brush: weed-grass mixture with brush major element - Poor (<50% ground cover)
Post development ground cover description:	Brush: weed-grass mixture with brush major element - Poor (<50% ground cover)
CN_{PRE}:	
CN_{POST}:	
User Composite Predevelopment CN:	91.0
User Composite Post development CN:	92.0

BMP Sizing Tool Delta Volume Capture Requirement

Percent of Goal Achieved = 105.79 %

	BMP Volume Below Ground		Ponded Water Above Ground	
Porosity:	0.10			
Depth below perforated pipe if present:	0.75	ft		
Depth:			0.50	ft
Width:	2.00	ft	2.00	ft
Length:	170.00	ft	170.00	ft
Area:	0.00	ft^2	0.00	ft^2

STORM WATER CALCULATOR

BMP Tributary Parameters

Project Name: CROIX WINERY

BMP ID:	BMP-2
BMP Design Criteria:	100% Capture & Treatment
Type of BMP Design:	Priority 1: P1-06 Swale with Bioretention
BMP's Physical Tributary Area:	39,461.0 ft^2
Description/Notes:	

Delta Volume Capture; V_{Delta}

V_{DELTA} = -2,298.60 ft^3

Hydrologic soil type within tributary area:	A: greater than 0.30 in/hr infiltration (transmission) rate
Predevelopment ground cover description:	Brush: weed-grass mixture with brush major element - Poor (<50% ground cover)
Post development ground cover description:	Brush: weed-grass mixture with brush major element - Poor (<50% ground cover)
CN_{PRE}:	
CN_{POST}:	
User Composite Predevelopment CN:	98.0
User Composite Post development CN:	85.0

BMP Sizing Tool Delta Volume Capture Requirement

Percent of Goal Achieved = (4.46) %

	BMP Volume Below Ground		Ponded Water Above Ground	
Porosity:	0.10			
Depth below perforated pipe if present:	0.50	ft		
Depth:			0.25	ft
Width:	2.00	ft	2.00	ft
Length:	176.00	ft	170.00	ft
Area:	0.00	ft^2	0.00	ft^2

MUNSELLE
CIVIL ENGINEERING
CIVIL ENGINEERING LAND PLANNING

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448

Phone (707) 395-0968
cell (707) 280-0474
cort@munsellecivil.com
www.munsellecivil.com

APPENDIX D

Map Scale: 1:2,300 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sonoma County, California
Survey Area Data: Version 11, Sep 21, 2017

Soil map units are labeled (as spaco allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Nov 22, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HtA	Huichica loam, 0 to 2 percent slopes	C	9.2	100.0%
Totals for Area of Interest			**9.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Table 2-2a Runoff curve numbers for urban areas [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area [2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts					
1/8 acre or less (t	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

The open space for the completed project will be landscaped and vegetated, therefore, this CN value best fits the proposed open space condition.

[1] Average runoff condition, and $I_a = 0.2S$.

[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

MUNSELLE
CIVIL ENGINEERING

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448

Phone (707) 395-0968
cell (707) 280-0474
cort@munsellecivil.com
www.munsellecivil.com

APPENDIX E

Form A
Storm Water Quality Feature Maintenance Check List
- Standard Conditions -

Date: _____ Inspector: _____

Start Time: _____ Project: _____

Stop Time: _____ Address: _____

Inspection Status Codes:
S = Satisfactory * = Refer to Form B (Specials) and/or Form C (Notes).
D = Deficient

Are there any special conditions and/or maintenance requirements noted for BMP(s)? Y N (circle one)
If Yes, attach Form B for Project.

	Drainage				Erosion						Vegetation				General			Special Features
	Drawdown - Drainage - Vector Risk - Pump Out-Blockage				Hydraulic Function - Failure - Sediment Clogging						Excessive Mowing - Herbicide Overuse - Health of Desired Vegetation -				Trash and Debris - Improper Modifications - Damage			
Reference code	D1	D2	D3	D4	E1	E2	E3	E4	E5	E6	V1	V2	V3	V4	G1	G2	G4	S
BMP ID:	Evidence of standing or ponding of water in the BMP area after 72 hours of dry weather?	Does the high flow bypass function as designed?	Is there sediment acumination in or around BMP?	Has water been observed flowing in the pervious concrete section during a low intensity storm?	Is there under cutting or washouts along the sidewalks and/or curbs abutting the planter area?	Is there channelization (gully) forming along the length of the planter area?	Is there accumulation of sediment (sand, dirt, mud) in the planter area ?	Observed or potential transport of mulch to drainage system?	Are there voids or holes present in the BMP?	Is there evidence of animal activity?	Is the vegetation clogging the inlet or flow path?	Evidence of Excessive Mowing and/or Herbicide Overuse?	Are there dead or dry plants or excessive weeds?	Is there an absence of correct vegetation?	Is there debris/trash accumulation in the BMP or high flow by pass?	Missing or damage structural features? (Grates, pipes, walls, curbs, etc.)	Evidence of improper modifications or removal of BMP?	See Additional Special Conditions or Features Check List Requirement Form B

Office Use:
Complete: _____ Issues Corrective Action: _____ Re-Inspection Required: _____

Storm Water Quality Special Feature Maintenence Check List

Date: _____

Start Time: _____

Stop Time: _____

Inspector: _____

Project: _____

Address: _____

Inspection Status Codes:

S = Satisfactory * - See Notes on Form C

D = Deficient

Special Feature or Conditions

Reference code	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
Additional Special Maintenance Inspection Criterial	Add special inspection requirements in addition to Form A here.	Add special inspection requirements in addition to Form A here.	Add special inspection requirements in addition to Form A here.	Add special inspection requirements in addition to Form A here.	Add special inspection requirements in addition to Form A here.	Add special inspection requirements in addition to Form A here.	Add special inspection requirements in addition to Form A here.	Add special inspection requirements in addition to Form A here.	Add special inspection requirements in addition to Form A here.	Add special inspection requirements in addition to Form A here.	Add special inspection requirements in addition to Form A here.
BMP ID:											

Office Use:

Complete: _____ Issues Corrective Action: _____ Re-Inspection Required: _____

Form C
Storm Water Quality Feature Maintenence Check List
- Inspection Notes -

Date: _____

Inspector: _____

Project: _____

Address: _____

BMP ID:	Reference Code	Notes

MUNSELLE
CIVIL ENGINEERING

CIVIL ENGINEERING LAND PLANNING

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

APPENDIX F

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448

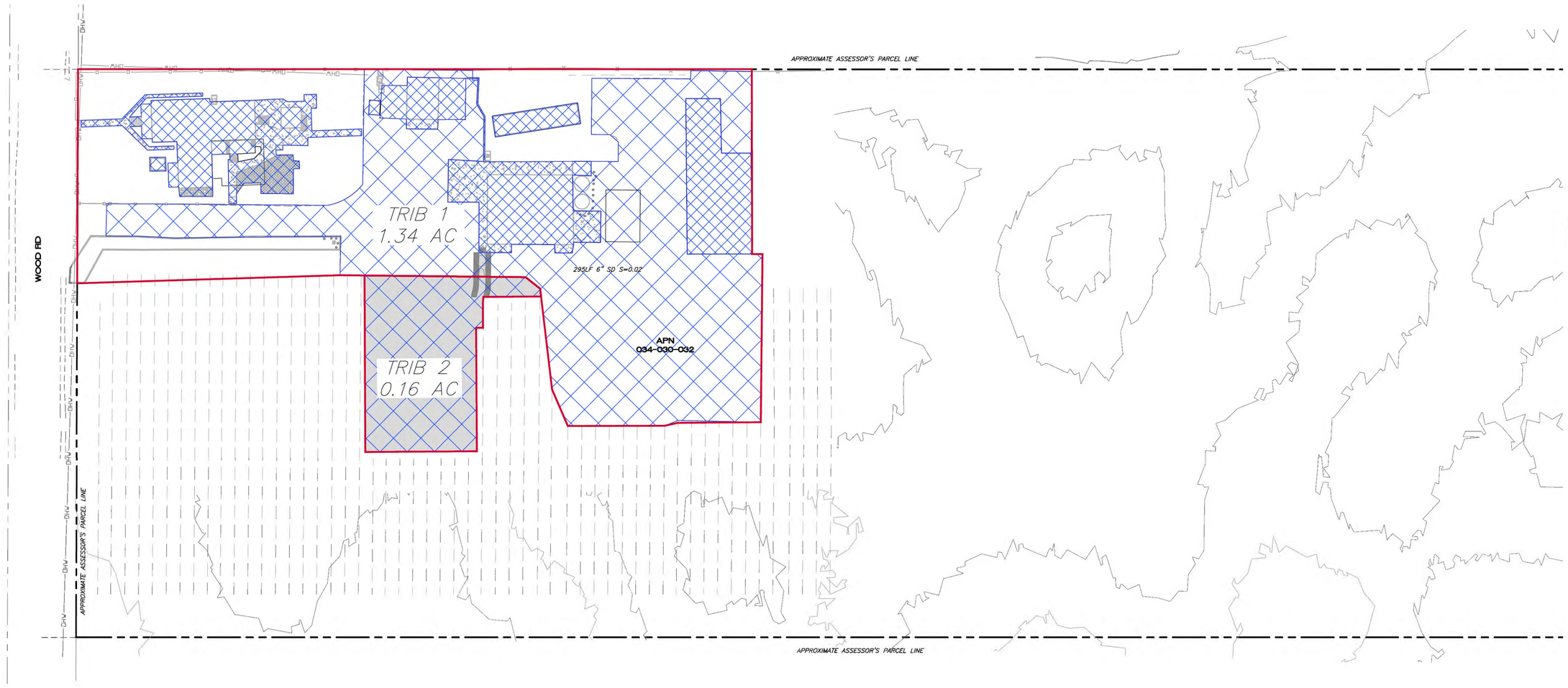
Phone (707) 395-0968
cell (707) 280-0474
cort@munsellecivil.com
www.munsellecivil.com

LEGEND

ROOFTOP/CONCRETE IMPERVIOUS AREA

TRIBUTARY AREA

SOIL TYPES:
HtA HUICHICA LOAM, 0 TO 2 PERCENT SLOPES – TYPE C



PERVIOUS & IMPERVIOUS AREAS		
PRE CONSTRUCTION:	TOTAL TRIBUTARY AREA (SF)	IMPERVIOUS AREA (SF)
TRIB 1	1.34 AC	0.98 AC
TRIB 2	0.16 AC	0.16 AC
TOTAL	1.50 AC	1.15 AC

PRE CONSTRUCTION HYDROLOGY MAP

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

N E S W

REVISION	DESCRIPTION	BY	DATE

MUNSELLE CIVIL ENGINEERING
CIVIL ENGINEERING • LAND PLANNING
513 CENTER STREET
HEALDSBURG, CA 95448
(707) 395-0568

PROFESSIONAL ENGINEER • MUNSELLE • COURT L. • No. 69941 Exp. 9-30-18 • REGISTERED • CIVIL • STATE OF CALIFORNIA

COURT L MUNSELLE RCE 69941 DATE

CROIX ESTATE WINERY
PRE CONSTRUCTION HYDROLOGY MAP
APN 034-030-032
1406 WOOD ROAD
FULTON, CA

JANUARY 14, 2020

JOB NO. 137-16

SHEET NO. 1 OF 2 SHEETS

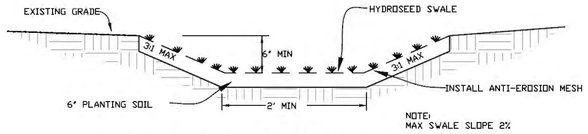
P:\MCE JOBS\2016\137-16 CROIX ESTATE WINERY\DWGS\137-16 POST-CONSTRT HYDRO.DWG 1/14/2020 10:35 AM

LEGEND

ROOFTOP/CONCRETE IMPERVIOUS AREA

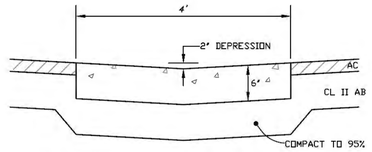
TRIBUTARY AREA

PROPOSED BMP



VEGETATED SWALE WITH FLAT BOTTOM

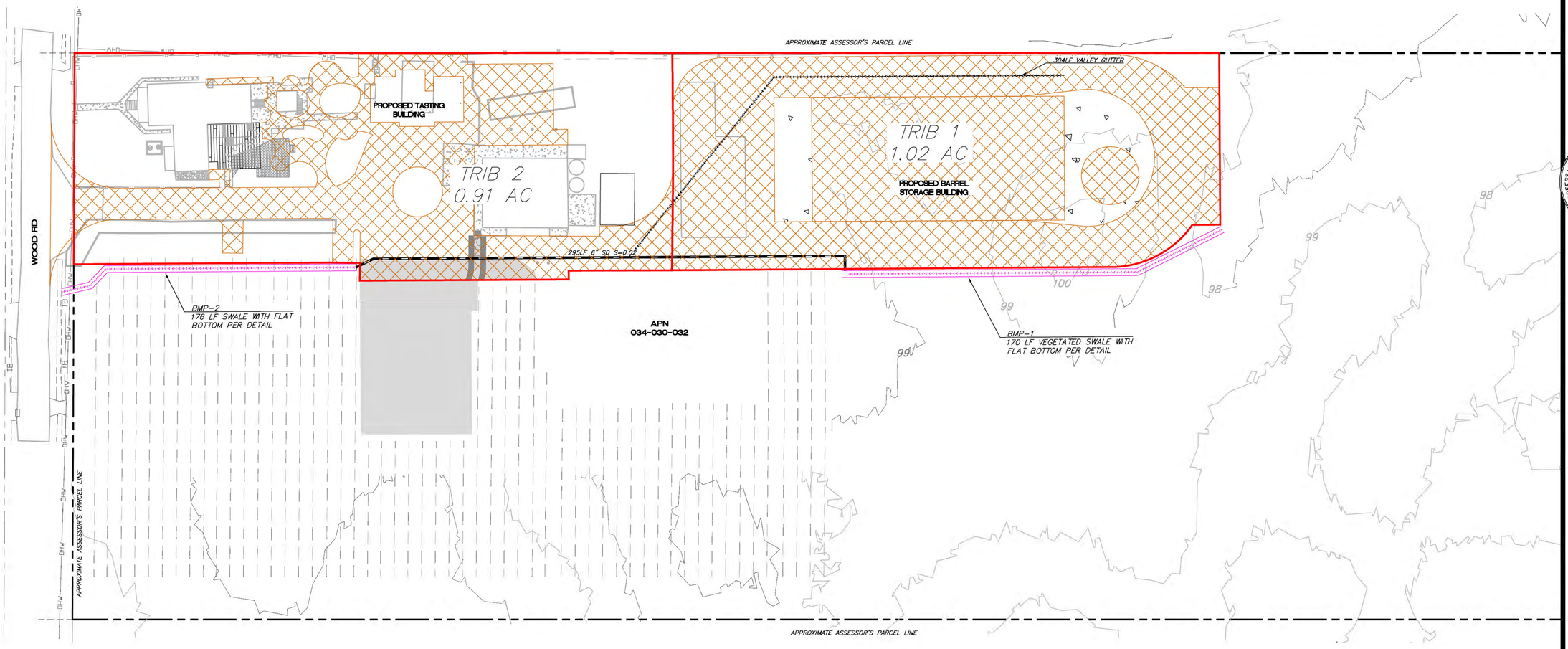
NO SCALE



ON-SITE VALLEY GUTTER

NO SCALE

SOIL TYPES:
HtA HUICHICA LOAM, 0 TO 2 PERCENT SLOPES – TYPE C



PERVIOUS & IMPERVIOUS AREAS		
POST CONSTRUCTION:	TOTAL TRIBUTARY AREA (AC)	IMPERVIOUS AREA (AC)
TRIB 1	1.02 AC	0.78 AC
TRIB 2	0.91 AC	0.41 AC
TOTAL	1.93 AC	1.28 AC

POST CONSTRUCTION HYDROLOGY PLAN

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

N W E S

REVISION	DESCRIPTION	BY	DATE

MUNSELLE CIVIL ENGINEERING
CIVIL ENGINEERING • LAND PLANNING
513 CENTER STREET
HEALDSBURG, CA 95448
(707) 395-0968

PROFESSIONAL ENGINEER • MUNSELLE • REGISTERED • No. 69941 Exp. 9-30-18 • CIVIL • STATE OF CALIFORNIA

CORT L. MUNSELLE DATE
CORT L MUNSELLE
RCE 69941

CROIX ESTATE WINERY
POST CONSTRUCTION HYDROLOGY MAP
APN 034-030-032
1406 WOOD ROAD
FULTON, CA

JANUARY 14, 2020

JOB NO.
137-16

SHEET NO.
2
OF 2 SHEETS

P:\MCE JOBS\2016\137-16 CROIX ESTATE WINERY\DWGS\137-16 POST-CONSTRT HYDRO.DWG 1/14/2020 10:35 AM