LANDSMART® FOR VINEYARDS
FARM PLAN

Prepared for: **NAPA COUNTY RESOURCE CONSERVATION DISTRICT**

Prepared by: Napa County Resource Conservation District

Date: 1/27/2017

Version 3.0
May 2016

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Productive lands. Thriving streams.

CONTENTS

INTRODUCTION

This LandSmart® Farm Plan template, in conjunction with workshops and one-on-one assistance (as needed), is intended to guide you through the process of inventorying vineyards, roads, and waterways, to document your current conservation practices and help you select additional conservation practices, when needed, to protect water quality and other natural resources. The resulting plan is intended to be a working document to record your decisions and progress. The plan will help you identify locations where photo monitoring should be conducted to document conservation practices. These photos, along with records you keep, can help you evaluate how various conservation practices work within your vineyard and, if needed, they can help you demonstrate to others the steps you have taken to protect and improve natural resources. Lastly, the plan will provide you with an easy to reference summary of conservation practices that you use and that you intend to implement (identified in earlier plan sections).

The LandSmart Farm Plan Template consists of several worksheets that you will complete. The top of each worksheet has information and/or directions, and as you work your way through the worksheet additional instructions may be provided based upon your responses. The questions and follow-up instructions are designed to help you identify which areas of your property could receive the most benefit from implementation of additional conservation practices. The worksheets also include tables to help you document existing and planned practices. You will be able to complete some of the worksheets quite easily. Other worksheets will take more time and will involve some field assessment, perhaps even some assistance from a resource professional (NRCS, RCD, or other professional). The LandSmart for Vineyards Reference Guide, available at LandSmart.org, may assist you in completing the worksheets. The Reference Guide contains chapters that correspond with each of the chapters in this Template.

This farm plan template purposefully covers topics of interest to most vineyard managers and has been developed to be consistent with water quality regulations. You may have additional conservation and land management interests beyond water quality regulations. The LandSmart program may help with those interests as well. If you need assistance to meet agricultural and conservation goals, please do not hesitate to contact your local Natural Resources Conservation Service (NRCS) or Resource Conservation District (RCD) office.

For more information about LandSmart, RCD, NRCS, and watershed concepts, and a guide to navigating the permit process see Chapter 1 of the Resource Guide (LandSmart.org).

Contact Information

NRCS Napa Field Office: 707-252-4189
NRCS Petaluma Field Office: 707-794-1242

Napa County RCD: 707-252-4189
Sonoma RCD : 707-569-1448
Mendocino County RCD: 707-462-3664
Gold Ridge RCD: 707-823-5244

PROPERTY DESCRIPTION

Vineyard Facility Location (*See Chapter 2 of the Reference Guide for more information)*

Vineyard Facility Name	Huichica Creek Sustainable Demonstration Vineyard		
Facility Address	2135 Duhig Rd		
City, State & Zip Code	Napa, CA, 94559	**County**	Napa
Assessor's Parcel Number(s)	047-320-024		
Township		**Range**	
Latitude	38.221608	**Longitude**	-122.356513
Watershed and Sub-watershed	Huichica Creek		

Plan Preparer

Name of Plan Preparer	Charles Schembre	**Plan Date:**	**1/3/2017**
Preparer's Affiliation	Napa County RCD Staff		
Plan Sections Prepared:	☒ All ☐ Some (specify below) List Sections:		
Email	charles@naparcd.org	**Phone:** 707-252-4189	**Fax:**

Owner/Lessee (if different from above)

Name(s)	Napa County Resource Conservation District		
Mailing Address	1303 Jefferson St – Suite 500B		
City, State & Zip Code	Napa, CA, 94559	**Phone (hm)**	707-252-4189
Email		**Phone (cell)**	

Land/Vineyard Manager (if different from above)

Name(s)			
Mailing Address			
City, State & Zip Code		**Phone (hm)**	
Email		**Phone (cell)**	

Technical Assistance Advisors (if applicable)

Name(s)			
Mailing Address			
City, State & Zip Code		**Phone (hm)**	
Email		**Phone (cell)**	

Operations and Land Use

Land Use Activity	***Area/Length***		***Notes***
Vineyard Blocks and Avenues	14	Acres	
Grazing/Rangeland		Acres	
Grape Processing Facilities		Acres	
Roads (paved)	830 ft	Feet/ Miles	
Roads (unpaved)		Feet/ Miles	
Other paved areas and buildings		Acres	
Forest/Woodland/Chaparral		Acres	
Open Space/Fallow/Undeveloped	1.4	Acres	Huichica Crk Flood Plain
Reservoir/Pond (footprint)		Acres	
Stream/River/Creek/Riparian (delineated as blue-line on USGS topographic maps)	1850 feet	Feet/ Miles	
Stream/River/Creek/Riparian (not delineated as blue-line on USGS topographic maps)		Feet/ Miles	
Drainage Ditch/Canal		Feet/ Miles	
Other Vineyard/Farming Facilities		Acres	
Other Land uses	4.2	Acres	Seasonal Wetland

EXISTING PLANS, PERMITS & CERTIFICATIONS

Plan Type	*Plan/ Permit Year*	*Plan/ Permit Area (ac)*	*Plan/Permit Number(s) and/or Notes (including status, e.g. permit pending/final or certification pending/complete)*
Napa County Erosion Control Plan			
Sonoma County Erosion Control Plan (VESCO)			
NRCS Conservation Plan			
Fire Management Plan			
Grazing/Rangeland Management Plan			
Grazing Lands Water Quality Plan			
Organic Certification (indicate if in transition)			
Timber Harvest Management Plan			
Napa Green Land/Fish Friendly Farming Certification	2012	21	
The Code of Sustainable Winegrowing (note if Self-Assessment or Certified)			
Industrial Stormwater Permit for Wineries			
Sustainability in Practice (SIP)			
Engineered pond including water rights (if applicable)			
Permits for stream-related projects: Department of Fish and Wildlife, Corps of Engineers, etc.			
Other:			
Other:			

OFF-SITE CONDITIONS OUTSIDE OF LANDOWNER CONTROL

If there are any upslope and/or upstream land uses or conditions within the watershed that are out of your control that may influence your ability to effectively implement conservation practices to control erosion, reduce sediment delivery, or otherwise protect water quality on your property, please describe them below.

Describe as needed:

The adjacent property immediately north, across Ramal Rd, drains via an existing culvert into the north end of our property. This functions as flood control for the county road (Ramal Rd). During large storm events significant runoff from the adjacent property discharges into our property, and is attenuated and captured by the wetland. A large portion of our vineyard is generally inundated with flood water during large storm events. The wetland functions as an attenuation basin and most likely mitigates any sediment delivery to Huichica Creek.

VINEYARD FACILITY MAP SUMMARY

Maps will be an important part of your LandSmart Plan and will serve as an easy reference for you. Maps should be prepared on a topographic map, an aerial photograph, or a Google Earth image (minimum 1" = 1,000' or 1:12,000 scales). More than one map may be used to display the information needed to complete your plan. A more detailed map (scale of 1" = 500' or 1:6,000' may be needed to accurately depict stream channels, riparian corridors, or other small scale features. Each map should have a legend and should clearly display the features that are identified in your Farm Plan.

You may already have maps of the property to meet the mapping needs identified below (for example, erosion control plan maps). In this case, you may wish to include (or reference) existing maps in your Farm Plan and alleviate the need to prepare new maps. In other cases, you may generate maps as you work your way through the Farm Plan process and assess the various features on your property.

See Chapter 3 of the Reference Guide for further information on map scale, map symbols, and other information that may be helpful in completing your maps. If you need assistance with mapping, NRCS and/or RCD staff is available to assist you.

This table provides a summary of suggested features to map for inclusion in your Farm Plan. Please indicate below which features are displayed on your Farm Plan map(s) by checking the box on the left. Maps should be kept with the Farm Plan.

Mark X if mapped	Boundaries	Notes
X	Property & plan boundaries	
X	Parcel boundaries	
X	Topography *(identify area with slope <5% and areas with slope >30%)*	
X	Existing vineyard block boundaries *(indicate slope and block ID)*	
X	Areas under consideration for new vineyard development or replant	
X	Non-vineyard land uses (grazing, winery, other)	
Buildings/Facilities – *May identify total footprint of buildings in lieu of labeling each*		
	Barns/shops/outbuildings/greenhouses	n/a
	Agrichemical (pesticide/fertilizer/petroleum) handling site(s)	n/a
	Agrichemical (pesticide/fertilizer/petroleum) storage facility(s)	n/a

	Winery/post-harvest handling/storage facility(s)	n/a
	Equipment yards and/or staging areas	n/a
	Other:	
Vineyard Soils, Erosion Control, Management & Structures – *Give each area/feature a name or number for easy reference.*		
X	Soil type(s) with erosion rating(s) (map from http://websoilsurvey.nrcs.usda.gov)	
X	Vineyard drainage system (diversion ditches, storm drains, and underground outlets with inlets and outlets)	
X	Sediment/attenuation/energy dissipation basin(s)	
	Vineyard Avenue(s)	
X	Erosion features (i.e. gullies, rills, landslides, mudflows, rock falls)	
	Other:	
Waterways – *Give each feature a name or number for easy reference.*		
	Ephemeral Stream (those that flow only during and shortly after a storm, also known as Class III streams)	
X	Seasonal/Intermittent Stream (those that flow for part of the year and generally stop flowing in the late spring, also known as Class III streams)	
	Year Round Stream (those that generally flow year round also known as Class I or II streams, depending on other factors)	
	Human-made waterways (ditches, also known as Class IV streams)	
X	Constructed Swale(s) – shallow trough-like depressions that carry water mainly during storms – no defined channel or bank	
X	Spring(s), Seep(s), and Wet Area(s)	
X	Reservoir/Pond/lake(s) (indicate pipe or open channel spillway location)	
X	Known in-stream structures	
X	Erosion features in waterways (i.e. streambank erosion, channel erosion)	
X	Wells, with notation of their use (agricultural, residential, not in use, other)	
	Other:	
Roads - *Identify with a name and indicate if public, private and/or easements.*		
	Surfaced roads (paved, graveled, etc.)	
	Unsurfaced roads (dirt, vegetated etc. – ***do not include vineyard avenues***)	
	Abandoned roads (trails or roads that are not used)	

X	Waterway crossings (indicate whether freespan bridge, culvert, ford, etc.)	
	Erosion issues associated with roadside ditches, ditch relief culverts, waterbars, rolling dips, etc.	
	Erosion features on land associated with roads (i.e. gullies, rills, landslides, mudflows, rock falls)	
	Other:	
Photo Monitoring Points – ***Sites you have selected for annual photo monitoring. Give each point a number for easy reference.***		
X	Photo-points to demonstrate winter readiness	
X	Photo-points to demonstrate annual maintenance and practice implementation	
X	Photo-points to demonstrate condition of discharge points	
X	Photo-points to demonstrate condition downstream of discharge points	
X	Photo-points to track “areas to watch” – e.g. areas with erosion or invasive weeds that you want to track over time	
	Other:	

MANAGING AGRICHEMICALS

Background: Agrichemicals (organic and/or synthetic nutrients and/or pesticides, including herbicides and sulfur) that move from the site of application into surface water, and other unintended places, can affect water quality by negatively impacting human, animal and/or non-target organism health. Nutrient sources associated with agricultural production practices may include organic and inorganic fertilizers, biodegraded crop residues, and agricultural wastes (grape pomace and waste directly generated by animals). Wind and water erosion of soil or aerial drift from agrichemical applications may contribute to pesticide movement away from the target area. Agrichemicals may enter surface waters during overland runoff and tile drainage either as water-soluble residuals or adsorbed to sediments. Nutrients from these sources become pollutants when they are transported off-site into nearby streams and lakes or percolate in excessive amounts of groundwater. Nitrates and phosphates in surface water bodies contribute to increases in aquatic plants and algal blooms that deplete dissolved oxygen and impact aquatic organisms.

See chapter 4 of the Resource Guide for more information on managing agrichemicals, including BMP descriptions, beneficial insects, plans and instructions for building bird and bat houses, practices for treating common diseases/pests.

Purpose: Identify practices, currently in use or intended for implementation, to ensure that agrichemicals (fertilizers, soil nutrients, compost and pesticides) are stored, mixed and applied in a manner consistent with all applicable regulations, including those required by the California Department of Pesticide Regulation (DPR) and the County Agricultural Commissioner, and in a manner that prevents excess agrichemicals from reaching surface and groundwater.

AGRICHEMICAL HANDLING AND STORAGE

A1. Agrichemicals are stored properly (per the label) on-site.

☐ Yes (Indicate on map where agrichemicals are stored)

☐ No (Implement practice # 2, listed in Table A1 below, consult a professional if needed)

☒ Agrichemicals are not stored on-site.

Describe as needed:

A2. Agrichemical mixing, loading, and rinsing are conducted in an area where agrichemicals are contained.

☒ Yes (Indicate on map where agrichemicals are mixed, loaded, and rinsed)

☐ No (Consider practices # 3 through 6, listed in Table A1 below)

☐ No mixing, loading, or rinsing on-site.

Describe as needed: View Map. 7 for location of mixing zone. Map. 7

A3. Agrichemicals not handled on a containment facility are mixed, loaded and rinsed away from aquatic habitat and wells.

☒ Yes (Indicate on map where agrichemicals are mixed, loaded, and rinsed)

☐ No (Consider practices # 3 through 6, listed in Table A1 below)

☐ Agrichemicals are not mixed, loaded, and rinsed on-site.

Describe as needed: View Map. 7 for location of mixing zone.

A4. Employees are trained in the safe handling of agrichemicals.

☒ Yes (Describe how often and source of training)

☐ No (Consider practices # 3 through 6, listed in Table A1 below)

All workers that handle chemicals are employed and trained by a third part vineyard management company.

Table A1: Conservation Practices for Agrichemical Handling and Storage

The following table provides an assortment of management practices that are intended to protect water quality. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to protect water quality and to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance. *See Chapter 4 of the Reference Guide for information on these conservation practices.*

Conservation Practice	*NRCS Practice Title*	*Current Practice*	*Planned Implementation Date / Status*	*Location / Notes*
1. Consult a Professional		☐		
2. Read agrichemical labels and store them according to directions.		☒		
3. Use an impervious containment pad for agrichemical handling	Agrichemical Handling Facility (309)	☐		
4. Provide securable agrichemical handling	Agrichemical Handling Facility (309)	☐		
5. Move agrichemical handling away from aquatic habitat and wells		☒		
6. Train employees on safe agrichemical handling		☒		
Other:		☐		

PEST MANAGEMENT

A5. The facility operates under a current Pesticide Use Permit filed with the County Agricultural Commissioner.

☒ Yes (List your permit number)

☐ No (Implement practice # 2, listed in Table A2 below. Consult a professional if needed)

☐ No pesticides are used at the facility.

28-16-2800045 Oak Knoll Farming manages the permit and submits all pesticide use reports. Site Number: 2A-1

A6. UC-IPM guidelines are followed (http://www.ipm.ucdavis.edu/PMG/selectnewpest.grapes.html)

☒ Yes (Briefly describe IPM practices in use)

☐ Some (Briefly describe IPM practices in use)

☐ No (Consider practices # 3 through 6, listed in Table A2 below)

Hand weeding occurs in young vine blocks and in areas where weed pressure is very intense. Mulching under the vine to blanket out weeds. Herbicide application is reduced by operating an under the vine mechanical hoe. Soft chemicals and timely canopy management are used for mitigating fungicide. Organic products are utilized when effectiveness is very likely. Owl and blue bird boxes are installed for predatory shelter. Hedgerows, riparian restoration, and complex permanent cover crops have been established for attracting insectary habitat for beneficial insects.

A7. Alternative, non-chemical pest control methods are used when and where practical.

☒ Yes (Briefly describe your pest control methods)

☐ No (Consider practices # 10, 11 and 12 in Table A2 below)

Timely canopy management reduces mildew and other fungal pressure. Permanent cover crop, creek and wetland restoration provide significant beneficial and predacious insect habitat, keeping insect pressure low. Balanced farm ecosystem.

A8. Pesticides and herbicides with the least toxicity are utilized whenever possible.

☒ Yes (List typical pesticides and herbicides used)

☐ No (Consider practices # 6 in Table A2 below)

Sulfur, Stylet Oil, Inspire Super, Serenade, Luna Experience, Elevate, Round Up. Movento and Seduce may have to be used in the future against Mealybug and Argentine Ants.

Table A2: Conservation Practices for Pest Management

The following table provides an assortment of management practices that are intended to protect water quality. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to protect water quality and to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance. *See Chapter 4 of the Reference Guide for information on these conservation practices.*

Practice	*NRCS Practice Title*	*Current Practice*	*Planned Implementation Date / Status*	*Location / Notes*
1. Consult a Professional		☐		
2. Apply pesticides under a Pesticide Use Permit		☒		
3. UC-IPM: Implement appropriate guidelines for grapes	Integrated Pest Management (595)	☒	Active	
4. UC-IPM: Scout for pests	Integrated Pest Management (595)	☒	Active	
5.UC-IPM: Maintain pest management records	Integrated Pest Management (595)	☒	Active	
6. UC-IPM: Use chemicals that are lowest risk to water quality	Integrated Pest Management (595)	☒	Active	
7. Calibrate application equipment (sprayers and injectors) regularly		☒	Active	
8. Dispose of containers properly		☒	Active	
9. Train employees per OSHA & MSDS		☒	Active	
10. Install raptor roosts, owl boxes, and/or bat boxes	Upland Wildlife Habitat Management (645)	☒	Blue bird, Bat Boxes Fall 2016	Bat Boxes throughout property
11. Replace Pierce's Disease host trees & shrubs with native plants	Brush Management (314) Riparian Forest Buffer (391)	☒	Active-Blackberry Bush removal	
12. Replace Pierce's Disease host forbs with native plants	Herbaceous Weed Control (603) Riparian Herbaceous Cover (390)	☐		
Other: Comprehensive plan for Mealybug		☒	Spring 2017	

NUTRIENT SOURCES USED ON THE VINEYARD FACILITY

Check all that apply:

☒ Synthetic Fertilizer ☒ Organic Fertilizer ☒ Compost (vegetative)

☒ Green Manure (nitrogen fixing) Cover Crop

☐ Animal Manure (Is it composted? ☐ Yes ☐ No)

☐ Grape Pomace (Is it composted? ☐ Yes ☐ No)

☐ Other

List: Compost and other mineral amendments were applied during the development of the vineyard. Other fertilizers injected through the drip system include Fish Emulsion, Humi-K 0-0-26, Compost Tea's and other microbial products.

NUTRIENT AND/OR COMPOST MANAGEMENT

A9. Fertilizer amount and application timing is prescribed based on crop needs, identified by field inspection and/or testing. (Note testing date, if performed).

☒ Yes (Describe method(s) of inspection and/or testing)

☐ No (Consider practices # 1 through 7, listed in Table A3 below)

Describe as needed: Petiole samples are taken twice a year, one at bloom and one in verasion. Fertilization is based on the degree of any nutrient deficiency indicated in the petiole results.

A10. Fertilizer(s) are applied and timed to reduce runoff and leaching.

☒ Yes (Describe timing of application)

☐ No (Consider practices # 6 and 7, listed in Table A3 below)

Describe as needed: Liquid fertilizers are injected though the drip system at 6-12-inch shoot length and or after bloom, if needed. Foliar fertilization of zinc and boron are sprayed at bloom to promote strong pollination. Gypsum is broadcasted in the vine row in fall to correct Na accumulation in the drip zone. Gypsum is highly soluble and is quickly dissolved into the top soil with the lightest of wetting rains, and has a very low chance of being transported off of site.

A11. Fertilizer(s) are applied with calibrated equipment.

☒ Yes (Describe how often equipment is calibrated)

☐ No (Consider practice #8, listed in Table A3 below)

Describe as needed: Fertigation includes measuring the exact quantity of fertilizer required for a given irrigation block, mixing it in solution in a 300 gal tank and injecting. Foliar sprays are measured and mixed in a spray rig, and applied at the desired rate in solution. All soil amendments are broadcast applied and calibrated by the amendment spreader and the speed at which the equipment is driven through the field.

A12. On-site composting takes place on a containment facility that collects any leachate.

☐ Yes (Identify location of the composting containment facility on a map)

☐ No (Consider practice # 9, listed in Table A3 below)

☒ No on-site composting

Describe as needed:

A13. Compost is monitored to reach temperatures necessary to eliminate pathogens (131°F for a minimum of 3 days enclosed or 15 days if windrowed).

☐ Yes

☐ No (Consider practice # 10, listed in Table A3 below)

☒ No on-site composting

Describe as needed:

Table A3: Conservation Practices for Nutrient Sources and Application Rates & Timing

The following table provides an assortment of management practices that are intended to protect water quality. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to protect water quality and to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance. *See Chapter 4 of the Reference Guide for information on these conservation practices.*

Practices	*NRCS Practice Title*	*Current Practice*	*Planned Implementation Date / Status*	*Location / Notes*
1. Consult a Professional		☐		
2. Perform visual or infrared crop assessment	Nutrient Management (590)	☒		TerrAvion
3. Take petiole and/or leaf samples to assess plant nutrient content	Nutrient Management (590)	☒		
4. Collect soil samples to assess available levels of soil nutrients	Nutrient Management (590)	☒		Soil Analysis conducted in block F, in 2015. Annual to bi-annual soil sampling under the vine for Na analysis
5. Time fertilizer application to meet crop requirements	Nutrient Management (590)	☒		
6. Time fertilizer application to reduce runoff and leaching	Nutrient Management (590)	☒		
7. Apply nutrients through fertigation (directly to root zone)	Nutrient Management (590)	☒	2016	
8. Calibrate application equipment (fertigation, spreaders) regularly	Nutrient Management (590)	☒	Active	
9. Provide a containment facility or area for composting	Composting Facility (317)	☐		
10. Monitor compost and ensure that required conditions are met		☐		
Other:		☐		

MANAGING EROSION IN VINEYARD BLOCKS AND AVENUES

Background: When soil erodes and excessive amounts of sediment are allowed to enter waterways, water quality is impacted. In areas with ground disturbance, erosion rates can be relatively high and, hence, major contributors of sediment to water bodies. The risk of soil erosion increases based on factors of slope, soil type, and precipitation rates and timing. Vineyard operations on slopes over 5% must pay particular attention to erosion control practices.

Practices to reduce the risk of erosion generally aim to **slow** the rate of water running off of the land, **spread** water across the land, and allow for water to **sink** or percolate into the soil (i.e., Slow It, Spread It, Sink It). Where there are opportunities to safely disperse water across the land rather than concentrate it into a lined waterway or pipeline, please consider doing so.

See Chapter 5 of the Reference Guide for further information on soil erosion and sedimentation, soil quality, and BMPs to manage erosion.

Purpose: Identify practices currently in use and that are intended for implementation, to protect soil from erosion (slow and spread storm runoff), attenuate significant storm runoff flows, promote on-site water infiltration (sinking storm runoff), prevent excessive rates of sediment delivery to receiving waters, and reduce the impacts of storm runoff from the vineyard floor.

PREVENTING EROSION AND FLOW CONCENTRATION IN VINEYARD BLOCKS AND AVENUES

V1. Vineyard blocks are covered by a fully implemented County-Approved Erosion Control Plan (ECP).

☐ All Blocks (List all active ECPs)

☐ Some Blocks (List all active ECPs and use appropriate ECP practices in all blocks, including those not covered by an ECP)

☐ No Blocks (If slopes are over 5% or if there is erosion, consider practice # 1, listed in Table V1 below)

☒ NA, a County ECP is not required.

ECP File #(s):	Approval Date(s):

Describe as needed:

V2. Mulch and/or vegetative cover is maintained in vineyard blocks (between vine rows) during rainy months.

☒ All Blocks (Describe your current practice(s))

☐ Some Blocks (Describe your current practice(s). Consider a combination of practices # 2 through 12, listed in Table V1 below)

☐ No Blocks (Consider a combination of practices # 2 through 12, listed in Table V1 below)

Describe as needed: Vineyard avenues are grassed and vegetated all year. Bare areas are mulched with straw when needed. Tillage vineyard middles are seeded with a green manure cover crop which generally produces thick ground coverage. Vegetation under the vine regrows to cover about 50% of the spray strip. Overall vineyard ground cover is 90% by mid-January.

V3. Vegetative cover is allowed to grow under the vine row during raining months.

☒ Yes (Describe your current practice(s))

☐ No (Consider practices # 5 through 8 listed in Table V1 below)

Describe as needed: Vegetation regrows under the vine row, however, the first herbicide application occurs during the late rainy season, while the vines are still dormant. The rainy season in our region will persist into May, and applying herbicides later then early March is typically too late to achieve successful weed management. The die off of the vegetation under the vine generally persists through the rainy season has dead plant residues, acting has a mulch ground cover.

V4. Under-the-vine spray widths are minimized (generally no greater than 16 inches).

☒ Yes (Describe your current practice(s))

☐ No (Consider practices # 5 through 8 listed in Table V1 below)

Describe as needed: Strip spray widths are generally 20-24 inches. This target width is required to achieve successful mowing of the cover crop, so that there are no cover crop strips left un-mowed near the vine row. The long term goal is to eliminate herbicide usage, or reduce application to certain years when needed. As we replant our old vineyard blocks, we can design our trellis system to support under the vine cultivation equipment and livestock grazing. In addition, appropriate equipment for under the vine cultivation needs to be purchased.

V5. Mulch and/or vegetative cover is maintained on unsurfaced vineyard avenues during rainy months.

☒ All avenues (Describe your current practice(s))

☐ Some avenues (Describe your current practice(s). Consider practices # 4, 9 through 14 listed in Table V1 below)

☐ No avenues (Consider practices # 4, 9 through 14, listed in Table V1 below)

Describe as needed: All vineyard avenues are grassed and revegetate every winter after wetting rains. If there are substantial bare areas, seed and straw is applied.

V6. Vineyard blocks and avenues are inspected before and after major storm events and problem areas are treated.

☒ All Blocks (Describe any frequently recurring problem areas)

☐ Some Blocks (Describe any frequently recurring problem areas. Implement practice # 17 and consider all practices listed in Table V1 below)

☐ No Blocks (Implement practice # 17 and consider all practices listed in Table V1 below)

Describe as needed:

V7. Emergency erosion control materials are readily available and field staff are trained in their proper use.

☒ Yes (Describe where they are located)

☐ No (Practices # 18 and 19, listed in Table V1 below are suggested)

Describe as needed: Field Staff are trained; however emergency erosional control materials are not on site. The vineyard management company stages emergency supplies at their yard.

Table V1: Conservation Practices to Reduce Soil Erosion and Runoff Concentration on the Vineyard

The following table provides an assortment of management practices that are intended to protect water quality. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to protect water quality and to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance. *See Chapter 5 of the Reference Guide for information on these conservation practices.*

Practices	*NRCS Practice Title*	*Current Practice*	*Planned Implementation Date / Status*	*Location / Notes*
1. Consult a Professional		☐		
2. Plant a non-tilled, permanent vegetative cover crop to minimize soil disturbance	Conservation Cover (327)	☒	2017	Alternate Row tillage blocks A,B,C, D. Non-tillage in Blocks E,F,G. Ultimate goal is to cover to full non-tillage in all blocks. Map. 6
3. Till every other middle (alternate row cultivation) and ensure that disturbed soil is protected during the rainy season. Avoid tilling in the avenue.	Cover Crop (340)	☒		Alternate Row tillage blocks A,B,C, D. Tillage row are seeded with a green manure cover crop. Map. 6
4. Plant an annually seeded and/or disked cover crop (generally not appropriate for vineyards on slopes >5%)	Cover Crop (340)	☒		Tillage row are seeded with a green manure cover crop.
5. Mow (or string-trim) under the vinerows	Conservation Cover (327)	☒		Clements in row cultivation
6. Spot-spray under vinerows using post-emergent product – protect disturbed soils during rainy season		☒		
7. Apply post-emergent spray in late spring – protect disturbed soils during rainy season		☐		
8. Mulch under vinerows and/or in middles (between vinerows) to protect disturbed soils	Mulching (484)	☒	2017	In all vineyard blocks, apply 5-10 tons/acre compost under the vines
9. Install temporary straw or coir fiber structures to protect vulnerable areas	Stormwater Runoff Control (570)	☒		Where soil is significantly disturbed and has potential of delivery to creek.

10. Plant/maintain a vegetative buffer along the block perimeter	Field Border (386) Conservation Cover (327) Filter Strip (393)	☒		Intact healthy Riparian corridor and Wetland. Map. 4
11. Plant/maintain a vegetative buffer to filter runoff	Filter Strip (393) Vegetated Barrier (601)	☒		Map. 4
12. Plant/maintain a vegetative swale to filter runoff	Grassed Waterway (412)	☒		Map. 4
13. Apply seed and straw mulch to avenues in the fall		☒		When necessary
14. Install and/or maintain waterbars in the avenues in the fall to disperse runoff		☐		
15. Install a mid-slope runoff conveyance ditch with a protected outlet	Diversion (362)	☐		
16. Install drop inlet pipe (storm drain) to convey runoff to a protected or safe outlet location	Underground Outlet (620)	☒		Map.5
17. Conduct pre- and post-storm maintenance and monitoring; address erosion concerns as necessary		☒		
18. Keep emergency erosion control materials readily available		☐		
19. Provide erosion control trainings for field staff		☒		
Other: Reduce strip spray widths to less than 16”		☒	Spring 2017	Throughout vineyard – Better calibrate equipment and train workers

MANAGING CONCENTRATED STORM RUNOFF AND SEDIMENT DELIVERY FROM VINEYARD BLOCKS

V8. Rainfall runoff from the vineyard is dispersed and/or infiltrated in the vineyard and does not run off as concentrated flow. *(Note, this will not generally be the case as it is nearly impossible to contain all runoff. If you are on flat ground, consider how you get water out of your vineyard in the spring. If in doubt, mark "No" and complete the section.)*

☒ Yes (Describe dispersal/infiltration methods below and skip the remainder of this section)

☐ No (Consider practices # 1 through 7 and #11, listed in Table V2 below)

Describe as needed: The vineyard interior and all vineyard avenues have sufficient ground cover during the winter months to attenuate, slow, spread, and sink the majority of storm water during small-mid size storm events. The topography is subtle, and the majority of the flows across the landscape are sheet flow. In areas where concentrated flow is a natural function of the landscape, there are drop inlets in various locations of the vineyard that route, and discharge the storm water to the wetland and creek. Naturally, the wetland functions as an attenuation and floodplain basin. During large storm events Huichica Creek breeches its banks, and floods across the landscape, and often there is side channel flow developed that discharges across the vineyard and into to the wetland.

V9. Concentrated flow is conveyed in a way that prevents erosion and flow acceleration.

☒ Yes (Describe practices to prevent flow acceleration. Identify locations on a map, where feasible)

☐ In Some Places (Describe practices to prevent flow acceleration. Identify locations on a map, where feasible. Consider practices # 2 through 9 and # 11, listed in Table V2 below)

☐ No (Consider practices # 2 through 9 and # 11, listed in Table V2 below)

Describe as needed: Natural swale features in the landscape concentrate and convey storm water with is discharge to the creek via a vegetated swale. There is no concentrated flow associated with roads. All the majority of the vineyard floods during storm events.

V10. Concentrated flows that are conveyed into a basin or pond are released slowly and outlet to a stable location.

☐ Yes (Identify basin or pond that captures flows, describe how it managed to release flows, and identify outlet / discharge point)

☐ No (Consider practices # 6 through 10, listed in Table V2 below)

☒ Not Applicable

Describe as needed:

Table V2: Conservation Practices to Slow and Remove Sediment from Concentrated Runoff From the Vineyard

The following table provides an assortment of management practices that are intended to protect water quality. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to protect water quality and to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance. *See Chapter 5 of the Reference Guide for information on these conservation practices.*

Practices	*NRCS Practice Title*	*Current Practice*	*Planned Implementation Date / Status*	*Location / Notes*
1.Consult a Professional		☐		
2. Plant a vegetative buffer or swale to filter runoff	Filter Strip (393) Grassed Waterway (412) Vegetated Barrier (601)	☒		Map. 4
3. Install a basin to collect sediment and/or attenuate flows	Sediment Basin (350)	☐		
4. Install a level rock bench or tee spreader to disperse concentrated runoff	Underground Outlet (620)	☐		
5. Install a diversion ditch – look for opportunities to disperse concentrated flows and ensure that outlet is protected	Lined waterway or outlet (468)	☐		
6. Line an eroding swale or diversion ditch – look for opportunities to disperse concentrated flows and ensure that outlet is protected	Lined waterway or outlet (468)	☒		Map. 4 Rock Armored Drainage Swale
7. Install a piped storm drain - – look for opportunities to disperse concentrated flows and ensure that outlet is protected	Underground outlet (620)	☒		Map. 5
8. Install an energy dissipater at pipe/waterway outlet – look for opportunities to disperse concentrated runoff prior to outlet	Lined waterway or outlet (468)	☒		Rock dissipater at flood gate and swale outlet along avenue in block B. Map. 5

9. Install temporary straw or coir structures	Stormwater Runoff Control (570)	☐		
10. Install a rock weir spillway from a sediment basin – look for opportunities to disperse concentrated flow	Structure for Water Control (587)	☐		
11. Set back vineyard upon replant and seed bare areas	Critical Area Planting (342) Conservation Cover (327)	☒		Block F replant was set back an additional 40 ft. 2016.
Other:		☐		

MANAGING NATURAL WATERWAYS, DITCHES, AND SPILLWAYS

Background: Waterways, channels, streams, swales, and ditches act as a conduit from upstream to downstream areas and they are sensitive to land use activities and practices. Healthy riparian zones and/or adequate space between land use activities and waterways may provide a number of environmental benefits and may protect streambanks from erosion. Riparian areas also buffer waterways from the effects of potential nutrient, pesticide, pathogen and sediment runoff.

See Chapter 6 of the Reference Guide for further information on waterways and riparian areas.

Purpose: Describe the condition of natural stream channels, riparian areas, and human-made waterways (ditches and pond/basin spillways) on the property including the rate of bed and/or bank erosion, channel incision, head-cutting, and the condition of human-made structures in the channel. Describe the conservation practices being implemented to protect waterways from water quality degradation.

W1. Please mark the type(s) of waterways on the property that are on or adjacent to the vineyard facility (mark all that are present):

☒ Natural (Complete questions W2 and W3 through W6. Complete Table W1.)

☐ Ditches (Complete Questions W2 and W7. Complete Table W2.)

☒ Spillways (Complete Questions W2 and W8 through W11. Complete Table W3.)

☐ No Waterways (You do not have to complete this section of the LandSmart Plan.)

W2. Waterways on the property regularly flow out of their banks and flood causing erosion and/or other problems.

☒ Yes (Identify problematic locations. Consider Practice #1, listed in table W1 below)

☐ No

Describe as needed: Natural flooding is not considered a problem. The vineyard sits on the floodplains of Huichica Creek and there is a seasonal wetland within the property.

MANAGING EROSION AND WATER QUALITY IN NATURAL WATERWAYS

W3. Vineyard blocks are set back from waterways by the minimum distance required by County regulations (or greater).

☒ Yes (Describe set back ranges below)

☐ Some blocks (Consider practice #9, listed in Table W1 below)

☐ No (Consider practice #9, listed in Table W1 below)

Describe as needed: Vineyard blocks are set back more than 35 feet from top of bank, as required by the county regulations on slopes under 5%.

W4. All agricultural supplies (heaters, trellis parts, irrigation supplies, machinery, etc.) are stored outside of the required waterway setback during winter months.

☐ Yes

☒ No (Consider practice #10, listed in Table W1 below)

Describe as needed: There is no storage facility on site. Given that the site can completely flood, all staged materials are susceptible to flooding.

W5. Complete this data form for all natural waterways on or adjacent to the Vineyard facility. If major streams have widely varying characteristics, break the stream out into reaches with consistent characteristics. Make additional copies if all waterways do not fit on one form.

Waterway Name As labeled on Map. Break into reaches as needed.	**Channel width (ft)** ~ Bank full* width	**Bank Height (ft)** Height at bank full	**Flow Persistence*** (during average rain season)	**Channel Condition**	**Slope of Banks**	**Material on Waterway Bottom** Check <u>two</u> boxes that are most appropriate	**Riparian Corridor Width (ft)**	**Riparian Vegetation**	**Riparian Shade Over Waterway**
Huichica Creek – Upper 900 ft	☐ 0-10 ☒ 11-25 ☐ 26-50 ☐ 51+	☐ 0-2 ☒ 3-6 ☐ 7-10 ☐ 11+	☐ Year-round ☒ Seasonally ☐ During & shortly after storms	☒ Stable ☐ Eroding ☐ Widening ☐ Deepening ☐ Building up	☐ Steep (1:1) ☒ Moderate (2:1) ☒ Gentle (3:1 or less)	☒ Silt and Clay ☐ Sand ☒ Gravel (pea to tennis ball) ☐ Cobble (tennis to basketball) ☐ Boulder (> than a basketball) ☐ Bedrock	☐ 0-10 ☐ 11-25 ☐ 26-50 ☒ 50+	☐ Minimal ☐ Sparse ☒ Moderate ☐ Dense ☐ Overgrown	☐ Not shaded/ sparsely shaded ☐ Partially shaded ☒ Mostly shaded
Huichica Creek – lower 900 ft (Tidally Influenced)	☐ 0-10 ☒ 11-25 ☐ 26-50 ☐ 51+	☐ 0-2 ☐ 3-6 ☒ 7-10 ☐ 11+	☐ Year-round ☐ Seasonally ☐ During & shortly after storms ☒ Tidally Influenced	☒ Stable ☒ Eroding ☐ Widening ☐ Deepening ☐ Building up	☒ Steep (1:1) ☒ Moderate (2:1) ☐ Gentle (3:1 or less)	☒ Silt and Clay ☒ Sand ☒ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock	☐ 0-10 ☒ 11-25 ☐ 26-50 ☐ 50+	☒ Minimal ☐ Sparse ☐ Moderate ☐ Dense ☐ Overgrown	☒ Not shaded/ sparsely shaded ☐ Partially shaded ☐ Mostly shaded
	☐ 0-10 ☐ 11-25 ☐ 26-50 ☐ 51+	☐ 0-2 ☐ 3-6 ☐ 7-10 ☐ 11+	☐ Year-round ☐ Seasonally ☐ During & shortly after storms	☐ Stable ☐ Eroding ☐ Widening ☐ Deepening ☐ Building up	☐ Steep (1:1) ☐ Moderate (2:1) ☐ Gentle (3:1 or less)	☐ Silt and Clay ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock	☐ 0-10 ☐ 11-25 ☐ 26-50 ☐ 50+	☐ Minimal ☐ Sparse ☐ Moderate ☐ Dense ☐ Overgrown	☐ Not shaded/ sparsely shaded ☐ Partially shaded ☐ Mostly shaded

	*See Reference Guide for bank full definition		*Flow or presence of water in pools	**If channel condition is not stable, consider practices # 1 through 6 and 9 listed in Table W1 below**	**If banks are very steep, consider practices # 1, 5, 6 and 9 listed in Table W1 below**	**Silt on the waterway bottom may indicate erosion nearby or upstream.**	**If width is less than county required setback, consider practices # 3, 4 and 9 in Table W1 below**	**If minimal or sparse, consider practices # 3 and 4 in table W1.If overgrown, consider practice # 2 in Table W1.**	**If riparian shade is sparse or not present, consider practice #3 in Table W1.**

Bank Erosion:

Please map and note location and dimensions of any significant erosion features and indicate whether erosion is already being treated/managed. If erosion at site is not being addressed, consider practices #1 through 6 and 9 listed in Table W1.

Erosion has been addressed for the last 26 years. The stretch of Huichica Creek that runs through the property was degraded and bare, with little to no vegetation on the banks. The RCD has restored the riparian vegetation through multiple restoration projects. At this current time, the stream banks appear stabilized in the upper 900 feet of the creek.

The lower 900-foot section has some bank erosion that appears to be active – this is most apparent along the west bank, where an outfall pipe enters the creek.

Other Notes:

W6. Complete this data form for each natural waterway where there is landowner interest in and opportunity to enhance native vegetation, fish and wildlife habitat. If you broke streams out into reaches above, use the same reaches here. ***(This table is a requirement for Level II LandSmart Certification.)***

Waterway Name As labeled on Map. Please break major streams into reaches as above.	**Variety of Native Vegetation?** Mix of grasses, forbs, shrubs and trees?	**Non-native/ Invasive Plants** Indicate percentage of vegetative cover that is non-native. Seek assistance as needed.	**Structures Within Waterway Known to Cause Obstruction to Fish Passage?** Yes/No, note location	**Creek Channel Features** Check the boxes that seem to apply most.	**In-stream Habitat Structure** Check the boxes that seem to apply most.
Huichica Creek Lower 900ft	☐ Yes ☒ No	☐ 0-25% ☐ 25-50% ☐ 50-75% ☒ 75-100%	☐ Yes ☒ No	☐ Deep pools (>5') ☐ Shallow pools (< 5') ☐ Gravel Bars ☐ Riffles (shallow gravel areas where water moves fast) ☐ Bends ☒ Straight	☐ Large wood ☐ Boulders ☐ Overhanging roots/banks ☒ None of the above
Huichica Creek Upper 900ft	☒ Yes ☐ No	☒ 0-25% ☐ 25-50% ☐ 50-75% ☐ 75-100%	☐ Yes ☒ No	☐ Deep pools (>5') ☒ Shallow pools (< 5') ☐ Gravel Bars ☒ Riffles ☒ Bends ☒ Straight	☐ Large wood ☐ Boulders ☒ Overhanging roots/banks ☐ None of the above
	☐ Yes ☐ No	☐ 0-25% ☐ 25-50% ☐ 50-75% ☐ 75-100%	☐ Yes ☐ No	☐ Deep pools (>5') ☐ Shallow pools (< 5') ☐ Gravel Bars ☐ Riffles ☐ Bends ☐ Straight	☐ Large wood ☐ Boulders ☐ Overhanging roots/banks ☐ None of the above
	If no, consider practices # 3 and 4 in Table W1 below	**If non-native plant cover >50%, or if non-natives are a management concern, consider practice # 2 in table W1 below**	**If yes, consider practice # 7 in Table W1 below** ***See Chapter 6 of the Reference Guide for information on fish passage***	***See Chapter 6 of the Reference Guide for information on channel features***	**If low or none, consider practices # 1 and 8 in Table W1 below** ***See Chapter 6 of the Reference Guide for information on in-stream habitat***

Waterway Enhancement:
To the extent possible, please map and note location(s) of non-native plant species. Please also map and note possible fish migration barriers and or areas of the creek or its upper banks that you believe could be enhanced for fish and wildlife species.

Notes:

The lower 900 ft of the creek is tidally influenced.

Table W1: Conservation Practices to Reduce Erosion in Natural Waterways

The following table provides an assortment of management practices that are intended to protect water quality. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to protect water quality and to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance. *See Chapter 6 of the Reference Guide for information on these conservation practices.*

	NRCS Practice Title	*Current Practice*	*Planned Implementation Date / Status*	*Location / Notes*
1. Consult a Professional		☐		
2. Remove invasive riparian plants and establish native riparian cover (permit may be required)	Restoration & Mgmt. Declining Habitats (643) Weed Control (315) Brush Management (314)	☒	2017-Future.	Huichica Lower 900ft
3. Establish native riparian trees and shrubs	Riparian Forest Buffer (391)	☒	2017-Future	Huichica Lower 900ft
4. Establish native riparian grasses and forbs	Riparian Herbaceous Cover (390)	☒		Wetland
5. Promote natural restoration (let the bank erode and as it becomes stable encourage native vegetation recruitment)		☒		Lower 900ft
6. Stabilize and protect streambanks through layback, bioengineering, and/or rock installation (permits likely required)	Streambank & Shoreline Protection (580)	☒	3-5 years	Need to monitor and address bank in the lower reach of the creek near the outfall.
7.Modify instream structures to improve fish passage (permits required)	Stream Habitat Improvement & Mgmt. (395)	☐		
8. Install in-stream structures to enhance habitat (permits required)	Stream Habitat Improvement & Mgmt. (395)	☐		
9. Provide more space to the stream by setting back structures, roads, vines, and other agricultural activities		☒	Future Replants	Winter 2016 in Block F Replant, Set main entrance road back from creek an additional 40 feet.
10. Establish a supply yard away from the waterway		☐		
Other:		☐		

MANAGING EROSION AND WATER QUALITY IN DITCHES

W7. Complete this inventory for ditches. If the ditch has widely varying characteristics, break it out into reaches with consistent characteristics. Make additional copies if all ditches do not fit on one form.

	Ditch			Adjacent Buffer	
Ditch ID (As labeled on Map)	**Width at top of bank (ft)**	**Ditch Condition**	**Vegetative Cover on Ditch Banks and Bottom**	**Vegetation Buffer Width (ft)** From top of bank	**Vegetation Condition** Minimal, Sparse, Moderate, Full Cover
	☐ 0-10 ☐ 11-25 ☐ 25+	☐ Stable ☐ Eroding ☐ Widening ☐ Deepening ☐ Building up	☐ None/Minimal ☐ Sparse ☐ Moderate ☐ Full Cover	☐ 0-10 ☐ 11-25 ☐ 25+	☐ None/Minimal ☐ Sparse ☐ Moderate ☐ Full Cover
	☐ 0-10 ☐ 11-25 ☐ 25+	☐ Stable ☐ Eroding ☐ Widening ☐ Deepening ☐ Building up	☐ None/Minimal ☐ Sparse ☐ Moderate ☐ Full Cover	☐ 0-10 ☐ 11-25 ☐ 25+	☐ None/Minimal ☐ Sparse ☐ Moderate ☐ Full Cover
	☐ 0-10 ☐ 11-25 ☐ 25+	☐ Stable ☐ Eroding ☐ Widening ☐ Deepening ☐ Building up	☐ None/Minimal ☐ Sparse ☐ Moderate ☐ Full Cover	☐ 0-10 ☐ 11-25 ☐ 25+	☐ None/Minimal ☐ Sparse ☐ Moderate ☐ Full Cover
	☐ 0-10 ☐ 11-25 ☐ 25+	☐ Stable ☐ Eroding ☐ Widening ☐ Deepening ☐ Building up	☐ None/Minimal ☐ Sparse ☐ Moderate ☐ Full Cover	☐ 0-10 ☐ 11-25 ☐ 25+	☐ None/Minimal ☐ Sparse ☐ Moderate ☐ Full Cover
	☐ 0-10 ☐ 11-25 ☐ 25+	☐ Stable ☐ Eroding ☐ Widening ☐ Deepening ☐ Building up	☐ None/Minimal ☐ Sparse ☐ Moderate ☐ Full Cover	☐ 0-10 ☐ 11-25 ☐ 25+	☐ None/Minimal ☐ Sparse ☐ Moderate ☐ Full Cover
		If ditch condition is not stable, consider practices #1 through 6 listed in table W2 below.	**If vegetative cover is minimal or sparse, consider practices #2 and 6 listed in Table W2 below.**	**If vegetation is not present, or if width is narrower than the ditch itself, consider practice #3 listed in table W2 below.**	**If vegetation is minimal or sparse, consider practice #2 listed in table W2 below.**

Notes:

Table W2: Conservation Practices to Reduce Erosion and Manage Stability and Conveyance in Ditches

The following table provides an assortment of management practices that are intended to protect water quality. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to protect water quality and to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance. *See Chapter 6 of the Reference Guide for information on these conservation practices.*

	NRCS Practice Title	*Current Practice*	*Planned Implementation Date / Status*	*Location / Notes*
1. Consult a Professional		☐		
2. Establish native grasses and forbs	Conservation Cover (327) Critical Area Planting (342)	☒		Throughout various locations in the vineyard.
3. Provide more space to the ditch by setting back vines		☐		
4. Line an eroding swale or diversion ditch – seek opportunities to disperse water and ensure that outlet is protected and well maintained	Lined Waterway or Outlet (468)	☒		
5. Install rock check structures to dissipate hydraulic energy	Structure for Water Control (587)	☒		Map. 4 and Map. 5
6. Plant a vegetative filter waterway	Grassed Waterway (412)	☐		
Other:		☐		

MANAGING EROSION FROM ON-FARM POND/BASIN SPILLWAYS

W8. Open channel spillways are stable (not eroding) and/or properly armored to prevent erosion.

☒ Yes (Briefly describe condition of spillway and how spillway is managed)
☐ No (Consider practices # 1 through 5, listed in Table W3 below)

☐ Not applicable, no open spillways

Describe as needed: A culvert on the south end of the wetland drains to Huichica creek. The culvert outlets to a grassed channel spillway that is hydrologically connected to the creek.

W9. Piped and open channel spillways from on-farm ponds are adequately sized to handle expected pond overflow volume.

☒ Yes (Describe sizing and condition of piped spillway and outlet)

☐ Some spillways (Consider practices # 3, 6 and 7, listed in Table W3 below)

☐ No spillways (Consider practices # 3, 6 and 7, listed in Table W3 below)

Describe as needed: Wetland spillway

W10.The alignments of spillway outlets, both piped and open channel, are in line with the downstream waterway (i.e., flow from the spillway enters the waterway in-line with flow of the waterway).

☒ Yes

☐ Some spillways (Consider practice # 8, listed in Table W3 below)

☐ No spillways (Consider practice # 8, listed in Table W3 below)

☐ Not Applicable

Describe as needed:

W11. Spillways, pipe and open channel, from on-farm ponds have energy dissipaters prior to re-entering the downstream waterway.

☐ Yes (Describe energy dissipater and its condition)

☐ Some spillways (Consider practices # 5 through 7, listed in Table W3 below)

☐ No spillways (Consider practices # 5 through 7, listed in Table W3 below)

☒ Not Applicable

Describe as needed: The Wetland and Riparian vegetation attenuate the flow from the wetland to the creek channel. Vegetation includes dense perennial bunch grasses, aquatic vegetation, and a health riparian corridor of trees.

Table W3: Conservation Practices to Reduce Erosion and Manage Stability and Conveyance in On-farm Pond/Basin Spillways

The following table provides an assortment of management practices that are intended to protect water quality. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis and an assortment of practices to protect water quality and to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance. *See Chapter 6 of the Reference Guide for information on these conservation practices.*

Practices	*NRCS Practice Title*	*Current Practice*	*Planned Implementation Date / Status*	*Location / Notes*
1. Consult a Professional		☐		
2. Install a rock weir to control and slow in-channel flow	Grade Stabilization Structure (410)	☐		
3. Widen/enlarge the spillway	Pond (378)	☐		
4. Stabilize the open channel spillway	Pond (378)	☐		
5. Plant a vegetative filter waterway	Grassed Waterway (412)	☐		
6. Install a rock lined plunge basin	Structure for Water Control (587)	☐		
7. Install an energy dissipater at the spillway outlet to reduce streambank erosion	Streambank and Shoreline Protection (580)	☐		
8. Realign the existing spillway with the downstream waterway	Pond (378)	☐		
Other:		☐		

ROADS AND CROSSINGS

Background: Roads that drain toward waterways can be major contributors of sediment. Roads must be safe to travel while having a minimal effect on waterways in the watershed. Practices to address erosion from roads aim to reduce the concentration of flow from roads, slowing the rate of water running off the land and discharging accumulated waters more frequently to areas away from waterways.

See Chapter 7 of the Reference Guide for further information on roads and crossings.

Purpose: To identify practices, currently in use and intended for implementation, to slow, spread and sink runoff from roads, particularly unpaved roads. Identify priority road reaches that may discharge directly to waterways so that no more than 25% of roads are connected.

R1. Roads on the property are included in an implemented County-approved Erosion Control Plan.

☐ All roads

☐ Some roads

☒ No roads

Describe as needed:

R2. Roads on the vineyard property cross waterways.

☒ Yes (Please complete the Road Stream Crossing Data Form that follows for each crossing. Make additional copies of the data form as needed. Consider practices in Table R1 below, as appropriate.)

☐ No

R3. Road surfaces, fills, and cutbanks on the property appear to be stable (i.e., they do not show signs of excessive erosion such as riling, cut-bank failures, slumping)

☒ Yes

☐ No (Consider practices listed in Table R2 below for unstable areas)

R4. All roads on the property are necessary and utilized.

☒ Yes

☐ No (Consider practice #14, listed in Table R2 below)

DATA FORM R1. ROAD STREAM CROSSING DATA FORM

Complete this data form for each place that roads cross a waterway. *The instructions and definitions in the Resource Manual may be helpful.* Make a copy of the form for each crossing. As applicable consider treatment options provided and complete Conservation Practice Tables R1 and R2.

ROAD STREAM CROSSING DATA FORM (2015)				
GENERAL	Site #: 1	Road ID/Name: Main Access Road. View Map. 5.	Date: 9/21/2016	Site located up-stream of pond/reservoir (Y,N): ☐ Yes ☒ No
	Are fill slopes or adjacent stream banks actively eroding (Y, N): ☐ Yes ☒ No (If yes see treatment option 3, 13, 14, 15 in Table R1)			

STREAM CROSSING TYPE (Circle one)	Bridge, Bottomless Arch, or Box. (If yes, skip down to 'Road Drainage' section)	Culvert (round or oval) (If yes, go to 'Culverted crossing info' section)	Wet Crossing (Ford, Armored Fill, Fill, or Pulled crossing) (If yes, go to 'Wet crossing' section)
Culverted Crossing info	Is rust/silt line at inlet of culvert greater than half the diameter of the culvert (Y, N): ☐ Yes ☒ No (If yes, see treatment options 4, 5, 8 in Table R1).		Is Inlet of culvert greater than 20% crushed or plugged (Y, N): ☐ Yes ☒ No (If yes, see treatment options 3, 7, 8 in Table R1).
	Is culvert bottom rusted or separated (Y, N): ☐ Yes ☒ No (If yes, see treatment options 4, 5, 7, 8 in Table R1).		Does the Culverted stream crossing have diversion potential (Y, N): ☐ Yes ☒ No (If yes see treatment options 9, 10 in Table R1)
Wet crossing info	Is crossing dipped wide enough to keep flows within natural stream channel (Y, N): ☐ Yes ☐ No (If no see treatment option 3 in Table R1)		At Armored Fill crossing, is armor adequate enough to prevent fill material from eroding (Y, N): ☐ Yes ☐ No (If no see treatment option 14 in Table R1)
	Does crossing look to be actively eroding (Y, N): ☐ Yes ☐ No (If yes see treatment options 3, 14 in Table R1)		

ROAD DRAINAGE TO STREAM CROSSING	**Left** road/Avenue length(s) draining down to site (ft): 0 (If greater than 150ft see treatments options in Table R2)	Road Surface (paved, rocked, native) native	Avg. width (ft): 15
	Right road/avenue length(s) draining down to site (ft): 0 (If greater than 150ft see treatments options in Table R2)	Road Surface (paved, rocked, native): native	Avg. width (ft): 15

COMMENT ON STREAM CROSING AND ASSOCIATED ROAD LENGTH(S): The culverted crossing functions as spillway outlet from the wetland. This wetland frequently floods and breeches over the road surface, submerging the culvert. The culvert is not undersized, and the flooding is function of a floodplain.

Table R1: Treatment Options to Reduce Erosion and Manage Stability at Stream Crossings

The following table provides an assortment of management practices that are intended to protect water quality. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to protect water quality and to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance. *See chapter 7 of the reference guide for information on these conservation practices.*

Practices *(at stream crossing)*	*NRCS Practice Title*	*Current Practice*	*Planned Implementation Date / Status*	*Location / Site# / Notes*
1. No treatment at site	--	☐	--	
2. Consult a Professional		☐		
3. Excavate soil	Earthfill (903)	☐		
4. Install bridge	Stream Crossing (578)	☐		
5. Construct Armored-fill crossing *(See typical drawings 5a, 5b, 6, 7)*	Stream Crossing (578)	☐		
6. Construct a Ford crossing *(See typical drawing 5a)*	Stream Crossing (578)	☐		
7. Repair culvert	Access Road (560)	☐		
8. Install or replace culvert *(See typical drawing 2, 4)*	Access Road (560)	☐		
9. Construct critical dip *(See typical drawing 1c)*	Access Road (560)	☐		
10. Install critical culvert	Access Road (560)	☐		
11. Remove screen from culvert inlet	Access Road (560)	☐		
12. Install trash rack (SB, GP, I-B) *(See typical drawing 3)*	Access Road (560)	☐		
13. Armor fill face *(See typical drawing 1b, 4)*	Lined Waterway or Outlet (468) and Rock Riprap (907)	☐		
14. Armor below outlet *(See typical drawing 1b)*	Lined Waterway or Outlet (468) and Rock Riprap (907)	☐		
15. Other		☐		

Table R2: Treatment Options to Reduce Erosion from Road Surfaces

The following table provides an assortment of management practices that are intended to protect water quality. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to protect water quality and to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance. *See chapter 7 of the reference guide for information on these conservation practices.*

Practices (along road lengths)	*NRCS Practice Title*	*Current Practice*	*Planned Implementation Date / Status*	*Location / Site# / Notes*
1. No treatment at site	--		--	
2.Consult a Professional		☐		
3. Construct rolling dips *(See typical drawings 10, 11, 19a-c.)*	Access Road (560)	☐		
4. Install Speed bumps on paved road	Access Road (560)	☐		
5. Outslope road & remove ditch *(See typical drawings 9a-c)*	Access Road (560)	☐		
6. Outslope road & retain ditch – ensure that outlet is located in a stable location *(See typical drawings 9a-c)*	Access Road (560)	☐		
7. Inslope road – ensure that ditch outlets to a stable location *(See typical drawings 9a-c)*	Access Road (560)	☐		
8. Crown road *(See typical drawings 9a-c)*	Access Road (560)	☐		
9. Install/Replace ditch relief culvert – ensure that outlet is located in a stable location *(See typical drawing 8)*	Access Road (560)	☐		
10. Cut/clean ditch	Diversion (362) and Access Road (560)	☐		
11. Rock armor ditch – ensure that ditch outlets to a stable location	Lined Waterway or Outlet (468)	☒		
12. Construct Water bars *(See typical drawing 20*)	Access Road (560)	☐		
13. Construct cross road drains *(See typical drawing 17)*	Access Road (560)	☐		
14. De-compact road surface *(See typical drawing 17)*	Road Closure and Treatment (654)	☒	Fall 2017	Decommission length of road between Orchard and Creek

15. Other		☐		

PHOTO MONITORING

Purpose: To document your visual monitoring and site inspections and record your monitoring notes and any actions needed and taken. Monitoring sites should be selected to 1) demonstrate winter readiness, 2) demonstrate annual maintenance and practice implementation, 3) demonstrate condition of outfall (discharge) points and associated receiving waters, and 5) track other areas of interest that you want to watch (e.g., areas of erosion, areas of invasive vegetation, etc.) Monitoring is conducted to document that sediment control practices outlined in the LandSmart™ Plan are implemented, that the practices are effective, and that they are properly maintained. Monitoring locations should be mapped and numbered. To the extent feasible, photos should be kept with the Farm Plan. In any case, photos should be readily available for reference.

Label on Map	**Description and Purpose**	**Date** (m/d/y)	**Photo Taken ?** Y or N	**Condition** (performing properly, needs maintenance, needs consultation)	**Actions taken**
1	Ground cover condition of vegetated avenue	1/2015	Y	Good	
2	Ground cover condition of vegetated avenue	1/2015	Y	Good	
3	Ground cover condition of vegetated avenue	1/2015	Y	Good	
4	Ground cover condition of vegetated avenue	1/2015	Y	Good	
5	Ground cover condition and productivity of plow down cover crop in Block B	1/2015	Y	Seed late in fall 2014. Dry winter conditions 2014/2015 promoted a poor cover crop growth. Growth in 2016 is adequate.	
6	Ground cover condition and productivity of	1/2015	Y	Good.	

	permanent and tillage cover crops in Block B.				
7	Ground cover condition of vegetated avenue	1/2015	Y	Good	
8	Permanent no-till ground cover condition, Block F.	12/2016	Y	Good	
9	Permanent no-till ground cover condition, Block G	1/2015	Y	Good	
10	Drop Inlet condition. Westside boundary of block A	1/2015	Y	Good	
11	Drop Inlet condition. Westside boundary of block C	1/2015	Y	Good	
12	Outlet of culvert into wetland.	1/2015	Y	Good	
13	Wetland culvert and weir outlet to Huichica Creek.	1/2015	Y	Good	
14	Lunker	9/2016	Y	Good	
15	Bank instability and outletting culvert	9/2016	Y	Bank condition is actively eroding.	Monitor the degree of instability.
16	Road condition before decommission project	9/2016	Y	Road is compacted. Main access road will get relocated off of the creek.	Road will be decommissioned in Fall 2017.
17	Wetland enhancement	1/2017		Planting occurring 1/2017	Plant oaks, buckeyes, sedge, rushes

ADDITIONAL GOALS, INTERESTS OR CONCERNS

Please describe any other natural resource-related goals, interests or concerns identified during the planning process but not otherwise noted in this plan.

Describe as needed:

Goal 1: Measure the exact water being irrigated and improve irrigation precision with a result of water conservation (reduction in average water use). Through the Implementation and interpretation of a soil moisture probe(s), stomatal conductivity and leaf water potential measurements.

Goal 2: Soil Sampling in non-tilled vs alternate tilled rows. Partnership with UC Davis Viticulture and Enology, Soil Carbon Lab.

Goal 3: Implement the HCV Carbon Farm Plan. This includes copious applications of compost, conversion to full no tillage in areas where tillage still occurs, enhancement of insectary habitat through cover cropping and hedgerows, and riparian restoration.

Goal 4: Correct pH and sodium build up issue in the vine drip zone. The sodium may be causing soil particle dispersion and leading to poor infiltration and soil water retention. Corrective action includes applications of gypsum, organic matter, or treating the well water to reduce the sodium adsorption ratio.

Goal 5: Reduce well water usage and attain rights to Sonoma County Water Agency Recycled Water during summer months. the proximity of the well maybe in the alluvium and not pulling strictly groundwater, and may be pulling subsurface streamflow. Reducing usage of well water and irrigating with recycled water may have potential co-benefits of reducing sodium build up and reducing impact to stream flow in Huichica Creek.

Goal 6: Set main access road further from the creek. Decommission existing main road entrance along Huichica Creek, and establish a new main road access point into the vineyard that is set back an additional 40 ft from the creek. Establish native grasses and forbs.

Goal 7: Establish a plan for replanting all Pinot Noir, and consider alternative crops. Replanting will focus on rootstock and crop selection that is adaptable and compatible with Huichica Creek/Carneros soils and climate, and selected for appropriate and effective demonstration purposes.

Goal 8: Create a grazing management plan as a means to control weeds around the vineyard, reduce herbicide and fuel usage.

Goal 9: Reduce and mitigate equipment compaction in no-tilled rows. Compaction will be corrected and further mitigated by incorporating sub-soiling with low impact equipment that does not invert the soil, every 2-3 years as needed. This subsoiling technique does not disturb the soil structure like traditional tillage, and is recognized as a technique to attenuate concentrated flow and improve infiltration.

TRACKING IMPLEMENTATION OF YOUR FARM PLAN

Background: By tracking changes in land use and implementation of conservation or beneficial management practices (BMPs) on your agricultural operation, any water quality changes that may occur due to implementing practices are documented. Monitoring water quality changes can attribute those changes to implementation of practices or to other confounding influences such as regional geology or a source upslope or upstream of the operation.

Use this table to track implementation of the actions that you identified in the previous sections. You can also use this table to list additional conservation practices not identified in previous chapters that are part of your management goals for the property. You may make additional copies of this page as needed to adequately document all practices that are planned or have already been implemented.

Practice	**Applicable NRCS Practice Standard**	**Location** (show on map if possible)	**Date** (Implemented and/or Maintained)	**Details/Notes** (include reference to photos)
Enhanced IPM plan for Mealybug		All vineyard blocks	Spring 2017	Install Pheromone disruptors. Soil applied ant bait. Movento when necessary. Promote predatory wasps
Hedgerow and insectary planting *	422	View Map. 6	2016 – Future	Plant native shrubs and forbs along selected vineyard perimeter locations. Seed flowering insectary cover crops throughout the vineyard.
Compost Application *	590	All vineyard blocks.	2015 – Future	Apply compost at rates between 5-15 tons/acre. Included practice in HCV-CFP
Tillage conversion to non-tillage *	329	Block E Block A, B, C, D. View Map. 6	Block E Fall 2015 Block A, B, C, D – 2017 - 2020	All tillage rows will be seeded with an annual permanent cover crop. Included practice in the HCV-CFP.
Creek and Wetland Restoration *	391	Wetland and Creek Banks. View Map. 6	Fall 2016- Fall 2018	Remove poison hemlock and blackberry. Work with NRCS for plant selection. Propagated plants from site. View CFP map for locations.
Decommission road		Creekside along apple orchard	Fall 2016	Establish a new main access road entrance. De-compact, seed, mulch, and plant perennials in coming years.
Monitor condition of eroding bank and outfall in Huichica Creek.		Map. 4, Map. 8 (Photopoint 15)	Every Fall	Yearly photo monitoring and length of outfall exposure to assess the degree of bank erosion. If bank is actively eroding, a restoration plan will be developed.

Soil Moisture and Vine Leaf water stress monitoring	449	Block F replant. View map.7 for probe locations.	Fall 2016	Soil Moisture Probe, Porometer, Pressure Bomb readings. Implement Regulated Deficit Irrigation methods. TerrAvion NDVI imagery.
Treat Well Water or Obtain rights to Sonoma Recycle water		Well	Spring 2017	Select a water treatment plan to dissolve Na in solution at the pump discharge.

* Practice is included in the Huichica Creek Carbon Farm Plan (CFP)

RESOURCE AND FACT SHEETS

MAPS: TABLE OF CONTENTS

Map Number

PHOTO POINTS (SEE PHOTOS BELOW)