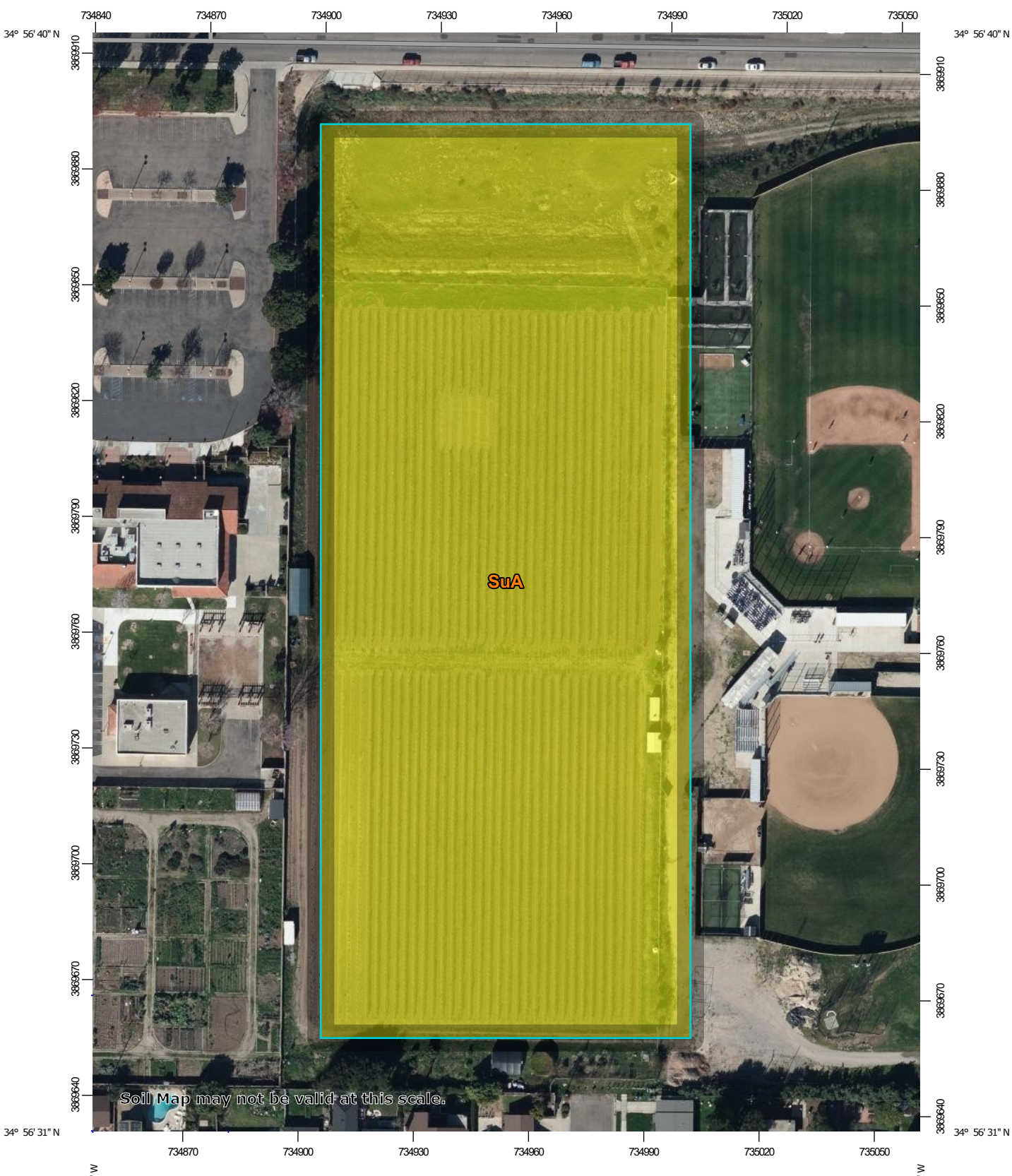
Vinifera Wine Grape Site Desirability (Long)—Northern Santa Barbara Area, California
(AHC Vineyard Site Soil Suitability Info)



Map Scale: 1:1,390 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

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
- Very low
- Low
- Moderate
- High
- Very high
- Not rated or not available

Soil Rating Lines
- Very low
- Low
- Moderate
- High
- Very high
- Not rated or not available

Soil Rating Points
- Very low
- Low
- Moderate
- High
- Very high
- 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: Northern Santa Barbara Area, California
Survey Area Data: Version 15, May 29, 2020

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

Date(s) aerial images were photographed: Jan 31, 2020—Feb 6, 2020

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.

Vinifera Wine Grape Site Desirability (Long)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
SuA	Sorrento sandy loam, sandy substratum, 0 to 2 percent slopes	Moderate	Sorrento (85%)	Growing season length and heat (0.76)	5.6	100.0%
				Soil reaction (0.77)		
				Slope (0.84)		
				Site and soil features (0.92)		
Totals for Area of Interest					**5.6**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Moderate	5.6	100.0%
Totals for Area of Interest	**5.6**	**100.0%**

Description

Soil and Site Suitability for Viticulture in the United States

The wine industry in the United States has experienced remarkable growth in the past 10 years. In order to support this growth, NRCS Soil Science Division and the National Soil Survey Center have developed a series of tools that use the soil survey database to locate areas that are amenable to a number of wine grape varieties. These tools quantify the suitability of sites for 12 sets of grape varieties, including European Vinifera, French-American hybrids, American, and Muscadine grapes.

Identification of areas suited to wine grapes presents a unique challenge because absolute fruit yield is not the measure of success for a vineyard. Wine grapes do not necessarily require the most productive soils but rather produce a desirable product where certain soil, site, and climatic characteristics are met. The interaction of climate, soil, geology, topography, and grape variety results in a terroir for a vineyard.

The soil characteristics required for high quality grapes are related mainly to water. Too much water encourages detrimental fungal growth and excessive vine vigor. Vines will grow on wetter sites, but they will be subject to an onslaught of fungal diseases and the vine longevity will be reduced. Most wine grapes prefer a near-neutral soil pH, relatively low general soil fertility, and moderate water-storage capacity.

The climatic tolerance of wine grapes is naturally diverse and crossbreeding by man has extended that tolerance to the point that there is a wine grape variety able to grow in each of the 50 states. Indeed, most grape varieties require a cold period for dormancy, but the Muscadines can produce in climates where there is no frost. Other climate factors, such as winter temperature extremes, limit where certain wine grapes can be grown and which varieties are adapted.

A major piece to the puzzle is pairing the physiology of a grape variety with the climate of a given site once the soil requirements are met. The goal is to find a climate similar to that where a grape variety originates such that the time required to bring the fruit to maturation can exploit as much of the growing season as possible. This way, the fruit will develop more fully the characteristics we associate with a particular variety. A major component of climate is the yearly accumulation of heat, called growing degree days (GDD). This is used as an indicator of which variety is best adapted to the climate of an area. For example, Chardonnay grapes achieve their best varietal character in a climate supplying up to 2,500 GDD and Cabernet Sauvignon grapes reach maturity at 3,000 to 3,500 GDD. Interestingly, microclimatic niches can be found in many areas where the larger scale climate is not suitable. Such areas are often sought by vintners.

Given the soil and a larger climate context, the lay of the land is also a consideration for selecting a vineyard site for a specific variety. Sites need to be high enough on the landscape to avoid frost pockets but low enough to avoid wind damage. Some slope gradient is desirable as long as it does not interfere with equipment usage. The direction the slope faces can be important when the

growing degree days are marginal because it affects the amount of heat received by the landscape.

The wine grapes grown in the United States fall into four general classes: Vinifera, French-American hybrids, American, and Muscadine. Within each general class, the vines can be further subdivided by the length and heat of the growing season that they require. There is a relationship between growing season and harvest date. Usually, growers attempt to match the harvest date to use as much of the growing season as possible in order to accumulate as much sugar as the environment allows. All groups except the Muscadine require a period of cold weather for dormancy, but many cannot tolerate extremely cold temperatures.

This group of Vinifera varieties represents the long growing season varieties such as Cabernet Sauvignon, Mourvedre, Petite Syrah, Nebbio, Zinfandel, and Sangiovese. These varieties do best in a climate characterized by a growing season averaging over 200 days. Some of the varieties do not do well in an excessively hot climate and none of them survive in a climate having very cold winters.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are made suitable by all of the soil features that affect these uses. "Very high" indicates that the soil has features that are very favorable for the specified grape. High quality of fruit may be expected most years. "High" indicates that the soil has features that are favorable for the specified grape. Good quality fruit can be expected most years. "Moderate" indicates that the soil has one or more features that are unfavorable for the specified grape. Good quality fruit can be expected some years, but in other years there may be damage from frost or fungi. "Low" indicates that the vines will grow, but the fruit may not be of high quality and the crop may be damaged some years by excessive cold, heat, or wetness. "Very low" indicates a site where the vines are not likely to grow or persist.

Numerical ratings indicate the degree of suitability. The ratings are shown in decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil has the least similarity to a good site (0.00) and the point at which the soil feature is very much like known good sites (1.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

References:

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California grapes. Hilgardia, 15:493-675.

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Sommers, B. J. 2008. The geography of wine: how landscapes, cultures, terroir, and the weather make a good drop. Penguin Group. New York, New York.

Wolf, T. K and Boyer, J. D. 2003. Vineyard site selection. Publication 463-020.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.