

Attachment C

Agricultural Resources Report

Agriculture Suitability and Production Report

for

Solomon Hills

Santa Barbara County, California



Prepared for

Solstra Communities CA, LLC

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May 2024 (Updated November 2025)

Agriculture Suitability and Production Report Certification

Solomon Hills

This Report was prepared at the request of Solstra Communities to evaluate agriculture suitability and production within the proposed Study Area. This project summarizes conditions observed and documented during spring of 2024 and spring 2025. This report is accurate and true to the best of our knowledge.

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Table of Contents

EXECUTIVE SUMMARY	1
1 INTRODUCTION	2
1.1 Purpose	2
1.2 Project Description	2
1.3 Project Location.....	3
1.4 Study Area.....	3
1.5 Local and Regional Context	4
1.6 Regulatory Framework	4
2 SURVEY AND INVESTIGATION METHODS AND MATERIALS	8
2.1 Field Survey Methods.....	8
2.2 Literature and Database Research.....	8
3 SURVEY AND INVESTIGATION RESULTS AND DISCUSSION.....	11
3.1 Parcel Size	11
3.2 Soil Classification	11
3.2.1 Soil Taxonomy	11
3.2.2 Land Capability Classes	17
3.2.3 Soil Fertility	18
3.3 Water Availability	23
3.4 Agricultural Suitability	25
3.4.1 Important Farmland Classification.....	25
3.4.2 Grazing Potential	27
3.4.3 Crop Production Potential	31
3.5 Existing and Historic Land Use.....	32
3.6 Comprehensive Plan Designation	32
3.7 Existing Adjacent Land Uses	33
3.8 Agricultural Preserve Potential	34
3.9 Combined Farming Operations	34
4 CONCLUSIONS.....	37
5 AUTHORSHIP AND QUALIFICATIONS	39
6 REFERENCES	41
7 APPENDICES.....	44

List of Tables

TABLE 1. STUDY AREA ASSESSOR PARCEL NUMBERS (APNS) OWNED BY SOLSTRA.....	4
TABLE 2. PARCEL SIZE SCORE	11
TABLE 3. SOIL CAPABILITY CLASSES SCORE.....	18
TABLE 4. COMMON CEC VALUES.....	19
TABLE 5. SOIL TEXTURES	19
TABLE 6. WATER AVAILABILITY SCORE	25
TABLE 7. AGRICULTURAL SUITABILITY SCORE – GRAZING	31
TABLE 8. AGRICULTURAL SUITABILITY SCORE – CROPS	32
TABLE 9. EXISTING AND HISTORIC LAND USE SCORE.....	32
TABLE 10. COMPREHENSIVE PLAN DESIGNATION SCORE	33
TABLE 11. ADJACENT LAND USE SCORE	33
TABLE 12. AGRICULTURAL PRESERVE POTENTIAL SCORE.....	34
TABLE 13. COMBINED FARMING OPERATIONS SCORE.....	34
TABLE 14. SUMMARY OF RECOMMENDED POINTS BY CATEGORY	38

List of Figures

FIGURE 1. SOLOMON HILLS UNITED STATES GEOLOGICAL SURVEY TOPOGRAPHIC MAP.....	6
FIGURE 2. SOLOMON HILLS AERIAL PHOTOGRAPH.....	7
FIGURE 3. SOIL CLASSIFICATION AND SAMPLE POINTS.....	9
FIGURE 4. SOIL STORIE INDEX RATING	14
FIGURE 5. GEOLOGY.....	15
FIGURE 6. HYDROLOGY	16
FIGURE 7. IMPORTANT FARMLAND CLASSIFICATION	26
FIGURE 8. FORAGE PRODUCTION.....	29
FIGURE 9. COMPREHENSIVE PLAN DESIGNATION.....	36

List of Charts

GRAPH 1. CATION EXCHANGE CAPACITY	19
GRAPH 2. SOIL CARBON, NITROGEN, AND ORGANIC MATTER	21
GRAPH 3. SOIL ANALYTES	22
GRAPH 4. SOIL PHYSICAL PROPERTIES	23
GRAPH 5. FORAGE PRODUCTION SPRING 2024	30
GRAPH 6. ANNUAL VEGETATION PRODUCTION 2001-2022	30
GRAPH 7. RANGELAND ANALYSIS PLATFORM 16-DAY PRODUCTION PLOT 2023.....	31

List of Appendices

APPENDIX A. LITHIC SOIL SAMPLE RESULTS

APPENDIX B. A&L LABS SOILS SAMPLE RESULTS

APPENDIX C. WEB SOIL SURVEY REPORT

APPENDIX D. RANGELAND ANALYSIS PLATFORM RESULTS

APPENDIX E. STOCKING RATE CALCULATIONS

Cover Page: Cattle grazing on annual grassland toeslope landscape position within Solomon Hills Study Area. View southwest, March 5, 2024.

EXECUTIVE SUMMARY

Althouse and Meade, Inc. conducted an agricultural suitability assessment of an approximately 2,302-acre Study Area proposed for the Solomon Hills Project south of the city of Orcutt in Santa Barbara County. Prime Agricultural Soils were mapped by the County of Santa Barbara along the Study Area's eastern boundary. Onsite soil tests, forage production assessments, desktop review, and literature review were completed for the Study Area. Results indicate that Prime Agricultural Soils do not exist within the Study Area and the Study Area does not qualify as Prime Agricultural Land. The Study Area has a recommended point value of 45 based on the County's weighted system, which is 15 points below the minimum requirement of 60 to be considered a potentially significant effect on agricultural productivity.

1 INTRODUCTION

Santa Barbara County (SB; County) developed Agricultural Resource Guidelines to limit the conversion of agricultural land to urban uses to preserve wildlife habitats and the natural environmental functions of the land, protect the agricultural industry, and maintain the aesthetics of open spaces (SB County 2021). In order for land to be classified as Prime Agricultural land by the County, one or more of the following must be true: The land must either be in a Class I or II Soil Capability classification, or qualify for an 80 to 100 rating in the Storie Index System with a minimum parcel size of 40 acres; support livestock at a density of one animal per acre; is in orchard use that can return at least \$200 per acre; or is devoted to other agricultural production that generally would return \$200 per acre. The Santa Barbara County Cattlemen's Association provided a general threshold for lands to be considered viable for cattle ranching. This threshold is defined as land being able to support at least 25-30 animal units per year. The SB County Comprehensive Plan Environmental Resources Management Element (ERME) states that agricultural land should be preserved for agricultural use, prohibiting urbanization, and benefiting the economy as well as the environment and natural resources.

When a project is proposed to occur on agricultural land, potentially significant impacts to that land must be identified. To do so, a weighted point system is utilized to value site characteristics and agricultural productivity on that land. Agricultural viability is based on parcel size, soil classification, water availability, agricultural suitability, existing and historic land use, adjacent land uses, agricultural preserve potential, combined farming operations, and comprehensive plan designation.

1.1 Purpose

The California Environmental Quality Act (CEQA), as well as Santa Barbara County, have identified Prime Agricultural land as both economically and environmentally important. The State of California and the County have enacted regulations to accurately identify and preserve Prime Agricultural lands. CEQA Section 15064 outlines who will determine whether a project will have a significant effect on the environment. Santa Barbara County has developed a method to determine agricultural suitability and productivity of a parcel, building off goals and policies taken from the County's Comprehensive Plan Land Use Element, ERME, the Local Coastal Plan, the Agricultural Element, and adopted Community Plans (SB County 2021).

The purpose of this report is to provide an accurate representation of the agricultural potential on and around the approximately 2,302 acres (Figure 1) which consists of portions of 5 Assessor Parcel Numbers (APNs) that are summarized in Figure 2 and Table 1, as well as adjacent roads (Study Area). Parcel acreage and boundaries are based on USDA 2022 National Agriculture Imagery Program (NAIP). Results provided in this report provide scientific data for the County to determine if the Project will impact Prime Agricultural Land.

1.2 Project Description

The Solomon Hills Project proposes to create Santa Barbara County's first new community, resulting in a sustainable, resilient, and healthy environment for its residents. The Project establishes a holistic framework for Smart Growth with a redevelopment of private lands historically used for grazing and oil and gas production. Its proposed Specific Plan includes the

design and implementation of a central village closely surrounded by several neighborhoods, office and commercial space, a TK-8 school, a fire/sheriff station, parks, open space, and public trails to allow walking and biking as an easy alternative to vehicle transport.

The Project's proposed Specific Plan allows for a balance of land uses primarily serving working families, allowing 4,000 single and multi-family residential units, 650,000 square feet of commercial retail and office use and space, 25.5 acres of public and institutional uses and space, and 1,023 acres of recreational and open space uses. Critical infrastructure includes water supply and a water reclamation facility, interchange improvements along Hwy 101, additional secondary access along Hwy 101 and Hwy 135, and several active and passive parks and public trails. Public benefits include developer sponsored Affordable housing near commercial and transportation access points, utility and access improvements that minimize traffic impacts to neighboring properties, new public trail access into the Orcutt Hills, recreational improvements and public access to the Newlove Picnic Grounds, the preservation of open space ridgelines and valleys for habitat protection, and the abandonment and remediation of all oilfield features and operations. The Project is designed to be built in four (4) buildout phases over a fourteen-year period for the orderly delivery of the Project. Phased grading, access, utility, horizontal, and public improvements are scheduled ahead of and to align with the same buildout phases.

1.3 Project Location

The Project Area is located adjacent to and west of Highway 101, south of Orcutt by 0.7 miles, east of Highway 135 by 2 miles and north of Los Alamos by 6 miles. It encompasses portions of 5 legal parcels owned by Solstra Inc., including APNs 101-020-041, 043, 085, 086, and 087 totaling 2,302 acres (Figure 1). The Project Area is currently zoned AG-II-100 with a Land Use Designation of Agricultural Commercial (AC).

1.4 Study Area

The Study Area includes the entire Project, which consists of onsite and offsite improvement areas. The onsite portion of the Study Area is 1,693.17 acres. The offsite portions of the Study Area include i) a California Tiger Salamander conservation area (505.83 acres), ii) tree planting area (51.12 acres), iii) improvements to two interchanges on Highway 101 (15.77 acres and 2.65 acres), iv) improvements to Bicknell Road and Graciosa Road (16.00 acres, which are not proposed to extend beyond the 30-foot roadway width, including shoulders, and will therefore not encroach on existing or potential agricultural lands), and v) improvements related to water conveyance near the Tanglewood turnout (17.24 acres, which will occur on existing roadways and pipeline locations and therefore not lead to alteration of existing agricultural land). The Project is accessible from an unnamed road, which branches off US 101 South, and from Bicknell Road. The center of the Study Area is 34.83483°N, 120.42126°W (WGS 84) in the Orcutt and Sisquoc United States Geological Survey (USGS) 7.5-minute topographic quadrangle. Table 1 summarizes the APNs associated with the Study Area, excluding APNs for roadways and the water line.

TABLE 1. STUDY AREA ASSESSOR PARCEL NUMBERS (APNs) OWNED BY SOLSTRA

Acreage based on USDA NAIP imagery from June 2022. APNs for roadways and water lines not shown.

APN	Assessed Acreage
101-020-041	0.11
101-020-043	0.10
101-020-085	802.90
101-020-086	963.33
101-020-087	942.99

1.5 Local and Regional Context

The Project parallels approximately one mile of US 101 south. The Project is within Solomon Hills, with Orcutt Creek running near the northern and eastern Project boundaries. An unnamed creek runs through the western boundary of the Project between Newlove Hill and Camelback Hill. Some areas across US 101 include established crops. Otherwise, the Project is surrounded primarily by open space. Slopes within the site range widely from two percent to 75 percent, with relatively abrupt changes from gentle to steep sloping hills.

1.6 Regulatory Framework

Standards for environmental protection and restoration, in the form of laws and regulations, are created within three different organizational levels of government: Federal, State, and Local. Entities exist within each level to create and enforce regulations that help ensure protection of specific and pertinent regional issues threatening ecosystems and environments. The following regulations are applicable to the proposed Project: CEQA Section 15064 and CEQA Appendix G, Santa Barbara County's Comprehensive Plan Land Use Element, the Environmental Resources Management Element (ERME), the Local Coastal Plan, the Agricultural Element, and the State Important Farmland Map. From these resources, Santa Barbara County created a methodology for determining agricultural suitability and productivity. Specifically, this methodology established a weighted point system, which assigns values to the following characteristics of a site's agricultural productivity: parcel size, soil classification, water availability, agricultural suitability, existing and historic land use, comprehensive plan designation, existing adjacent land uses, agricultural preserve potential, and combined farming operations.

Groundwater use in the Study Area falls within two groundwater basins: The Santa Maria River Valley and the San Antonio Creek Valley Groundwater Basins (County of Santa Barbara 2025a,b; USGS 2024). The Santa Maria River Valley Groundwater Basin was adjudicated in 2008 and the Twitchell Management Authority administers annual assessments of hydrogeological conditions (Twitchell Management Authority, 2025; Luhdorff Scalman Consulting Engineers, 2025).

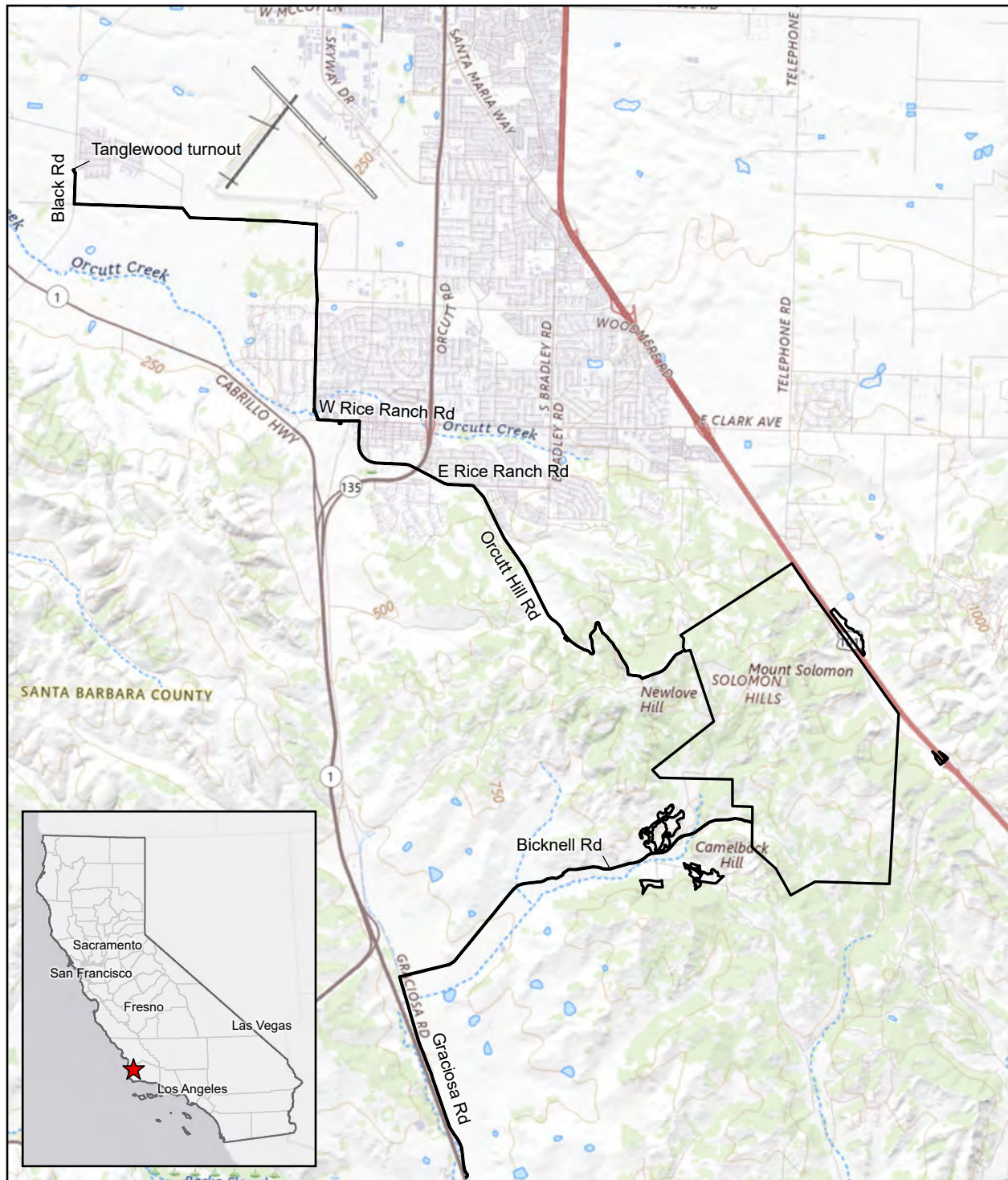
The San Antonio Creek Valley Groundwater Basin is subject to the San Antonio Creek Valley Groundwater Basin Groundwater Sustainability Plan (GSP; GSI Water Solutions, Inc. 2021) due to increased water demands caused by the growth of irrigated agriculture in the area. San Antonio Basin Groundwater Sustainability Agency (SABGSA) member agencies are the San Antonio

Basin Water District and the Los Alamos Community Services District. The Basin is bounded on the north by the Casmalia Hills and Solomon Hills, on the east by the San Rafael Mountains and a watershed divide separating the adjoining Santa Ynez River Valley groundwater basin, on the south by the Purisima Hills and Burton Mesa, and on the west by the approximate western boundary of Barka Slough. Their GSP states:

“The volume of groundwater that is pumped from the Basin in recent years is more than the estimated Basin yield of about 8,900 AFY. The SABGSA has determined that the volume of groundwater being pumped must be reduced to the sustainable yield of the Basin. To achieve this goal, the SABGSA may develop and implement a regulatory program to equitably allocate a groundwater BPA volume of water to be pumped from the Basin annually. Once the program is implemented, individual non-de minimis pumpers will be provided an annual groundwater BPA that will start at historically used quantities of water and ramp down over time to bring pumping in the Basin within its sustainable yield by 2042. The amount of needed pumping reduction in the future is uncertain and will depend on several factors, including climate conditions, the effectiveness and timeliness of voluntary actions by pumpers, and the success of other management actions described in the GSP. (Excerpted from (section ES-5.5 Tier 2)

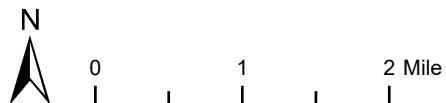
On March 18, 2025, the SABGSA Board adopted Ordinance 25-001 requiring well owners within the San Antonio Creek Valley Groundwater Basin to install a flow meter with a visual, volume-recording totalizer on their wells, submit documentation of compliance by April 1, 2026, and report monthly groundwater extraction readings to the SABGSA on a twice-a-year basis, through a form provided by the SABGSA. De minimis extractors – defined as those who extract two acre-feet or less per year solely for domestic purposes – are exempt from metering and reporting requirements. Ordinance 25-001 also outlines a pathway to exemption for inactive and abandoned wells provided all of the SABGSA’s criteria are met.”

Figure 1. General Location



Legend

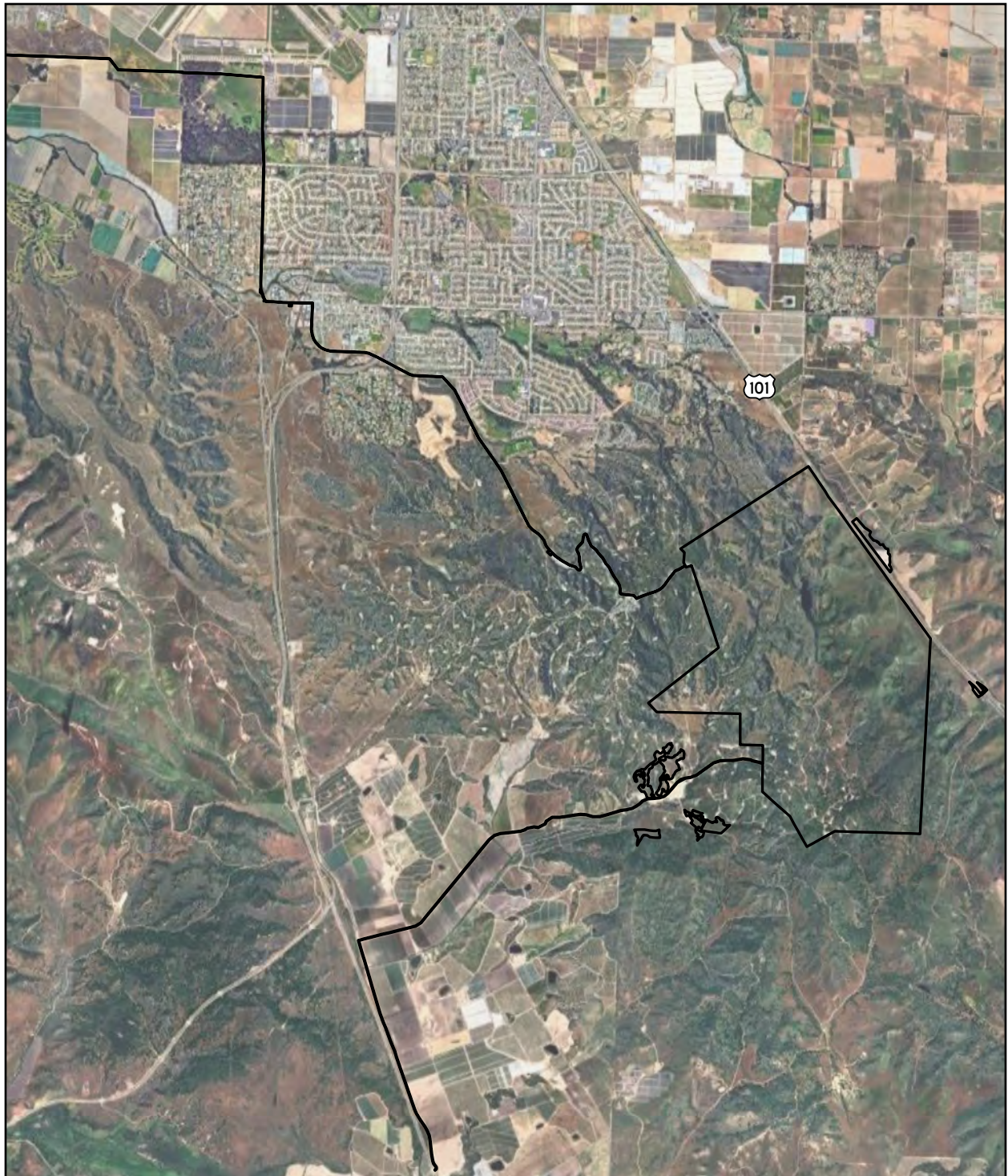
 Study Area (2,302 acres)



Solstra Communities
Solomon Hills Development
 Map Center: 34.8444°N 120.42445°W
 Santa Barbara County, California

USGS Quadrangles: Orcutt, Sisquoc, Santa Maria

Figure 2. Aerial



Legend

 Study Area (2,302 acres)



Solstra Communities
Solomon Hills Development
Map Center: 34.83483°N 120.42126°W
Santa Barbara County, California

Imagery Source: Google Satellite, 5/30/2025

2 SURVEY AND INVESTIGATION METHODS AND MATERIALS

2.1 Field Survey Methods

The Project Area was surveyed on February 29, 2024, by Althouse and Meade (A&M) Range Ecologists Edith Velasquez-Randise and Grace Damaschino. Vehicle and walking surveys were completed to assess the topography and soil sample locations throughout the Project Area. Soil sampling was subsequently conducted at select locations on February 29 and March 05, 2024, by Mrs. Velasquez-Randise and Ms. Damaschino. Thirteen composite samples were collected from areas pre-determined as Prime Ag Soil by the County or non-Prime Ag soil areas (reference soils). Nine Prime Agricultural and four Reference (REF) samples were collected (Figure 3). At each location, three samples were collected and then homogenized for one composite sample. Samples were collected to a depth of 24 inches using a SharpShooter shovel. The samples were stored in plastic bags and transported to A&M's office for lab preparation. The samples were then shipped to A&L Laboratories for analysis of the following soil health components: percent organic matter (OM), nitrogen, phosphorus, potassium, magnesium, calcium, sodium, soil pH, cation exchange capacity (CEC), soil texture (i.e., sand, silt, clay), and soil water holding capacity (WHC). Additionally, seven sample points from a previous site evaluation performed by Lithic Soils Co. (LS) in December of 2021 (Appendix A), were included in our data analysis.

An additional site visit was completed by Mrs. Velasquez-Randise and A&M Range Ecologist Helen Dubee on April 18, 2024. During this site visit, forage samples were collected to assess whether the proposed Study Area can support 25 to 30 animal units per year, another factor in determining whether the area is agriculturally viable (per Cattlemen's Association). The site inspection conducted in April did not capture full floristic surveys.

The Project Area was surveyed again, with focus on offsite locations, on April 29, 2025 by A&M Principal Scientist LynneDee Althouse and Associate Principal Raymond Danner.

Tablets and phones equipped with onboard Global Positioning System (GPS) receivers were utilized for mapping efforts. Maps were created using aerial photo interpretation, field notation, and GPS data imported to ArcGIS Pro, a Geographic Information System (GIS) software program. Data was overlaid on a 2022 National Agriculture Imagery Program (NAIP) aerial of Santa Barbara County.

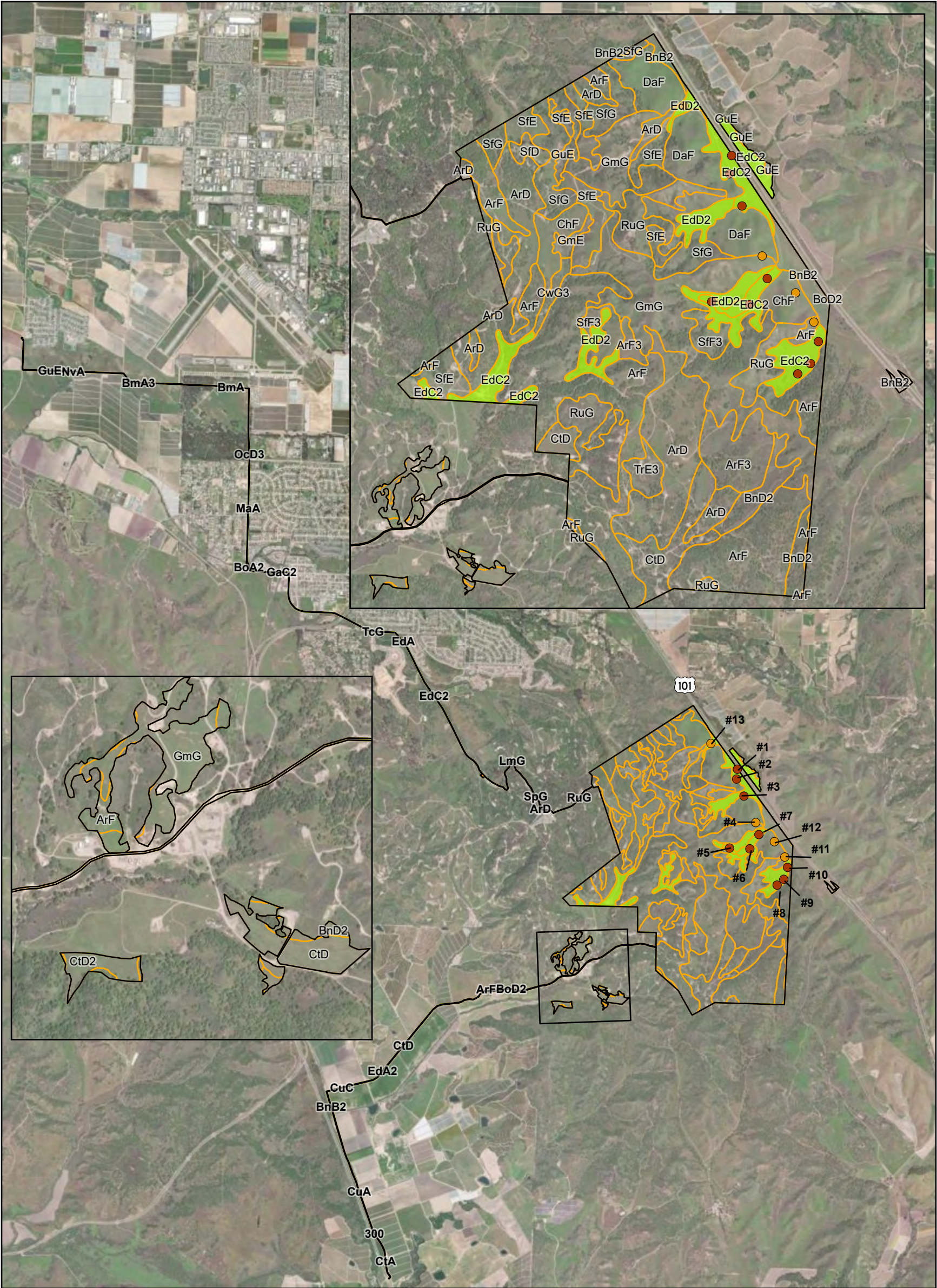
2.2 Literature and Database Research

Review of relevant databases included review of the NRCS Field Guide Section II – Land Capability Classifications (USDA 2010), SoilWeb (UC Davis, 2019), the Storie Index Soil Ratings (UC ANR 1978), and Web Soil Survey (NRCS, n.d.).

Literature review included reviews of the Agricultural Resource Guidelines from the Santa Barbara County Environmental Thresholds and Guidelines Manual (SB County 2021) and the Lithic Soils Co. paper, *Soil Analysis for Vineyard*, by Coastal Vineyard Care Associates, December 2021.

Additional resources were reviewed and included in Section 6, to obtain local climate, hydrology, and surrounding preserved areas information, as well as a comprehensive review of soil health and nutrient literature.

Figure 3. Soil Classification and Sample Sites

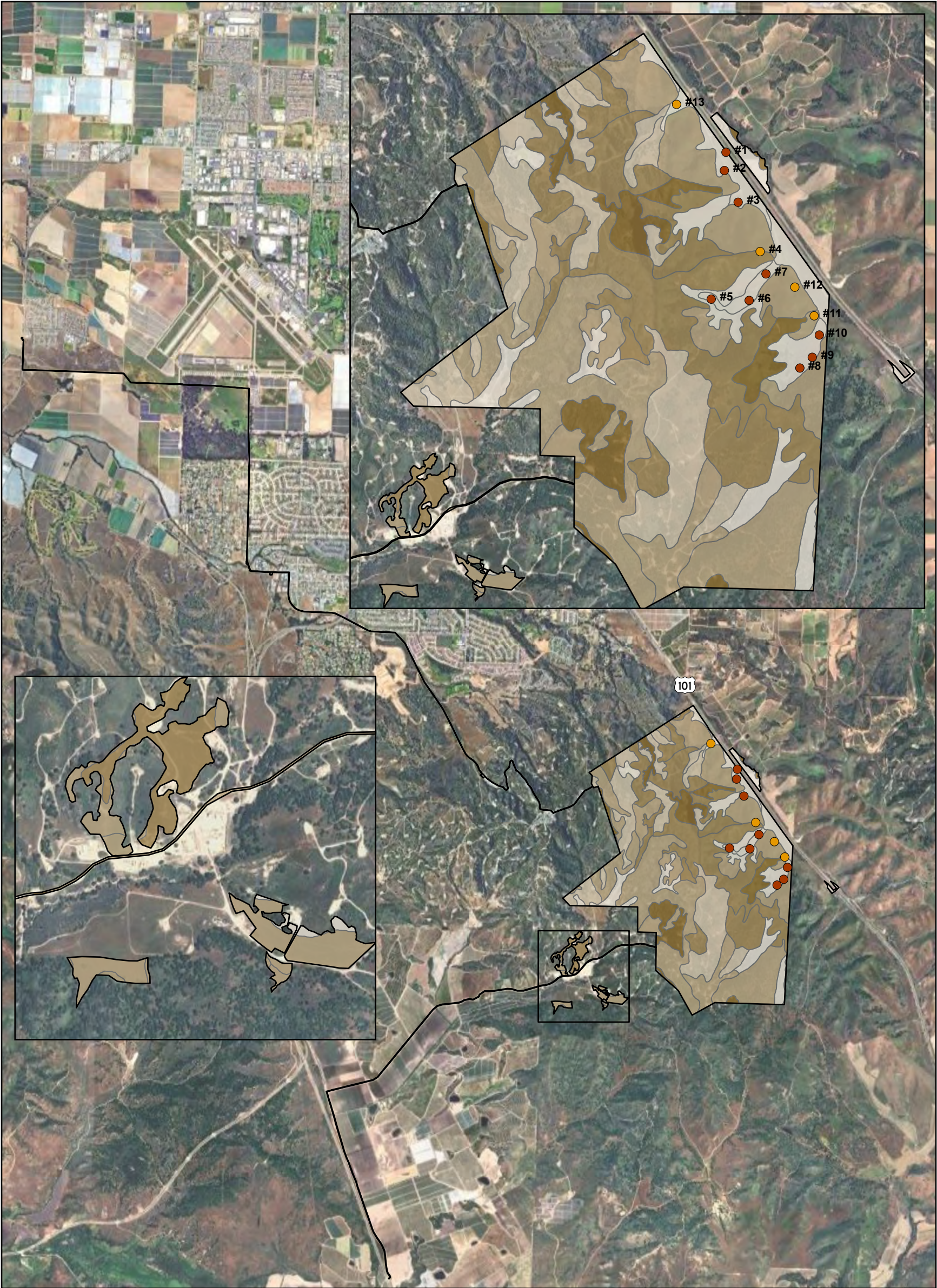


Legend		Soil Type	Study Area	Soil Type	Study Area	Soil Type	Study Area	Soil Type	Study Area
	Study Area (2,302 acres)	300	<1%	CtA	<1%	GaC2	<1%	SfF3	2%
	USDA NRCS Soils	ArD	11%	CtD	4%	GmE	<1%	SfG	5%
	Santa Barbara County Prime Agriculture Soils	ArF	23%	CtD2	<1%	GmG	14%	SpG	<1%
Sample Location		ArF3	3%	CuC	<1%	GuE	1%	TcG	<1%
		BmA	<1%	CuA	<1%	LmG	<1%	TrE3	1%
	Sample In Prime Agriculture Soils	BmA3	<1%	CwG3	<1%	MaA	<1%		
	Sample Outside Prime Agriculture Soils	BnB2	2%	DaF	6%	NvA	<1%		
		BnD2	2%	EdA	<1%	OcD3	<1%		
		BoA2	<1%	EdA2	<1%	RuG	6%		
		BoD2	<1%	EdC2	5%	SfD	<1%		
		ChF	3%	EdD2	3%	SfE	5%		

Solstra Communities
Solomon Hills Development
Map Center: 34.85617°N 120.41833°W
Santa Barbara County, California
Imagery Source: USDA NAIP, 06/20/2022

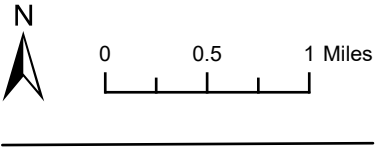
Map Updated:
July 23, 2025 10:55 AM by SWD

Figure 3b. Soil Classification and Sample Sites



Legend

Study Area (2,302 acres)	Non-Irrigated Capability Class - Dominant Condition
Sample Location	III (294.4 acres)
● Sample In Prime Agriculture Soils	IV (375.1 acres)
● Sample Outside Prime Agriculture Soils	VI (890.0 acres)
	VII (572.8 acres)
	VIII (169.2 acres)



Solstra Communities
Solomon Hills Development
Map Center: 34.85617°N 120.41833°W
Santa Barbara County, California

Imagery Source: USDA NAIP, 06/20/2022

3 SURVEY AND INVESTIGATION RESULTS AND DISCUSSION

3.1 Parcel Size

According to the Santa Barbara County Guidelines, large parcel size is, in general, an important indicator of potential agricultural suitability and productivity. This Project is located on approximately 2,302 acres. However, much of that area is designated as non-Prime Agricultural land/soil, likely due to the abundance of steep slopes through the Study Area. This score is based solely on parcel size, not agricultural suitability.

TABLE 2. PARCEL SIZE SCORE

Project Parcel Size	Points Available	Solomon Hills Recommended Points
Less than 5 acres	0-3	n/a
5 acres to less than 10 acres	4-6	n/a
10 acres to less than 40 acres	7-8	n/a
40 acres to less than 100 acres	9-10	n/a
100 acres to less than 500 acres	11-12	n/a
500 acres to less than 1000 acres	13-14	n/a
1000 acres or greater	15	15

3.2 Soil Classification

Assessment of agricultural potential of the soils within the Study Area included review of the Land Capability Classification, Storie Index Rating, and site-specific soil physical and chemical property testing. According to NRCS Web Soil Survey, each potentially Prime Agricultural sample location was within Land Capability Classification Class III (non-irrigated) or Class II (irrigated), with the main limitation being water in or on the soil interfering with plant growth (Figure 3, NRCS, n.d.). Land within classes I, II, III, and IV is suitable for mechanized production of common field crops, if properly managed, and for production of pasture and woodland (USDA, 2010). Class I and II soils are considered “prime.” All Prime Agricultural sample locations had a Storie Index Rating of 51-60 (Figure 4), placing them into Grade 3 (fair). This rating is below the 80-100 rating required for Prime Agricultural soils by the County. Soils with this rating are of fair quality and may give good results with certain crops (UC ANR, 1978).

The following sections provide detailed information about the soil taxonomy and land capability classification of each sampling location, as well as the soil fertility data from each of the sampled locations.

3.2.1 Soil Taxonomy

Each of the Prime Agricultural soil samples were described on NRCS Web Soil Survey as being a part of the Elder soil series. These soils are coarse-loamy haploxerolls which form on floodplains. Elder soils are deep and well-drained. This section utilizes information from UC Davis SoilWeb

to define, in detail, each soil type from which the Prime Agricultural, Reference (REF), and Lithic Soil (LS) samples were collected:

ArF – Arnold sand, 15 to 45 percent slopes, occupies approximately 23.4 percent of the Study Area, or 538.1 acres. REF sample 11 is located on this soil type. The dominant soil component is Arnold and similar soils, occupying 85 percent of the composition, and minor components occupy 15 percent. This soil is common on convex hillslopes at elevations ranging from 200 to 1,500 feet. This soil is derived from residuum weathered from sandstone, with approximate depths to bedrock between 40 to 60 inches. This soil is somewhat excessively drained with moderately high water-holding capacity. This type of soil is associated with Ecological Site R015XD055CA – SANDY and is classified as not prime farmland (Land Capability Classification 6e (nonirrigated)).

GmG – Gaviota sandy loam, 30 to 75 percent slopes, occupies approximately 14.2 percent of the Study Area, or 326.7 acres. REF sample 4 and LS sample 6 are located on this soil type. The dominant soil component is Gaviota and similar soils, occupying 80 percent of the composition, and minor components occupying 20 percent. This soil is common on convex and concave hillslopes and mountain slopes at elevations ranging from 250 to 3,070 feet. This soil is derived from residuum weathered from sandstone, with approximate depths to bedrock between 8 to 16 inches. This soil is somewhat excessively drained with very low to low water-holding capacity. This type of soil is associated with Ecological Sites R015XD093CA – SHALLOW LOAMY and R015XD117CA - SHALLOW COARSE LOAMY and is classified as not prime farmland (Land Capability Classification 7e (nonirrigated)).

DaF – Diablo silty clay, 30 to 45 percent slopes, occupies approximately 6.0 percent of the Study Area, or 137.6 acres. LS samples 1, 4, and 7 are located on this soil type. The dominant soil component is Diablo and similar soils, occupying 85 percent of the composition, and minor components occupy 15 percent. This soil is common on convex hillslopes at elevations ranging from 500 to 3,000 feet. This soil is derived from residuum weathered from calcareous mudstone or shale, with approximate depths to bedrock between 20 to 36 inches. This soil is well-drained with very low to moderately high water-holding capacity. This type of soil is associated with Ecological Sites R015XD001CA – CLAYEY and is classified as not prime farmland (Land Capability Classification 6e (nonirrigated)).

EdC2 – Elder sandy loam, 2 to 9 percent slopes, occupies approximately 5.0 percent of the Study Area, or 113.8 acres. PA samples 1, 2, 3, 5, 6, 7, 8, 9, and 10, REF sample 13, and LS sample 2 are all located on this soil type. The dominant soil component is Elder and similar soils, occupying 85 percent of the composition, and minor components occupy 15 percent. This soil is common on linear alluvial fans and flood plains at elevations ranging from 100 to 1,500 feet. This soil is derived from alluvium derived from acid sandstone and shale, with an approximate depth to bedrock being more than 80 inches. This soil is well-drained with high water-holding capacity. This type of soil is associated with Ecological Sites R014XG917CA - Dry Loamy Fan and is classified as prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season (Land Capability Classification 2w (irrigated), 3w (nonirrigated)).

Edd2 – Elder sandy loam, 9 to 15 percent slopes, occupies approximately 3.1 percent of the Study Area, or 70.8 acres. LS sample 3 is located on this soil type. The dominant soil component is Elder and similar soils, occupying 85 percent of the composition, and minor components occupying 15 percent. This soil is common on linear drainageways at elevations ranging from 100

to 1,500 feet. This soil is derived from alluvium derived from acid sandstone and shale, with an approximate depth to bedrock being more than 80 inches. This soil is well-drained with high water-holding capacity. This type of soil is associated with Ecological Sites R014XG917CA - Dry Loamy Fan and is classified as not prime farmland (Land Capability Classification 3w (nonirrigated)).

ChF – Chamise shaley loam, 15 to 45 percent slopes, occupies approximately 2.7 percent of the Study Area, or 61.3 acres. REF sample 12 is located on this soil type. The dominant soil component is Chamise and similar soils, occupying 85 percent of the composition, and minor components occupy 15 percent. This soil is common on linear hillslopes at elevations ranging from 200 to 1,500 feet. This soil is derived from alluvium, with approximate depths to restrictive feature between 18 to 40 inches. This soil is well-drained with moderately low to moderately high water holding capacity. This type of soil is associated with Ecological Sites R015XY005CA – Loamy Terrace <20” ppt and is classified as not prime farmland (Land Capability Classification 6e (nonirrigated)).

BnB2 – Betteravia loamy sand, dark variant, 0 to 5 percent slopes, eroded, occupies approximately 1.6 percent of the Study Area, or 37.3 acres. LS sample 5 is located on this soil type. The dominant soil component is Betteravia, dark variant, and similar soils, occupying 85 percent of the composition, and minor components occupy 15 percent. This soil is common on linear flood plains at elevations ranging from 0 to 800 feet. This soil is derived from alluvium derived from diatomaceous shale and/or acid sandstone, with approximate depths to bedrock more than 80 inches. This soil is well-drained with moderately low to moderately high water holding capacity. This type of soil is associated with Ecological Sites R015XD005CA – SANDY and is classified as not prime farmland (Land Capability Classification 3e (nonirrigated)).

3.2.1.1 Geology

The prominent geologic formation underlying the Study Area is Pliocene marine rocks, followed by a stretch of Plio-Pleistocene and Pliocene loosely consolidated deposits along the eastern border of the Study Area, and then a relatively small pocket of older Quaternary alluvium and marine deposits in the northern corner of the Study Area (Figure 5).

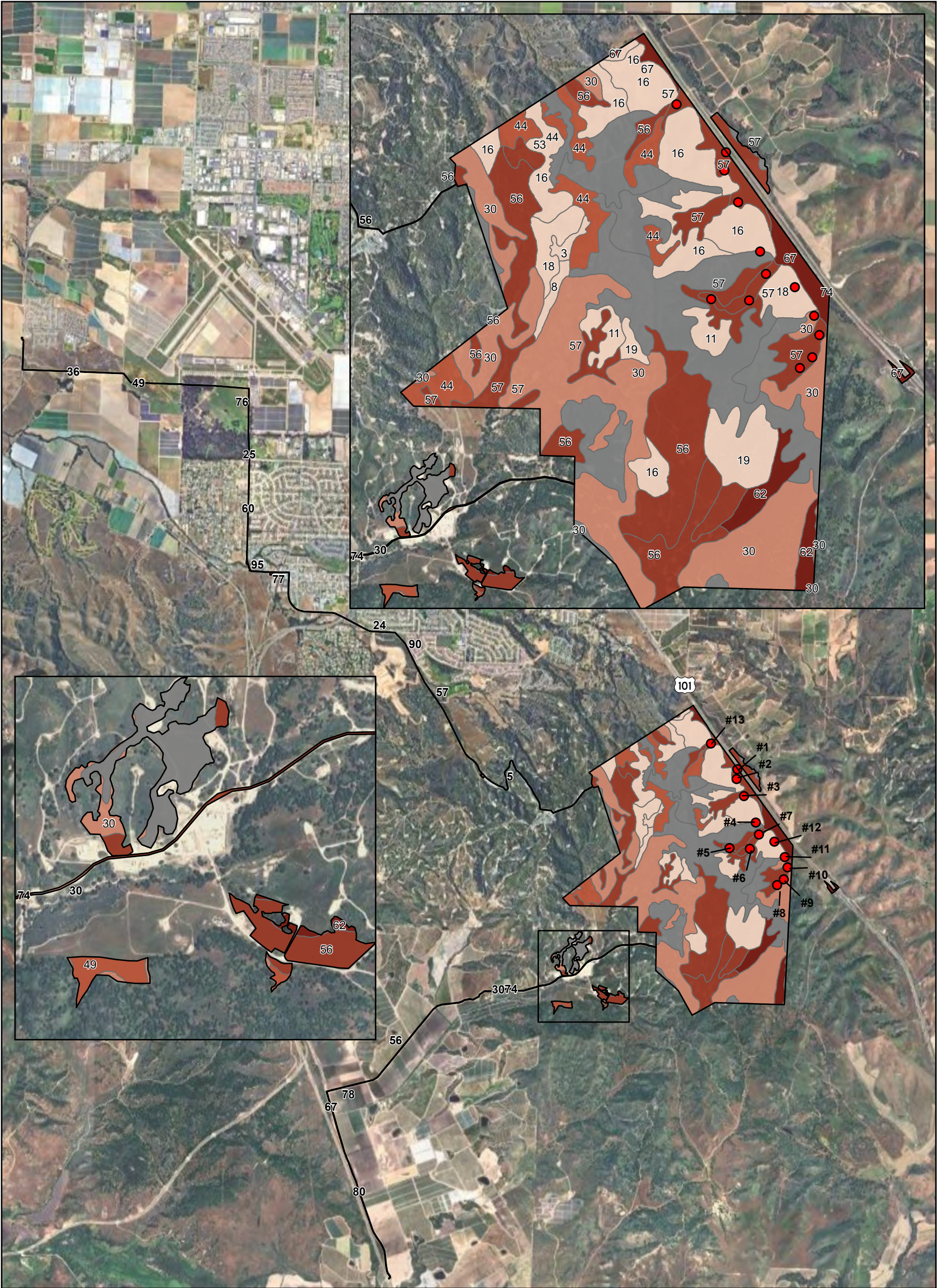
3.2.1.2 Hydrology

The U.S. Geological Survey and U. S. Department of Agriculture (USDA) – Natural Resource Conservation Service (NRCS) developed nationally consistent watershed boundaries that range from a 2-digit code as the first level of classification (Hydrologic Unit Code [HUC] 2) to a 12-digit code for the most detailed watershed delineation (HUC12). The northern portion of the Study Area falls within the Santa Maria watershed (HUC 8 – Unit 18060008), while the southern portion falls within the San Antonio watershed (HUC 8 – Unit 18060009).

There are two unnamed freshwater ponds located within the northern portion of the Study Area (Figure 6). There is an abundance of ephemeral springs flowing into the Project boundary from all directions. There are two intermittent streams: Orcutt Creek enters the Project for approximately 500’ along the eastern boundary, and one unnamed stream drains the western slope of Mt. Solomon and exits the western side of the project (Figure 6).

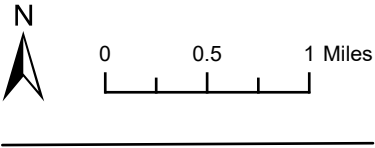
There are no wells within the Study Area.

Figure 4. Soil Storie Index Rating



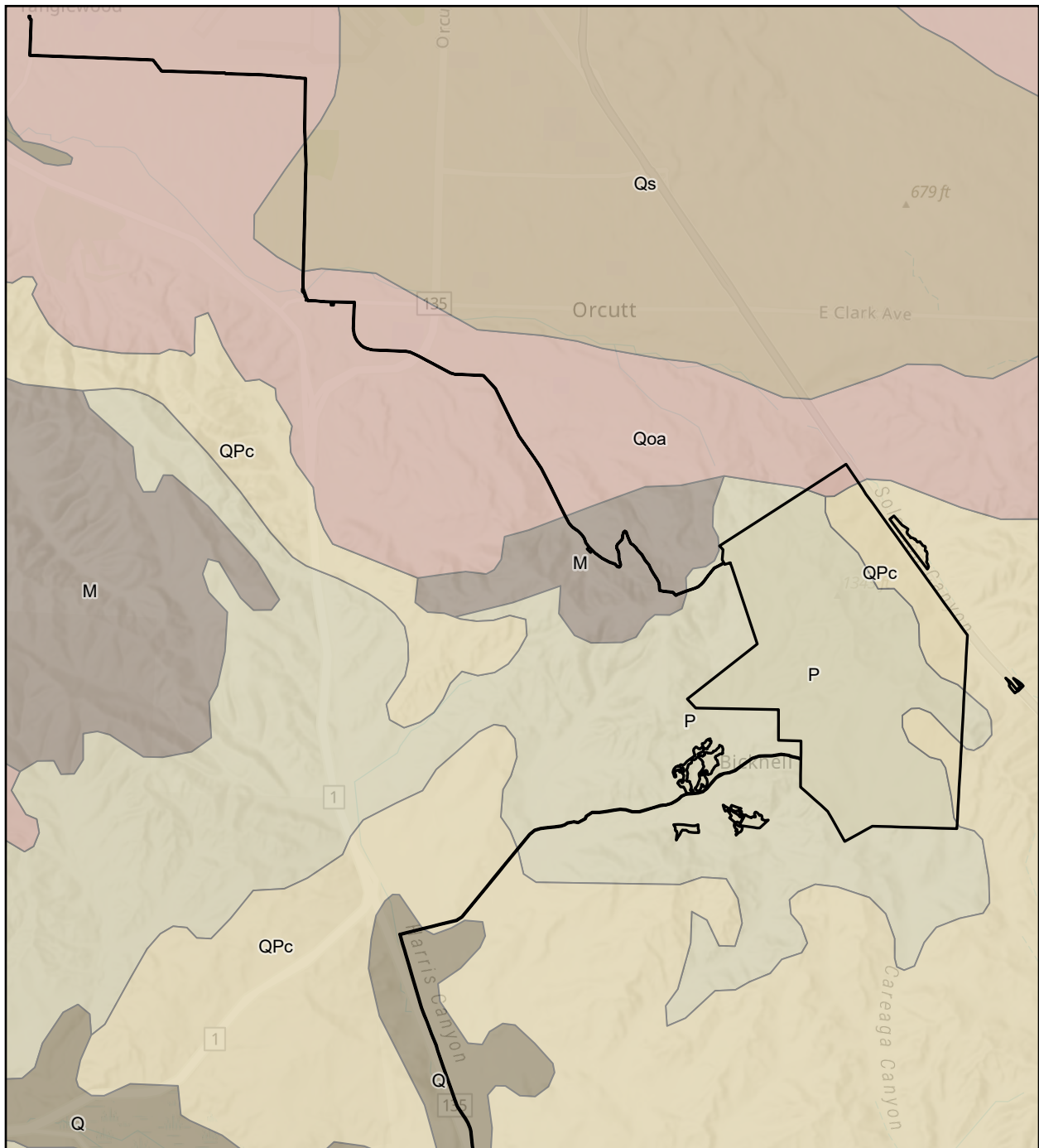
Legend

Storie Index Rating	51 - 60	Study Area (2,302 acres)
3 - 10	61 - 70	Sample Location
11 - 20	71 - 80	
21 - 30	None	
31 - 40		
41 - 50		



Solstra Communities
Solomon Hills Development
Map Center: 34.85617°N 120.41833°W
Santa Barbara County, California
Imagery Source: USDA NAIP, 06/20/2022

Figure 5. Geology



Legend

 Study Area (2,302 acres)

Geologic Unit

 M: Miocene marine rocks

 P: Pliocene marine rocks

 Q: Quaternary alluvium and marine deposits

 QPc: Plio-Pleistocene and Pliocene loosely consolidated deposits

 Qoa: Older Quaternary alluvium and marine deposits

 Qs Quaternary sand deposits

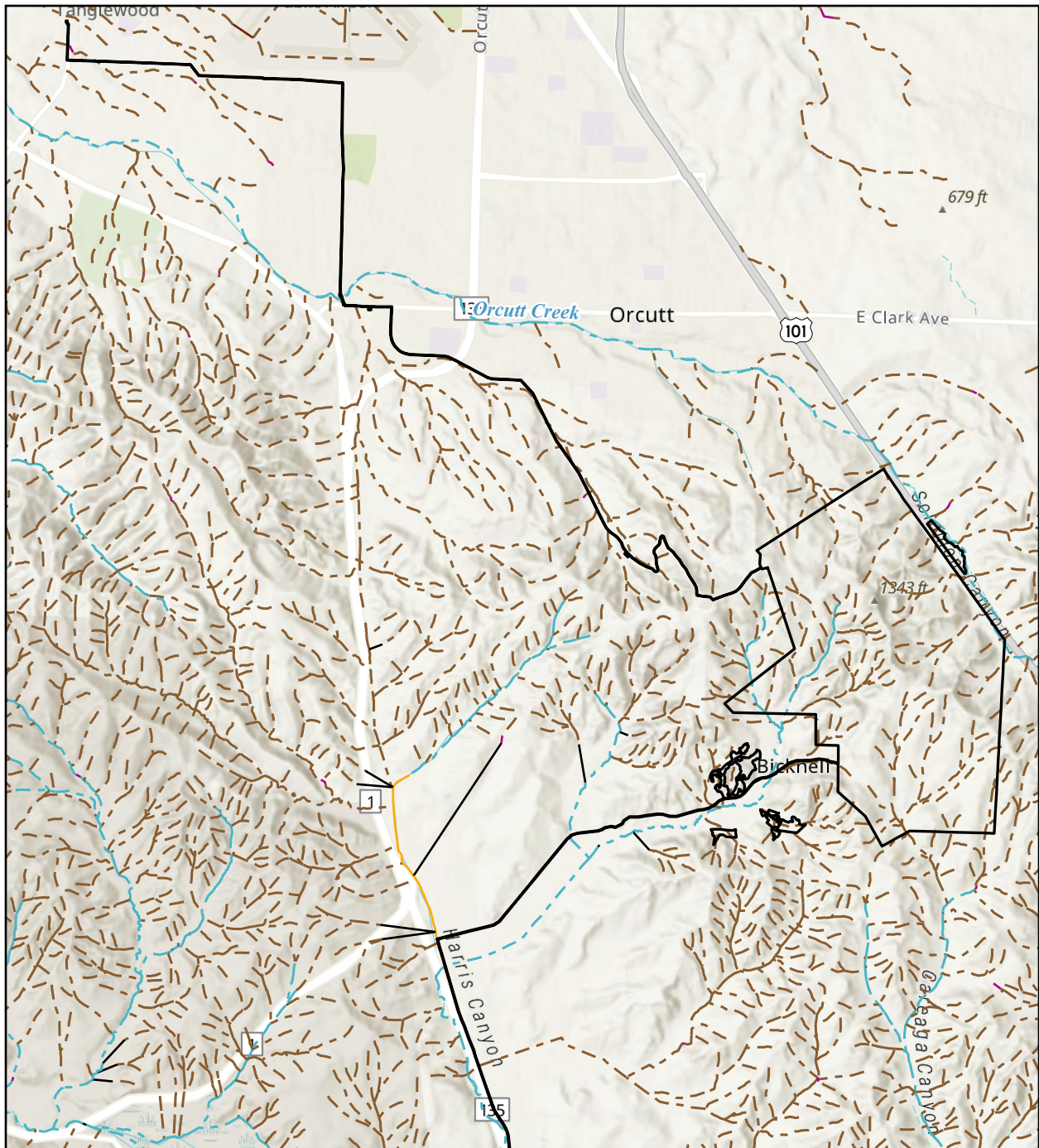


0 0.5 1 Miles

Solstra Communities
Solomon Hills Development
 Map Center: 34.83575°N 120.42436°W
 Santa Barbara County, California

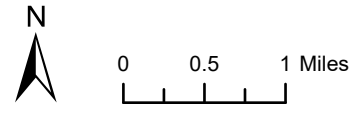
Data Source: USGS

Figure 6. Hydrology



Legend

- | | |
|--|---|
|  Study Area (2,296 acres) |  Artificial Path |
|  Intermittent |  Canal Ditch |
|  Ephemeral |  Connector |
| |  Pipeline |



Solstra Communities
Solomon Hills Development
 Map Center: 34.83619°N 120.42927°W
 Santa Barbara County, California

Data Source: USGS and USFWS

3.2.2 *Land Capability Classes*

The land capability classes give a broad understanding of the suitability of the land for certain crops or pasture. The USDA NRCS Web Soil Survey provides Land Capability Classifications for each soil type. There are eight classes (I-VIII) and four subclasses (e, w, s, or c). Classes I-IV are suitable for common field crops and production of pasture and woodland, if properly managed, while classes V-VIII are primarily suitable for rangeland forestland or wildlife habitat (USDA NRCS 2014). A brief overview of each class is provided below:

Class I: Soils have slight limitations that restrict their use.

Class II: Soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class III: Soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class IV: Soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class V: Soils are subject to little or no erosion but have other limitations impractical to remove, which restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class VI: Soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class VII: Soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class VIII: Soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Four subclasses are used to describe the main soil hazard or restriction:

e: erosion is primary hazard.

w: water in or on the soil may interfere with plant growth or cultivation.

s: shallow soils, lack of water retention, or stony.

c: climate is very cold or very dry – this subclass is only used in certain parts of the U.S.

The soils sampled within the Prime Ag locations and one REF sample are classified on Web Soil Survey as III-w, meaning they are suitable for common field crops, if properly managed, and for production of pasture and woodland (USDA 2025). Their limiting factor is water on or within the soil. Specifically, these soils are considered Prime Farmland if they are either protected from flooding or not frequently flooded during the growing season. Two REF soil samples are classified on Web Soil Survey as VI-e, one as VII-e, meaning they are more suitable for permanent cover such as grasses and trees. These REF soils are located on steeper slopes than the Prime Agricultural soils, leading to erosion being the dominant limitation of these soils.

TABLE 3. SOIL CAPABILITY CLASSES SCORE

Land Capability Class Score based on non-irrigated soils. The recommended points are based on the 13 percent of the Study Area that is classified as Class III soils. The remaining 87 percent of the Study Area was scored between 1 and 6 points and would be in Land Capability Classes IV-VII. Because only 13 percent of the soils on the site fell into Class III, and the Thresholds and Guidelines Manual states that “Where a variety of soil types are present on a site, weight should depend upon extent of usable prime/non-prime acreage. As appropriate, points may be assigned according to approximate percentages of site area containing various soil classifications.” The site was scored with 8 points, the lower end of the point range for Class III. Further, the site is only moderately suitable for pasture or range, and the soils are non-prime and cannot support high cash crops. Project acreage total may be slightly different due to Land Capability Class maps.

Land Capability Class	Acres	Points Available	Solomon Hills Recommended Points
Class I (Prime)	0.0	14-15	n/a
Class II (Prime)	0.0	11-13	n/a
Class III	294.4	8-10	8
Class IV	375.1	6-7	n/a
Class V	0.0	1-5	n/a
Class VI	890.0	1-5	n/a
Class VII	572.8	1-5	n/a
Class VIII	169.2	0	n/a

3.2.3 Soil Fertility

Althouse and Meade, Inc. collected thirteen total composite soil samples from various Prime-Ag and Reference locations across the Study Area. Soil chemistry was analyzed by A&L Labs for organic matter, nitrogen, cation exchange capacity (CEC), phosphorus, calcium, magnesium, sodium, potassium, pH, water holding capacity (WHC), and texture (percent sand, silt, and clay, Appendix B). Data previously collected from this Study Area and reported in the Lithic Soils Report (Appendix A) was added to this data analysis. This section summarizes soil analytes that relate directly to soil fertility and use for agricultural crop production. Results summarized and discussed below indicate that Prime Agricultural soils are not significantly more fertile or suitable for crop production when compared with REF samples that are not designated as Prime Agricultural land.

3.2.3.1 Cation Exchange Capacity

Cation Exchange Capacity (CEC) describes the amount of nutrients available for plant root uptake to support growth. Most common nutrients measured in CEC are calcium, magnesium, potassium, ammonium, hydrogen, and sodium. These nutrients are held onto the soil’s clay and organic matter particles (Mengel, 2023). Higher clay content and higher organic matter typically result in higher CEC values (Table 4). The dominant soil textures across the Study Area are sandy loam and sandy clay loam (typical CEC value of 5-30 meq/100g). The CEC values observed on the Study Area ranged between 4.2 up to 24.4 meq/100g. Data from the Study Area shows that CEC in the REF samples are significantly higher compared to the Prime Agricultural samples ($p < 0.05$; Graph 1).

Soils located within Prime Agricultural sample locations have lower nutrients available for plant root uptake compared with REF samples located on non-Prime Agricultural land.

TABLE 4. COMMON CEC VALUES

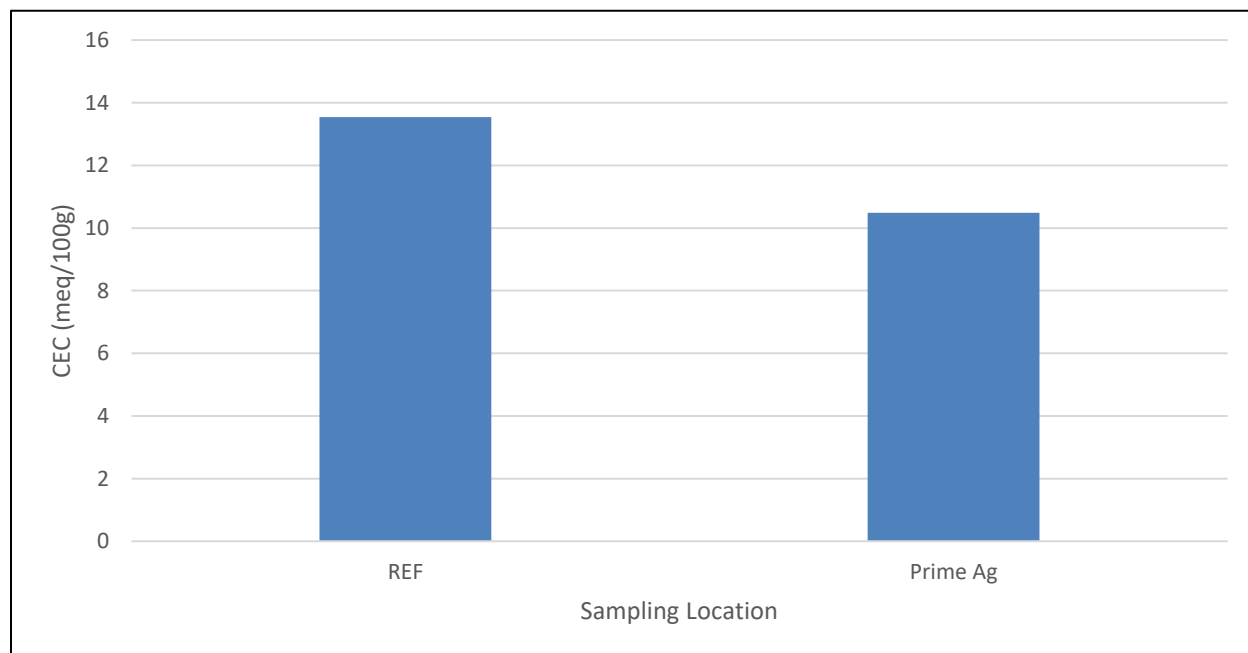
Cation exchange capacity values commonly observed in soil groups (UGA 2022).

Soil Texture	CEC (me/100g)
Sand	1-5
Fine Sandy Loam	5-10
Loam	5-15
Clay Loam	15-30
Clay	>30
Organic Matter	200-400

TABLE 5. SOIL TEXTURES

Soil textures documented at the Site Area by A&L Labs in March 2024.

Sample Locations	Soil Texture
Prime-Ag	Sandy Loam
Reference	Sandy Clay Loam



GRAPH 1. CATION EXCHANGE CAPACITY

Reference (REF) sampling sites had significantly higher soil cation exchange capacity (CEC) values compared with Prime Agricultural (Prime Ag) sample locations ($p < 0.05$).

3.2.3.2 Soil Organic Matter, Carbon, and Nitrogen

Organic matter measures the amount of decomposed plant, animal, and microbial residues present in a soil sample. Soil organic matter (SOM) can be stabilized by physical separation from decomposers through occlusion within aggregates (Rowley et al. 2018). This process of physical aggregation¹ (initiated by root and microbial exudates) improves soil structure, decreases erosion, and reduces soil bulk density (i.e., soil compaction) by increasing soil porosity (amount of space between soil particles). These characteristics improve the soil structure, which enhances water and nutrient flow through the soil profile and improves availability of these particles to plants. Higher soil organic content is directly associated with higher soil organic carbon, cation exchange capacity (described previously), and improved nutrient availability to plants. There is no significant difference in SOM between REF and Prime Agricultural soil samples ($p>0.05$; Graph 2). Both locations are slightly below the recommended SOM threshold of 2-8 percent.

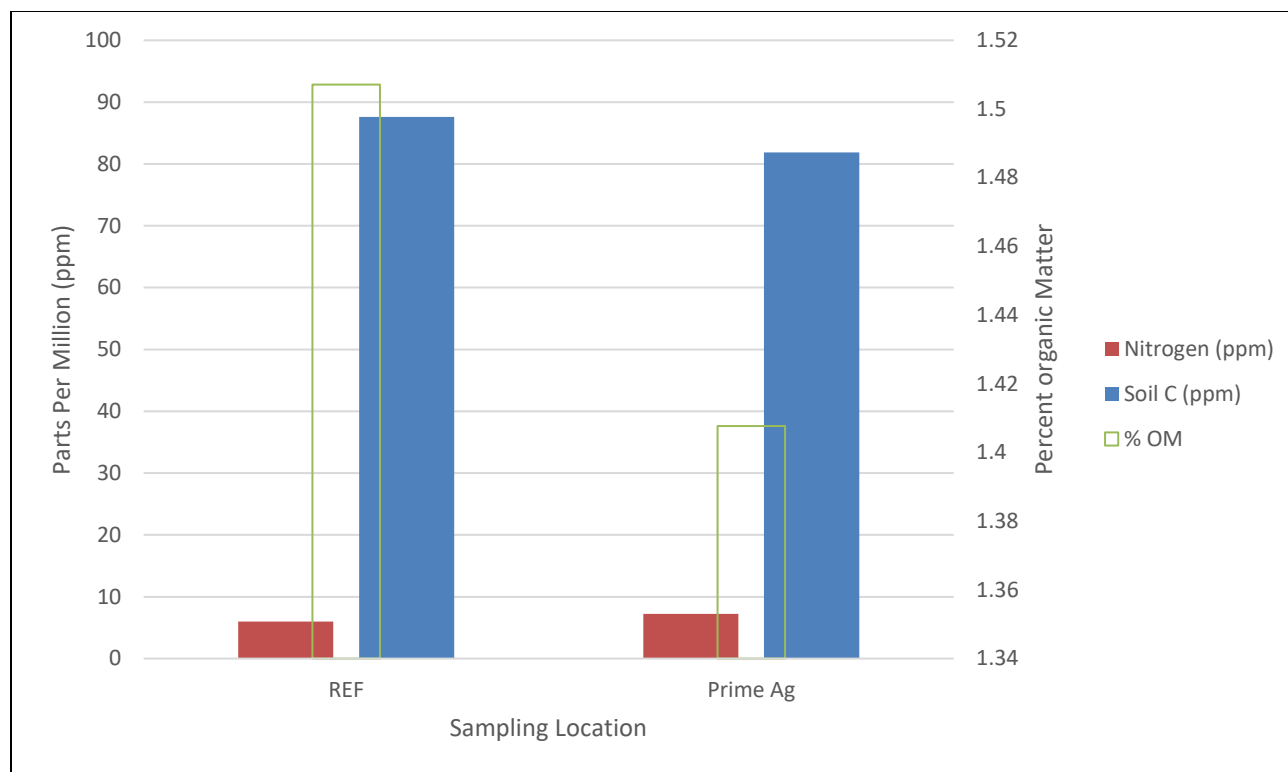
Total soil carbon is composed of soil inorganic carbon (SIC) and soil organic carbon (SOC). SIC is an inherent part of the soil profile included in calcareous soils in the form of calcium and magnesium carbonates. Soil organic carbon enters the soil profile through decomposition of plant and animal residues, root exudates², and living and dead soil microorganisms. Soil organic carbon is a component of SOM and typically comprises 52-58 percent of the total SOM within the soil profile (USDA NRCS 2019). Thus, the amount of SOC storage within a soil profile is directly correlated to the amount of SOM within the soil and therefore can be estimated from percent organic matter results. As with SOM, SOC can be increased through processes such as physical aggregation, and sorption³ to clays and aluminum and iron-oxides (Sollins et al. 1996). When comparing the Prime Agricultural soils to the REF soils, the two locations did not have significantly different soil carbon values ($p>0.05$; Graph 2).

Carbon and nitrogen are essential for soil microbial health and plant growth. Carbon is an important energy source for microbes, and nitrogen provides a needed element to build tissue. These elements are described in the soil profile as a ratio of carbon to nitrogen. An ideal balance of carbon and nitrogen in the soil is 10:1 (USDA 2023). Increased carbon and nitrogen in the soil profile through root exudates, manure, and dried vegetation triggers microbial growth. Too much carbon will result in slow decomposition due to a lack of nitrogen in the material to support microbial growth (e.g., straw 80:1 or cornstalks 60:1). In this scenario, microbes will absorb nitrogen from the soil organic matter and immobilize it in their cells. Thus, if the added material has a C:N ratio that is too high, it cannot be broken down until the microbial population dies back and nitrogen becomes available through decomposing microbes. The Prime Agricultural soils had an average C:N ratio of 15:1, whereas the Reference soils had an average C:N ratio of 19:1. The Prime Agricultural soils and the Reference location soils did not have significantly different nitrogen levels ($p>0.05$; Graph 2).

¹ Aggregation: arrangement of primary soil particles (sand, silt, clay) around soil organic matter.

² Root exudates: Organic compounds such as sugars and amino acids emitted by plant roots to promote plant growth and microbial habitat.

³ Sorption: the transfer of a solute (e.g., organic groups) from solution to an existing solid phase (e.g., soil surfaces)



GRAPH 2. SOIL CARBON, NITROGEN, AND ORGANIC MATTER

There was no significant difference in soil organic matter (%OM), soil nitrogen, and calculated soil carbon across the sampling locations.

3.2.3.3 Soil Analytes

Other important soil health indicators include macronutrients such as phosphorus, soil cations such as sodium, potassium, magnesium, and calcium, and soil abiotic⁴ factors such as pH.

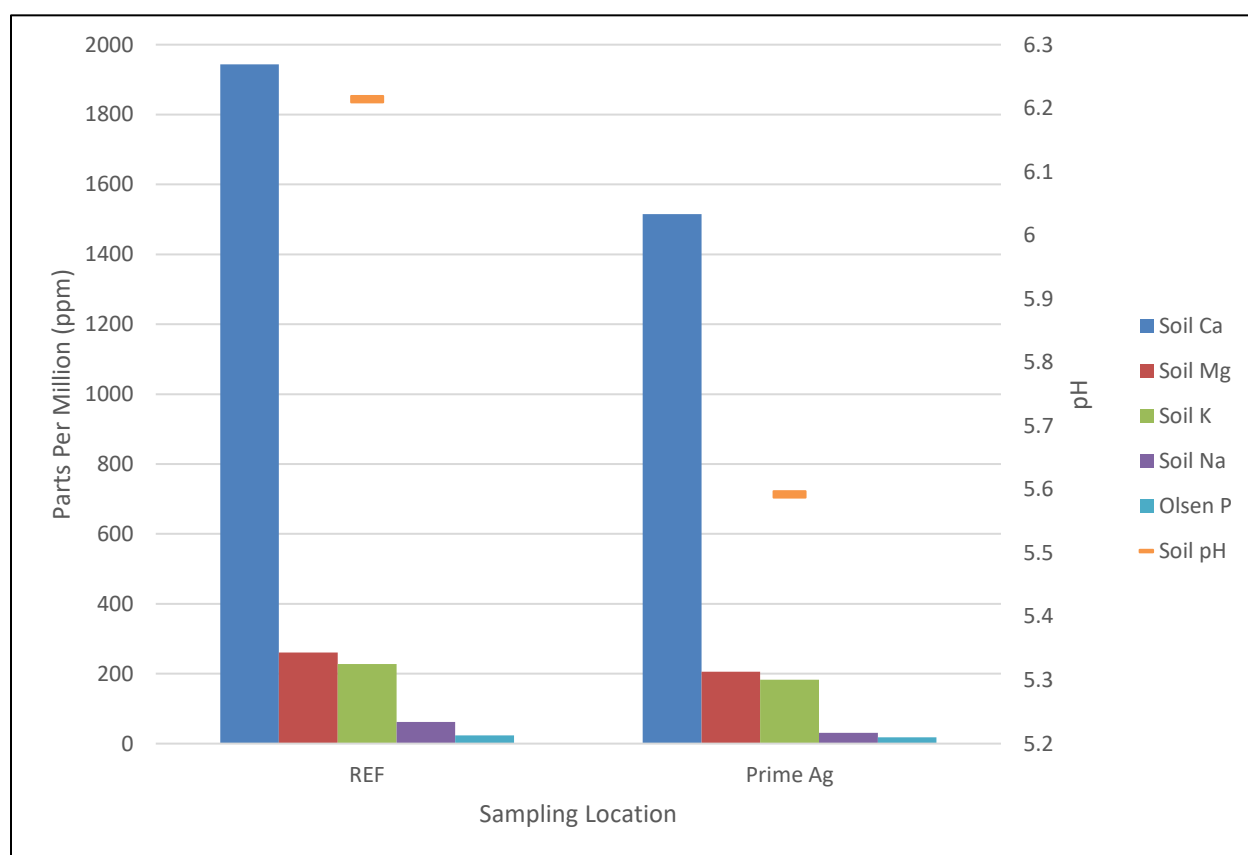
Soil pH has important implications for soil health and biogeochemical processes. pH influences exchangeable calcium within the soil, which is significantly correlated with soil organic matter (SOM) stabilization (Rasmussen et al. 2018). pH can also indicate types of SOC being stabilized due to the fact that the prevalence of aluminum (Al^{3+}), iron (Fe^{3+}), and calcium (Ca^{2+}) are largely linked to soil pH, with Al^{3+} and Fe^{3+} occurring in more acidic conditions (Rowley et al. 2018). REF soils had a pH of 6.2, which was significantly higher (more basic) than Prime Agricultural soils ($p < 0.05$; Graph 3). The Prime Agricultural soils are slightly acidic, falling below the recommended 6.0-7.0 range, and nearing the strongly acidic range of $\text{pH} < 5.5$.

The cations most important for plant growth include calcium, magnesium, potassium, and sodium (Guan 2014). These positively charged nutrients bind to negatively charged soil and become exchangeable in the soil solution, thus becoming available for plants to absorb. Furthermore, exchangeable calcium (Ca), as well as soil texture, exhibits a strong correlation with SOM stabilization (Rasmussen 2018). Cations such as magnesium (Mg) and potassium (K) can also increase the sorption of organics onto these clay surfaces. This is likely due to the abundance of

⁴ Abiotic factor: Non-living variables which can influence where organisms can live.

negatively charged exchange sites in clay and silt soils. Prime Agricultural and REF results for exchangeable calcium and exchangeable magnesium are within the ideal ranges of 500-4000 ppm and 100-500 ppm, respectively (Isleib 2019; Graph 3). REF soils had significantly higher Ca and Na compared to Prime Agricultural soils ($p < 0.05$).

Soil phosphorus (measured in this report as $\text{NaHCO}_3\text{-P}$) is a macronutrient primarily important to plant growth and productivity. While phosphorus deficiencies lead to weak root systems and plant yield, excessive soil phosphorus can negatively impact surrounding water bodies through surface runoff and leaching (Spargo et al. 2013). Most soil P is bound to minerals such as iron and aluminum, and, as with Ca, phosphorus release is also linked with soil pH. Across the site, phosphorus levels ranged from 11.3 ppm to 67.6 ppm, falling around the optimum levels of phosphorus (30-50 ppm; Graph 3). Phosphorus levels were not significantly different between REF and Prime Agricultural sites ($p > 0.05$).

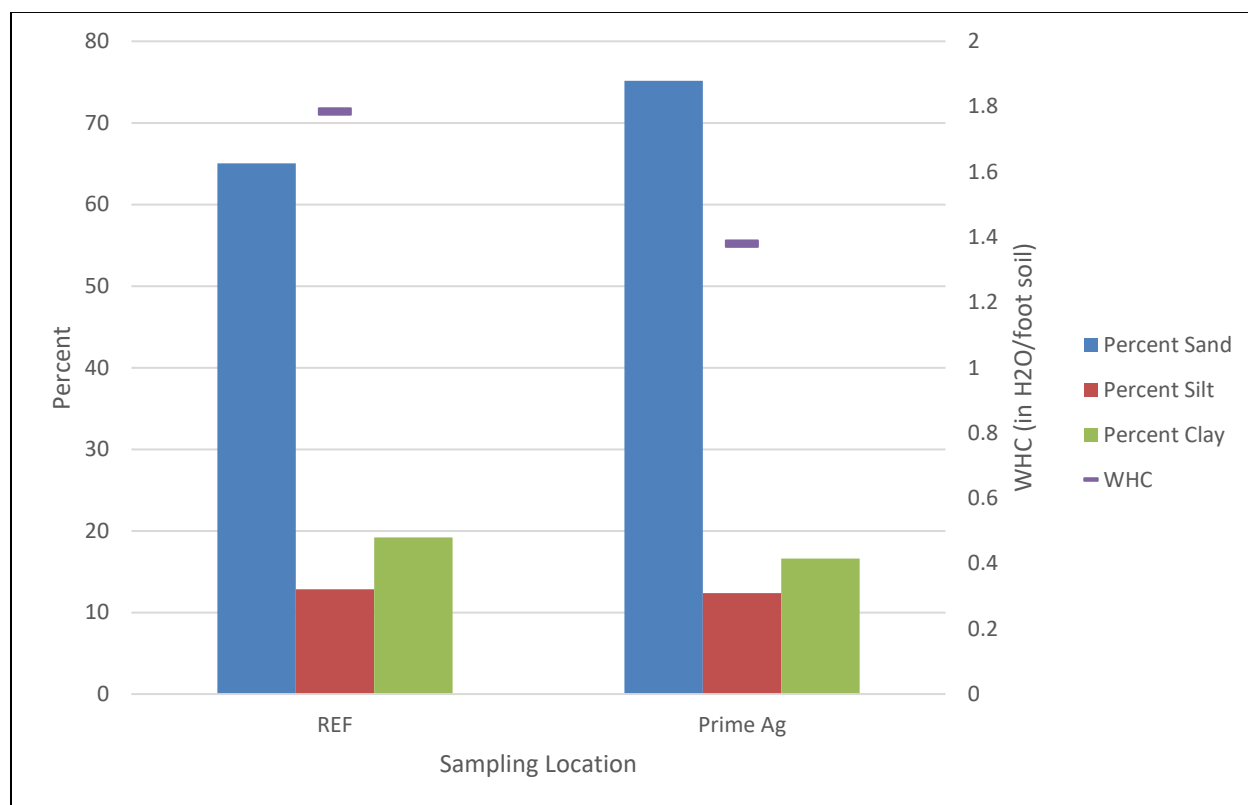


GRAPH 3. SOIL ANALYTES

The Reference (REF) sampling sites had significantly higher pH and concentrations of calcium (Ca) and sodium (Na) compared to the Prime Agricultural (Prime Ag) sites ($p < 0.05$). The two sites were not significantly different from one another regarding magnesium (Mg), potassium (K), or phosphorus (P).

3.2.3.4 Soil Physical Properties

Soil physical properties play an important role in soil health and nutrient availability. Soil water holding capacity (WHC) is the amount of water a soil can hold for a crop and is determined by soil texture and organic matter, as well as soil structure (Curell 2011). Soils with higher clay percentages typically have higher water holding capacities, while sandier soils typically have lower water holding capacity values. Higher WHC values is often linked to improved soil and plant health due to higher availability of water for plants; However, clayey soils with high water holding capacity may lack proper drainage, leading to waterlogging. Sand, silt, and clay percent did not differ significantly across the Study Area; however, water holding capacity was significantly higher at the REF sites compared to the Prime Agricultural sites ($p < 0.05$; Graph 4).



GRAPH 4. SOIL PHYSICAL PROPERTIES

Sand, silt, and clay percentages did not differ across sampling sites ($p > 0.05$). Soil WHC was significantly higher in REF sites compared to Prime Ag sites ($p < 0.05$).

3.3 Water Availability

There are no water wells in the Study Area. Groundwater is either adjudicated (Santa Maria Valley Management Area) or is located in a managed groundwater area (San Antonio Creek Valley Groundwater Basin).

The parcels are served by three separate off-site water wells, two of which may continue to serve the subject property through an existing shared water agreement. However, Solomon Hills only has partial rights to these wells along with other landowners, affording insufficient use for agricultural purposes within the project boundary. The two wells to the north of the property are

not suitable sources of water for the areas identified as Santa Barbara County Prime Agricultural Soils because the wells are in an adjudicated basin (Santa Maria Groundwater Basin, County of Santa Barbara 2024a), where groundwater may not be withdrawn beyond recent historic use. The well to the west of the property is also unsuitable as a water source for the areas with prime agricultural soils because it is in a different water basin (the San Antonio Creek Valley Groundwater Basin), and in principle, water can only be pumped out of a basin if the basin is in surplus, but the San Antonio Basin is in overdraft.

Pacific Coast Energy Company water cannot be increased substantially or materially extracted from the basin due to physical constraints of pumping beyond current capacity and other users of the well.

The majority of the Study Area is very limited in potential for installation and use of irrigation systems. On the east side of Highway 101, at the planned location of improvements to the Highway 101 interchange, approximately 12.5 acres (0.5%) of the Study Area is currently irrigated for crops. The majority of the Study Area (76.0%) is not rated for irrigated crops, and the portions of the Study Area that are rated for irrigated crops are expected to produce lower estimated average yields per acre from selected crops under a high level of management (USDA 2025). The vast majority of the Study Area (94.3%) is not rated for non-irrigated crops (USDA 2025). Without irrigation, the land area is not suitable to grow alfalfa, oranges, strawberries, lemons, tomatoes, walnuts, wine grapes, or used for pasture (USDA 2025). Only small portions of the area are suitable for crops when irrigated (Appendix C). However, as described above, insufficient water is available to irrigate crops within the Study Area. A well-fertilized, healthy alfalfa crop may use 0.3 gallons of water per sq. ft. per week in early April, and up to 1.24 gallons of water per sq. ft. per week in the warmest part of the season (Sloan 2009). Strawberry plants require approximately 0.6 gallons of water per sq. ft. per week during establishment and 1.24 gallons of water per sq. ft. per week in production years and may be higher in hot, dry climates (Klodd et al., 2021). Meanwhile, young grapes should receive approximately 0.6 to 1.24 gallons of water per sq. ft. per week (5-10 gallons/vine/week; WARC, n.d.). Finally, a mid-sized orange tree (14-foot canopy diameter) requires about 3.7 gallons of water per day in January, and up to 29.5 gallons of water per day in July (Wright 2021). It should be noted that irrigation rates depend on local soil and climate conditions. More frequent irrigation is necessary in excessively high temperatures and for sandy or gravelly soils.

In average rainfall years livestock access water at small onsite seasonal ponds. Water needs for cattle are influenced by environmental temperature, class of livestock, and weight. Water needs increase as temperatures increase. Bulls and lactating cows have greater daily water requirements than nonlactating cows. Walz (2015) found that, when ambient temperature is 90 degrees F, a growing animal or a lactating cow needs two gallons of water per 100 pounds of body weight. The average weight of a cow is 1,200 lbs., which would require approximately 24 gallons per day. Spring-calving cows would need approximately 20 to 24 gallons of water per day for themselves and another 5 to 10 gallons for their calf in high temperature environmental conditions. A nonlactating cow or bull requires 1 gallon of water per 100 pounds of body weight, which is approximately 12 gallons per day.

Given the estimates of 96 – 175 grazing animal units (AUs) that could be supported by the foraging production in the study area per year (see Section 3.4.2 below), the grazing animals would require 3,024 – 5,513 gallons of water per day. These estimates of water need are based on each AU

consisting of a cow-calf pair, which requires 24 gal per day for each cow and 7.5 gal per day for each calf.

A score of 2 is recommended for Water Availability because developed water sources do not occur, and there is no potential to develop water sources for agricultural production because the Study Area is within a litigated groundwater area.

TABLE 6. WATER AVAILABILITY SCORE

Water Availability	Points Available	Solomon Hills Recommended Points
Land has an adequate water supply from on/off-site sources suitable for crops or grazing	12-15	n/a
Land has water, but may be marginal in quantity or quality suitable for crops or grazing	8-11	n/a
Land does not have developed water supply but an adequate supply is potentially available	3-7	n/a
Land does not have developed water and potential sources are of poor quality/quantity	0-2	2

3.4 Agricultural Suitability

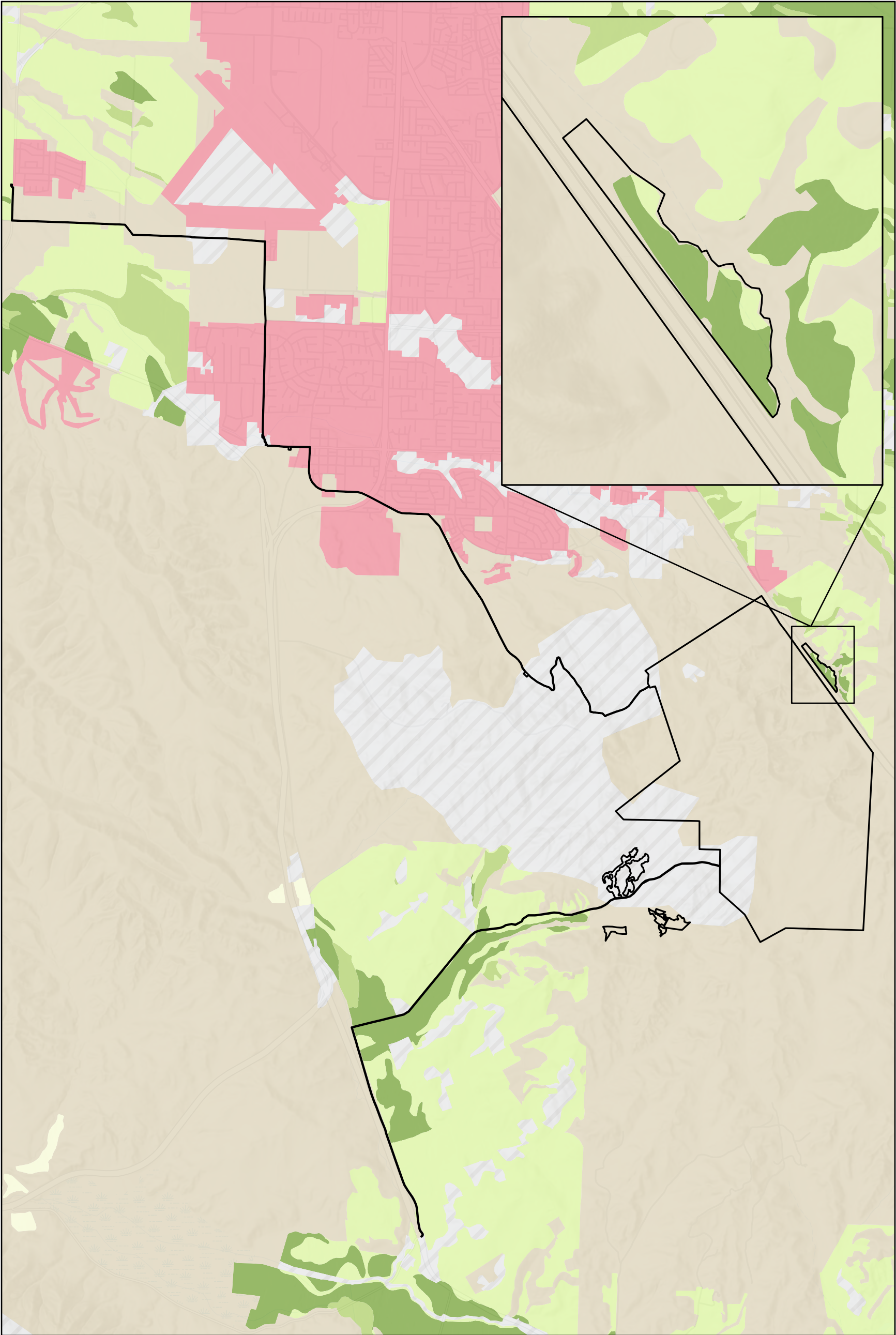
3.4.1 Important Farmland Classification

The California Department of Conservation provides Important Farmland Classification(s) based on the Farmland Mapping and Monitoring Program (FMMP) (California Department of Conservation 2022). The Study Area has been mapped as part of the FMMP, with the majority of the Study Area mapped as “Grazing Land⁵,” with two sections of “Other Land⁶” classification in the southwest and northwest corners of the Study Area (Figure 7).

⁵ Grazing Land category is defined as land that is well-suited for grazing livestock and was developed by the California Cattlemen’s Association, University of California Cooperative Extension, and other groups involved in grazing activities.

⁶ Other Land category is land not included in any of the other mapping classifications. Examples can include brush, wetland, riparian areas, or timber. These areas are not suitable for livestock grazing.

Figure 7. Important Farmland Classification



Legend

- Study Area (2,302 acres)

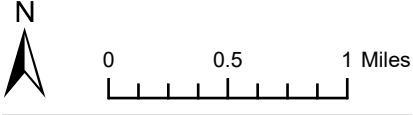
Farmland of Statewide Importance

Farmland of Local Importance
- Prime Farmland

Unique Farmland

Grazing Land
- Urban and Built-Up Land

Other Land



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Solomon Hills Development
Map Center: 34.8395°N 120.42675°W
Santa Barbara County, California
ESRI World Terrain

3.4.2 *Grazing Potential*

Grazing potential was examined on the onsite location (1,693.13 acres) and selected offsite locations: the California Tiger Salamander conservation area (505.83 acres) and oak tree planting areas (51.12 acres). Other offsite locations were not included because they are not used for grazing and cannot be readily converted to grazing land (improvements to two interchanges on Highway 101: 15.77 acres and 2.66 acres) or are existing roadways (improvements to Bicknell Road and Graciosa Road) or water conveyance routes that will occur on existing roadways and pipeline locations and therefore not lead to alteration of existing agricultural land. The onsite location is currently divided into three livestock leases. Two leases support continuous cattle grazing with approximately 100 head of cattle total in average rainfall years. The third lease supports approximately 150 head of cattle from October through July in average rainfall years. Based on these stocking numbers, the entire onsite location can support approximately 175 animal units (AUs) each year, which equates to one AU per 10.9 acres. If only FMMP Grazing Lands in the onsite area are considered (1,778.6 acres), the ratio is one AU per 10.2 acres. Cattle graze in a variety of habitats in the onsite area, but if we conservatively assume that they only use the non-native grasslands (542 acres; Wolff 2024) or non-native grasslands and coast live oak woodland with grassland understory (771 acres; Wolff 2024), the ratios would be one animal per 3.1 acres and one animal per 4.4 acres, respectively. Ratios of one animal per 3.1 – 10.9 acres exceed the threshold set by SB County of one animal unit per acre to be classified as Prime Agricultural land (or preserve).

Forage production plots collected onsite averaged 3,985 pounds per acre on soils mapped by the County as Prime Agricultural Land, and 3,314 pounds per acre on soils mapped as non-Prime Agricultural Land (Figure 8). There was no significant difference between forage production on soils mapped as Prime Agricultural soils compared with non-Prime Agricultural soils ($p>0.05$). Samples were collected from grassland habitats and excluded coastal scrub and shrubland areas that dominate on the southern portion of the Study Area as those habitats do not provide significant grazeable forage.

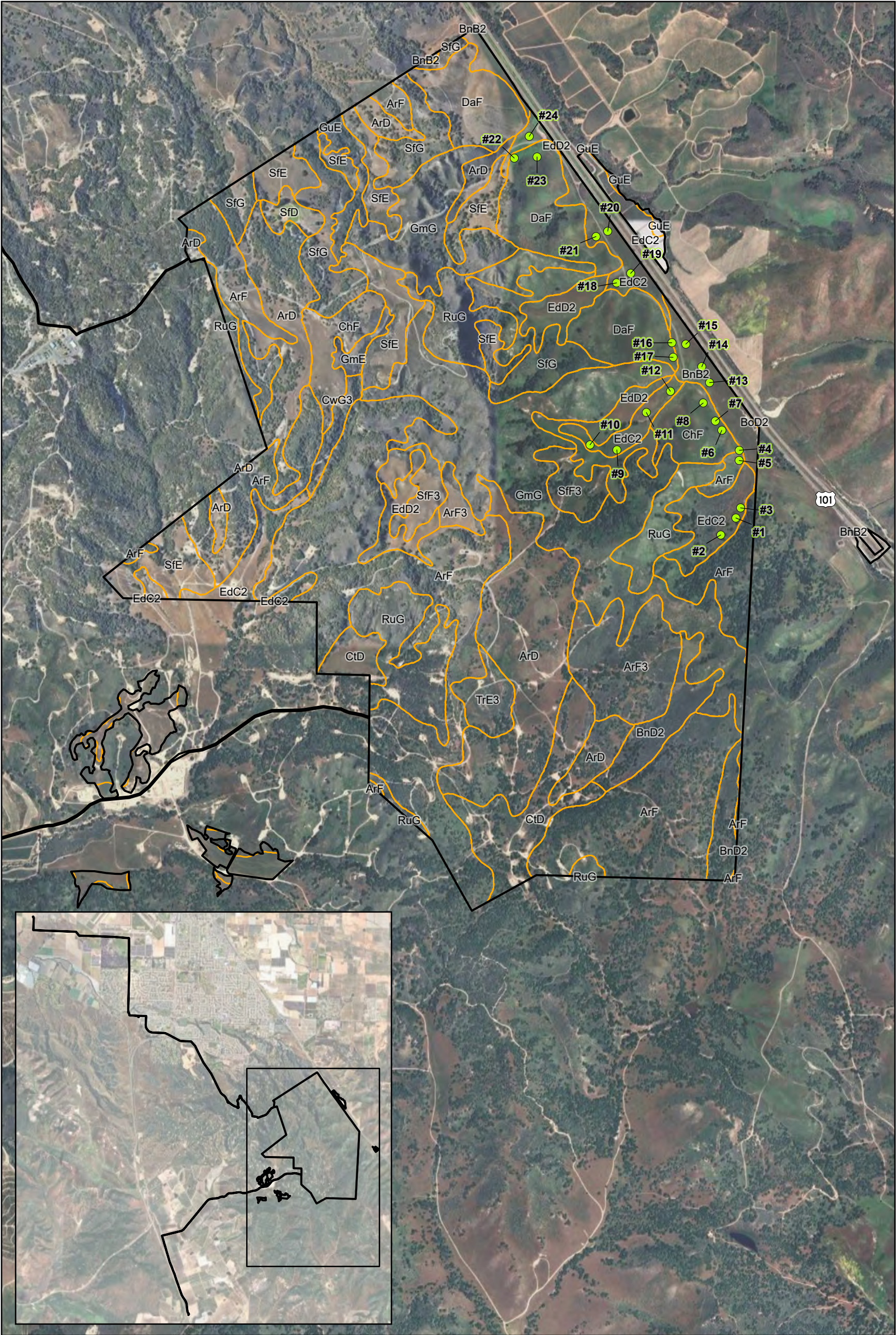
The USDA Agricultural Research Service's Rangeland Analysis Platform (RAP) Production Explorer was used to estimate the historical vegetation production across the onsite and selected offsite locations of the Study Area that were specified above (Appendix D). According to the RAP, the historic average production (2001-2022) of the Study Areas was: onsite, 2,239 pounds per acre (Graph 6 provided as a representative); California Tiger Salamander area, 2,023 pounds per acre; and oak planting areas, range of 3,152 – 3,703 pounds per acre. The RAP estimated 2023 annual vegetation production to be 1,815 pounds per acre at the onsite location (Graph 7 provided as a representative), and similar values for the California Tiger Salamander area (1,640 pounds per acre) and increased values for the oak planting areas (range of 2,761 – 3,566 pounds per acre). The spring forage production data collected by A&M staff on April 18, 2024, was 3,676 pounds per acre, greater than the 2023 RAP estimated values. The RAP analysis covered the whole Study Area, including areas of coastal scrub that have lower forage production. This is why the average production across the Study Area, calculated by RAP, is lower than A&M's values that were collected in grassland-dominant habitats. The RAP estimate of forage production for grassland-dominated habitats within the region collected by A&M was 3,270 pounds per acre for the onsite area, which was very similar to the results obtained by A&M in April 2024.

Based on the historic production values derived from the RAP in 2001-2022, the onsite and selected offsite portions of the Study Area combined could sustainably support 114 animal units

(AUs) per year (range 0 – 87 AUs per area), or one AU per 19.8 acres (Appendix E). This is above the threshold developed by SB County Cattlemen’s Association of a parcel supporting 25-30 AUs per year for agriculturally viable cattle ranching. However, this is substantially below the requirement set by SB County of one AU per acre to be classified as Prime Agricultural land (or preserve). The RAP stocking rate calculation is based on year-round grazing (365 days), with slopes of 0-15%, and an estimated 0.5 miles to water for the cattle. The site areas were set to the acreages of each of the on-site and selected off-site locations, with the animal type set to 1,000 lbs (representing cattle). It should be noted that much of the Site Area has slopes greater than 15% (Appendix C), and parameterizing the RAP with steeper slopes reduces the estimated stocking rate (e.g., slopes of 15-30% in the onsite location reduce the AUs from 96 to 67). Similarly, increasing the distance to water and decreasing the area of grazing land in the RAP stocking rate calculation reduces the number of animals that could be supported. The lowest stocking rate estimated for 2001-2022 in the onsite location was 67 AUs and the highest was 115 AUs.

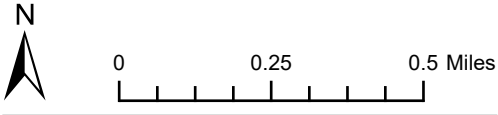
The Study Area does not meet the thresholds required for classification as Prime Agricultural Land for grazing, and it received a score of 5 points (Table 7), indicating moderately suitable grazing potential. This conclusion is based on three findings. First, the Study Area (onsite location) supports viable cattle grazing with a stocking rate of 1 AU per 10.2 to 10.9 acres, but it does not meet Prime Agricultural Land standards at 1 AU per acre. Second, forage production is sufficient for grazing in grassland areas adjacent to Highway 101. However, it is not highly suitable for grazing because most of the southern portion of the Study Area is coastal scrub, and much of the Study Area has slopes greater than 15 percent, which reduces the grazeable areas. Third, the Study Area is well above the threshold for agriculturally viable cattle ranching for SB County Cattlemen’s Association but is well below the SB County requirement of one animal unit per acre to be classified as Prime Agricultural land.

Figure 8. Forage Production



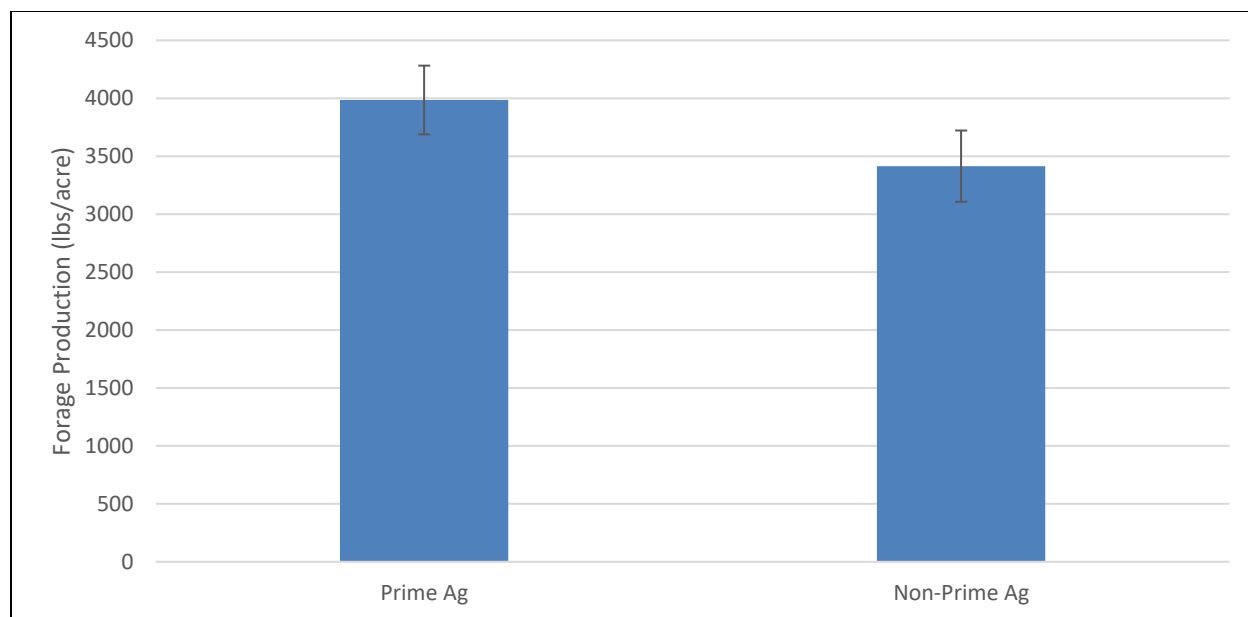
Legend

-  Study Area (2,302 acres)  USDA NRCS Soils  Forage Sample



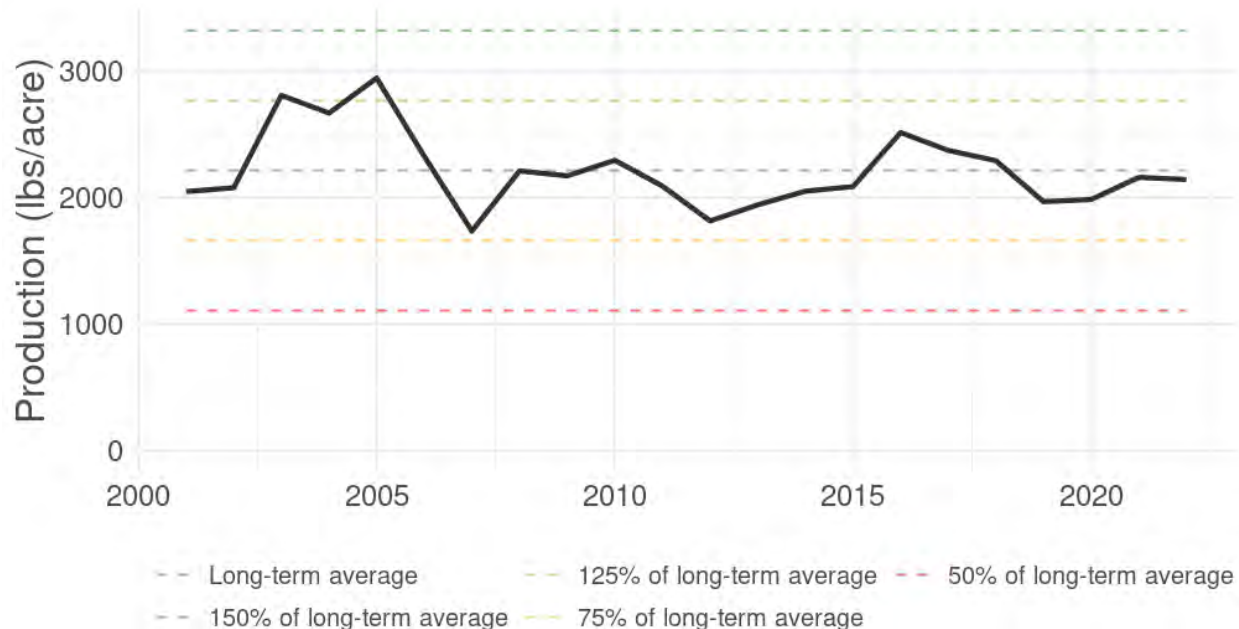
Solstra Communities
Solomon Hills Development
Map Center: 34.81935°N 120.38297°W
Santa Barbara County, California

Imagery Source: Google Satellite, 5/30/2025



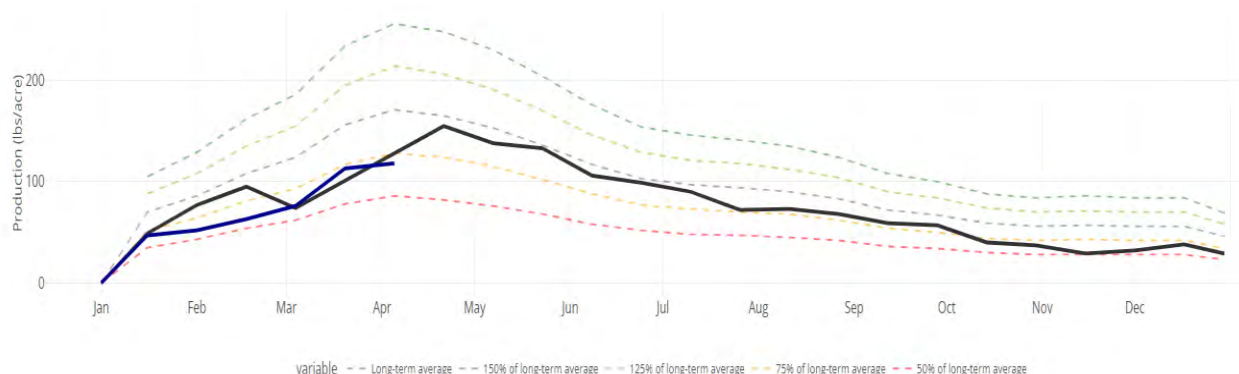
Graph 5. Forage Production Spring 2024

Forage production collected within the onsite portion of the Study Area during spring 2024. Forage production on soils mapped by Santa Barbara County as Prime Agricultural was not significantly different from soils mapped as non-Prime Agricultural land. Error bars are one standard error of the mean (SEM).



Graph 6. Annual Vegetation Production 2001-2022

Annual vegetation production of the onsite portion of the Study Area obtained from the Rangeland Analysis Platform in pounds per acre, shown with the long-term average (2001-2022) and above- and below-average values.



Graph 7. Rangeland Analysis Platform 16-Day Production Plot 2023

Comparison of the 16-day estimates of forage production for 2023 to the long-term average (2001-2022), 150, 125, 75 and 50 percent of the long-term average for the onsite portion of the Study Area. Each datapoint represents estimated production for the previous 16-day period. The blue line represents the forage production estimates through April 2024.

TABLE 7. AGRICULTURAL SUITABILITY SCORE – GRAZING

Score based on the grazing potential of the Study Area. Most of the southern portion of the Study Area is coastal scrub with low value for livestock grazing. Grassland areas adjacent to Hwy 101 are suitable for grazing. Average carrying capacity is 114 animal units per year in an average rainfall year, or 19.8 acres per animal unit per year.

Agricultural Suitability – Grazing	Points Available	Solomon Hills Recommended Points
Highly suitable for pasture or range	6-10	n/a
Moderately suitable for pasture or range	3-5	5
Low suitability for pasture or range	1-2	n/a
Unsuitable for pasture or range	0	n/a

3.4.3 Crop Production Potential

Crops are not currently grown on the Study Area, except for approximately 12.5 acres (0.5% of the Study Area) east of Highway 101. With land capability classifications of II (irrigated) and III (nonirrigated), as well as a Storie Index Rating of Grade 3 (fair), we can determine that, if properly managed through irrigation and flood protection, the Prime Agricultural soils are suitable for certain crops. The slightly higher C:N values, slightly lower than ideal percent OM, slightly acidic pH values, and slightly sandier textures may limit the Prime Agricultural soils from moving up into the “Highly Suitable” point range. However, per Section 3.3, sufficient irrigation for crops is not available for this location. Dry farming relies on the soil’s ability to retain moisture between rain events. Without sufficient high-quality soils—which are typically rich in organic matter, deep, and have strong water-holding capacity—moisture can quickly evaporate or drain, thereby precluding successful dry farming. Accordingly, the Study Area has low suitability for irrigated crops, orchard ornaments, and dry farming, with a recommended Crop Agricultural Suitability

rating of 1 due to the limited extent of Prime Agricultural soils and the unavailability of sufficient irrigation.

TABLE 8. AGRICULTURAL SUITABILITY SCORE – CROPS

Agricultural Suitability – Crops	Points Available	Solomon Hills Recommended Points
Highly suitable for irrigated grain, truck, and field, orchard, or vineyard crops	8-10	n/a
Highly suitable for irrigated ornamentals, pasture, alfalfa, or dry farming	6-8	n/a
Moderately suitable for irrigated crops, orchards, ornamentals, or dry farming	4-5	n/a
Low suitability for irrigated crops, orchards, ornamentals, or dry farming	1-3	1
Unsuitable for crop production because of soil capabilities, environmental constraints, etc.	0	n/a

3.5 Existing and Historic Land Use

The Study Area has historically been used for oil production and livestock grazing. Oil was discovered within the Study Area in 1908 and has slowly been developed into the Cat Canyon Oil Field over the last century. There are currently 32 active oil wells and 31 inactive oil wells within the Study Area. Cattle grazing has been a compatible land use throughout the life of the oil field. Approximately 175 animal units are grazed within the Study Area each year.

TABLE 9. EXISTING AND HISTORIC LAND USE SCORE

Agricultural Suitability – Grazing	Points Available	Solomon Hills Recommended Points
In active agricultural production	5	n/a
In maintained range/pasture	5	5
Unmaintained, but productive within last ten years	3-5	n/a
Vacant land: fallow or never planted, with range of suitability for agricultural potential	1-3	n/a
Substantial urban or agricultural industrial development onsite	0	n/a

3.6 Comprehensive Plan Designation

The Study Area includes portions of Assessor Parcel Numbers (APNs) 101-020-041, 043, 085, 086, and 087. All APNs have the land use designation AC for agricultural commercial (Figure 9). The land use class is identified as open land uses and the land use type is agricultural (ESRI 2024). All APNs are zoned for agriculture, with a zoning description of Agriculture II, and the zoning class being open land uses (ESRI 2024). Agriculture I is used to designate areas with high return,

specialty crops. Minimum parcel sizes under the Agriculture I designation range from five to forty acres, and permitted uses include food and fiber crops, orchards, and greenhouse operations. This Study Area is not a high-return, specialty crop area. There are no crops or orchards. Therefore, it is not assigned 4 points. AG-II zone is applied to areas that are appropriate for agricultural land uses on prime and non-prime agricultural lands located within the Rural Area, as shown on the Santa Barbara County Comprehensive Plan land use maps (Santa Barbara County 2024). The Study Area thus qualifies as “A – II” with an associated point score of 5.

TABLE 10. COMPREHENSIVE PLAN DESIGNATION SCORE

Comprehensive Plan Designation	Points Available	Solomon Hills Recommended Points
A – II	5	5
A – I	4	n/a
MA	3-4	n/a
Existing public/private open space or recreation	3-4	n/a
Proposed public/private open space or recreation	3-4	n/a
Open lands	3-4	n/a
Rural residential 40-100 acres	3-4	n/a
Residential Ranchette 5-20 acres	2	n/a
Residential less than 5 acres	0	n/a
Commercial, industrial, community facility	0	n/a

3.7 Existing Adjacent Land Uses

The adjacent parcels are designated similarly to the parcels within the Study Area. Land use types are all agricultural, with land use designations of AG-II-100 or AC.

TABLE 11. ADJACENT LAND USE SCORE

Adjacent Land Uses	Points Available	Solomon Hills Recommended Points
Surrounded by agricultural operations or open space in a region with adequate agricultural support uses	9-10	10
Partially surrounded by agriculture/open space with some urban uses adjacent, in a region with adequate agricultural support uses	7-8	n/a
Partially surrounded by agriculture/open space with some urban uses adjacent, in a region without adequate agricultural support uses	7-8	n/a
Proposed public/private open space or recreation	3-6	n/a
Immediately surrounded by urban uses, no buffers	0-2	n/a

3.8 Agricultural Preserve Potential

The Study Area qualifies for the Agricultural Preserve (Williamson Act) Program in Santa Barbara County. Parcels within the Study Area are greater than 100 acres, zoned as Agriculture with a Comprehensive Plan Designation of Agriculture/Commercial (AC). The property was formerly under a non-Prime contract, and it does not qualify for a Prime Agricultural preserve because the soils across the Study Area are not entirely within Class 1 or Class 2, soils do not meet the Storie Index rating of 80-100, it does not produce a crop value of \$200 per acre or more, and it cannot support one animal unit per year (SB County 2021).

TABLE 12. AGRICULTURAL PRESERVE POTENTIAL SCORE

Agricultural Preserve Potential	Points Available	Solomon Hills Recommended Points
Can qualify for prime agricultural preserve by itself, or is in a preserve	5-7	n/a
Can qualify for non-prime agricultural preserve by itself	2-4	4
Can qualify for prime agricultural preserve with adjacent parcels	3-4	n/a
Can qualify for non-prime agricultural preserve with adjacent parcels	1-3	n/a
Cannot qualify	0	n/a

3.9 Combined Farming Operations

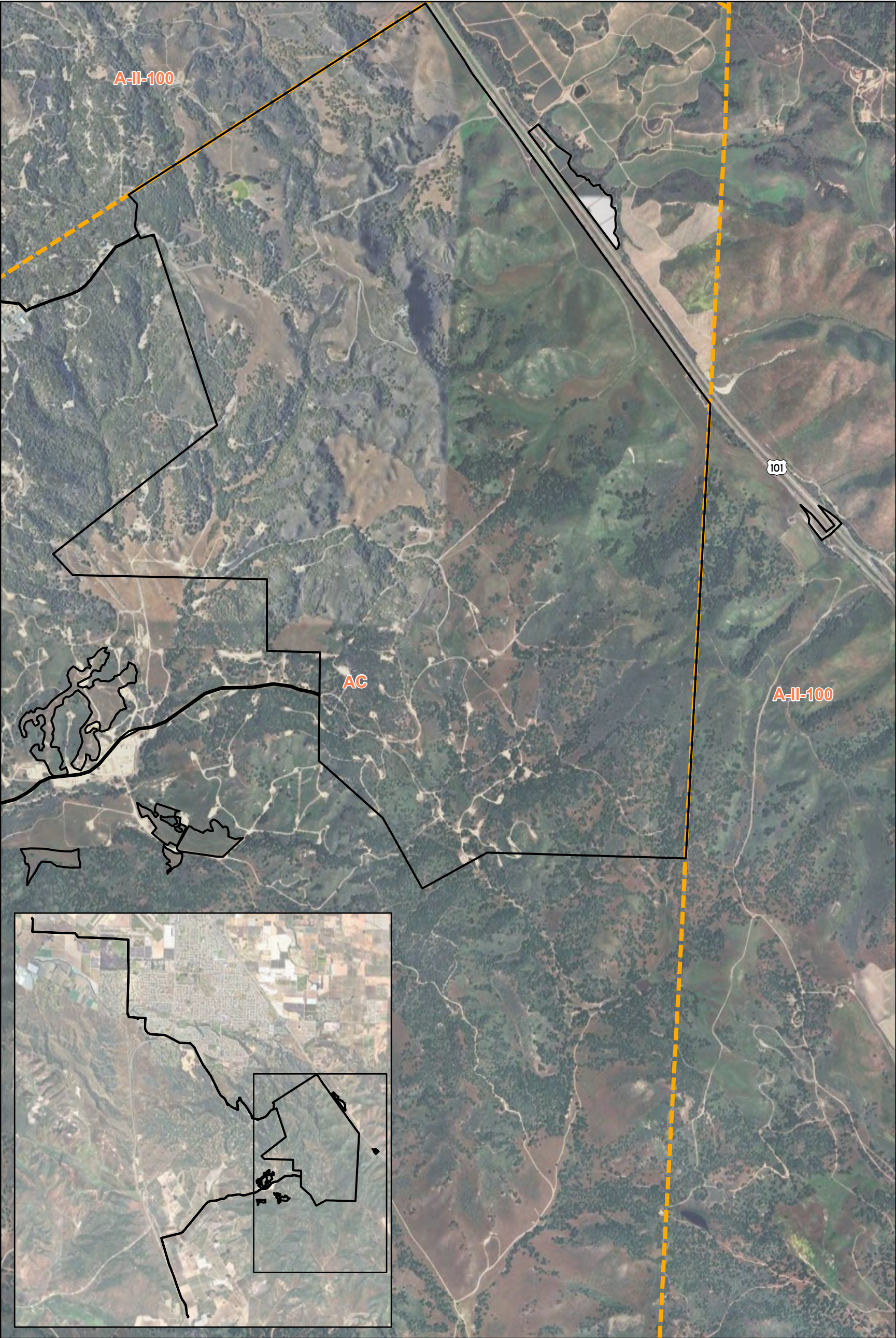
The Study Area is not part of a combined farming operation. A combined farming operation involves a single business managing multiple types of agricultural activities, such as crop cultivation and livestock production, or operating multiple parcels as a single agricultural operation. Portions of the Study Area have historically been utilized for cattle grazing and oil and gas production. Today, the property includes grazing leases and one bee lease within one parcel west of Highway 101, and cropping activity in a separate parcel east of the highway, with no evidence of integrated operations between the two parcels. No indication of other crop cultivation, horticulture, orchards, or any additional agricultural production was observed during the site visits on February 29 and March 5, 2024, or April 29, 2025, or in review of aerial images. Additionally, oil and gas extraction, while a recognized land use, are classified as a mineral resource extraction activity, not an agricultural use.

TABLE 13. COMBINED FARMING OPERATIONS SCORE

Bonus Points for Combined Farming Operations	Points Available	Solomon Hills Recommended Points
Provides a significant component of a combined farming operation	5	n/a
Provides an important component of a combined farming operation	3	n/a

Bonus Points for Combined Farming Operations	Points Available	Solomon Hills Recommended Points
Provides a small component of a combined farming operation	1	n/a
No combined operation	0	0
Cannot qualify	0	n/a

Figure 9. Comprehensive Plan Designation



Legend

-  Study Area (2,302 acres)
-  Santa Barbara County Land Use Type Border
- AC: Agricultural Commercial/Minimum parcel size- 40 acres
- A-II-100: Agriculture II/Minimum parcel size- 100 acres



Solstra Communities
Solomon Hills Development
Map Center: 34.81828°N 120.38017°W
Santa Barbara County, California

Imagery Source: Google Satellite, 5/30/2025

4 CONCLUSIONS

The Study Area had sections of Prime Agricultural soils, as designated by the County of Santa Barbara, adjacent to Highway 101. Field and laboratory assessments of the soils designated as Prime Agricultural indicate that they qualify for Prime Agricultural Land only if irrigated. Water wells are not present on the property. There is no potential to develop adequate water sources for agricultural production because the Study Area is within a litigated groundwater area and may not be withdrawn beyond recent historic use. The two wells to the north of the property are not suitable sources of water for the areas identified as Santa Barbara County Prime Agricultural Soils because the wells are in an adjudicated basin (Santa Maria Groundwater Basin). The well to the west of the property is also unsuitable as a water source for the areas with prime agricultural soils because it is in a different water basin (the San Antonio Creek Valley Groundwater Basin), and in principle, water can only be pumped out of a basin if the basin is in surplus, but the San Antonio Basin is in overdraft. Thus, irrigation is not an option on these soils, and they do not qualify as Prime Agricultural soils if not irrigated. Additionally, the soils do not qualify as Prime Agricultural Land based on their Storie Index rating, which was 51-60, well below the required 80-100 rating for Prime Agricultural Land. Soil chemical and physical properties related to crop production were not significantly different from non-Prime Agriculture soils.

The Study Area currently supports livestock grazing at 175 animal units per year. Based on historic production modeled by the RAP, the Study Area could sustainably support 96 animal units per year in an average rainfall year. This meets the Santa Barbara County Cattlemen's Association threshold of 25-30 animal units per year for viable cattle production. However, it does not meet the requirement defined by Santa Barbara County for Prime Agricultural Land for grazing, which supports one animal unit per acre per year. The Study Area can support one animal unit per 19.8 acres per year when considering all three APNs as one preserve.

Based on field and desktop analysis, the Study Area does not qualify for Prime Agricultural Land as defined by the County of Santa Barbara. The Study Area has a recommended point value of 45 based on the County's weighted system (Table 14). This is below the required weighted value of 60 to be considered a significant impact on agriculture by the County (Santa Barbara County 2021).

TABLE 14. SUMMARY OF RECOMMENDED POINTS BY CATEGORY

Category	Recommended Points
Parcel Size	15
Soil Classification (non-irrigated) ¹	8
Water Availability	2
Agricultural Suitability – Grazing	5
Agricultural Suitability – Crops	1
Existing and Historic Land Use	5
Comprehensive Plan Designation	5
Agricultural Preserve Potential	4
Combined Farming Operations	0
Total (non-irrigated)	45

¹Soil Classification score based on 13 percent of the Study Area where prime soils have the potential to occur. The remaining 87 percent of the Study Area would be scored between 1 and 6.

5 AUTHORSHIP AND QUALIFICATIONS

Althouse and Meade, Inc. Certified Rangeland Manager Katie Brown was the lead author of the first draft of this report (submitted May 2024), with support and later collaborative leadership from Range Ecologist and Soil Scientist Grace Damaschino, Range Ecologist Edith Velasquez-Randise, and Principal Scientist LynneDee Althouse. Geographic Information Specialist Corbin Matley provided spatial analysis and soil data.

Katie Brown, M.S. – Certified Rangeland Manager, Althouse and Meade, Inc.

Katie is a Certified Rangeland Manager, plant and animal scientist with experience in livestock and land management. She earned her Bachelor of Science degree in Animal Science with a minor in Rangeland Resource Management from California Polytechnic State University, San Luis Obispo. While earning her Master of Science degree in Animal and Range Sciences from Montana State University, Bozeman, she completed research on cattle grazing behavior and invasive weed management. Katie has experience with developing restoration, grazing, and pasture management plans, ruminant nutrition, invasive weed management, soil carbon sequestration, permit applications, GIS, environmental compliance, project management, data management, and technical writing. She has worked on American beaver habitat studies, livestock digestibility and nutrient absorption studies, managed and documented livestock grazing on solar farms, collected field data to map vegetation and plant communities, and has been a part of an international research trip on land and water management in China. Additional experience includes construction and wildlife monitoring for species such as the San Joaquin kit fox, American badger, California spadefoot toad, and burrowing owl in the Carrizo Plain area.

LynneDee Althouse, M.S. – Principal Scientist, Althouse and Meade, Inc.

LynneDee Althouse is a consulting biologist, restoration ecologist, botanist, soil scientist, and Clean Water Act specialist with extensive experience, having conducted hundreds of surveys and restoration projects in Santa Barbara, San Luis Obispo, Kern, Monterey, San Joaquin, Kings, and Ventura Counties since 1987.

LynneDee is an expert botanist, oak specialist, and a range and soil scientist with a strong background in watershed ecology. She worked as a range technician for the BLM on thousands of acres in Wyoming and Colorado's sheep and beef contract lands. She completed her Master's thesis in 1987, studying oak regeneration in San Luis Obispo County, and has facilitated oak restoration planting in Santa Barbara and San Luis Obispo County. She has extensive experience regarding the flora of central and coastal California, including the Carrizo Plain. She has been a lecturer in conservation planning at U.C. Santa Barbara and has taught natural history and soil science at California Polytechnic State University, San Luis Obispo. She has trained many students and employees to become environmental professionals, including conservation planners and restoration ecologists.

LynneDee is an expert on permit compliance and habitat conservation, and management. She regularly works with the California Department of Fish and Wildlife (CDFW), Regional Water Quality Control Board (RWQCB), State Parks, U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and the U.S. Army Corps of Engineers (USACE) regarding permitting issues and frequently works with the California Coastal Commission (CCC) and County and City governments.

Grace Damaschino, M.S. – Environmental Scientist II, Althouse and Meade, Inc.

Grace graduated from California Polytechnic State University in San Luis Obispo, California, in 2024 with a Master's degree in Environmental Science and Management. Her work focused on restoring rangeland soil health. She has experience conducting rangeland surveys and assisting in developing land management plans.

Edith Velasquez-Randise, B.S. – Range Ecologist III, Althouse and Meade, Inc.

Edith graduated from California Polytechnic State University in San Luis Obispo, California in 2017 with a bachelor's degree in Animal Science and minored in Rangeland Resources. She has a strong background in livestock and grazing management. Mrs. Velasquez-Randise manages projects that involve plant and animal relationships, habitat assessments, and rangeland health surveys. Edith has experience in developing land management plans such as sustainable grazing management plans, vegetation management plans, and solar and wind restoration plans.

Corbin Matley, B.A. – GIS Analyst, Althouse and Meade, Inc.

Corbin earned his Bachelor's degree in Environmental Studies and Planning, as well as a minor in biology from Sonoma State University. His responsibilities in the GIS Department include refining, upgrading and managing GIS data for ongoing projects, as well as producing maps, creating databases and collaborating with biologists and project managers to produce exhibits for biological reports, wetland delineations and conservation plans.

Raymond M. Danner, PhD – Associate Principal, Althouse and Meade, Inc.

Raymond earned his PhD in Biological Sciences at Virginia Tech. He has expertise in diverse environmental assessments, including projects in Santa Barbara County and the surrounding region.

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7 APPENDICES

- **Appendix A. Lithic Soil Sample Results**
- **Appendix B. A&L Labs Soils Sample Results**
- **Appendix C. Web Soil Survey Report**
- **Appendix D. Rangeland Analysis Platform Results**
- **Appendix E. Stocking Rate Calculations**

APPENDIX A. LITHIC SOIL SAMPLE RESULTS

COASTAL VINEYARD CARE ASSOCIATES
224 E Hwy 246 Suite A
Buelton, CA 93427

December 8, 2021

Attn: Vic Guerrero
vic@coastvineyardcare.com



SOIL ANALYSIS FOR VINEYARD

El Camino Real
Orcutt, CA
(Project # 21-007)

Project Overview

Number of backhoe pits: 7

Evaluated on: December 2, 2021

**Samples Collected for Chemical
Analysis: 21**

**Samples Collected for
Nematode Screening: 4****

The Lab Data Sheets, digital photographs and Soil Profile Logs are included as part of this report.

Soil Pit locations in longitude and latitude are listed on the Soil Profile Logs and plotted on the attached photographic map.

The objective of this assessment is to determine and recommend amendments and soil management activities for the development of vineyards.

This report does not include analysis of water requirements, water quality, appropriative rights or evaluations of current delivery or storage systems.

Project Summary

Based on the chemical and physical attributes of the sites, this location is suitable for a vineyard replant with the addition of the following amendments:

Physical Summary

(Please see attached Soil Profile Log for an in-depth description of each site.)

These sites were generally representative of the mapped **Elder sandy loam** series given sandy textures, indications of good drainage and depth to weathered sandstone.

Site 3 was generally representative of the Betteravia loam sandy, given the depth and loamy sand texture.

Influences of the upslope Diablo series were seen at **Sites 1, 2, 4 & 5** given increased clay contents and prismatic structures in upper horizons. The illuviation (transport by water) of clays were likely deposited over time due to erosion.

NE and N facing aspects were prevalent among most sites which indicates generally cooler microclimates and may result in later bud-break and maturation.

Site 6, representative of the Gaviota series, showed the shallowest depth of soil to weathered sandstone parent material (~24") and may require more frequent watering.

A physical assessment of the soils revealed favorable blocky and single grained soil structures and no physical obstructions above 3 feet (hardpans etc).

Generally, favorable soil textures (sandy loam and sandy clay loams) and structures were present throughout all sites and moderate to rapid drainage is indicated.

Chemical Summary

Based on the chemical analysis these soils are considered moderately (5.6-6.0) acidic to near neutral (6.6-7.3) in the top and sub soils at most sites. Generally, nutrient uptake issues are not expected.

Site 6 contains Extremely (4.5 -5.0) and strongly (5.1-5.5) acidic sub soils and uptake of macro and micronutrients may be inhibited. No Al or Ni toxicities are evident. Calcitic lime is recommended to elevate the soil pH.

Nitrate nitrogen (NO₃-N) levels are low to moderate in the topsoil and are generally low in the subsoil for optimal vine production. The incorporation of compost is recommended to increase these levels.

P-K levels are considered sufficient **with the exception of Site 5** which contains excessively high K levels. These high levels are presumably a result of accumulations of cow manure as it is located by a watering station and popular cattle “hangout”. K limiting rootstocks should be selected (like 3309C).

Micronutrients like B, Zn and Mn are considered low and foliar applications may be required before bloom and veraison for optimal set and growing conditions.

Ca:Mg ratios are sufficient in the top and sub soils **with the exception of subsoils at Site 6** which are low due to elevated Mg levels. Calcitic lime is recommended to increase the Ca levels.

K:Mg ratios are moderate at most sites with **slightly elevated ratios** in the topsoil at **Site 3** and **excessively elevated** ratios at **Site 5**. The addition of gypsum will aid in lowering this ratio by lowering the replacing K⁺ on the available CEC sites (see report for further details).

Sites 4 & 6 contain subsoil SAR levels that are close to the upper threshold or elevated. The levels occur below 3.5’ and are not thought to cause immediate toxicity issues. The use of a low Na⁺ irrigation source is recommended (see report for further details).

Biological Summary

No nematodes issues are expected given populations found.

The following pre-plant soil amendments are suggested:

<u>Site ID</u>	<u>Material</u>	<u>Rate (tons per acre)</u>
Sites 1-5,7	Compost	10
Site 6	Calcitic Lime	1.5
	Gypsum	1
	Compost	10

These soils amendments should be thoroughly ripped 28-36” into the soil profile with a winged tine. The final tillage pass should be run parallel to planted rows.

Dolomitic lime contains 11% Mg and 21% Ca. Calcitic lime contains 0.2% Mg and 40% Ca.

Gypsum (CaSO_4) contains approximately 23% Ca and 19% S.

Vermicompost (1-2 cup/vine) is also recommended to be applied into the planting holes.

No pre-plant fertilizers are suggested. A mixed NPK fertilizer can be used to supplement young vines during establishment (years 1 and 2). This can be rotated with the use of compost teas or commercial organic microbial activators injected through the vineyard drip irrigation system. After year 2, annual tissue analysis coupled with visual observations can be used to develop specific fertilizer strategies. The soil analysis implies that annual pre-bloom foliar inputs of zinc may be beneficial.

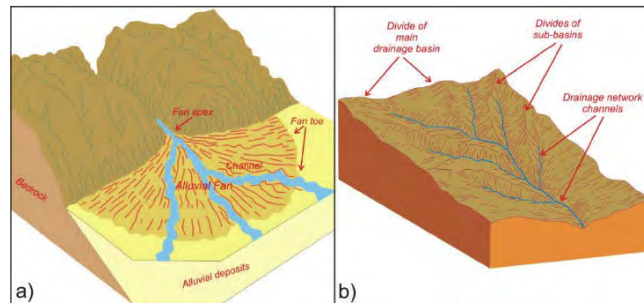
Rootstock choices are typically balanced with soil characteristics, wine grape variety, trellis design, vine density, soil pest/disease pressures and water availability. Assuming a 6-7' row with 4-5' between vines, and available water, rootstock choices would include (in order of decreasing vigor): **110R, 3309C, & Schwartzmann**

The following information provides an in-depth review and discussion of the physical and chemical attributes of the analyzed soil pits:

Site Location, Landform Types, & Aspect

The soil pits were dug on an approximately 15-acre site, generally used as pasture. Sites were primarily located on alluvial fans (see graphic).

- Sites 1,2,3,4,6, &7 were located on slopes boarding alluvial fan drainages (fan apexes) with Sites 5 located on an alluvial fan basin (plain).



Aspect – refers to the direction that a slope faces. Aspect affects the angle that the sunlight hits the vineyard and this its total heat balance.

North facing- early ripening varieties are planted on N facing aspects due to maintained cooler temperatures. In frost prone areas, vines in N facing aspects usually avoid frost damage, though they may be subject to harsher winter conditions.

South facing- warmer earlier in the spring and vines may undergo early budbreak, which is desirable in locations that do not have frost danger. In frost-prone areas, this may put vines at risk for early frost damage. This aspect can lead to more extensive vine warming on sunny, winter days, potentially reducing resistance to cold injury.

East facing- receive the first of the morning radiation, warming the canopy and soil temperatures fastest in lower temperature climates. These are less exposed during the hottest part of the day, though are more prone to increased mildew pressure. Vines on east facing aspects often benefit in retaining volatile aromatic compounds in their fruit since the slopes tend to be more sheltered from afternoon sun.

- Sites 1,2 & 7 - **NE-facing** aspect
- Sites 4 & 5 - **N-facing** aspect
- Sites 3,6 - **SE-facing** aspect

Soil Series, Texture, Color, Structure, Rock Fragments and Redox Features

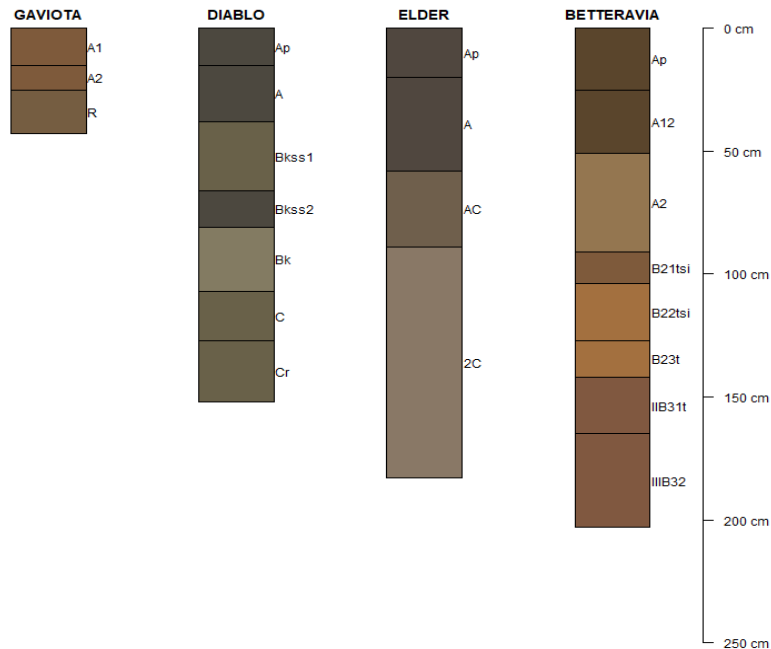
Soil type – The Napa County Soil Survey describes the characteristics and distribution of soils throughout the county. While soil map units are named after a soil series, they may contain several soil types. Soil series designations are over-laid on the attached map.

- As shown, the locations of the sites are mapped as Diablo silty clay, Elder sandy loam, Gaviota sandy loam, and Betteravia loamy sand.

The following soil series descriptions are provided by the USDA National Cooperative Soil Survey:

- The Diablo series typically consists of deep, poorly drained soils that formed from residuum weathered from shale, sandstone, and consolidated sediments.
- The Elder series typically consist of deep and very deep, well drained soils that formed in alluvial material derived from missed rock sources. These are commonly found on alluvial fans.
- The Gaviota series typically consists of very shallow and shallow, well drained soils that formed in material weathered from hard sandstone or meta-sandstone. These are commonly found on hillslopes.
- The Betteravia series typically consists of very deep, moderately well drained soils, formed in sandy eolian deposits that overlie stratified terrace deposits of finer texture.

Typical depths, soil horizons, and colors of these soil series can be seen below:



Soil Texture – the relative proportion of sand, silt and clay – was estimated using the hand-feel method at the site and the saturation percentage (Sat %) laboratory method.

- Saturation percentage is an indirect measurement of soil texture and general Sat % constraints are typically:

Texture (approx.)	Sat %
Very Sandy	< 20
Sandy loam - loam	20 - 35*
Silt loam-clay loam -clay	35 - 50

*Organic matter content and fine sands can slightly increase Sat % by increasing water holding capacity (Miller, CSU)

- Soil textures in the **topsoil** included:
 - **Sandy loam (SL)**
 - **Sandy clay loam (SCL)**
 - **Gravelly loamy sand (GLS)**
- Soil textures in the **subsoil** were more diverse & included:
 - **Fine Sand (FS)**
 - **Gravelly loamy sand (GLS)**
 - **Sandy loam (SL)**
 - **Loam (L)**
 - **Sandy clay loam (SCL), fine sandy clay loam (FSCL) & Gravelly SCL**
 - **Gravelly clay loam**

Soil Color – the color was determined examining a wetted soil ped using the standardized Munsell Soil Color Chart system.

The Munsell color system was created using three measurable variables of:

- o Hue: dominant spectral color (related to wavelengths of light)
- o Value: degree of darkness of lightness of the color (light reflected)
- o Chroma: measure of purity (strength) of color

Soil color is influenced by three major factors:

- 1) Organic matter content
- 2) Water content
- 3) Presence and oxidation states of iron and manganese oxides
- 4)

The attached soil profile log provides both the visual representation of the color, matching the Munsell color chart as well as the English designation of the color.

Redoximorphic Features (redox) - areas of soils that show concentrations or depletions of color that help identify zones of saturation in a soil profile, even when that soil is dry. Redox features are formed under water saturated conditions by microorganisms who have run out of oxygen to break down organic matter. Microbes have to find an alternate source (electron acceptor) to continue breaking down the organic matter. Alternate acceptors like, Iron (Fe^{3+}), are usually abundant in the soil and can act as a replacement for oxygen, ultimately resulting in a permanent change (indicated by color) of the replacement mineral ($\text{Fe}^{3+} \rightarrow \text{Fe}^{2+}$).

Microbial preferences for electron acceptors usually follow this pattern:



- Moderate to strong redox features were only observed in the subsoil at **Site 6** and were the result of topsoil interaction of the shallow topsoil (W/ organic matter) overlying and aiding in the weathering of sandstone parent material.
- No perched water table or drainage issues are expected

Non-Soil (Rock) Fragments: Moderate (20-40%) amounts of rock fragments are considered favorable for grapevines, because roots are able to exploit the soil/gravel interface to extend deeper into the soil profile. Any mineral fragments to 3" in diameter are considered gravel, 3-10" diameter cobbles and >10" stones.

A rock fragment modifier prefaces the soil texture name if particles larger than 1/8" compose >15% of the volume of the soil material. (Loam → gravelly loam). The estimated rock content of each horizon (if >5%) is listed as "NS = ___%" in the designated horizon.

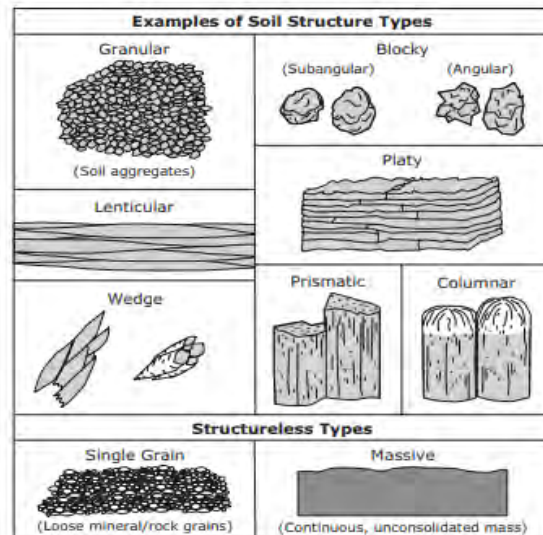
Shapes of gravels (or other "non-soil" particulates) aid in indicating their means of deposition. Generally, presence of rounded gravels indicates that they were deposited due to alluviation (water transported), whereas angular gravels indicate deposition by colluvium (gravity based).

- Site 2, 3, and 7 contained appreciable percentages of mixed, rounded and angular gravels throughout the profile.

Soil Physical Structure

Soil Structure reflects the aggregation of individual soil particles into larger units with planes of weakness between them. Individual aggregates are known as "peds". The structure is observed by carefully probing the soil wall with a knife and prying out volumes of soil while observing how the material crumbles into peds. The structure is classified by three factors:

- o **Grade:** distinctness of the structure prior to probing (weak, moderate, strong)
- o **Size:** measurement of avg ped (fine, medium, coarse)
- o **Type:** shape style (see figure)



- Favorable structures of single grained, angular blocky, subangular blocky, and weakly distinct prismatic were observed at all sites.
- Unfavorable, “massive” structure was observed in the lower subsoils at Sites **1, 4, & 6** and are not thought to impede root growth or water movements.

Massive soil structure is where the soil aggregation has dispersed, and consequently the soil pores are very small. This limits water, air and root movement into the soil.

Prismatic structure occurs when soil particles, usually clay, have moved deeper into the soil profile and have started to accumulate. The peds become elongated in the vertical axis (longer than they are wide). As this accumulation of clay progresses, it can restrict water, air and root movement within the horizon. As definition of prismatic structure becomes more distinct, this indicates the increased consolidation of soil aggregates and water and root penetrations into the soil prism becomes difficult.

Horizon Compaction/ Rupture Resistance (soil horizon hardness/ ped strength) Horizon compaction is the hardness or tightness of the soil in each horizon, which affects how easily it is penetrated by roots and water. Resistance is an evaluation of the strength of soil to withstand applied stress.

- Horizon compaction was favorable in the top and mid soils at all sites with compact horizons (unfavorable) occurring in the lower subsoils at Site 1, 4, & 6.
- Soil ripping is recommended at all sites 28-36” **with the exception of Site 3** to facilitate old root removal and incorporate soil amendments, which will allow for a more uniform rooting environment for young vines.

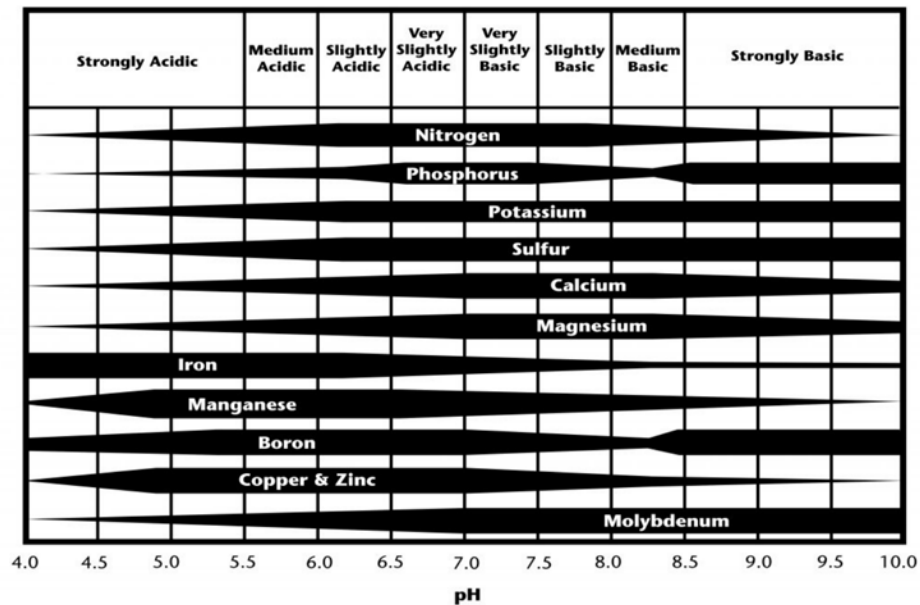
Soil Chemistry and Vine Nutrition

Soil Balance: pH is the relative measure of soil acidity, with 7.0 being neutral, below 7 acidic and above 7 alkaline. Generally, problems related to soil pH become more serious for grapes as the pH drops below 5.8 or goes above 7.8.

The soil pH scale is logarithmic; meaning there is a ten-fold difference between values (pH 4.0 is 10X more acidic than pH 5.0, 100X more acidic than pH 6.0 and 1,000X more acidic than pH 7.0).

As pH values fall below 5.8, pH induced nutrient availability problems can occur. Most affected are calcium (Ca), phosphorus (P) and magnesium (Mg).

As pH increases above 7.8, availability problems can occur with nitrogen (N), calcium (Ca), magnesium (Mg) and phosphorous (P), as well as many micronutrients including iron (Fe), copper (Cu), manganese (Mn) and zinc (Zn).



The influence of soil pH on nutrient availability of 12 different plant nutrients. The thicker the line, the more available the nutrient. The thinner the line, the less available the nutrient. (MSU Extension, 2018)

- Based on the chemical analysis these soils are considered moderately (5.6-6.0) acidic to near neutral (6.6-7.3) in the top and sub soils at most sites. Generally, nutrient uptake issues are not expected.
-
- Site 6** contains Extremely (4.5 -5.0) and strongly (5.1-5.5) acidic sub soils and uptake of macro and micronutrients may be inhibited. No Al or Ni toxicities are evident. Calcitic lime is recommended to elevate the soil pH (see summary).

Soil Salinity: measured by the Electrical Conductivity (ECe) of the soil solution is an indicator of the overall salt load in the soil.

- Soil ECe values are favorably low for toxicity considerations.
- Infiltration problems can occur at surface soil EC values <0.3 especially if low-salt irrigation water is used. These problems can be addressed by gypsum applications under the emitters or injected into the water.

The **Sodium Adsorption Ratio (SAR)** is the concentration of sodium on the cation exchange complex (CEC). As sodium begins to predominate on the exchange site, it can cause dispersion (destruction) of soil aggregates and reduce infiltration due to reduction in the average pore size. Therefore, a moderate (5-6) to high (7-10) SAR can be an indicator of limited soil drainage.

- Sites 4 & 6 contain subsoil SAR levels that are close to the upper threshold or elevated. The levels occur below 3.5' and are not thought to cause immediate toxicity issues. The use of a low Na⁺ irrigation source is recommended (movement of existing Ca²⁺ deeper into the soil will cause Na⁺ particles to leach and improve SAR levels.

Boron (B): Boron is an essential plant nutrient necessary for cell division and aids in the movement of calcium; however, the concentration range from deficient to toxic levels is rather narrow.

- Soil B levels are favorably low for toxicity considerations.

Cation Balance: Cations are positively charged ions (elements) that are attracted to the negatively charged soil surfaces. The cation exchange capacity (CEC) is the sum of these negatively charged sites per volume of soil and represents the major nutrient holding capacity of the soil. The concentrations of the cations that make up the CEC can be indexed into ratios to determine their balance relative to one another. Unbalanced relationships can indicate a propensity for deficiencies in these nutrients or flag a potential problem with trace nutrients.

Magnesium percentages above 50 % of the CEC are reflected in slowed vine growth and K deficiency symptoms. Excessive soil Mg can increase water-holding capacity, degrade soil structure, make soils prone to compaction and inhibit nitrogen utilization. A high

proportion of Mg also causes a dispersion of clay particles, leading to decreased porosity and reduced water infiltration.

It is desirable for the CEC to reflect a Ca:Mg ratio of 3:1 or higher and for the Ca percentage to be above 60%.

- Ca:Mg ratios are sufficient in the top and sub soils with the exception of subsoils at **Site 6** which are low due to elevated Mg levels. Calcitic lime is recommended to increase the Ca levels.
- K:Mg ratios are moderate at most sites with slightly elevated ratios in the topsoil at **Site 3** and excessively elevated ratios at **Site 5**. The addition of gypsum will aid in lowering this ratio by lowering the replacing K^+ on the available CEC sites.

Organic Matter (OM): Organic matter (OM %) is the fraction of the soil that consists of plant or animal tissue in various stages of decomposition. Organic matter provides many of the essential plant nutrients in a slow-release formulation. It also supplies negatively charged sites that contribute to the CEC, which in turn holds many of the plant nutrients in forms that are readily available to plants. Soil OM also plays a role in improving soil structure and water and gas transport.

- Current levels (OM %) are low in the top and subsoil samples. The addition of compost is recommended to increase the levels.
- About 1-1 ½ % of the soils OM is naturally decomposed each year and should be replaced on an annual basis through application of organic manures or composts, or cover cropping.

Nitrogen: An essential macro nutrient used by plants to form new cells. Photosynthesis can produce carbohydrates from CO_2 and H_2O , but the process cannot continue with the production of proteins, nucleic acids etc. unless nitrogen is available. Nitrogen deficiencies are observed as yellowing of plant tissue and stunted growth.

Nitrate Nitrogen (NO_3-N): Nitrate nitrogen is a product of nitrification, a process by which microorganisms convert ammonium (NH_4) to nitrate (NO_3) to obtain energy. Nitrate is the most available form of N but is highly susceptible to leaching. This process is most rapid when the soil is warm, moist, and well aerated (Cornell Extension, 2018).

- Soil nitrate nitrogen levels are considered sufficient in the topsoil and predictably lower in the subsoil for optimal vine growth. The addition of compost when ripping is recommended

Phosphorous (P): A component of every living cell as part of proteins that carry the genetic code of living things. It also tends to be concentrated in seeds and growing points of plants. Extractable (plant available) soil P is that associated with the mineral fraction of the soil. However, some P is also associated with the organic matter fraction of the soil and becomes available as the organic matter slowly decomposes throughout the growing season. High soil P can reduce uptake of micronutrients such as zinc. The lab method for measuring P is dependent on soil pH, the Olsen method for soils > pH 6.0 and the Bray method for soil < 6.5.

- Soil P levels are considered sufficient at all sites and depths.

Potassium (K): Extractable potassium is that washed from the soil surfaces. However, additional soil K is usually sandwiched in the mineral interlayer space and becomes slowly available as the easily available levels decrease. Vine requirements for K are relatively high and are quite dependent upon rootstock/scion combination, crop load and in-season soil moisture levels.

- Soil K levels are considered moderate in the top and subsoils with the exception of Site 5 which contains excessively high levels of K.
- The levels are most likely the result of high populations of cattle (and subsequent manure droppings) in the area. Site 5 is located near a watering station and popular resting spot for the herd.
- Excessive amounts of available K^+ in the soil can lead to a magnesium deficiency in plants. In these conditions it is recommended that high-K fertilizers and compost applications are avoided. Instead, the application of $MgSO_4$ and/or $CaSO_4$ under irrigation emitters is preferable. Planting then removing sorghum or wheat (high K requirement) as a cover crop could also help remove K from the system. If forage crops are to be grown in a low Mg environment, use as livestock feed is NOT recommended due to elevated risk of tetany to animals.

Zinc (Zn): Zn is one of the most commonly deficient micronutrients in California soils. It is necessary for chlorophyll and carbohydrate production. As soil Zn readings are notoriously poor indicators of potential Zn deficiencies, we suggest using visual observation of suspected Zn problems coupled with petiole analysis before adding Zn.

- Soil Zn levels are considered low at all sites.
- Foliar applied materials have proven quite effective in correcting Zn shortages in grapevines.

Nematology

Nematodes are microscopic worms that reside in the soil and move within the film of water between soil particles. They feed on roots thus interfering with the vines ability to meet aboveground requirements for water and nutrients. Often, this can lead to the introduction of root rotting organisms. Some nematode species are vectors of grapevine viruses.

The results are site and time specific. Further sampling of the same areas or at different times of the season may produce different results in both numbers and species recovered. The sieving and centrifugal flotation method used is based on 50 % extraction efficiency. The numbers have already been adjusted to reflect 100 % extraction.

<u>Site I.D.</u>	<u>Nematode I.D.</u>	<u>Nematodes/Kg Soil</u>
Composite	Root Knot	8
Site 1,2	Pin	14
Site 3	Spiral HD	16
	Stunt	12
Composite	Pin	502
4,5,6		
Site 7	NPN	

NPN = No Plant Parasitic Nematodes Recovered.

- Root Knot nematodes (*Meloidogyne*) are injurious to grapes. Usually, a population >100 indicate significant root damage is occurring. Root Knot is an endo-parasitic nematode, meaning that it completes its life cycle inside the host root, which make it difficult to control with post plant nematicides. The recovered population at Site 1 was considered low.
- Pin (*Paratylenchus*) and Stunt (*Tylenchorhynchus*), and Spiral HD (*Helicotylenchus dihystera*) nematodes are not considered harmful to grapes. The recovered population at Sites 3-6 was considered low.

Disclaimer

The conclusions and/or recommendations included in this report are based upon the data and information available to Lithic Soils Company, LLC. at the time this report was prepared. Therefore, all conclusions and recommendations are time and site specific and are directed to the specific and stated need of the addressed client only. Lithic Soils Company, LLC assumes no liability for the use of this data or recommendations by any other party.

Cassandra Rieser
Master of Soil Science (MSS)
Certified Professional Soil Scientist (CPSS)
Lithic Soils Company, LLC



Orcutt
El Camino Real
Project #: 21-007
Project Map

Imagery By: Santa Barbara County Orthos 2018
Soil Series Boundaries: USDA-NRCS
Map Created By: Lithic Soils Company LLC
Sonoma, CA 95476 phone: (651) 303-3435

Legend



Soil Pit Location



5ft Contour

Santa Barbara County Soil Series

DaF Diablo silty clay, 30-45% slopes

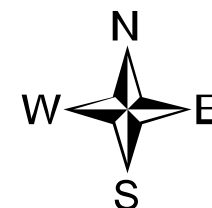
EdC2 Elder sandy loam, 2-9% slopes, eroded

EdD2 Elder sandy loam, 9-15% slopes, eroded

GmG Gaviota sandy loam, 30-75% slopes

BnB2 Betteravia loamy sand, dark variant, 0-5% slopes,
eroded

0 370 740 1,480 2,220
Feet



Project Number	21-007
Client	CVCA
Property	EL CAMINO REAL
Test ID	2657



Log In #	4112032
Date Sampled	12/2/2021
Date Submitted	12/6/2021
Date Reported	12/7/2021

SOIL CHEMISTRY REPORT

Sample Depth (in)			Texture		Saturation Extract											Extractable Nutrients						Extractable Cations					Ratios	
			Lab Method >	S-9.30	S-1.10	S-1.20	S-1.60				S-11.10					S-3.10	S-4.10	S-4.20	S-5.10	S-6.11								
			%	dS/m	meq/l	meq/l	meq/l	-	ppm	ppm	meq/l		ppm	ppm	ppm	ppm	ppm	meq/100g	% of CEC									
Site	From	To	Sat %	Organic Matter	pH	ECe	Ca	Mg	Na	SAR	B	SO ₄	Cl	Free Lime	NO ₃ -N	P _{Olsen}	P _{Bray}	K	Zn	CEC	Ca	Mg	K	Na	H	Ca/Mg	K/Mg	
SITE 1	0	16	45	1.6	6.1	0.8	4.5	2.0	1.7	0.95	0.18	9	1.2	0	5.9	20.9		135	0.3	17	66	19	2	1	12	3.5	0.11	
SITE 1	16	33	33	1.0	5.8	0.3	1.0	0.4	1.0	1.24	0.08	1	0.8	0	1.9	23.6		123	0.1	17	66	20	2	2	11	3.2	0.09	
SITE 1	33	47	29	0.5	6.0	0.1	0.2	0.2	0.4	0.82	0.06	1	0.3	0	1.4	19.4		107	0.1	14	65	19	2	3	11	3.5	0.10	
SITE 1	47	60	31	0.3	6.8	0.2	0.3	0.2	1.1	2.36	0.06	1	0.7	0	1.7	18.8		107	0.1	14	74	18	2	6	0	4.2	0.11	
SITE 2	0	14	37	2.0	5.9	0.3	1.5	0.5	0.7	0.66	0.10	1	0.7	0	3.2	23.6		152	0.2	15	69	14	3	1	13	4.8	0.18	
SITE 2	14	36	35	1.0	6.0	0.2	0.8	0.3	0.6	0.83	0.09	1	0.3	0	1.9	17.8		111	0.1	15	71	15	2	1	11	4.7	0.13	
SITE 2	36	58	33	1.0	6.3	0.2	0.9	0.3	0.7	0.96	0.08	1	0.4	0	1.7	14.2		119	0.1	16	77	15	2	1	5	5.3	0.13	
SITE 3	0	18	33	1.2	6.3	0.3	1.3	0.4	0.3	0.33	0.12	1	0.6	0	2.8	22.1		283	0.5	8	64	10	9	1	16	6.3	0.88	
SITE 3	18	45	30	0.6	6.3	0.3	1.6	0.7	0.6	0.57	0.13	1	0.8	0	2.2	22.0		187	0.2	8	64	12	6	1	16	5.1	0.48	
SITE 3	45	58	28	0.2	6.7	0.2	0.8	0.4	0.5	0.67	0.09	1	0.5	0	2.3	22.0		149	0.1	6	72	21	6	1	0	3.4	0.29	
SITE 4	0	18	35	1.9	5.9	0.3	1.0	0.5	1.0	1.11	0.10	1	0.8	0	3.0	19.2		117	0.2	14	62	17	2	1	17	3.6	0.13	
SITE 4	18	42	32	1.3	5.6	0.2	0.4	0.3	1.1	1.91	0.07	1	0.9	0	2.3	21.1		96	0.2	13	61	23	2	3	12	2.7	0.08	
SITE 4	42	59	69	0.9	6.6	0.7	1.0	0.6	5.0	5.72	0.08	1	4.3	0	1.8	31.3		222	0.5	37	58	32	2	9	0	1.8	0.05	
SITE 5	0	24	31	1.6	7.0	2.2	9.9	4.8	2.5	0.93	0.55	27	4.8	0	19.3	67.6		753	1	9	59	18	21	2	0	3.3	1.13	
SITE 5	24	60	31	1.2	7.3	1.3	5.2	2.1	2.9	1.53	0.34	13	3.3	0	7.7	47.1		678	0.3	10	64	16	17	3	0	4.0	1.03	
SITE 6	0	24	38	0.3	5.8	0.2	0.6	0.3	0.7	1.03	0.10	1	0.6	0	4.6	13.6		145	0.2	13	52	26	3	2	17	2.0	0.11	
SITE 6	24	41	36	0.6	5.0	0.3	0.4	0.3	1.9	3.41	0.07	1	1.8	0	2.6	20.3		79	0.1	15	42	37	1	7	13	1.1	0.04	
SITE 6	41	60	37	0.2	5.5	0.5	0.9	0.6	4.0	4.65	0.11	1	2.8	0	1.3	11.1		64	0.1	10	42	39	2	15	2	1.1	0.04	
SITE 7	0	18	39	1.7	5.9	0.2	0.8	0.3	0.8	1.15	0.07	1	0.5	0	3.6	18.1		146	0.2	15	75	12	2	2	9	6.1	0.20	
SITE 7	18	39	40	1.4	6.3	0.2	0.9	0.4	0.7	0.82	0.06	1	0.3	0	2.4	17.3		153	0.2	18	84	8	2	2	4	10.0	0.26	
SITE 7	39	54	46	0.8	7.3	0.2	0.9	0.2	0.5	0.73	0.04	1	0.2	Med	1.7	11.8		134	0.1	20	90	7	2	2	0	12.7	0.25	
Desired levels for grapes			20-60		5.5-7.5	0.2-1.5				<5	<1.5	<5.0	<5.0		2-20	8-30	8-30	100-300	>1.0	5-40	60-80	12-20	3-7	<5	<8	2-10	0.1-0.4	

Soil Chemistry Report Supplementals

Extractable Cations											Tons/ac-ft	Tons/ac-ft	%	inches/ft of soil	PARTICLE SIZE ANALYSIS			
Sample Depth (in)			ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	Lime Req.	Gypsum Req	Active Lime	Water Holding capacity	%	%	%	
Site	From	To	Ca	Mg	K	Na	H	Mn	Fe	Cu		to raise Ca to 60%			Sand	Silt	Clay	Classification
SITE 1	0	16	2183	376	135	52	19.8	2.6	23	0.6	0.5							
SITE 1	16	33	2184	409	123	61	17.6	1.4	15	0.5								
SITE 1	33	47	1892	332	107	104	15.4	1.1	12	0.5								
SITE 1	47	60	2025	294	107	186	0	0.5	12	0.4								
SITE 2	0	14	2134	270	152	37	19.8	1.6	27	0.4	0.3							
SITE 2	14	36	2080	267	111	47	15.4	1.0	14	0.4								
SITE 2	36	58	2521	289	119	54	8.8	0.7	9	0.4								
SITE 3	0	18	1045	100	283	15	13.2	1.5	19	0.3								
SITE 3	18	45	1033	122	187	19	13.2	1.0	13	0.3								
SITE 3	45	58	899	160	149	19	0	0.6	9	0.2								
SITE 4	0	18	1724	287	117	45	24.2	2.6	28	0.5	0.3 1.0							
SITE 4	18	42	1593	364	96	92	15.4	2.1	26	0.5								
SITE 4	42	59	4240	1408	222	754	0	0.4	27	0.4								
SITE 5	0	24	1117	207	753	41	0	5.0	18	0.3	0.17							
SITE 5	24	60	1337	204	678	63	0	1.4	13	0.2								
SITE 6	0	24	1340	399	145	66	22	2.9	38	0.3	0.6 2.9 1.5	1.7 3.2 2.18						
SITE 6	24	41	1242	660	79	239	19.8	1.0	83	0.3								
SITE 6	41	60	806	451	64	334	2.2	0.1	12	0.2								
SITE 7	0	18	2314	231	146	60	13.2	3.3	21	0.4	0.3							
SITE 7	18	39	3040	185	153	78	6.6	1.0	13	0.5								
SITE 7	39	54	3556	170	134	70	0	0.2	7	0.6								

Soil Color Name (overlying visual of actual Munsell soil color)

Soil Texture Abbreviation

Rock Fragment shape

Soil Structure Type (graphic)

Soil Horizon

Clay Percentage

Rock Fragment ("non-soil") Percentage

Site # (38.48365, -122.483678)

Lat, Long of pit location

Physical Soil Attribute Rating (for vineyards)

Soil Moisture % (approx)

LEGENDS

EXAMPLE Soil Profile Log

How to Read

Client Name

Address

Block or Ranch

Sample Date: 01/1/21

Project Number: 21-000

Soil Collection From:
Soil Pit: _X_
Soil Probe: ____
Auger: ____

Drafting By: CJR
Data By: CJR

Lithic Soils Company LLC
16060 Hwy 12 Sonoma, CA 95476
Phone: (651) 303-3435

Color | Texture | Structure

S R S C R D S M

0 12" 24" 32" 36" 48" 58" 60"

Brown
Gravely CL NS: 25% CP: 8%

Brown
L

Ex. Cobbly LS (angular sandstone cobbles)

NS: 90% CP: < 8%

50 - 75% 3"

0 - 25%

CP = clay percentage (approx.)
NS = Non-Soil % (gravels, cobbles, stones etc)

Soil Texture:

S= sand
SL= sandy loam
LS= loamy sand
L= loam

SiL= silt loam
SCL= sandy clay loam
SiCL= silty clay loam
CL= clay loam
C= clay

Physical Attributes:

SR = structure rating
SM = soil moisture
SC = soil compaction
RD = root density
RF = redox features

Favorable

Acceptable

Marginal

Unfavorable

Rock

--
None
Strong
None

--
Weak
Moderate
Weak
Moderate

--
Moderate
Weak
Moderate
Strong

--
Strong
None
Strong

Structure Types:

Prismatic

Blocky (Angular) (Subangular)

Granular

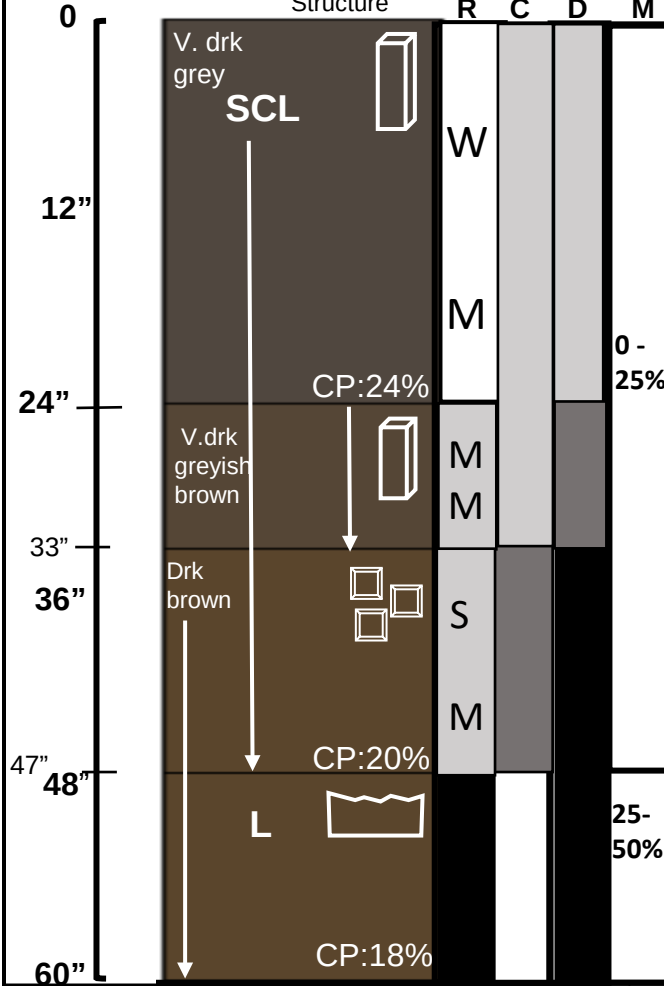
Massive

Single Grain

Site 1 (34.840832, -120.376807)

Color | Texture | Structure

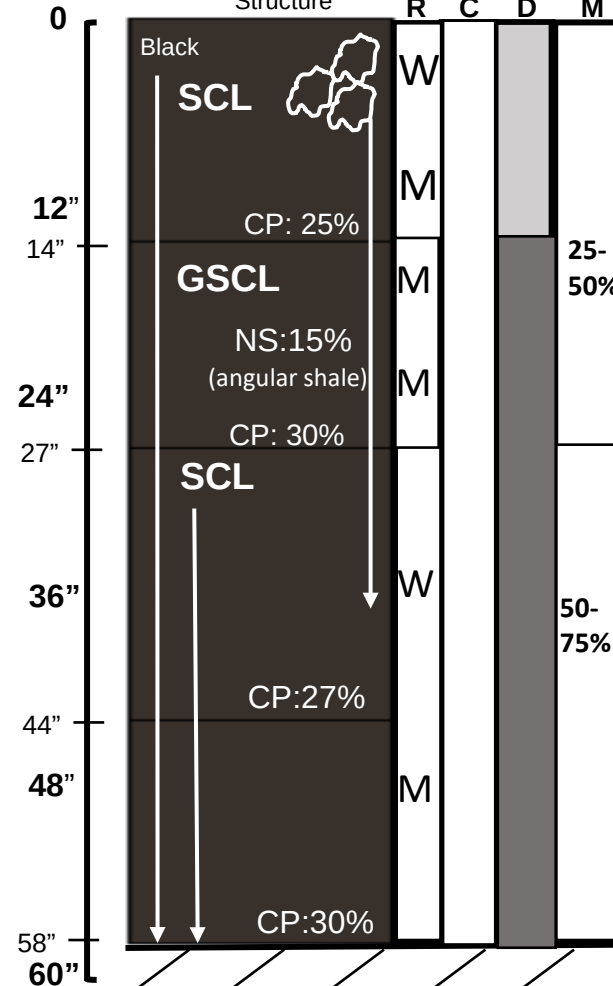
S R H C R D S M



Site 2 (34.838989, -120.375551)

Color | Texture | Structure

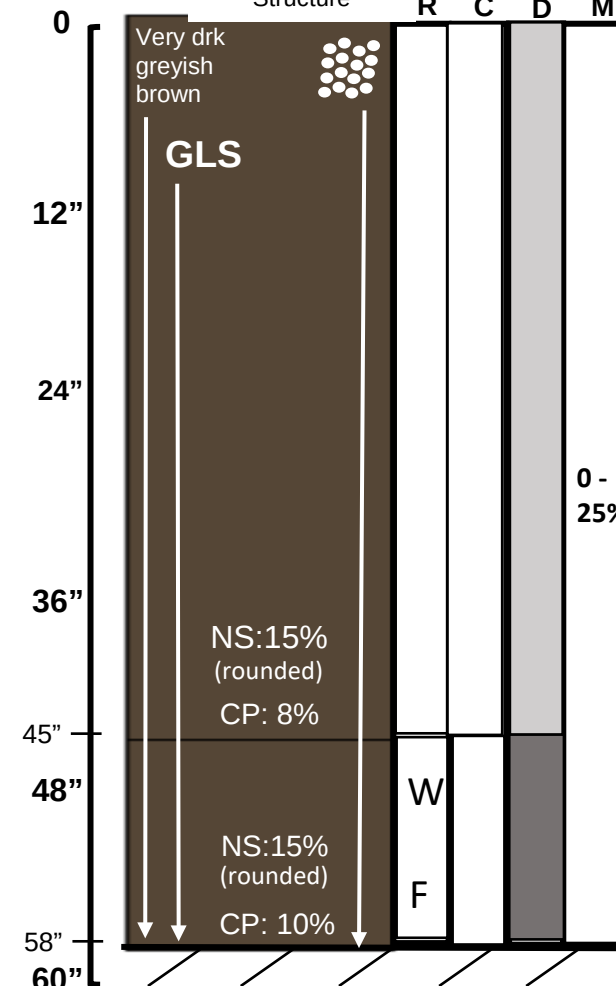
S R H C R D S M



Site 3 (34.835992, -120.378491)

Color | Texture | Structure

S R H C R D S M



Soil Profile Log

Coastal Vineyard
Care Assoc.

El Camino Real

Orcutt, CA

Sample Date: 12/2/21

Project Number: 21-007

Soil Collection From:
Soil Pit: _X_
Soil Probe: ____
Auger: ____

Drafting By: CJR
Data By: CJR

Lithic Soils Company LLC
16060 Hwy 12 Sonoma, CA
95476
Phone: (651) 303-3435

CP = clay percentage (approx.)

NS = Non-Soil % (gravels(G), cobbles(Cb),
Stones(Stn) etc)

Soil Texture:

S= sand
SL= sandy loam
LS= loamy sand
L= loam
FSC= fine sandy clay

SCL= sandy clay loam
SiCL= silty clay loam
CL= clay loam
C= clay
G / VG/ Ex.G = grvly/
very grvly/Extrmly grvly

Physical Attributes:

SR = structure rating
SM = Soil Moisture
SC = soil compaction
RD = root density
RF = rebox features

Favorable Acceptable Marginal Unfavorable Rock

-- -- -- --
None Weak Moderate Strong
Strong Moderate Weak None
None Weak Moderate Strong

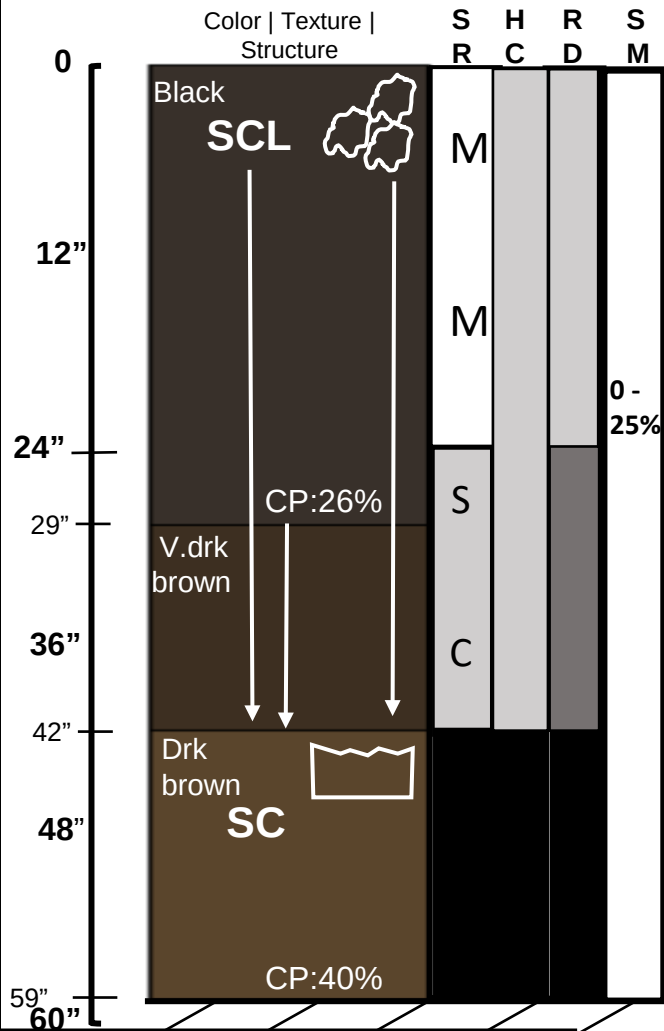
Structure Grade: W – weak | M – moderate | S - strong

Structure Size: F – small | M – medium | C - large

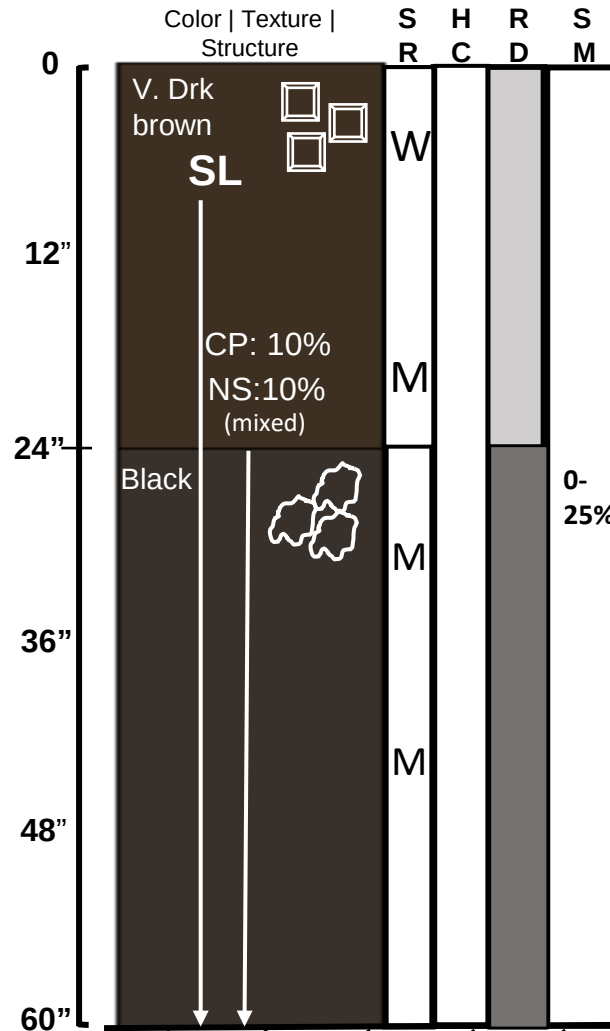
Structure Types:

Prismatic (Angular) Blocky (Subangular) Granular Massive Single Grain

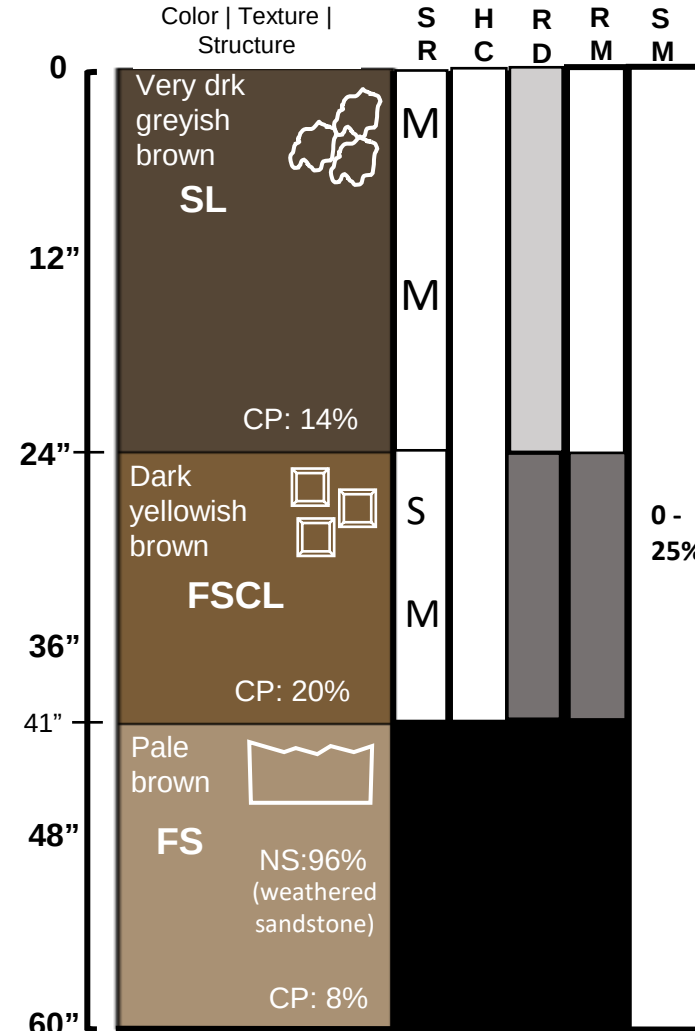
Site 4 (34.834046, -120.372554)



Site 5 (34.833473, -120.369820)



Site 6 (34.831216, -120.377504)



Soil Profile Log

Coastal Vineyard
Care Assoc.

El Camino Real

Orcutt, CA

Sample Date: 12/2/21

Project Number: 21-007

Soil Collection From:
Soil Pit: _X_
Soil Probe: ____
Auger: ____

Drafting By: CJR
Data By: CJR

Lithic Soils Company LLC
16060 Hwy 12 Sonoma, CA
95476
Phone: (651) 303-3435

CP = clay percentage (approx.)
NS = Non-Soil % (gravels(G), cobbles(Cbl),
Stones(Stn) etc)

Soil Texture:

S= sand
SL= sandy loam
LS= loamy sand
L= loam
FS= fine sand
SCL= sandy clay loam
SiCL= silty clay loam
CL= clay loam
C= clay
G / VG/ Ex.G = grvly/
very grvly/Extrmly grvly

Physical Attributes:

SR = structure rating
SM = Soil Moisture
SC = soil compaction
RD = root density
RF = redox features
RM = Rust Mottles

Favorable	Acceptable	Marginal	Unfavorable	Rock
--	--	--	--	
None	Weak	Moderate	Strong	
Strong	Moderate	Weak	None	
None	Weak	Moderate	Strong	
None	Weak	Moderate	Strong	

Structure Grade: W – weak | M – moderate | S - strong

Structure Size: F – small | M – medium | C - large

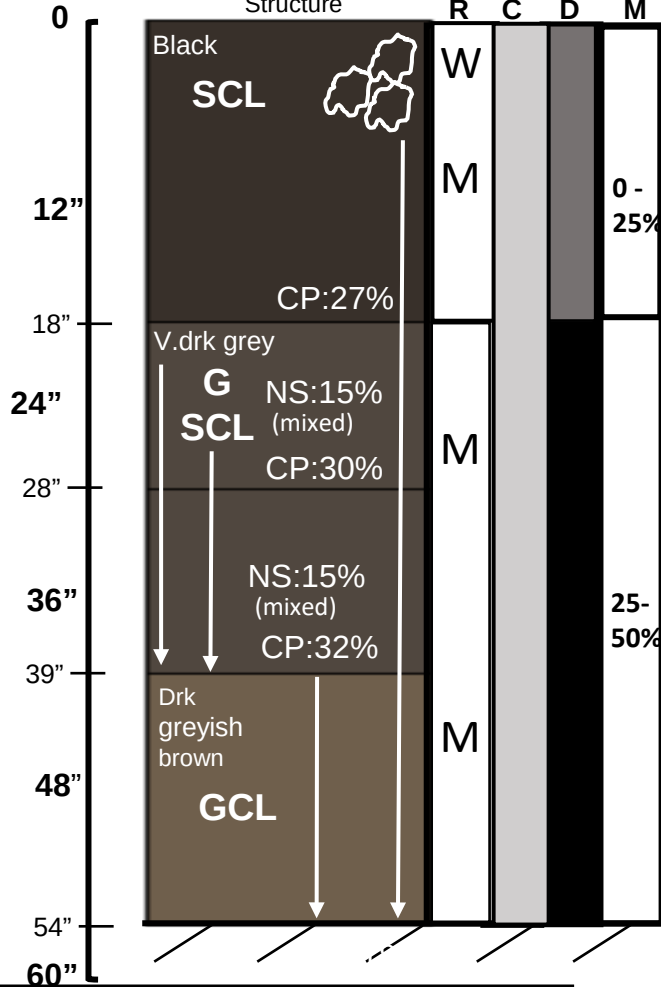
Structure Types:

Prismatic	Blocky	Granular	Massive	Single Grain
(Angular)	(Subangular)			

Site 7 (34.846324, -120.382818)

Color | Texture |
Structure

S H R S
R C D M



Soil Profile Log

**Coastal Vineyard
Care Assoc.**

El Camino Real

Orcutt, CA

Sample Date: 12/2/21

Project Number: 21-007

Soil Collection From:
Soil Pit: X
Soil Probe:
Auger:

Drafting By: CJR
Data By: CJR

Lithic Soils Company LLC
16060 Hwy 12 Sonoma, CA
95476
Phone: (651) 303-3435

CP = clay percentage (approx.)
NS = Non-Soil % (gravels(G), cobbles(Cbl),
Stones(Stn) etc)
Soil Texture:
S= sand
SL= sandy loam
LS= loamy sand
L= loam
FSC= fine sandy clay
SCL= sandy clay loam
SiCL= silty clay loam
CL= clay loam
C= clay
G / VG/ Ex.G = grvly/
very grvly/Extrmly grvly

Physical Attributes:

SR = structure rating
SM = Soil Moisture
SC = soil compaction
RD = root density
RF = rebox features

Favorable	Acceptable	Marginal	Unfavorable	Rock
None	Weak	Moderate	Strong	
Strong	Moderate	Weak	None	
None	Weak	Moderate	Strong	

Structure Grade: W – weak | M – moderate | S - strong

Structure Size: F – small | M – medium | C - large

Structure Types:

Prismatic	Blocky	(Angular)	(Subangular)	Granular	Massive	Single Grain



Site 1 – Full Profile with Horizon Boundaries

CVCA
El Camino Real
Orcutt, CA
Project #21-007

Prepared by Lithic Soils Company, LLC.
16060 Highway 12
phone: (651) 303-3435



Site 2 – Full Profile with Horizon Boundaries

CVCA
El Camino Real
Orcutt, CA
Project #21-007

Prepared by Lithic Soils Company, LLC.
16060 Highway 12
phone: (651) 303-3435



Site 3 – Full Profile with Horizon Boundaries

CVCA
El Camino Real
Orcutt, CA
Project #21-007

Prepared by Lithic Soils Company, LLC.
16060 Highway 12
phone: (651) 303-3435



Site 4 – Full Profile with Horizon Boundaries

CVCA
El Camino Real
Orcutt, CA
Project #21-007

Prepared by Lithic Soils Company, LLC.
16060 Highway 12
phone: (651) 303-3435



Site 5 – Full Profile with Horizon Boundaries

CVCA
El Camino Real
Orcutt, CA
Project #21-007

Prepared by Lithic Soils Company, LLC.
16060 Highway 12
phone: (651) 303-3435



Site 6 – Full Profile with Horizon Boundaries

CVCA
El Camino Real
Orcutt, CA
Project #21-007

Prepared by Lithic Soils Company, LLC.
16060 Highway 12
phone: (651) 303-3435



Site 7 – Full Profile with Horizon Boundaries

CVCA
El Camino Real
Orcutt, CA
Project #21-007

Prepared by Lithic Soils Company, LLC.
16060 Highway 12
phone: (651) 303-3435

APPENDIX B. A&L LABS SOILS SAMPLE RESULTS



A & L Western Laboratories, Inc.

1311 Woodland Avenue, Modesto CA 95351 209-529-4080
10220 SW Nimbus Avenue Bldg. K-9, Portland OR 97223 503-968-9225

REPORT NUMBER: 79682

CLIENT NO: 5800

SUBMITTED BY: GRACE DAMASCHINO

SEND TO: ALTHOUSE & MEADE, INC.
1602 SPRING STREET
Paso Robles CA 93446

GROWER: SOLSTRA COMMUNITIES
LOCATION: ORCUTT

SUBMITTED DATE: 4/1/2024

P.O. No:

COC No:

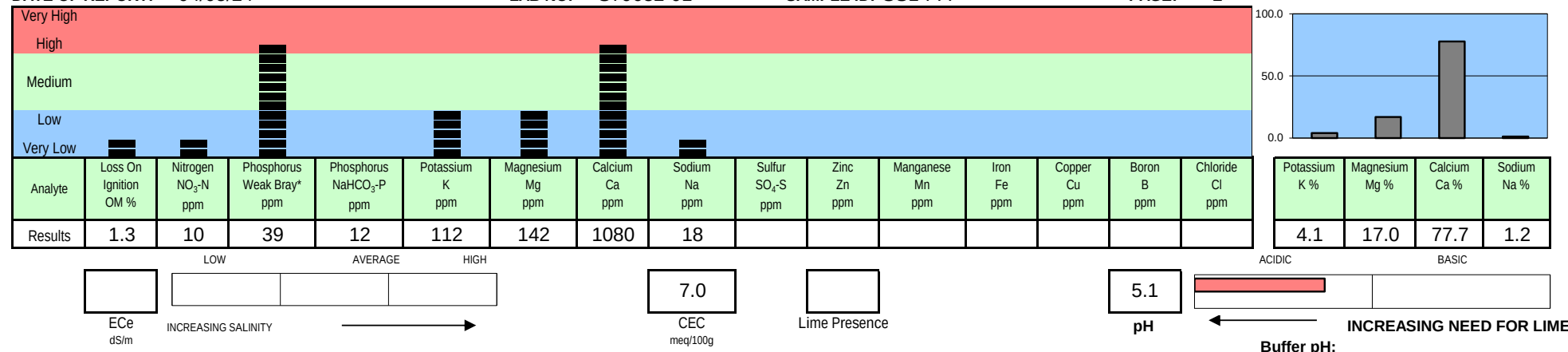
Graphical Soil Analysis Report

DATE OF REPORT: 04/05/24

LAB NO: S79682-01

SAMPLE ID: SS1-PA

PAGE: 1



Soil Fertility Guidelines

CROP: RANGELAND

RATE:** lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	

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**To convert recs from lb/ac to lb/1000 sq. ft. divide by 43.56.



A & L Western Laboratories, Inc.

1311 Woodland Avenue, Modesto CA 95351 209-529-4080
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CLIENT NO: 5800

SUBMITTED BY: GRACE DAMASCHINO

SEND TO: ALTHOUSE & MEADE, INC.
1602 SPRING STREET
Paso Robles CA 93446

GROWER: SOLSTRA COMMUNITIES
LOCATION: ORCUTT

SUBMITTED DATE: 4/1/2024

P.O. No:

COC No:

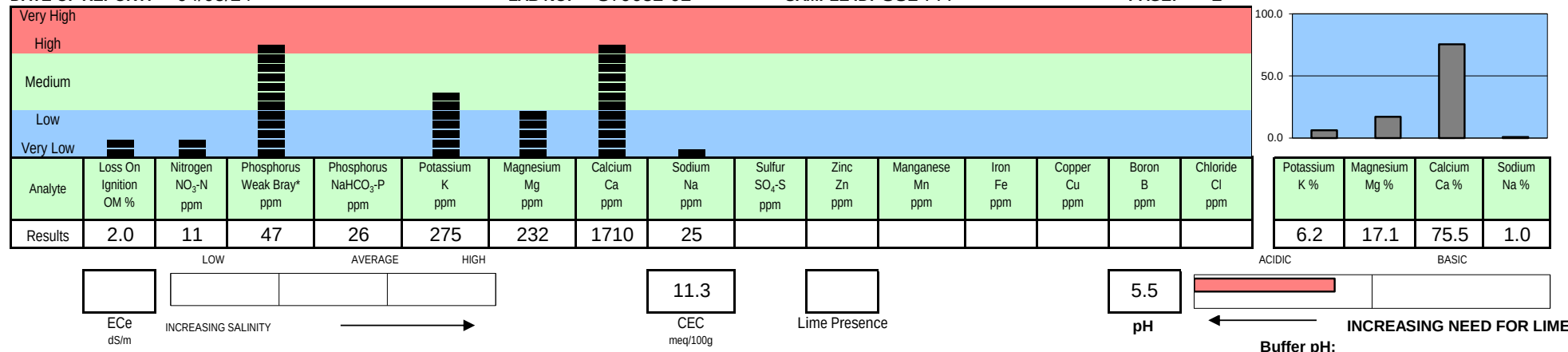
Graphical Soil Analysis Report

DATE OF REPORT: 04/05/24

LAB NO: S79682-02

SAMPLE ID: SS2-PA

PAGE: 2



Soil Fertility Guidelines

CROP: RANGELAND

RATE:** lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	

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10220 SW Nimbus Avenue Bldg. K-9, Portland OR 97223 503-968-9225

REPORT NUMBER: 79682

CLIENT NO: 5800

SUBMITTED BY: GRACE DAMASCHINO

SEND TO: ALTHOUSE & MEADE, INC.
1602 SPRING STREET
Paso Robles CA 93446

GROWER: SOLSTRA COMMUNITIES
LOCATION: ORCUTT

SUBMITTED DATE: 4/1/2024

P.O. No:

COC No:

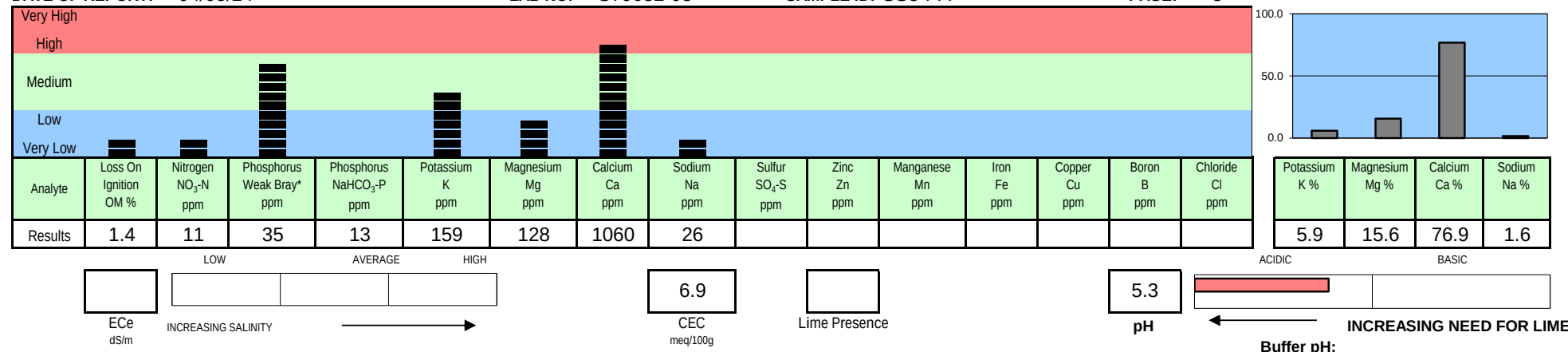
Graphical Soil Analysis Report

DATE OF REPORT: 04/05/24

LAB NO: S79682-03

SAMPLE ID: SS3-PA

PAGE: 3



Soil Fertility Guidelines

CROP: RANGELAND

RATE:** lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	

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**To convert recs from lb/ac to lb/1000 sq. ft. divide by 43.56.



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REPORT NUMBER: 79682

CLIENT NO: 5800

SUBMITTED BY: GRACE DAMASCHINO

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1602 SPRING STREET
Paso Robles CA 93446

GROWER: SOLSTRA COMMUNITIES
LOCATION: ORCUTT

SUBMITTED DATE: 4/1/2024

P.O. No:

COC No:

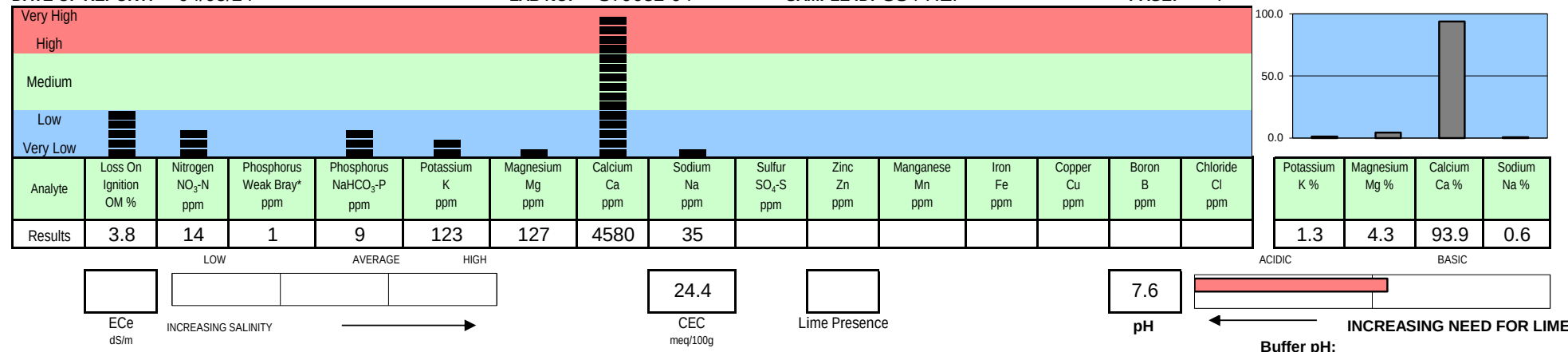
Graphical Soil Analysis Report

DATE OF REPORT: 04/05/24

LAB NO: S79682-04

SAMPLE ID: SS4-REF

PAGE: 4



Soil Fertility Guidelines

CROP: RANGELAND

RATE:** lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	

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**To convert recs from lb/ac to lb/1000 sq. ft. divide by 43.56.



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REPORT NUMBER: 79682

CLIENT NO: 5800

SUBMITTED BY: GRACE DAMASCHINO

SEND TO: ALTHOUSE & MEADE, INC.
1602 SPRING STREET
Paso Robles CA 93446

GROWER: SOLSTRA COMMUNITIES
LOCATION: ORCUTT

SUBMITTED DATE: 4/1/2024

P.O. No:

COC No:

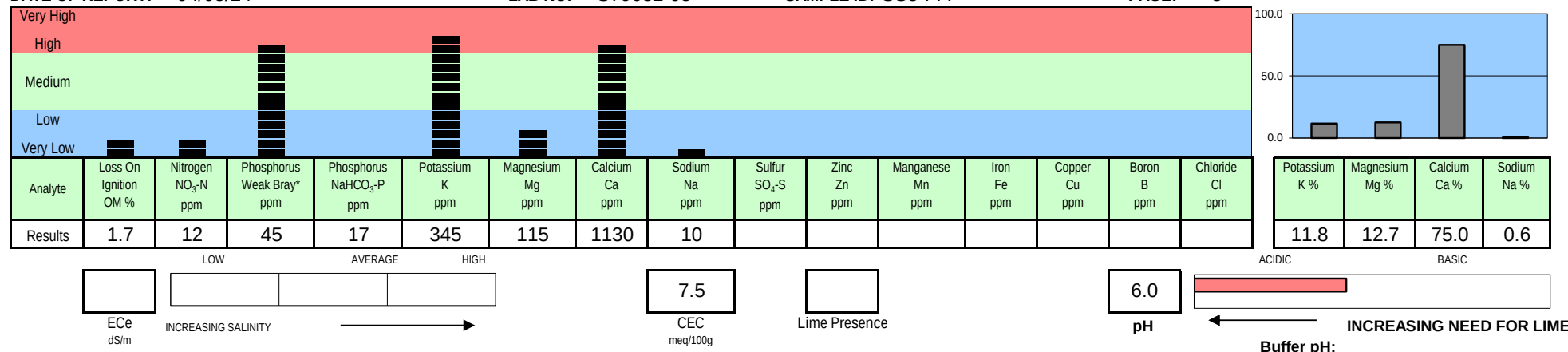
Graphical Soil Analysis Report

DATE OF REPORT: 04/05/24

LAB NO: S79682-05

SAMPLE ID: SS5-PA

PAGE: 5



Soil Fertility Guidelines

CROP: RANGELAND

RATE:** lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	

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**To convert recs from lb/ac to lb/1000 sq. ft. divide by 43.56.



A & L Western Laboratories, Inc.

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10220 SW Nimbus Avenue Bldg. K-9, Portland OR 97223 503-968-9225

REPORT NUMBER: 79682

CLIENT NO: 5800

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SEND TO: ALTHOUSE & MEADE, INC.
1602 SPRING STREET
Paso Robles CA 93446

GROWER: SOLSTRA COMMUNITIES
LOCATION: ORCUTT

SUBMITTED DATE: 4/1/2024

P.O. No:

COC No:

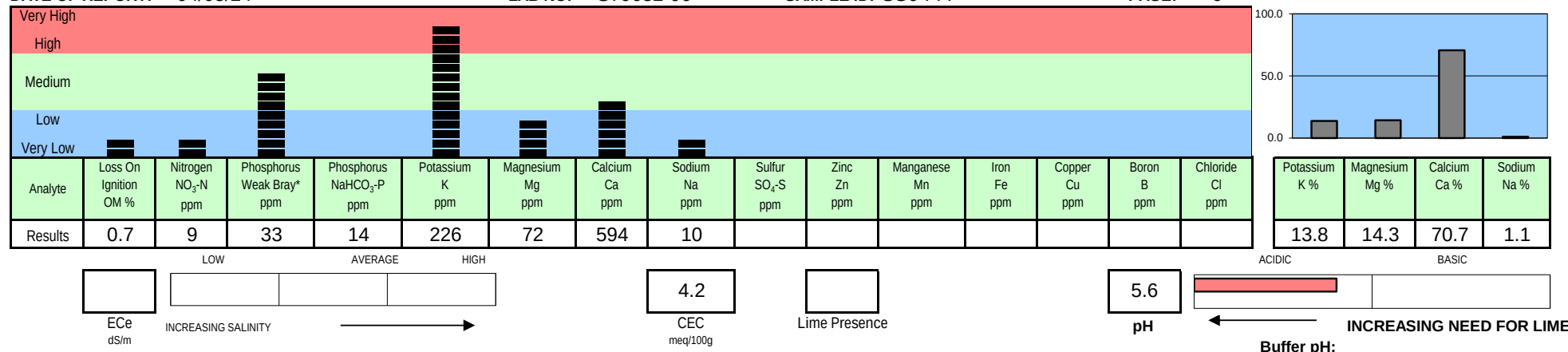
Graphical Soil Analysis Report

DATE OF REPORT: 04/05/24

LAB NO: S79682-06

SAMPLE ID: SS6-PA

PAGE: 6



Soil Fertility Guidelines

CROP: RANGELAND

RATE:** lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	

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**To convert recs from lb/ac to lb/1000 sq. ft. divide by 43.56.



A & L Western Laboratories, Inc.

1311 Woodland Avenue, Modesto CA 95351 209-529-4080
10220 SW Nimbus Avenue Bldg. K-9, Portland OR 97223 503-968-9225

REPORT NUMBER: 79682

CLIENT NO: 5800

SUBMITTED BY: GRACE DAMASCHINO

SEND TO: ALTHOUSE & MEADE, INC.
1602 SPRING STREET
Paso Robles CA 93446

GROWER: SOLSTRA COMMUNITIES
LOCATION: ORCUTT

SUBMITTED DATE: 4/1/2024

P.O. No:

COC No:

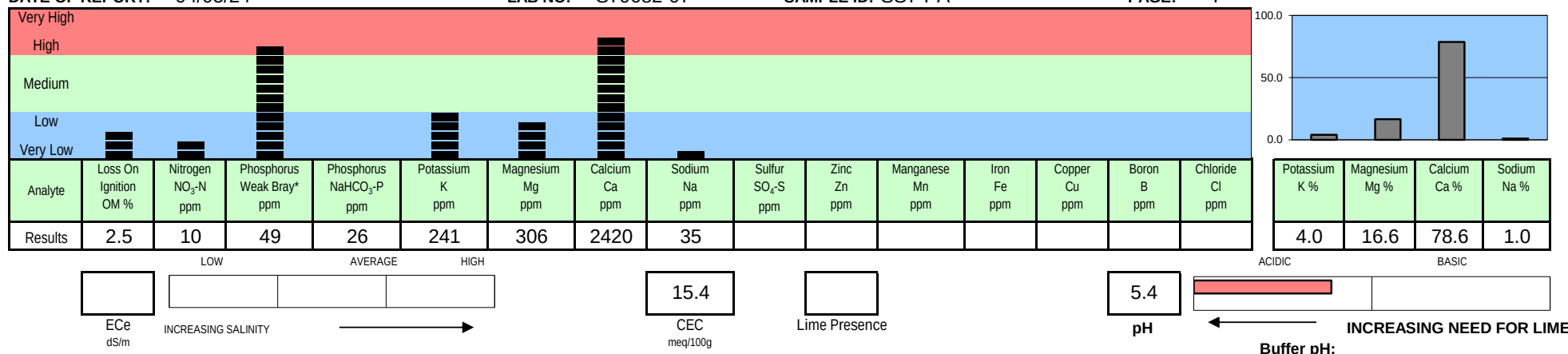
Graphical Soil Analysis Report

DATE OF REPORT: 04/05/24

LAB NO: S79682-07

SAMPLE ID: SS7-PA

PAGE: 7



Soil Fertility Guidelines

CROP: RANGELAND

RATE:** lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	

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**To convert recs from lb/ac to lb/1000 sq. ft. divide by 43.56.



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REPORT NUMBER: 79682

CLIENT NO: 5800

SUBMITTED BY: GRACE DAMASCHINO

SEND TO: ALTHOUSE & MEADE, INC.
1602 SPRING STREET
Paso Robles CA 93446

GROWER: SOLSTRA COMMUNITIES
LOCATION: ORCUTT

SUBMITTED DATE: 4/1/2024

P.O. No:

COC No:

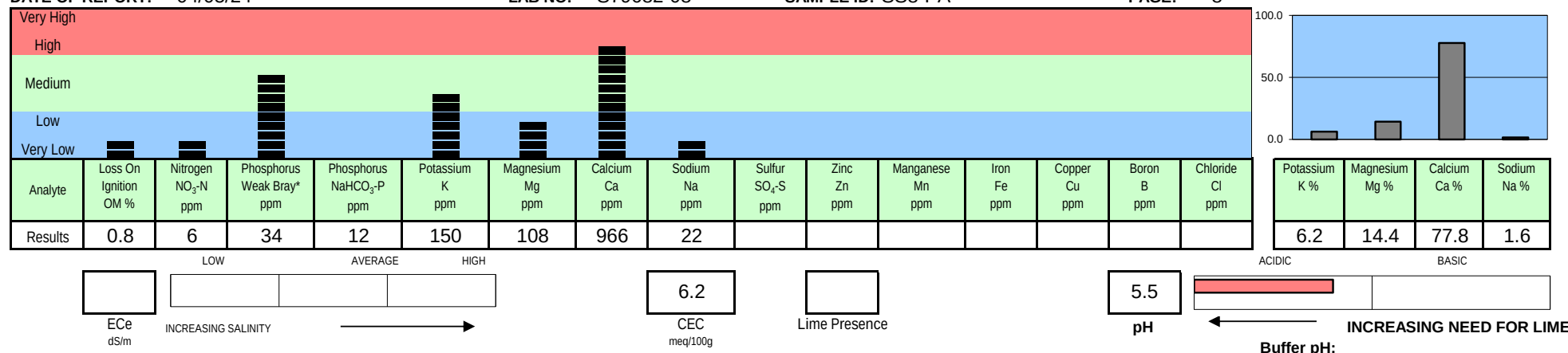
Graphical Soil Analysis Report

DATE OF REPORT: 04/05/24

LAB NO: S79682-08

SAMPLE ID: SS8-PA

PAGE: 8



Soil Fertility Guidelines

CROP: RANGELAND

RATE:** lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	

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**To convert recs from lb/ac to lb/1000 sq. ft. divide by 43.56.



A & L Western Laboratories, Inc.

1311 Woodland Avenue, Modesto CA 95351 209-529-4080
10220 SW Nimbus Avenue Bldg. K-9, Portland OR 97223 503-968-9225

REPORT NUMBER: 79682

CLIENT NO: 5800

SUBMITTED BY: GRACE DAMASCHINO

SEND TO: ALTHOUSE & MEADE, INC.
1602 SPRING STREET
Paso Robles CA 93446

GROWER: SOLSTRA COMMUNITIES
LOCATION: ORCUTT

SUBMITTED DATE: 4/1/2024

P.O. No:

COC No:

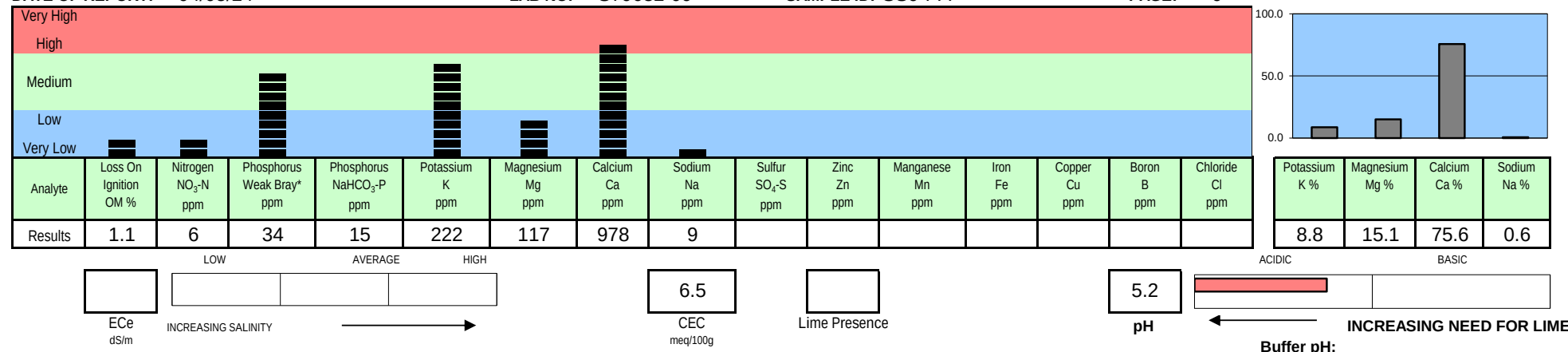
Graphical Soil Analysis Report

DATE OF REPORT: 04/05/24

LAB NO: S79682-09

SAMPLE ID: SS9-PA

PAGE: 9



Soil Fertility Guidelines

CROP: RANGELAND

RATE:** lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	

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**To convert recs from lb/ac to lb/1000 sq. ft. divide by 43.56.



A & L Western Laboratories, Inc.

1311 Woodland Avenue, Modesto CA 95351 209-529-4080
10220 SW Nimbus Avenue Bldg. K-9, Portland OR 97223 503-968-9225

REPORT NUMBER: 79682

CLIENT NO: 5800

SUBMITTED BY: GRACE DAMASCHINO

SEND TO: ALTHOUSE & MEADE, INC.
1602 SPRING STREET
Paso Robles CA 93446

GROWER: SOLSTRA COMMUNITIES
LOCATION: ORCUTT

SUBMITTED DATE: 4/1/2024

P.O. No:

COC No:

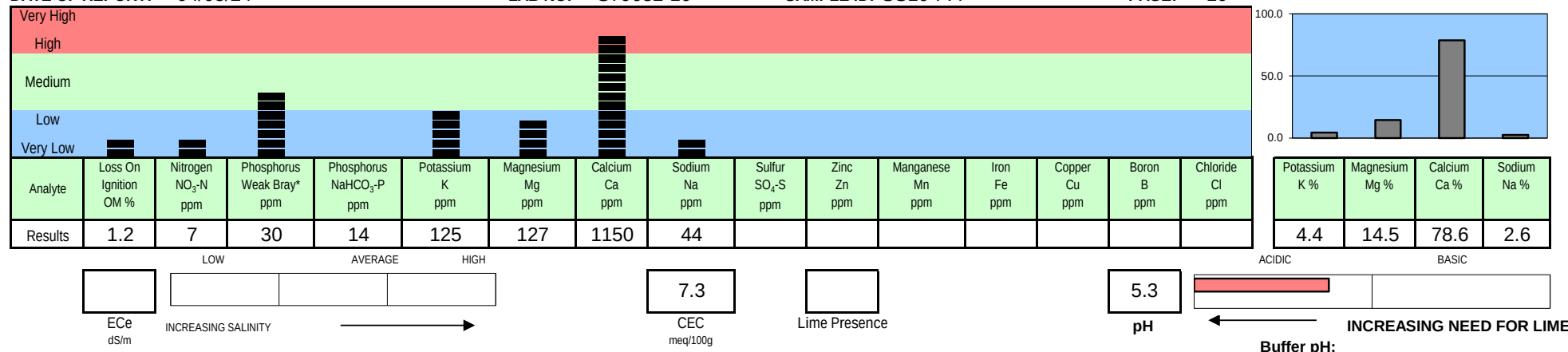
Graphical Soil Analysis Report

DATE OF REPORT: 04/05/24

LAB NO: S79682-10

SAMPLE ID: SS10-PA

PAGE: 10



Soil Fertility Guidelines

CROP: RANGELAND

RATE:** lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	

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**To convert recs from lb/ac to lb/1000 sq. ft. divide by 43.56.



A & L Western Laboratories, Inc.

1311 Woodland Avenue, Modesto CA 95351 209-529-4080
10220 SW Nimbus Avenue Bldg. K-9, Portland OR 97223 503-968-9225

REPORT NUMBER: 79682

CLIENT NO: 5800

SUBMITTED BY: GRACE DAMASCHINO

SEND TO: ALTHOUSE & MEADE, INC.
1602 SPRING STREET
Paso Robles CA 93446

GROWER: SOLSTRA COMMUNITIES
LOCATION: ORCUTT

SUBMITTED DATE: 4/1/2024

P.O. No:

COC No:

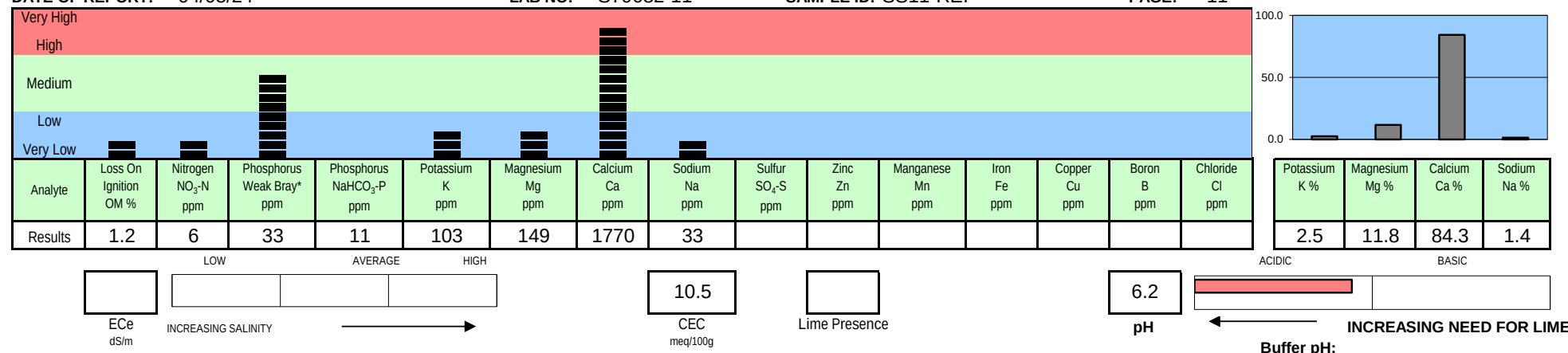
Graphical Soil Analysis Report

DATE OF REPORT: 04/05/24

LAB NO: S79682-11

SAMPLE ID: SS11-REF

PAGE: 11



Soil Fertility Guidelines

CROP: RANGELAND

RATE:** lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	

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**To convert recs from lb/ac to lb/1000 sq. ft. divide by 43.56.



A & L Western Laboratories, Inc.

1311 Woodland Avenue, Modesto CA 95351 209-529-4080
10220 SW Nimbus Avenue Bldg. K-9, Portland OR 97223 503-968-9225

REPORT NUMBER: 79682

CLIENT NO: 5800

SUBMITTED BY: GRACE DAMASCHINO

SEND TO: ALTHOUSE & MEADE, INC.
1602 SPRING STREET
Paso Robles CA 93446

GROWER: SOLSTRA COMMUNITIES
LOCATION: ORCUTT

SUBMITTED DATE: 4/1/2024

P.O. No:

COC No:

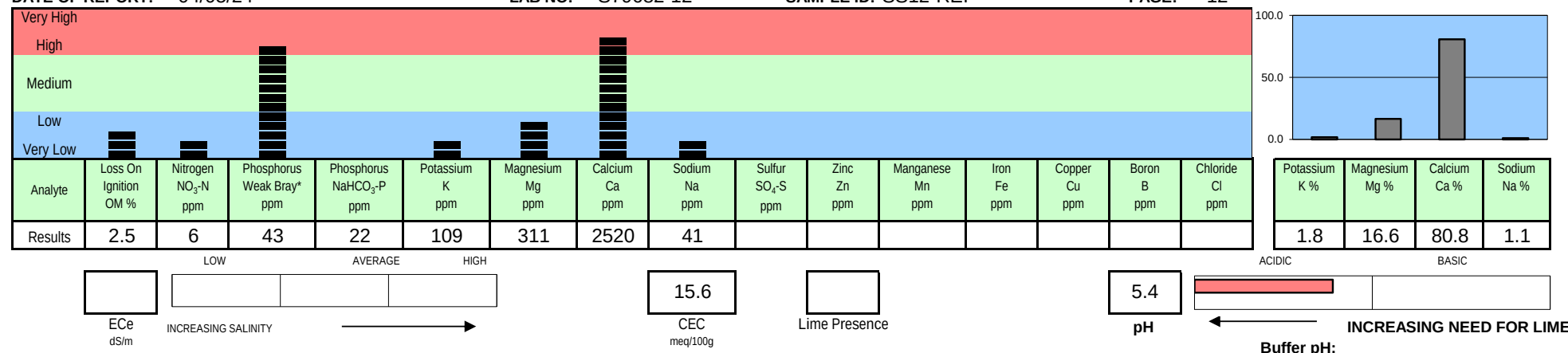
Graphical Soil Analysis Report

DATE OF REPORT: 04/05/24

LAB NO: S79682-12

SAMPLE ID: SS12-REF

PAGE: 12



Soil Fertility Guidelines

CROP: RANGELAND

RATE:** lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	

C
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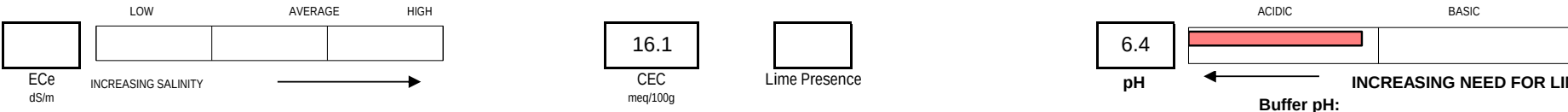
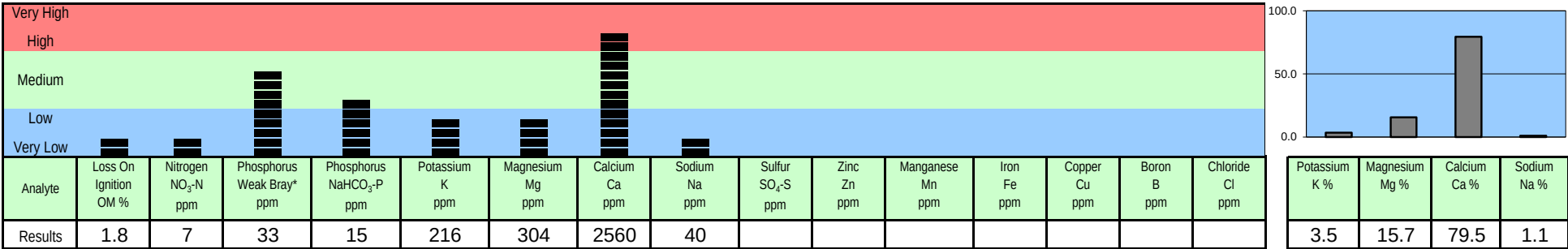
GROWER: SOLSTRA COMMUNITIES
LOCATION: ORCUTT

SUBMITTED BY: GRACE DAMASCHINO

SUBMITTED DATE: 4/1/2024
P.O. No:
COC No:

Graphical Soil Analysis Report

DATE OF REPORT: 04/05/24 LAB NO: S79682-13 SAMPLE ID: SS13-REF PAGE: 13



Soil Fertility Guidelines

CROP: RANGELAND

RATE:** lb/acre

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	

NOTES:

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**To convert recs from lb/ac to lb/1000 sq. ft.
divide by 43.56.



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Paso Robles CA 93446

GROWER: SOLSTRA COMMUNITIES

SUBMITTED DATE: 4/1/2024

DATE OF REPORT: 4/5/2024

SOIL PHYSICAL CHARACTERISTICS

PAGE: 14

Sample ID	Lab Number	% Sand	% Silt	% Clay	Soil Texture	Available Water Holding Capacity inches H2O / ft. of soil
SS1-PA	S79682-01	66.9	21.9	11.3	Sandy Loam	1.20-1.56
SS2-PA	S79682-02	68.8	13.8	17.5	Sandy Loam	1.20-1.56
SS3-PA	S79682-03	64.4	23.1	12.5	Sandy Loam	1.20-1.56
SS4-REF	S79682-04	56.3	13.8	30	Sandy Clay Loam	1.68-2.16
SS5-PA	S79682-05	74.4	14.4	11.3	Sandy Loam	1.20-1.56
SS6-PA	S79682-06	83.8	7.5	8.75	Sandy Loam	1.20-1.56
SS7-PA	S79682-07	68.8	12.5	18.8	Sandy Loam	1.20-1.56

NOTES:



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DATE OF REPORT: 4/5/2024

SOIL PHYSICAL CHARACTERISTICS

PAGE: 15

Sample ID	Lab Number	% Sand	% Silt	% Clay	Soil Texture	Available Water Holding Capacity inches H ₂ O / ft. of soil
SS8-PA	S79682-08	83.1	6.88	10	Sandy Loam	1.20-1.56
SS9-PA	S79682-09	83.8	5	11.3	Sandy Loam	1.20-1.56
SS10-PA	S79682-10	82.5	6.25	11.3	Sandy Loam	1.20-1.56
SS11-REF	S79682-11	83.8	2.5	13.8	Sandy Loam	1.20-1.56
SS12-REF	S79682-12	66.3	11.3	22.5	Sandy Clay Loam	1.68-2.16
SS13-REF	S79682-13	53.8	23.8	22.5	Sandy Clay Loam	1.68-2.16

NOTES:

APPENDIX C. WEB SOIL SURVEY REPORT



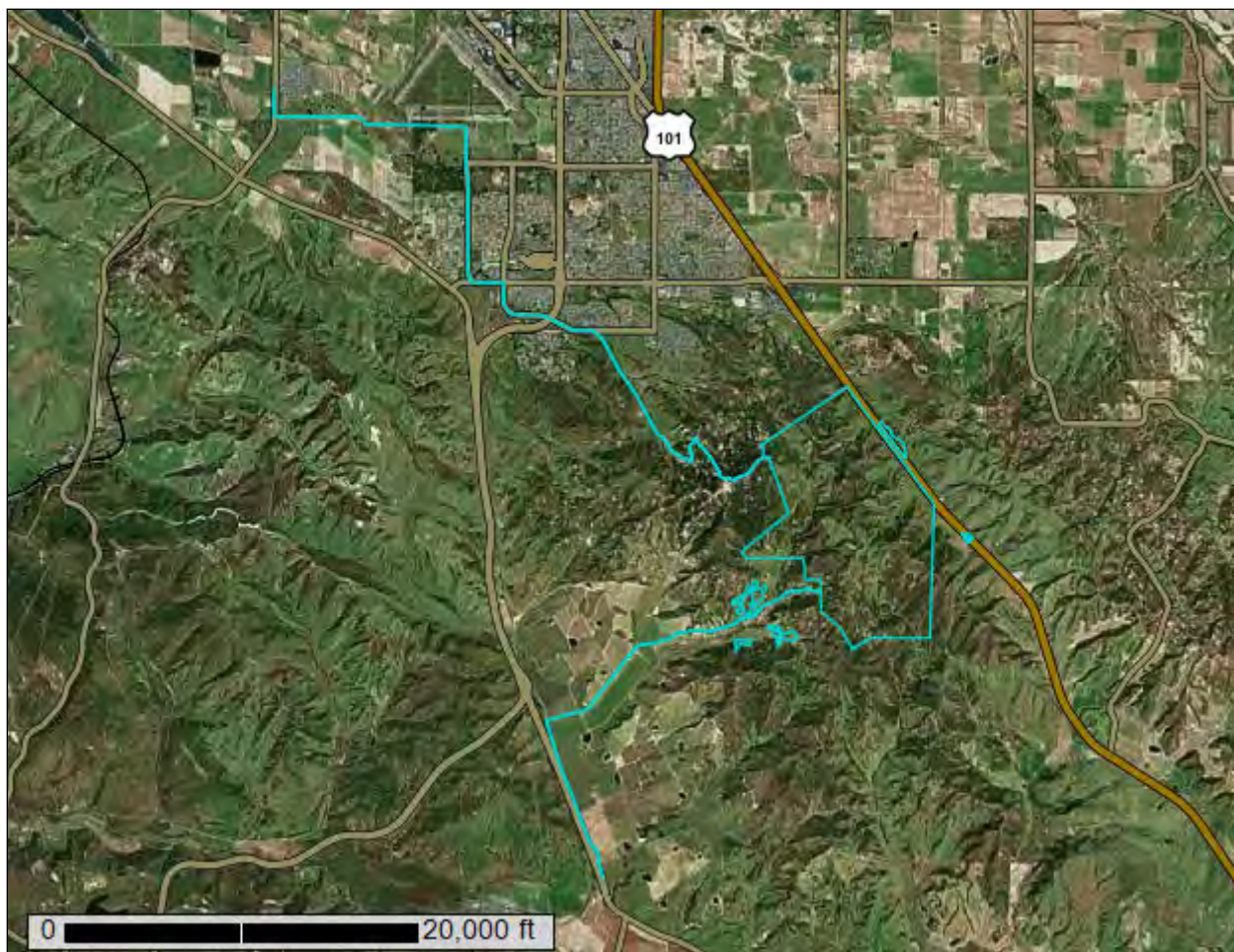
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Northern Santa Barbara Area, California



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface	2
How Soil Surveys Are Made	6
Soil Map	9
Soil Map.....	10
Legend.....	11
Map Unit Legend.....	12
Map Unit Descriptions.....	13
Northern Santa Barbara Area, California.....	16
300—Corducci and Typic Xerofluvents, 0 to 5 percent slopes, occasionally flooded, MLRA 14.....	16
ArD—Arnold sand, 5 to 15 percent slopes.....	18
ArF—Arnold sand, 15 to 45 percent slopes.....	20
ArF3—Arnold sand, 9 to 45 percent slopes, severely eroded.....	22
BmA—Betteravia loamy sand, 0 to 2 percent slopes.....	24
BmA3—Betteravia loamy sand, 0 to 2 percent slopes, severely eroded....	25
BnB2—Betteravia loamy sand, dark variant, 0 to 5 percent slopes, eroded.....	27
BnD2—Betteravia loamy sand, dark variant, 5 to 15 percent slopes, eroded.....	28
BoA2—Botella loam, 0 to 2 percent slopes, eroded.....	29
BoD2—Botella loam, 2 to 15 percent slopes, eroded.....	30
ChF—Chamise shaly loam, 15 to 45 percent slopes.....	32
CtA—Corralitos sand, 0 to 2 percent slopes.....	33
CtD—Corralitos sand, 2 to 15 percent slopes.....	34
CtD2—Corralitos sand, 2 to 15 percent slopes, eroded.....	36
CuA—Corralitos loamy sand, 0 to 2 percent slopes.....	37
CuC—Corralitos loamy sand, 2 to 9 percent slopes.....	39
CwG3—Crow Hill loam, 15 to 75 percent slopes, severely eroded.....	40
DaF—Diablo silty clay, 30 to 45 percent slopes.....	42
EdA—Elder sandy loam, 0 to 2 percent slopes, MLRA 14.....	43
EdA2—Elder sandy loam, 0 to 2 percent slopes, eroded.....	45
EdC2—Elder sandy loam, 2 to 9 percent slopes, eroded.....	47
EdD2—Elder sandy loam, 9 to 15 percent slopes, eroded.....	49
GaC2—Garey sandy loam, 2 to 9 percent slopes, eroded.....	50
GmE—Gaviota sandy loam, 15 to 30 percent slopes, MLRA 15.....	52
GmG—Gaviota sandy loam, 30 to 75 percent slopes.....	53
GuE—Gullied land.....	55
LmG—Lopez gravelly clay loam, 15 to 75 percent slopes.....	56
MaA—Marina sand, 0 to 2 percent slopes.....	57
NvA—Narlon sand, hardpan variant, 0 to 2 percent slopes.....	58
OcD3—Oceano sand, 2 to 15 percent slopes, severely eroded.....	60
RuG—Rough broken land.....	61
SfD—San Andreas-Tierra complex, 5 to 15 percent slopes.....	63
SfE—San Andreas-Tierra complex, 15 to 30 percent slopes.....	65

Custom Soil Resource Report

SfF3—San Andreas-Tierra complex, 9 to 45 percent slopes, severely eroded.....	67
SfG—San Andreas-Tierra complex, 30 to 75 percent slopes.....	69
SpG—Sedimentary rock land.....	71
TcG—Terrace escarpments, sandy.....	72
TrE3—Tierra loam, 5 to 30 percent slopes, severely eroded.....	73
Soil Information for All Uses	75
Suitabilities and Limitations for Use.....	75
Vegetative Productivity.....	75
Yields of Irrigated Crops (Component): Pasture (AUM).....	75
Yields of Irrigated Crops (Component): Wine grapes (Tons).....	81
Yields of Non-Irrigated Crops (Map Unit): Barley (Bu).....	87
Yields of Irrigated Crops (Map Unit): Oranges (Boxes).....	92
Water Management.....	97
Irrigation, General.....	97
References	110

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

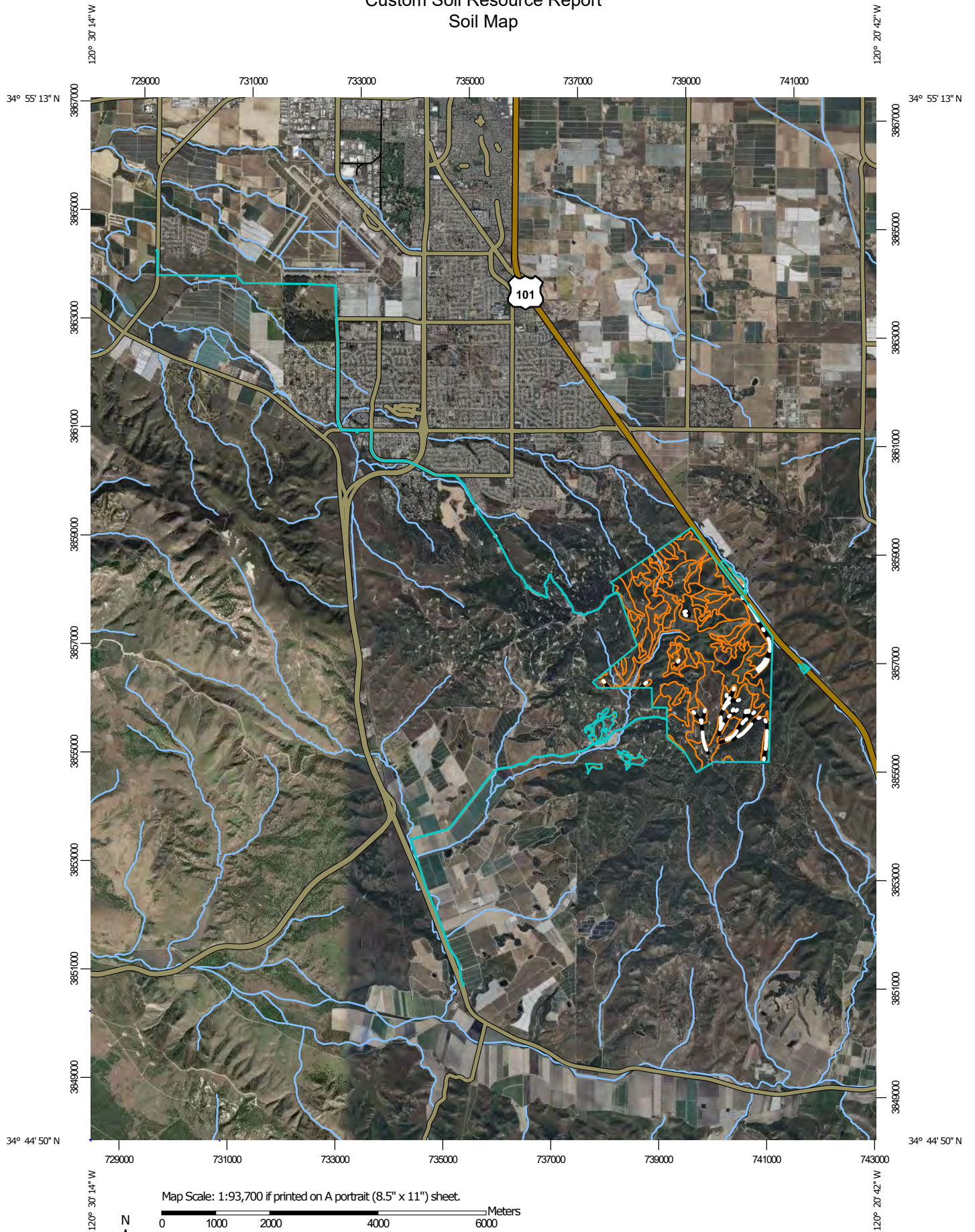
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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

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.

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 19, Sep 9, 2024

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

Date(s) aerial images were photographed: Dec 31, 2009—Apr 12, 2022

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
300	Corducci and Typic Xerofluvents, 0 to 5 percent slopes, occasionally flooded, MLRA 14	1.2	0.1%
ArD	Arnold sand, 5 to 15 percent slopes	253.2	11.0%
ArF	Arnold sand, 15 to 45 percent slopes	538.1	23.4%
ArF3	Arnold sand, 9 to 45 percent slopes, severely eroded	77.6	3.4%
BmA	Betteravia loamy sand, 0 to 2 percent slopes	2.5	0.1%
BmA3	Betteravia loamy sand, 0 to 2 percent slopes, severely eroded	1.5	0.1%
BnB2	Betteravia loamy sand, dark variant, 0 to 5 percent slopes, eroded	37.3	1.6%
BnD2	Betteravia loamy sand, dark variant, 5 to 15 percent slopes, eroded	51.4	2.2%
BoA2	Botella loam, 0 to 2 percent slopes, eroded	0.7	0.0%
BoD2	Botella loam, 2 to 15 percent slopes, eroded	3.1	0.1%
ChF	Chamise shaly loam, 15 to 45 percent slopes	61.3	2.7%
CtA	Corralitos sand, 0 to 2 percent slopes	2.0	0.1%
CtD	Corralitos sand, 2 to 15 percent slopes	99.9	4.3%
CtD2	Corralitos sand, 2 to 15 percent slopes, eroded	6.2	0.3%
CuA	Corralitos loamy sand, 0 to 2 percent slopes	0.3	0.0%
CuC	Corralitos loamy sand, 2 to 9 percent slopes	1.6	0.1%
CwG3	Crow Hill loam, 15 to 75 percent slopes, severely eroded	11.0	0.5%
DaF	Diablo silty clay, 30 to 45 percent slopes	137.6	6.0%
EdA	Elder sandy loam, 0 to 2 percent slopes, MLRA 14	0.8	0.0%
EdA2	Elder sandy loam, 0 to 2 percent slopes, eroded	1.2	0.1%

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Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
EdC2	Elder sandy loam, 2 to 9 percent slopes, eroded	113.8	4.9%
EdD2	Elder sandy loam, 9 to 15 percent slopes, eroded	70.8	3.1%
GaC2	Garey sandy loam, 2 to 9 percent slopes, eroded	1.8	0.1%
GmE	Gaviota sandy loam, 15 to 30 percent slopes, MLRA 15	8.1	0.4%
GmG	Gaviota sandy loam, 30 to 75 percent slopes	326.7	14.2%
GuE	Gullied land	19.4	0.8%
LmG	Lopez gravelly clay loam, 15 to 75 percent slopes	1.7	0.1%
MaA	Marina sand, 0 to 2 percent slopes	1.3	0.1%
NvA	Narlon sand, hardpan variant, 0 to 2 percent slopes	0.7	0.0%
OcD3	Oceano sand, 2 to 15 percent slopes, severely eroded	0.3	0.0%
RuG	Rough broken land	149.4	6.5%
SfD	San Andreas-Tierra complex, 5 to 15 percent slopes	10.9	0.5%
SfE	San Andreas-Tierra complex, 15 to 30 percent slopes	120.0	5.2%
SfF3	San Andreas-Tierra complex, 9 to 45 percent slopes, severely eroded	41.5	1.8%
SfG	San Andreas-Tierra complex, 30 to 75 percent slopes	124.5	5.4%
SpG	Sedimentary rock land	0.4	0.0%
TcG	Terrace escarpments, sandy	1.3	0.1%
TrE3	Tierra loam, 5 to 30 percent slopes, severely eroded	20.4	0.9%
Totals for Area of Interest		2,301.6	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some

observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The

Custom Soil Resource Report

pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Northern Santa Barbara Area, California

300—CorduCCI and Typic Xerofluvents, 0 to 5 percent slopes, occasionally flooded, MLRA 14

Map Unit Setting

National map unit symbol: 2xm5w

Elevation: 70 to 2,480 feet

Mean annual precipitation: 9 to 24 inches

Mean annual air temperature: 58 to 61 degrees F

Frost-free period: 219 to 346 days

Farmland classification: Not prime farmland

Map Unit Composition

CorduCCI and similar soils: 50 percent

Typic xerofluvents and similar soils: 30 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of CorduCCI

Setting

Landform: Flood plains, alluvial fans, stream terraces

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread, tal

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Mixed alluvium derived from igneous and sedimentary rock

Typical profile

A - 0 to 5 inches: fine sand

C1 - 5 to 35 inches: fine sand

C2 - 35 to 45 inches: sand

C3 - 45 to 59 inches: coarse sand

Properties and qualities

Slope: 0 to 5 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.99 to 19.99 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: Occasional

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

Ecological site: R014XG913CA - Dry Sandy Terrace

Hydric soil rating: No

Description of Typic Xerofluvents

Setting

Landform: Flood plains, stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium derived from igneous and sedimentary rock

Typical profile

A - 0 to 4 inches: sand
C1 - 4 to 31 inches: sand
C2 - 31 to 35 inches: fine sandy loam
C3 - 35 to 59 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 5.99 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R014XG914CA - Sandy Terrace
Hydric soil rating: No

Minor Components

Tujunga, very rarely flooded

Percent of map unit: 5 percent
Landform: Flood plains, stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Metz, very rarely flooded

Percent of map unit: 5 percent
Landform: Flood plains, stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Xerofluvents, frequently flooded

Percent of map unit: 5 percent

Custom Soil Resource Report

Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Microfeatures of landform position: Channels
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Xeropsamments, frequently flooded

Percent of map unit: 5 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Microfeatures of landform position: Channels
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

ArD—Arnold sand, 5 to 15 percent slopes

Map Unit Setting

National map unit symbol: hbwb
Elevation: 200 to 1,500 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 260 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Arnold and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arnold

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 23 inches: sand
H2 - 23 to 55 inches: sand
H3 - 55 to 59 inches: weathered bedrock

Properties and qualities

Slope: 5 to 15 percent

Custom Soil Resource Report

Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: R015XD055CA - SANDY
Hydric soil rating: No

Minor Components

San andreas

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Crow hill

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Santa lucia

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Linne

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Chamise

Percent of map unit: 2 percent

Custom Soil Resource Report

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

ArF—Arnold sand, 15 to 45 percent slopes

Map Unit Setting

National map unit symbol: hbwc
Elevation: 200 to 1,500 feet
Mean annual precipitation: 12 to 23 inches
Mean annual air temperature: 57 to 59 degrees F
Frost-free period: 260 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Arnold and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arnold

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 23 inches: sand
H2 - 23 to 55 inches: sand
H3 - 55 to 59 inches: weathered bedrock

Properties and qualities

Slope: 15 to 45 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 6e

Custom Soil Resource Report

Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R015XD055CA - SANDY
Hydric soil rating: No

Minor Components

San andreas

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Santa lucia

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Crow hill

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Linne

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Chamise

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

ArF3—Arnold sand, 9 to 45 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: hbwd
Elevation: 200 to 1,500 feet
Mean annual precipitation: 15 to 22 inches
Mean annual air temperature: 57 to 59 degrees F
Frost-free period: 260 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Arnold and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arnold

Setting

Landform: Ridges, hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 5 inches: sand
H2 - 5 to 25 inches: sand
H3 - 25 to 59 inches: weathered bedrock

Properties and qualities

Slope: 9 to 45 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R015XD076CA - SHALLOW SANDY
Hydric soil rating: No

Minor Components

San andreas

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Santa lucia

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Crow hill

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Chamise

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Linne

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

BmA—Betteravia loamy sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hbwv
Elevation: 0 to 800 feet
Mean annual precipitation: 13 to 18 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 310 to 340 days
Farmland classification: Not prime farmland

Map Unit Composition

Betteravia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Betteravia

Setting

Landform: Fan remnants
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian sands

Typical profile

H1 - 0 to 36 inches: loamy sand
H2 - 36 to 50 inches: cemented
H3 - 50 to 65 inches: sandy clay loam
H4 - 65 to 80 inches: stratified loamy sand to sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 6 to 50 inches to cemented horizon
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: R015XD055CA - SANDY
Hydric soil rating: No

Minor Components

Marina

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Dune land

Percent of map unit: 4 percent
Landform: Dunes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Oceano

Percent of map unit: 4 percent
Landform: Fan remnants
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 2 percent
Landform: Fan remnants
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

BmA3—Betteravia loamy sand, 0 to 2 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: hbww
Elevation: 0 to 800 feet
Mean annual precipitation: 13 to 18 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 310 to 340 days
Farmland classification: Not prime farmland

Map Unit Composition

Betteravia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Betteravia

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian sands

Typical profile

H1 - 0 to 20 inches: loamy sand
H2 - 20 to 34 inches: cemented
H3 - 34 to 50 inches: sandy clay loam
H4 - 50 to 65 inches: stratified loamy sand to sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 6 to 50 inches to cemented horizon
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.6 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R015XD076CA - SHALLOW SANDY
Hydric soil rating: No

Minor Components

Dune land

Percent of map unit: 7 percent
Landform: Dunes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Oceano

Percent of map unit: 4 percent
Landform: Terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Marina

Percent of map unit: 4 percent

Custom Soil Resource Report

Landform: Terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

BnB2—Betteravia loamy sand, dark variant, 0 to 5 percent slopes, eroded

Map Unit Setting

National map unit symbol: hbwy
Elevation: 0 to 800 feet
Mean annual precipitation: 13 to 18 inches
Mean annual air temperature: 59 degrees F
Frost-free period: 310 to 340 days
Farmland classification: Not prime farmland

Map Unit Composition

Betteravia, dark variant, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Betteravia, Dark Variant

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from diatomaceous shale and/or acid sandstone

Typical profile

H1 - 0 to 26 inches: loamy sand
H2 - 26 to 38 inches: sandy loam
H3 - 38 to 50 inches: sandy loam
H4 - 50 to 61 inches: loamy sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R015XD055CA - SANDY
Hydric soil rating: No

Minor Components

Corralitos

Percent of map unit: 10 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent
Landform: Troughs
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

BnD2—Betteravia loamy sand, dark variant, 5 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: hbwz
Elevation: 0 to 800 feet
Mean annual precipitation: 13 to 18 inches
Mean annual air temperature: 59 degrees F
Frost-free period: 310 to 340 days
Farmland classification: Not prime farmland

Map Unit Composition

Betteravia, dark variant, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Betteravia, Dark Variant

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from diatomaceous shale and/or acid sandstone

Custom Soil Resource Report

Typical profile

H1 - 0 to 26 inches: loamy sand
H2 - 26 to 38 inches: sandy loam
H3 - 38 to 50 inches: sandy loam
H4 - 50 to 61 inches: loamy sand

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R015XD055CA - SANDY
Hydric soil rating: No

Minor Components

Corralitos

Percent of map unit: 8 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 7 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

BoA2—Botella loam, 0 to 2 percent slopes, eroded

Map Unit Setting

National map unit symbol: hbx1
Elevation: 50 to 800 feet
Mean annual precipitation: 12 to 22 inches
Mean annual air temperature: 57 degrees F

Custom Soil Resource Report

Frost-free period: 250 to 320 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Botella and similar soils: 85 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Botella

Setting

Landform: Valleys, alluvial fans

Landform position (three-dimensional): Tread, talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from acid sandstone and shale

Typical profile

H1 - 0 to 9 inches: loam

H2 - 9 to 65 inches: clay loam

H3 - 65 to 76 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): 1

Land capability classification (nonirrigated): 3c

Hydrologic Soil Group: C

Ecological site: R014XG906CA - Dry Loamy Bottom

Other vegetative classification: LOAMY (015XD047CA_1)

Hydric soil rating: No

BoD2—Botella loam, 2 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: hbx3

Elevation: 50 to 800 feet

Mean annual precipitation: 12 to 22 inches

Mean annual air temperature: 57 degrees F

Frost-free period: 250 to 320 days

Farmland classification: Not prime farmland

Map Unit Composition

Botella and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Botella

Setting

Landform: Stream terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from acid sandstone and shale

Typical profile

H1 - 0 to 9 inches: loam

H2 - 9 to 65 inches: clay loam

H3 - 65 to 76 inches: sandy clay loam

Properties and qualities

Slope: 9 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: R015XY003CA - Loamy Bottom

Other vegetative classification: LOAMY (015XD047CA_1)

Hydric soil rating: No

Minor Components

Tierra

Percent of map unit: 10 percent

Landform: Alluvial fans, valleys

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent

Landform: Alluvial fans, valleys

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

ChF—Chamise shaly loam, 15 to 45 percent slopes

Map Unit Setting

National map unit symbol: hbxm

Elevation: 200 to 1,500 feet

Mean annual precipitation: 12 to 20 inches

Mean annual air temperature: 57 degrees F

Frost-free period: 240 to 300 days

Farmland classification: Not prime farmland

Map Unit Composition

Chamise and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chamise

Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium

Typical profile

H1 - 0 to 18 inches: shaly loam

H2 - 18 to 24 inches: shaly clay

H3 - 24 to 37 inches: very shaly clay

H4 - 37 to 60 inches: very shaly clay loam

Properties and qualities

Slope: 15 to 45 percent

Depth to restrictive feature: 18 to 40 inches to strongly contrasting textural stratification

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): 6e

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: R015XY005CA - Loamy Terrace <20"ppt

Other vegetative classification: LOAMY (015XD047CA_1)

Custom Soil Resource Report

Hydric soil rating: No

Minor Components

Tierra

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Chamise, sandy loam

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

CtA—Corralitos sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hbxz
Elevation: 100 to 800 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 59 to 61 degrees F
Frost-free period: 250 to 310 days
Farmland classification: Not prime farmland

Map Unit Composition

Corralitos and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Corralitos

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread

Custom Soil Resource Report

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium

Typical profile

H1 - 0 to 20 inches: sand
H2 - 20 to 60 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R015XD055CA - SANDY
Hydric soil rating: No

Minor Components

Elder

Percent of map unit: 8 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Corralitos, loamy sand

Percent of map unit: 7 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

CtD—Corralitos sand, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: hby0
Elevation: 100 to 800 feet
Mean annual precipitation: 14 to 18 inches

Custom Soil Resource Report

Mean annual air temperature: 59 to 61 degrees F

Frost-free period: 250 to 310 days

Farmland classification: Not prime farmland

Map Unit Composition

Corralitos and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Corralitos

Setting

Landform: Alluvial fans

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy alluvium

Typical profile

H1 - 0 to 20 inches: sand

H2 - 20 to 60 inches: sand

Properties and qualities

Slope: 2 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

Ecological site: R015XD055CA - SANDY

Hydric soil rating: No

Minor Components

Elder

Percent of map unit: 5 percent

Landform: Alluvial fans

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Arnold

Percent of map unit: 5 percent

Landform: Alluvial fans

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Custom Soil Resource Report

Hydric soil rating: No

Gullied land

Percent of map unit: 4 percent

Landform: Alluvial fans

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Riverwash

Percent of map unit: 1 percent

Landform: Drainageways

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: Yes

CtD2—Corralitos sand, 2 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: hby1

Elevation: 100 to 800 feet

Mean annual precipitation: 14 to 18 inches

Mean annual air temperature: 59 to 61 degrees F

Frost-free period: 250 to 310 days

Farmland classification: Not prime farmland

Map Unit Composition

Corralitos and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Corralitos

Setting

Landform: Alluvial fans

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy alluvium

Typical profile

H1 - 0 to 20 inches: sand

H2 - 20 to 60 inches: sand

Properties and qualities

Slope: 2 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Custom Soil Resource Report

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

Ecological site: R015XD055CA - SANDY

Hydric soil rating: No

Minor Components

Arnold

Percent of map unit: 10 percent

Landform: Alluvial fans

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Riverwash

Percent of map unit: 5 percent

Landform: Drainageways

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: Yes

CuA—Corralitos loamy sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hby2

Elevation: 100 to 800 feet

Mean annual precipitation: 14 to 18 inches

Mean annual air temperature: 59 to 61 degrees F

Frost-free period: 250 to 310 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Corralitos and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Corralitos

Setting

Landform: Alluvial fans, flood plains
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium

Typical profile

H1 - 0 to 32 inches: loamy sand
H2 - 32 to 60 inches: stratified sand to loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: R015XD055CA - SANDY
Hydric soil rating: No

Minor Components

Agueda

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Elder

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Botella

Percent of map unit: 3 percent
Landform: Valleys, alluvial fans
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear

Custom Soil Resource Report

Across-slope shape: Linear

Hydric soil rating: No

Salinas

Percent of map unit: 2 percent

Landform: Alluvial flats

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

CuC—Corralitos loamy sand, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: hby3

Elevation: 100 to 800 feet

Mean annual precipitation: 14 to 18 inches

Mean annual air temperature: 59 to 61 degrees F

Frost-free period: 250 to 310 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Corralitos and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Corralitos

Setting

Landform: Alluvial fans

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy alluvium

Typical profile

H1 - 0 to 32 inches: loamy sand

H2 - 32 to 60 inches: stratified sand to loamy sand

Properties and qualities

Slope: 2 to 9 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: R015XD055CA - SANDY
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Corralitos, sand

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Arnold

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

CwG3—Crow Hill loam, 15 to 75 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: hby9
Elevation: 200 to 1,500 feet
Mean annual precipitation: 11 to 18 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 275 to 325 days
Farmland classification: Not prime farmland

Map Unit Composition

Crow hill and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Crow Hill

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from shale

Typical profile

H1 - 0 to 7 inches: loam
H2 - 7 to 22 inches: silty clay loam
H3 - 22 to 59 inches: weathered bedrock

Properties and qualities

Slope: 15 to 75 percent
Depth to restrictive feature: 22 to 42 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R015XD093CA - SHALLOW LOAMY
Hydric soil rating: No

Minor Components

Santa lucia

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Shedd variant

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent
Landform: Mountain slopes

Custom Soil Resource Report

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

DaF—Diablo silty clay, 30 to 45 percent slopes

Map Unit Setting

National map unit symbol: hbyd
Elevation: 500 to 3,000 feet
Mean annual precipitation: 12 to 20 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 250 to 275 days
Farmland classification: Not prime farmland

Map Unit Composition

Diablo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Diablo

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from calcareous mudstone or shale

Typical profile

H1 - 0 to 26 inches: silty clay
H2 - 26 to 35 inches: silty clay
H3 - 35 to 59 inches: weathered bedrock

Properties and qualities

Slope: 30 to 45 percent
Depth to restrictive feature: 20 to 36 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R015XD001CA - CLAYEY
Hydric soil rating: No

Minor Components

Shedd

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Chamise

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

EdA—Elder sandy loam, 0 to 2 percent slopes, MLRA 14

Map Unit Setting

National map unit symbol: 2tyyj
Elevation: 50 to 1,570 feet
Mean annual precipitation: 11 to 29 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 300 to 365 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Elder and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elder

Setting

Landform: Alluvial fans, flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

Ap - 0 to 8 inches: sandy loam
A - 8 to 23 inches: sandy loam
AC - 23 to 31 inches: sandy loam
C - 31 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.83 to 9.92 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: A
Ecological site: R014XY001CA - LOAMY BOTTOMLAND
Hydric soil rating: No

Minor Components

Arroyo seco

Percent of map unit: 4 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Gorgonio

Percent of map unit: 4 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Elkhorn, sandy loam

Percent of map unit: 2 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear

Custom Soil Resource Report

Across-slope shape: Linear

Hydric soil rating: No

Metz, loamy sand

Percent of map unit: 1 percent

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Xerofluvents, sand

Percent of map unit: 1 percent

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: Yes

Watsonville, loam

Percent of map unit: 1 percent

Landform: Marine terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: Yes

San emigdio, sandy loam

Percent of map unit: 1 percent

Landform: Alluvial fans

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Baywood, loamy sand

Percent of map unit: 1 percent

Landform: Dunes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Rise

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

EdA2—Elder sandy loam, 0 to 2 percent slopes, eroded

Map Unit Setting

National map unit symbol: 31d5z

Elevation: 70 to 920 feet

Custom Soil Resource Report

Mean annual precipitation: 15 to 20 inches
Mean annual air temperature: 57 to 60 degrees F
Frost-free period: 280 to 355 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Elder and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elder

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium derived from sandstone and shale

Typical profile

Ap - 0 to 8 inches: sandy loam
A - 8 to 23 inches: sandy loam
AC - 23 to 35 inches: sandy loam
C - 35 to 72 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A
Ecological site: R015XY003CA - Loamy Bottom
Hydric soil rating: No

Minor Components

Elder, gravelly

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R015XY003CA - Loamy Bottom
Hydric soil rating: No

Botella

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R015XD001CA - CLAYEY
Hydric soil rating: No

Corralitos

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R015XD055CA - SANDY
Hydric soil rating: No

EdC2—Elder sandy loam, 2 to 9 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2zwt8
Elevation: 50 to 660 feet
Mean annual precipitation: 16 to 18 inches
Mean annual air temperature: 56 to 58 degrees F
Frost-free period: 345 to 365 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Elder and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elder

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium derived from sandstone and shale

Typical profile

Ap - 0 to 8 inches: sandy loam
A - 8 to 23 inches: sandy loam
AC - 23 to 35 inches: sandy loam
C - 35 to 72 inches: fine sandy loam

Custom Soil Resource Report

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A
Ecological site: R015XY003CA - Loamy Bottom
Hydric soil rating: No

Minor Components

Botella

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R015XD001CA - CLAYEY
Hydric soil rating: No

Elder, gravelly

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R015XY003CA - Loamy Bottom
Hydric soil rating: No

Corralitos

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R015XD055CA - SANDY
Hydric soil rating: No

EdD2—Elder sandy loam, 9 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: 31d60

Elevation: 300 to 1,150 feet

Mean annual precipitation: 15 to 19 inches

Mean annual air temperature: 57 to 60 degrees F

Frost-free period: 280 to 350 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Elder and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elder

Setting

Landform: Alluvial fans

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Alluvium derived from sandstone and shale

Typical profile

Ap - 0 to 8 inches: sandy loam

A - 8 to 23 inches: sandy loam

AC - 23 to 35 inches: sandy loam

C - 35 to 72 inches: fine sandy loam

Properties and qualities

Slope: 9 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 2w

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: A

Ecological site: R015XY003CA - Loamy Bottom

Hydric soil rating: No

Minor Components

Botella

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R015XD001CA - CLAYEY
Hydric soil rating: No

Elder, gravelly

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R015XY003CA - Loamy Bottom
Hydric soil rating: No

Corralitos

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R015XD055CA - SANDY
Hydric soil rating: No

GaC2—Garey sandy loam, 2 to 9 percent slopes, eroded

Map Unit Setting

National map unit symbol: hbyv
Elevation: 300 to 1,000 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Garey and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Garey

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits

Typical profile

H1 - 0 to 27 inches: sandy loam
H2 - 27 to 47 inches: sandy loam
H3 - 47 to 70 inches: loamy sand

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R014XG911CA - Dry Loamy Terrace
Other vegetative classification: LOAMY (015XD047CA_1)
Hydric soil rating: No

Minor Components

Oceano

Percent of map unit: 8 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 7 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

GmE—Gaviota sandy loam, 15 to 30 percent slopes, MLRA 15

Map Unit Setting

National map unit symbol: 2tb6p
Elevation: 30 to 2,820 feet
Mean annual precipitation: 9 to 28 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 300 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Gaviota and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gaviota

Setting

Landform: Mountain slopes
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Residuum weathered from sandstone

Typical profile

A1 - 0 to 2 inches: sandy loam
A2 - 2 to 12 inches: sandy loam
R - 12 to 22 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: 8 to 16 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R015XD117CA - SHALLOW COARSE LOAMY, R015XD093CA - SHALLOW LOAMY
Hydric soil rating: No

Minor Components

Arnold

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Contra costa

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear

Santa lucia

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear

Rock outcrop

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear

GmG—Gaviota sandy loam, 30 to 75 percent slopes

Map Unit Setting

National map unit symbol: 2zwtp
Elevation: 260 to 1,230 feet
Mean annual precipitation: 19 to 24 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Gaviota and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gaviota

Setting

Landform: Mountain slopes

Custom Soil Resource Report

Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

A1 - 0 to 7 inches: sandy loam
A2 - 7 to 15 inches: gravelly sandy loam
R - 15 to 79 inches: bedrock

Properties and qualities

Slope: 30 to 75 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R015XD117CA - SHALLOW COARSE LOAMY
Hydric soil rating: No

Minor Components

Arnold

Percent of map unit: 10 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R015XD055CA - SANDY
Hydric soil rating: No

Rock outcrop, sandstone

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Gilroy

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear

Custom Soil Resource Report

Across-slope shape: Linear
Ecological site: R015XD116CA - STEEP LOAMY
Hydric soil rating: No

GuE—Gullied land

Map Unit Composition

Gullied land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gullied Land

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

H1 - 0 to 60 inches: variable

Interpretive groups

Land capability classification (irrigated): 8e
Land capability classification (nonirrigated): 8e
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 10 percent
Landform: Drainageways
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Unnamed

Percent of map unit: 5 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

LmG—Lopez gravelly clay loam, 15 to 75 percent slopes

Map Unit Setting

National map unit symbol: 2zwt9

Elevation: 440 to 2,200 feet

Mean annual precipitation: 16 to 28 inches

Mean annual air temperature: 57 to 63 degrees F

Frost-free period: 295 to 355 days

Farmland classification: Not prime farmland

Map Unit Composition

Lopez and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lopez

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from shale and siltstone

Typical profile

A1 - 0 to 6 inches: gravelly clay loam

A2 - 6 to 16 inches: very gravelly clay loam

R - 16 to 79 inches: bedrock

Properties and qualities

Slope: 15 to 75 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low
(0.01 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): 7e

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Ecological site: R015XD093CA - SHALLOW LOAMY

Hydric soil rating: No

Minor Components

Crow hill

Percent of map unit: 5 percent

Custom Soil Resource Report

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R015XD116CA - STEEP LOAMY
Hydric soil rating: No

Santa lucia

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R015XD116CA - STEEP LOAMY
Hydric soil rating: No

MaA—Marina sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hbzs
Elevation: 100 to 600 feet
Mean annual precipitation: 14 to 22 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 300 to 320 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Marina and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marina

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits

Typical profile

H1 - 0 to 27 inches: sand
H2 - 27 to 50 inches: sand
H3 - 50 to 88 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained

Custom Soil Resource Report

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): 3s

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: B

Ecological site: R015XD055CA - SANDY

Hydric soil rating: No

Minor Components

Oceano

Percent of map unit: 15 percent

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

NvA—Narlon sand, hardpan variant, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hc0j

Elevation: 200 to 800 feet

Mean annual precipitation: 14 to 17 inches

Mean annual air temperature: 57 degrees F

Frost-free period: 300 to 320 days

Farmland classification: Not prime farmland

Map Unit Composition

Narlon variant and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Narlon Variant

Setting

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Clayey marine sediments

Typical profile

H1 - 0 to 26 inches: sand

Custom Soil Resource Report

H2 - 26 to 38 inches: sandy clay

H3 - 38 to 60 inches: cemented

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: 24 to 30 inches to abrupt textural change; 30 to 60 inches to duripan

Drainage class: Moderately well drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)

Depth to water table: About 18 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A/D

Ecological site: R015XD055CA - SANDY

Hydric soil rating: No

Minor Components

Unnamed, ponded

Percent of map unit: 3 percent

Landform: Depressions

Landform position (three-dimensional): Dip

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Tangair

Percent of map unit: 3 percent

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Unnamed

Percent of map unit: 3 percent

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: Yes

Oceano

Percent of map unit: 3 percent

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Narlon

Percent of map unit: 3 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

OcD3—Oceano sand, 2 to 15 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: hc0n
Elevation: 0 to 800 feet
Mean annual precipitation: 14 to 20 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 300 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Oceano and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oceano

Setting

Landform: Dunes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Eolian sands

Typical profile

H1 - 0 to 5 inches: sand
H2 - 5 to 60 inches: sand

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R015XD076CA - SHALLOW SANDY
Hydric soil rating: No

Minor Components

Dune land

Percent of map unit: 10 percent
Landform: Dunes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Marina

Percent of map unit: 5 percent
Landform: Dunes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

RuG—Rough broken land

Map Unit Setting

National map unit symbol: hc1b
Elevation: 0 to 4,050 feet
Mean annual precipitation: 8 to 20 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 225 to 360 days
Farmland classification: Not prime farmland

Map Unit Composition

Rough broken land: 50 percent
Lithic xerorthents and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rough Broken Land

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex

Custom Soil Resource Report

Across-slope shape: Convex

Parent material: Residuum weathered from sandstone or semiconsolidated gravelly sediments

Typical profile

H1 - 0 to 59 inches: weathered bedrock

Properties and qualities

Slope: 30 to 90 percent

Depth to restrictive feature: 0 to 10 inches to paralithic bedrock

Drainage class: Somewhat excessively drained

Runoff class: Very high

Interpretive groups

Land capability classification (irrigated): 8e

Land capability classification (nonirrigated): 8e

Hydric soil rating: No

Description of Lithic Xerorthents

Setting

Landform: Mountains

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Mountainflank

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: L

Properties and qualities

Slope: 30 to 90 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Runoff class: Very high

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): 7e

Land capability classification (nonirrigated): 7e

Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 10 percent

Landform: Mountains

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Mountainflank

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

SfD—San Andreas-Tierra complex, 5 to 15 percent slopes

Map Unit Setting

National map unit symbol: hc1k
Elevation: 150 to 2,500 feet
Mean annual precipitation: 13 to 20 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

San andreas and similar soils: 50 percent
Tierra and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Andreas

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from soft sandstone

Typical profile

H1 - 0 to 15 inches: fine sandy loam
H2 - 15 to 28 inches: very fine sandy loam
H3 - 28 to 59 inches: weathered bedrock

Properties and qualities

Slope: 9 to 15 percent
Depth to restrictive feature: 24 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R015XY008CA - Hills <20"ppt
Other vegetative classification: LOAMY (015XD047CA_1)

Custom Soil Resource Report

Hydric soil rating: No

Description of Tierra

Setting

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium

Typical profile

H1 - 0 to 11 inches: sandy loam

H2 - 11 to 43 inches: clay

H3 - 43 to 62 inches: clay loam

Properties and qualities

Slope: 5 to 15 percent

Depth to restrictive feature: 11 to 40 inches to abrupt textural change

Drainage class: Moderately well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D

Ecological site: R015XD115CA - CLAYPAN

Hydric soil rating: No

Minor Components

Crow hill

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Gaviota

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

SfE—San Andreas-Tierra complex, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hc1l
Elevation: 150 to 2,500 feet
Mean annual precipitation: 13 to 20 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

San andreas and similar soils: 60 percent
Tierra and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Andreas

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from soft sandstone

Typical profile

H1 - 0 to 15 inches: fine sandy loam
H2 - 15 to 28 inches: very fine sandy loam
H3 - 28 to 59 inches: weathered bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 22 to 30 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R015XY008CA - Hills <20"ppt
Other vegetative classification: LOAMY (015XD047CA_1)

Custom Soil Resource Report

Hydric soil rating: No

Description of Tierra

Setting

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium

Typical profile

H1 - 0 to 11 inches: sandy loam

H2 - 11 to 43 inches: clay

H3 - 43 to 62 inches: clay loam

Properties and qualities

Slope: 15 to 30 percent

Depth to restrictive feature: 8 to 24 inches to abrupt textural change

Drainage class: Moderately well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D

Ecological site: R015XD115CA - CLAYPAN

Hydric soil rating: No

Minor Components

Crow hill

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Gaviota

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent

Custom Soil Resource Report

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

SfF3—San Andreas-Tierra complex, 9 to 45 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: hc1m
Elevation: 150 to 2,500 feet
Mean annual precipitation: 13 to 20 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

San andreas and similar soils: 50 percent
Tierra and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Andreas

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from soft sandstone

Typical profile

H1 - 0 to 15 inches: fine sandy loam
H2 - 15 to 28 inches: very fine sandy loam
H3 - 28 to 59 inches: weathered bedrock

Properties and qualities

Slope: 9 to 45 percent
Depth to restrictive feature: 18 to 28 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Custom Soil Resource Report

Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 6e

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: R015XD093CA - SHALLOW LOAMY

Hydric soil rating: No

Description of Tierra

Setting

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium

Typical profile

H1 - 0 to 11 inches: sandy loam

H2 - 11 to 43 inches: clay

H3 - 43 to 62 inches: clay loam

Properties and qualities

Slope: 9 to 45 percent

Depth to restrictive feature: 11 to 26 inches to abrupt textural change

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): 6e

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: D

Ecological site: R015XD115CA - CLAYPAN

Hydric soil rating: No

Minor Components

Gaviota

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Crow hill

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

SfG—San Andreas-Tierra complex, 30 to 75 percent slopes

Map Unit Setting

National map unit symbol: hc1n
Elevation: 150 to 2,500 feet
Mean annual precipitation: 13 to 20 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

San andreas and similar soils: 60 percent
Tierra and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Andreas

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from soft sandstone

Typical profile

H1 - 0 to 15 inches: fine sandy loam
H2 - 15 to 28 inches: very fine sandy loam
H3 - 28 to 59 inches: weathered bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 20 to 28 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e

Custom Soil Resource Report

Hydrologic Soil Group: C
Ecological site: R015XD116CA - STEEP LOAMY
Hydric soil rating: No

Description of Tierra

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 11 inches: sandy loam
H2 - 11 to 43 inches: clay
H3 - 43 to 62 inches: clay loam

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 11 to 26 inches to abrupt textural change
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R015XD115CA - CLAYPAN
Hydric soil rating: No

Minor Components

Crow hill

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Gaviota

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

SpG—Sedimentary rock land

Map Unit Setting

National map unit symbol: hc23
Elevation: 650 to 9,000 feet
Mean annual precipitation: 9 to 27 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 245 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Sedimentary rock land: 40 percent
Lithic xerorthents and similar soils: 30 percent
Rock outcrop: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sedimentary Rock Land

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 59 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 90 percent
Depth to restrictive feature: 0 to 20 inches to lithic bedrock
Drainage class: Excessively drained
Runoff class: Very high

Interpretive groups

Land capability classification (irrigated): 8s
Land capability classification (nonirrigated): 8s
Ecological site: R015XY013CA - Loamy Mountains <20"ppt
Hydric soil rating: No

Description of Lithic Xerorthents

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex

Properties and qualities

Slope: 30 to 90 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very high
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Ecological site: R015XY013CA - Loamy Mountains <20"ppt
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex

Interpretive groups

Land capability classification (irrigated): 8
Land capability classification (nonirrigated): 8
Hydric soil rating: No

TcG—Terrace escarpments, sandy

Map Unit Setting

National map unit symbol: hc2z
Mean annual precipitation: 14 inches
Mean annual air temperature: 61 degrees F
Farmland classification: Not prime farmland

Map Unit Composition

Terrace escarpments: 85 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Terrace Escarpments

Setting

Landform: Escarpments
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium

Typical profile

H1 - 0 to 60 inches: variable

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Ecological site: R015XD076CA - SHALLOW SANDY
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 15 percent
Landform: Escarpments
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

TrE3—Tierra loam, 5 to 30 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: hc3b
Elevation: 150 to 1,100 feet
Mean annual precipitation: 14 to 20 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 270 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Tierra and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tierra

Setting

Landform: Terraces
Landform position (three-dimensional): Tread

Custom Soil Resource Report

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 6 inches: loam
H2 - 6 to 43 inches: clay
H3 - 43 to 62 inches: clay loam

Properties and qualities

Slope: 5 to 30 percent
Depth to restrictive feature: 6 to 10 inches to abrupt textural change
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 0.9 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R015XD115CA - CLAYPAN
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 10 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Chamise

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Vegetative Productivity

Vegetative productivity includes estimates of potential vegetative production for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture and rangeland. In the underlying database, some states maintain crop yield data by individual map unit component. Other states maintain the data at the map unit level. Attributes are included for both, although only one or the other is likely to contain data for any given geographic area. For other land uses, productivity data is shown only at the map unit component level. Examples include potential crop yields under irrigated and nonirrigated conditions, forest productivity, forest site index, and total rangeland production under of normal, favorable and unfavorable conditions.

Yields of Irrigated Crops (Component): Pasture (AUM)

These are the estimated average yields per acre that can be expected of selected irrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors. It is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

In the database, some states maintain crop yield data by individual map unit component and others maintain the data at the map unit level. Attributes are included in this application for both, although only one or the other is likely to have data for any given geographic area. This attribute uses data maintained at the map unit component level.

Custom Soil Resource Report

The yields are actually recorded as three separate values in the database. A low value and a high value indicate the range for the soil component. A "representative" value indicates the expected value for the component. For these yields, only the representative value is used.

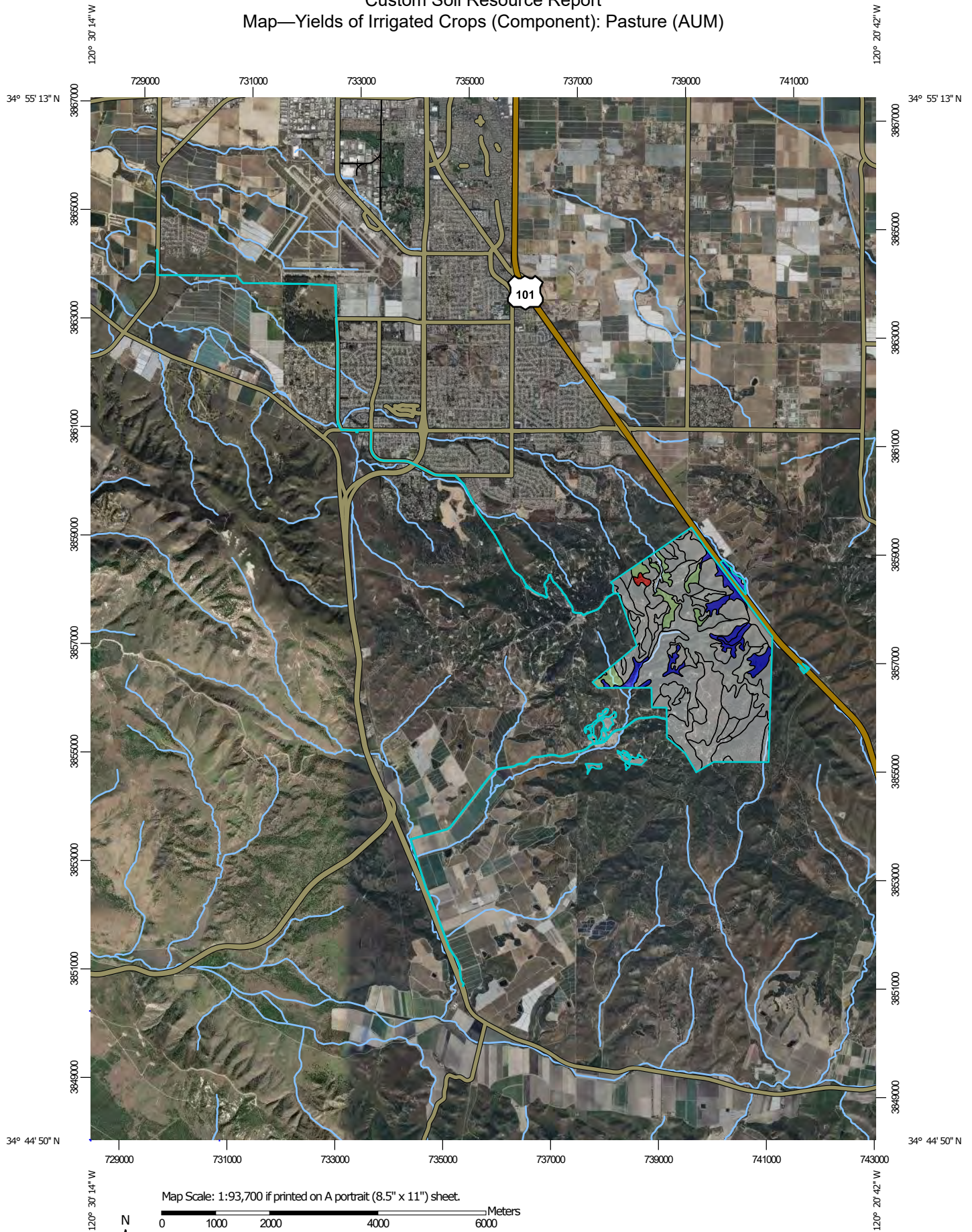
The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby areas and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for the selected crop. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Custom Soil Resource Report

Map—Yields of Irrigated Crops (Component): Pasture (AUM)



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Background

 Aerial Photography

Soils

Soil Rating Polygons

 ≤ 10.00
 > 10.00 and ≤ 12.00
 > 12.00 and ≤ 18.70
 Not rated or not available

Soil Rating Lines

 ≤ 10.00
 > 10.00 and ≤ 12.00
 > 12.00 and ≤ 18.70
 Not rated or not available

Soil Rating Points

 ≤ 10.00
 > 10.00 and ≤ 12.00
 > 12.00 and ≤ 18.70
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

MAP INFORMATION

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

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 19, Sep 9, 2024

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

Date(s) aerial images were photographed: Dec 31, 2009—Apr 12, 2022

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.

Table—Yields of Irrigated Crops (Component): Pasture (AUM)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
300	Corducci and Typic Xerofluvents, 0 to 5 percent slopes, occasionally flooded, MLRA 14		1.2	0.1%
ArD	Arnold sand, 5 to 15 percent slopes		253.2	11.0%
ArF	Arnold sand, 15 to 45 percent slopes		538.1	23.4%
ArF3	Arnold sand, 9 to 45 percent slopes, severely eroded		77.6	3.4%
BmA	Betteravia loamy sand, 0 to 2 percent slopes		2.5	0.1%
BmA3	Betteravia loamy sand, 0 to 2 percent slopes, severely eroded		1.5	0.1%
BnB2	Betteravia loamy sand, dark variant, 0 to 5 percent slopes, eroded		37.3	1.6%
BnD2	Betteravia loamy sand, dark variant, 5 to 15 percent slopes, eroded		51.4	2.2%
BoA2	Botella loam, 0 to 2 percent slopes, eroded		0.7	0.0%
BoD2	Botella loam, 2 to 15 percent slopes, eroded		3.1	0.1%
ChF	Chamise shaly loam, 15 to 45 percent slopes		61.3	2.7%
CtA	Corralitos sand, 0 to 2 percent slopes		2.0	0.1%
CtD	Corralitos sand, 2 to 15 percent slopes		99.9	4.3%
CtD2	Corralitos sand, 2 to 15 percent slopes, eroded		6.2	0.3%
CuA	Corralitos loamy sand, 0 to 2 percent slopes		0.3	0.0%
CuC	Corralitos loamy sand, 2 to 9 percent slopes		1.6	0.1%
CwG3	Crow Hill loam, 15 to 75 percent slopes, severely eroded		11.0	0.5%
DaF	Diablo silty clay, 30 to 45 percent slopes		137.6	6.0%
EdA	Elder sandy loam, 0 to 2 percent slopes, MLRA 14		0.8	0.0%

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
EdA2	Elder sandy loam, 0 to 2 percent slopes, eroded	18.70	1.2	0.1%
EdC2	Elder sandy loam, 2 to 9 percent slopes, eroded	18.70	113.8	4.9%
EdD2	Elder sandy loam, 9 to 15 percent slopes, eroded	18.70	70.8	3.1%
GaC2	Garey sandy loam, 2 to 9 percent slopes, eroded		1.8	0.1%
GmE	Gaviota sandy loam, 15 to 30 percent slopes, MLRA 15		8.1	0.4%
GmG	Gaviota sandy loam, 30 to 75 percent slopes		326.7	14.2%
GuE	Gullied land		19.4	0.8%
LmG	Lopez gravelly clay loam, 15 to 75 percent slopes		1.7	0.1%
MaA	Marina sand, 0 to 2 percent slopes		1.3	0.1%
NvA	Narlon sand, hardpan variant, 0 to 2 percent slopes		0.7	0.0%
OcD3	Oceano sand, 2 to 15 percent slopes, severely eroded		0.3	0.0%
RuG	Rough broken land		149.4	6.5%
SfD	San Andreas-Tierra complex, 5 to 15 percent slopes	10.00	10.9	0.5%
SfE	San Andreas-Tierra complex, 15 to 30 percent slopes	12.00	120.0	5.2%
SfF3	San Andreas-Tierra complex, 9 to 45 percent slopes, severely eroded		41.5	1.8%
SfG	San Andreas-Tierra complex, 30 to 75 percent slopes		124.5	5.4%
SpG	Sedimentary rock land		0.4	0.0%
TcG	Terrace escarpments, sandy		1.3	0.1%
TrE3	Tierra loam, 5 to 30 percent slopes, severely eroded		20.4	0.9%
Totals for Area of Interest			2,301.6	100.0%

Rating Options—Yields of Irrigated Crops (Component): Pasture (AUM)

Crop: Pasture

Yield Units: AUM

Aggregation Method: Weighted Average

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: Yes

Yields of Irrigated Crops (Component): Wine grapes (Tons)

These are the estimated average yields per acre that can be expected of selected irrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors. It is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

In the database, some states maintain crop yield data by individual map unit component and others maintain the data at the map unit level. Attributes are included in this application for both, although only one or the other is likely to have data for any given geographic area. This attribute uses data maintained at the map unit component level.

The yields are actually recorded as three separate values in the database. A low value and a high value indicate the range for the soil component. A "representative" value indicates the expected value for the component. For these yields, only the representative value is used.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby areas and results of field trials and demonstrations also are considered.

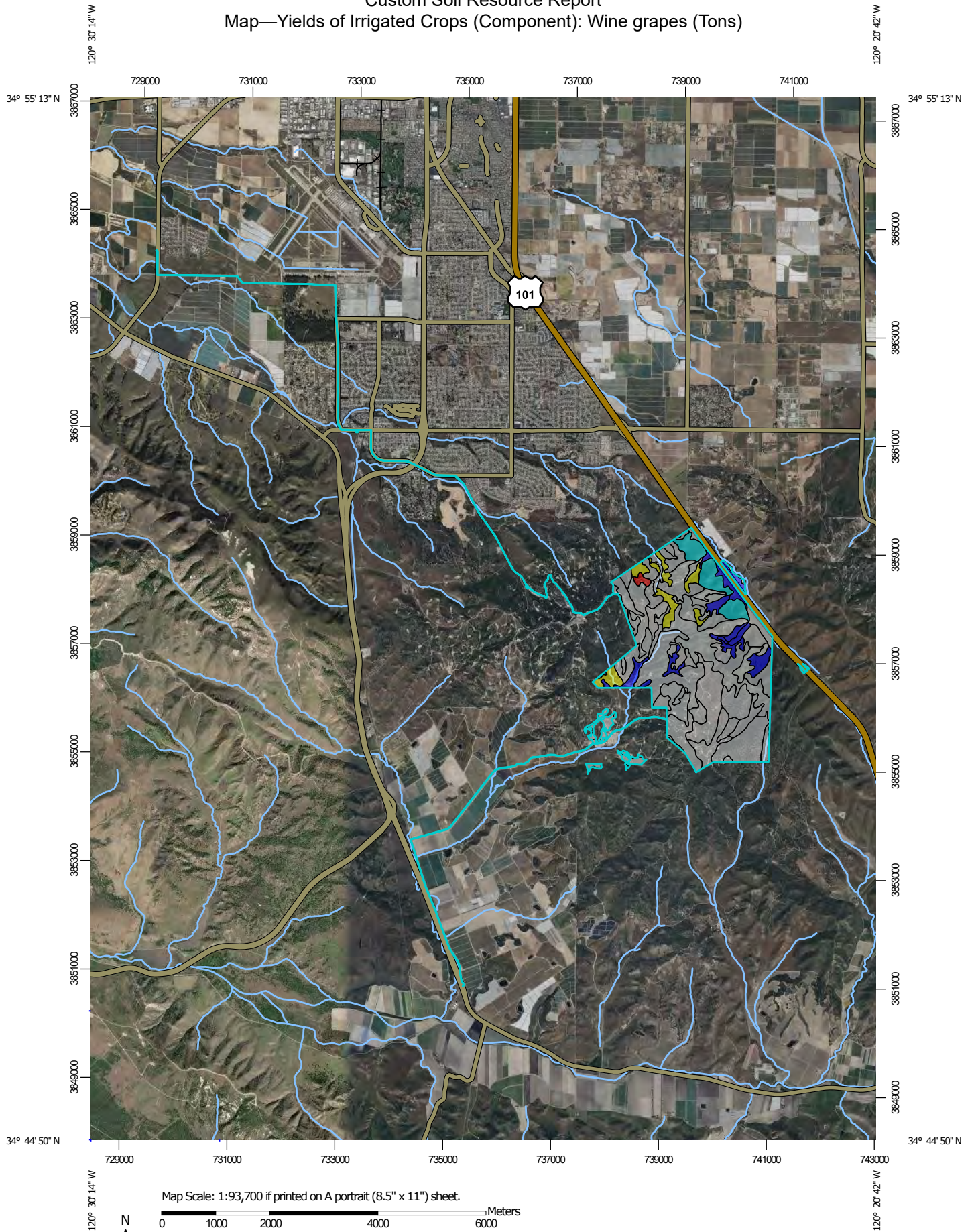
The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

Custom Soil Resource Report

The estimated yields reflect the productive capacity of each soil for the selected crop. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Custom Soil Resource Report

Map—Yields of Irrigated Crops (Component): Wine grapes (Tons)



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 ≤ 2.00
 > 2.00 and ≤ 2.40
 > 2.40 and ≤ 3.40
 > 3.40 and ≤ 8.50
 Not rated or not available

Soil Rating Lines

 ≤ 2.00
 > 2.00 and ≤ 2.40
 > 2.40 and ≤ 3.40
 > 3.40 and ≤ 8.50
 Not rated or not available

Soil Rating Points

 ≤ 2.00
 > 2.00 and ≤ 2.40
 > 2.40 and ≤ 3.40
 > 3.40 and ≤ 8.50
 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.

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 19, Sep 9, 2024

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

Date(s) aerial images were photographed: Dec 31, 2009—Apr 12, 2022

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.

Table—Yields of Irrigated Crops (Component): Wine grapes (Tons)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
300	Corducci and Typic Xerofluvents, 0 to 5 percent slopes, occasionally flooded, MLRA 14		1.2	0.1%
ArD	Arnold sand, 5 to 15 percent slopes		253.2	11.0%
ArF	Arnold sand, 15 to 45 percent slopes		538.1	23.4%
ArF3	Arnold sand, 9 to 45 percent slopes, severely eroded		77.6	3.4%
BmA	Betteravia loamy sand, 0 to 2 percent slopes		2.5	0.1%
BmA3	Betteravia loamy sand, 0 to 2 percent slopes, severely eroded		1.5	0.1%
BnB2	Betteravia loamy sand, dark variant, 0 to 5 percent slopes, eroded		37.3	1.6%
BnD2	Betteravia loamy sand, dark variant, 5 to 15 percent slopes, eroded		51.4	2.2%
BoA2	Botella loam, 0 to 2 percent slopes, eroded		0.7	0.0%
BoD2	Botella loam, 2 to 15 percent slopes, eroded		3.1	0.1%
ChF	Chamise shaly loam, 15 to 45 percent slopes		61.3	2.7%
CtA	Corralitos sand, 0 to 2 percent slopes		2.0	0.1%
CtD	Corralitos sand, 2 to 15 percent slopes		99.9	4.3%
CtD2	Corralitos sand, 2 to 15 percent slopes, eroded		6.2	0.3%
CuA	Corralitos loamy sand, 0 to 2 percent slopes		0.3	0.0%
CuC	Corralitos loamy sand, 2 to 9 percent slopes		1.6	0.1%
CwG3	Crow Hill loam, 15 to 75 percent slopes, severely eroded		11.0	0.5%
DaF	Diablo silty clay, 30 to 45 percent slopes	3.40	137.6	6.0%
EdA	Elder sandy loam, 0 to 2 percent slopes, MLRA 14		0.8	0.0%

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
EdA2	Elder sandy loam, 0 to 2 percent slopes, eroded	8.50	1.2	0.1%
EdC2	Elder sandy loam, 2 to 9 percent slopes, eroded	8.50	113.8	4.9%
EdD2	Elder sandy loam, 9 to 15 percent slopes, eroded	8.50	70.8	3.1%
GaC2	Garey sandy loam, 2 to 9 percent slopes, eroded		1.8	0.1%
GmE	Gaviota sandy loam, 15 to 30 percent slopes, MLRA 15		8.1	0.4%
GmG	Gaviota sandy loam, 30 to 75 percent slopes		326.7	14.2%
GuE	Gullied land		19.4	0.8%
LmG	Lopez gravelly clay loam, 15 to 75 percent slopes		1.7	0.1%
MaA	Marina sand, 0 to 2 percent slopes		1.3	0.1%
NvA	Narlon sand, hardpan variant, 0 to 2 percent slopes		0.7	0.0%
OcD3	Oceano sand, 2 to 15 percent slopes, severely eroded		0.3	0.0%
RuG	Rough broken land		149.4	6.5%
SfD	San Andreas-Tierra complex, 5 to 15 percent slopes	2.00	10.9	0.5%
SfE	San Andreas-Tierra complex, 15 to 30 percent slopes	2.40	120.0	5.2%
SfF3	San Andreas-Tierra complex, 9 to 45 percent slopes, severely eroded		41.5	1.8%
SfG	San Andreas-Tierra complex, 30 to 75 percent slopes		124.5	5.4%
SpG	Sedimentary rock land		0.4	0.0%
TcG	Terrace escarpments, sandy		1.3	0.1%
TrE3	Tierra loam, 5 to 30 percent slopes, severely eroded		20.4	0.9%
Totals for Area of Interest			2,301.6	100.0%

Rating Options—Yields of Irrigated Crops (Component): Wine grapes (Tons)

Crop: Wine grapes

Yield Units: Tons

Aggregation Method: Weighted Average

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: Yes

Yields of Non-Irrigated Crops (Map Unit): Barley (Bu)

These are the estimated average yields per acre that can be expected of selected nonirrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors.

In the database, some states maintain crop yield data by individual map unit component and others maintain the data at the map unit level. Attributes are included in this application for both, although only one or the other is likely to contain data for any given geographic area. This attribute uses data maintained at the map unit level.

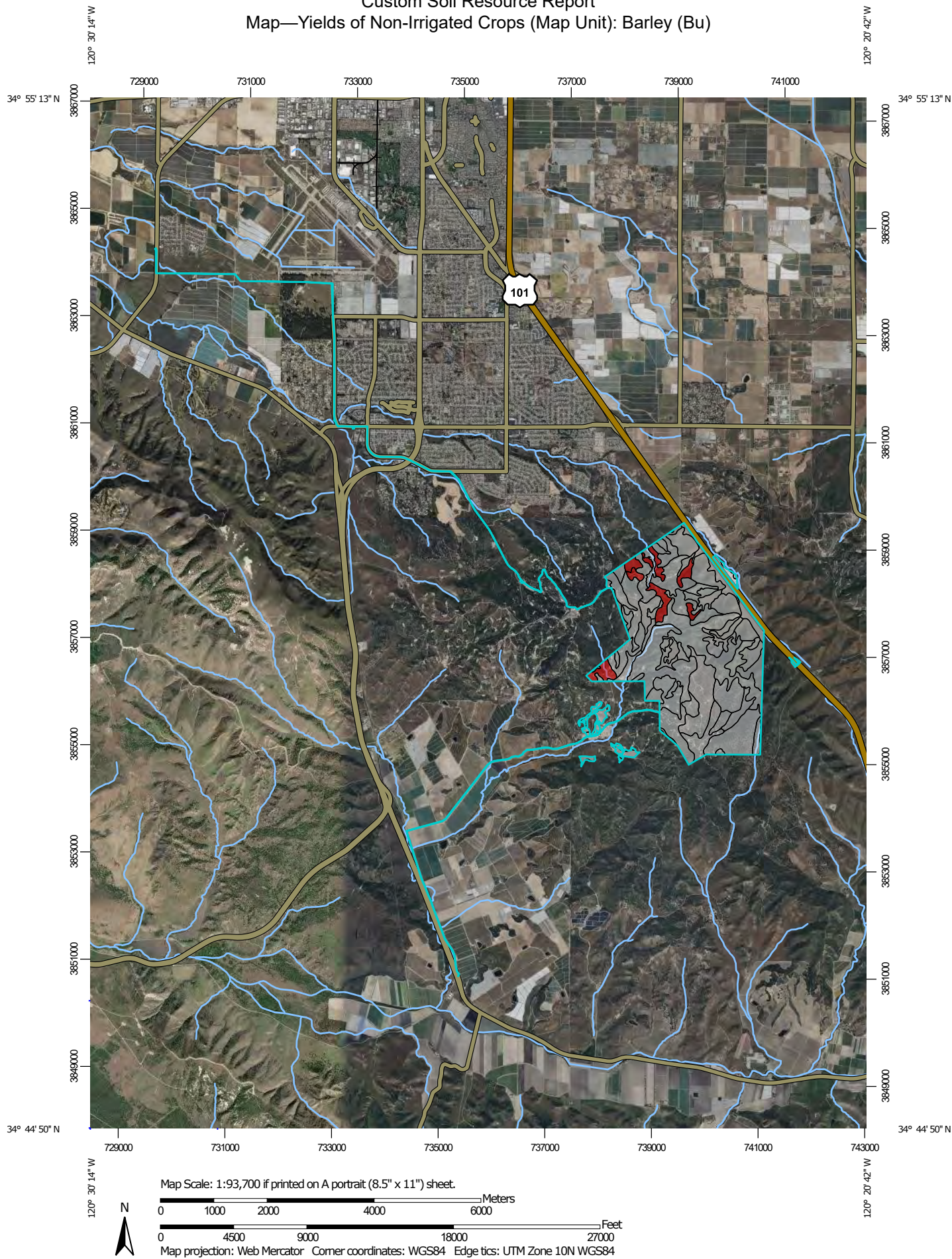
The yields are actually recorded as three separate values in the database. A low value and a high value indicate the range for the soil component. A "representative" value indicates the expected value for the component. For these yields, only the representative value is used.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby areas and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for the selected crop. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Custom Soil Resource Report
Map—Yields of Non-Irrigated Crops (Map Unit): Barley (Bu)



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 ≤ 25.00
 > 25.00 and ≤ 40.00
 Not rated or not available

Soil Rating Lines

 ≤ 25.00
 > 25.00 and ≤ 40.00
 Not rated or not available

Soil Rating Points

 ≤ 25.00
 > 25.00 and ≤ 40.00
 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.

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 19, Sep 9, 2024

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

Date(s) aerial images were photographed: Dec 31, 2009—Apr 12, 2022

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.

Table—Yields of Non-Irrigated Crops (Map Unit): Barley (Bu)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
300	Corducci and Typic Xerofluvents, 0 to 5 percent slopes, occasionally flooded, MLRA 14		1.2	0.1%
ArD	Arnold sand, 5 to 15 percent slopes		253.2	11.0%
ArF	Arnold sand, 15 to 45 percent slopes		538.1	23.4%
ArF3	Arnold sand, 9 to 45 percent slopes, severely eroded		77.6	3.4%
BmA	Betteravia loamy sand, 0 to 2 percent slopes		2.5	0.1%
BmA3	Betteravia loamy sand, 0 to 2 percent slopes, severely eroded		1.5	0.1%
BnB2	Betteravia loamy sand, dark variant, 0 to 5 percent slopes, eroded		37.3	1.6%
BnD2	Betteravia loamy sand, dark variant, 5 to 15 percent slopes, eroded		51.4	2.2%
BoA2	Botella loam, 0 to 2 percent slopes, eroded	40.00	0.7	0.0%
BoD2	Botella loam, 2 to 15 percent slopes, eroded	40.00	3.1	0.1%
ChF	Chamise shaly loam, 15 to 45 percent slopes		61.3	2.7%
CtA	Corralitos sand, 0 to 2 percent slopes		2.0	0.1%
CtD	Corralitos sand, 2 to 15 percent slopes		99.9	4.3%
CtD2	Corralitos sand, 2 to 15 percent slopes, eroded		6.2	0.3%
CuA	Corralitos loamy sand, 0 to 2 percent slopes		0.3	0.0%
CuC	Corralitos loamy sand, 2 to 9 percent slopes		1.6	0.1%
CwG3	Crow Hill loam, 15 to 75 percent slopes, severely eroded		11.0	0.5%
DaF	Diablo silty clay, 30 to 45 percent slopes		137.6	6.0%
EdA	Elder sandy loam, 0 to 2 percent slopes, MLRA 14		0.8	0.0%

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
EdA2	Elder sandy loam, 0 to 2 percent slopes, eroded		1.2	0.1%
EdC2	Elder sandy loam, 2 to 9 percent slopes, eroded		113.8	4.9%
EdD2	Elder sandy loam, 9 to 15 percent slopes, eroded		70.8	3.1%
GaC2	Garey sandy loam, 2 to 9 percent slopes, eroded		1.8	0.1%
GmE	Gaviota sandy loam, 15 to 30 percent slopes, MLRA 15		8.1	0.4%
GmG	Gaviota sandy loam, 30 to 75 percent slopes		326.7	14.2%
GuE	Gullied land		19.4	0.8%
LmG	Lopez gravelly clay loam, 15 to 75 percent slopes		1.7	0.1%
MaA	Marina sand, 0 to 2 percent slopes		1.3	0.1%
NvA	Narlon sand, hardpan variant, 0 to 2 percent slopes		0.7	0.0%
OcD3	Oceano sand, 2 to 15 percent slopes, severely eroded		0.3	0.0%
RuG	Rough broken land		149.4	6.5%
SfD	San Andreas-Tierra complex, 5 to 15 percent slopes	25.00	10.9	0.5%
SfE	San Andreas-Tierra complex, 15 to 30 percent slopes	25.00	120.0	5.2%
SfF3	San Andreas-Tierra complex, 9 to 45 percent slopes, severely eroded		41.5	1.8%
SfG	San Andreas-Tierra complex, 30 to 75 percent slopes		124.5	5.4%
SpG	Sedimentary rock land		0.4	0.0%
TcG	Terrace escarpments, sandy		1.3	0.1%
TrE3	Tierra loam, 5 to 30 percent slopes, severely eroded		20.4	0.9%
Totals for Area of Interest			2,301.6	100.0%

Rating Options—Yields of Non-Irrigated Crops (Map Unit): Barley (Bu)

Crop: Barley

Yield Units: Bu

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Higher

Yields of Irrigated Crops (Map Unit): Oranges (Boxes)

These are the estimated average yields per acre that can be expected of selected irrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors. It is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

In the database, some states maintain crop yield data by individual map unit component and others maintain the data at the map unit level. Attributes are included in this application for both, although only one or the other is likely to contain data for any given geographic area. This attribute uses data maintained at the map unit level.

The yields are actually recorded as three separate values in the database. A low value and a high value indicate the range for the soil component. A "representative" value indicates the expected value for the component. For these yields, only the representative value is used.

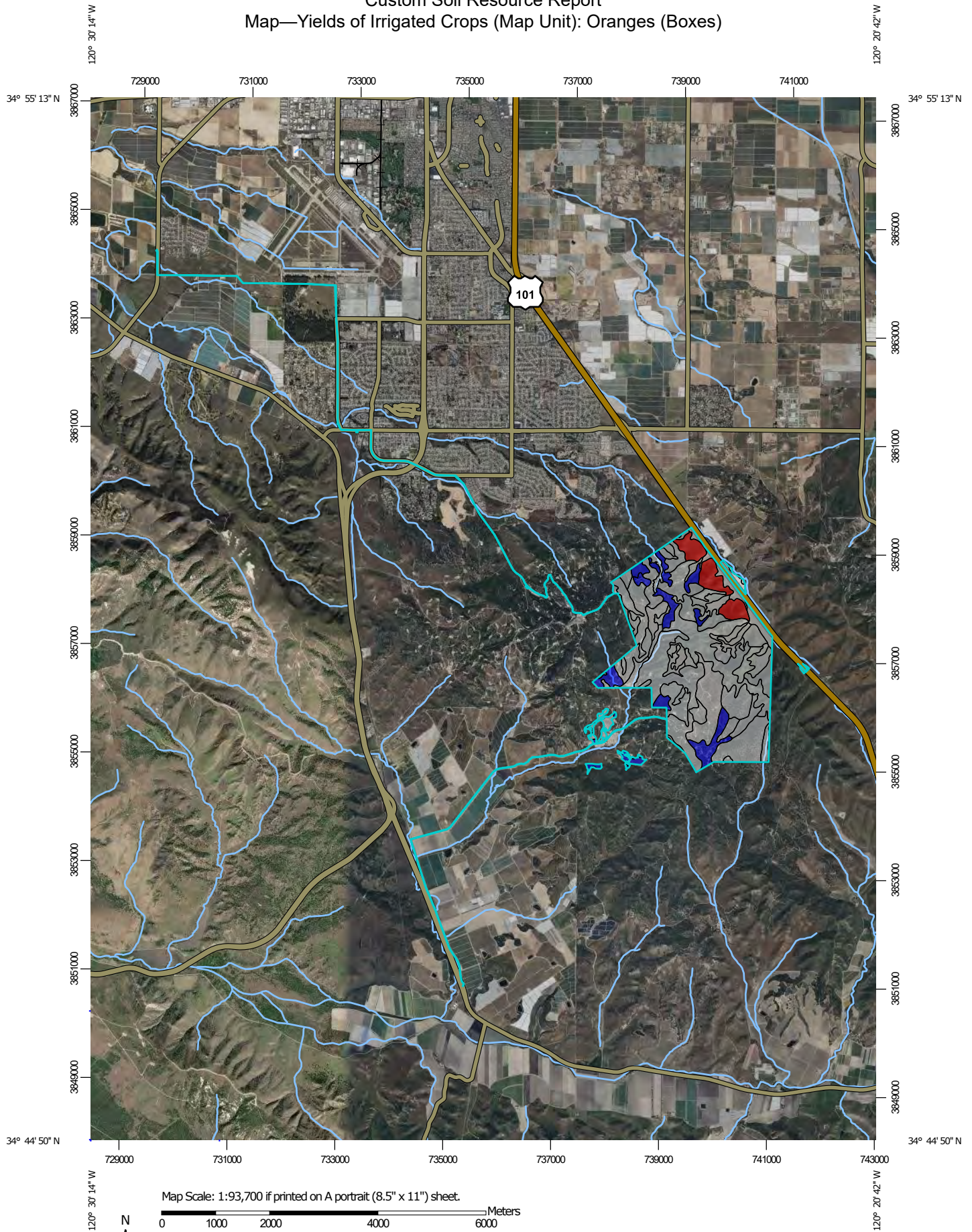
The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby areas and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for the selected crop. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Custom Soil Resource Report

Map—Yields of Irrigated Crops (Map Unit): Oranges (Boxes)



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 ≤ 250.00
 > 250.00 and ≤ 330.00
 > 330.00 and ≤ 360.00
 > 360.00 and ≤ 400.00
 Not rated or not available

Soil Rating Lines

 ≤ 250.00
 > 250.00 and ≤ 330.00
 > 330.00 and ≤ 360.00
 > 360.00 and ≤ 400.00
 Not rated or not available

Soil Rating Points

 ≤ 250.00
 > 250.00 and ≤ 330.00
 > 330.00 and ≤ 360.00
 > 360.00 and ≤ 400.00
 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.

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 19, Sep 9, 2024

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

Date(s) aerial images were photographed: Dec 31, 2009—Apr 12, 2022

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.

Table—Yields of Irrigated Crops (Map Unit): Oranges (Boxes)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
300	Corducci and Typic Xerofluvents, 0 to 5 percent slopes, occasionally flooded, MLRA 14		1.2	0.1%
ArD	Arnold sand, 5 to 15 percent slopes		253.2	11.0%
ArF	Arnold sand, 15 to 45 percent slopes		538.1	23.4%
ArF3	Arnold sand, 9 to 45 percent slopes, severely eroded		77.6	3.4%
BmA	Betteravia loamy sand, 0 to 2 percent slopes		2.5	0.1%
BmA3	Betteravia loamy sand, 0 to 2 percent slopes, severely eroded		1.5	0.1%
BnB2	Betteravia loamy sand, dark variant, 0 to 5 percent slopes, eroded		37.3	1.6%
BnD2	Betteravia loamy sand, dark variant, 5 to 15 percent slopes, eroded		51.4	2.2%
BoA2	Botella loam, 0 to 2 percent slopes, eroded	330.00	0.7	0.0%
BoD2	Botella loam, 2 to 15 percent slopes, eroded	330.00	3.1	0.1%
ChF	Chamise shaly loam, 15 to 45 percent slopes		61.3	2.7%
CtA	Corralitos sand, 0 to 2 percent slopes	400.00	2.0	0.1%
CtD	Corralitos sand, 2 to 15 percent slopes	400.00	99.9	4.3%
CtD2	Corralitos sand, 2 to 15 percent slopes, eroded	400.00	6.2	0.3%
CuA	Corralitos loamy sand, 0 to 2 percent slopes	400.00	0.3	0.0%
CuC	Corralitos loamy sand, 2 to 9 percent slopes	400.00	1.6	0.1%
CwG3	Crow Hill loam, 15 to 75 percent slopes, severely eroded		11.0	0.5%
DaF	Diablo silty clay, 30 to 45 percent slopes	250.00	137.6	6.0%
EdA	Elder sandy loam, 0 to 2 percent slopes, MLRA 14		0.8	0.0%

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
EdA2	Elder sandy loam, 0 to 2 percent slopes, eroded		1.2	0.1%
EdC2	Elder sandy loam, 2 to 9 percent slopes, eroded		113.8	4.9%
EdD2	Elder sandy loam, 9 to 15 percent slopes, eroded		70.8	3.1%
GaC2	Garey sandy loam, 2 to 9 percent slopes, eroded		1.8	0.1%
GmE	Gaviota sandy loam, 15 to 30 percent slopes, MLRA 15		8.1	0.4%
GmG	Gaviota sandy loam, 30 to 75 percent slopes		326.7	14.2%
GuE	Gullied land		19.4	0.8%
LmG	Lopez gravelly clay loam, 15 to 75 percent slopes		1.7	0.1%
MaA	Marina sand, 0 to 2 percent slopes	360.00	1.3	0.1%
NvA	Narlon sand, hardpan variant, 0 to 2 percent slopes		0.7	0.0%
OcD3	Oceano sand, 2 to 15 percent slopes, severely eroded		0.3	0.0%
RuG	Rough broken land		149.4	6.5%
SfD	San Andreas-Tierra complex, 5 to 15 percent slopes	400.00	10.9	0.5%
SfE	San Andreas-Tierra complex, 15 to 30 percent slopes	400.00	120.0	5.2%
SfF3	San Andreas-Tierra complex, 9 to 45 percent slopes, severely eroded		41.5	1.8%
SfG	San Andreas-Tierra complex, 30 to 75 percent slopes		124.5	5.4%
SpG	Sedimentary rock land		0.4	0.0%
TcG	Terrace escarpments, sandy		1.3	0.1%
TrE3	Tierra loam, 5 to 30 percent slopes, severely eroded		20.4	0.9%
Totals for Area of Interest			2,301.6	100.0%

Rating Options—Yields of Irrigated Crops (Map Unit): Oranges (Boxes)

Crop: Oranges

Yield Units: Boxes

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Higher

Water Management

Water Management interpretations are tools for evaluating the potential of the soil in the application of various water management practices. Example interpretations include pond reservoir area, embankments, dikes, levees, and excavated ponds.

Irrigation, General

This interpretation evaluates a soil's limitation(s) for installation and use of irrigation systems. This interpretation is for non-specific irrigation methods and is intended to provide initial planning information. If the type of irrigation system has been determined, additional interpretations provide more specific information. This interpretation does not apply if the crop planned for irrigation is rice or other crops (such as cranberries) with unique plant physiological characteristics. The ratings are for soils in their natural condition and do not consider present land use.

Irrigation systems are used to provide supplemental water to crops, orchards, vineyards, and vegetables in areas where natural precipitation will not support desired production of crops being grown.

The soil properties and qualities important in design and management of irrigation systems are sodium adsorption ratio, depth to high water table, available water holding capacity, saturated hydraulic conductivity (Ksat), slope, calcium carbonate content, ponding, and flooding. Soil properties and qualities that influence installation are stones, depth to bedrock or cemented pan, and depth to a high water table. The properties and qualities that affect performance of the irrigation system are depth to bedrock or to a cemented pan, the sodium adsorption ratio, salinity, and soil reaction.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the interpretation. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot

be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating class terms indicate the extent to which the soils are limited by the soil features that affect the soil interpretation. Verbal soil rating classes are based on the highest numerical rating for the most limiting soil feature(s) considered in the rating process. "Not limited" (numerical value for the most restrictive feature = 0.00) indicates that the soil has no limiting features for the specified use. "Somewhat limited" (numerical value for the most restrictive feature = .01 to .99) indicates that the soil has limiting features for the specified use that can be overcome with proper planning, design, installation, and management. The effort required to overcome a soil limitation increases as the numerical rating increases. "Very limited" (numerical value for the most restrictive feature = 1.00) indicates that the soil has one or more very limiting features that can only be overcome with special planning, major soil modification, special design, or significant management practices.

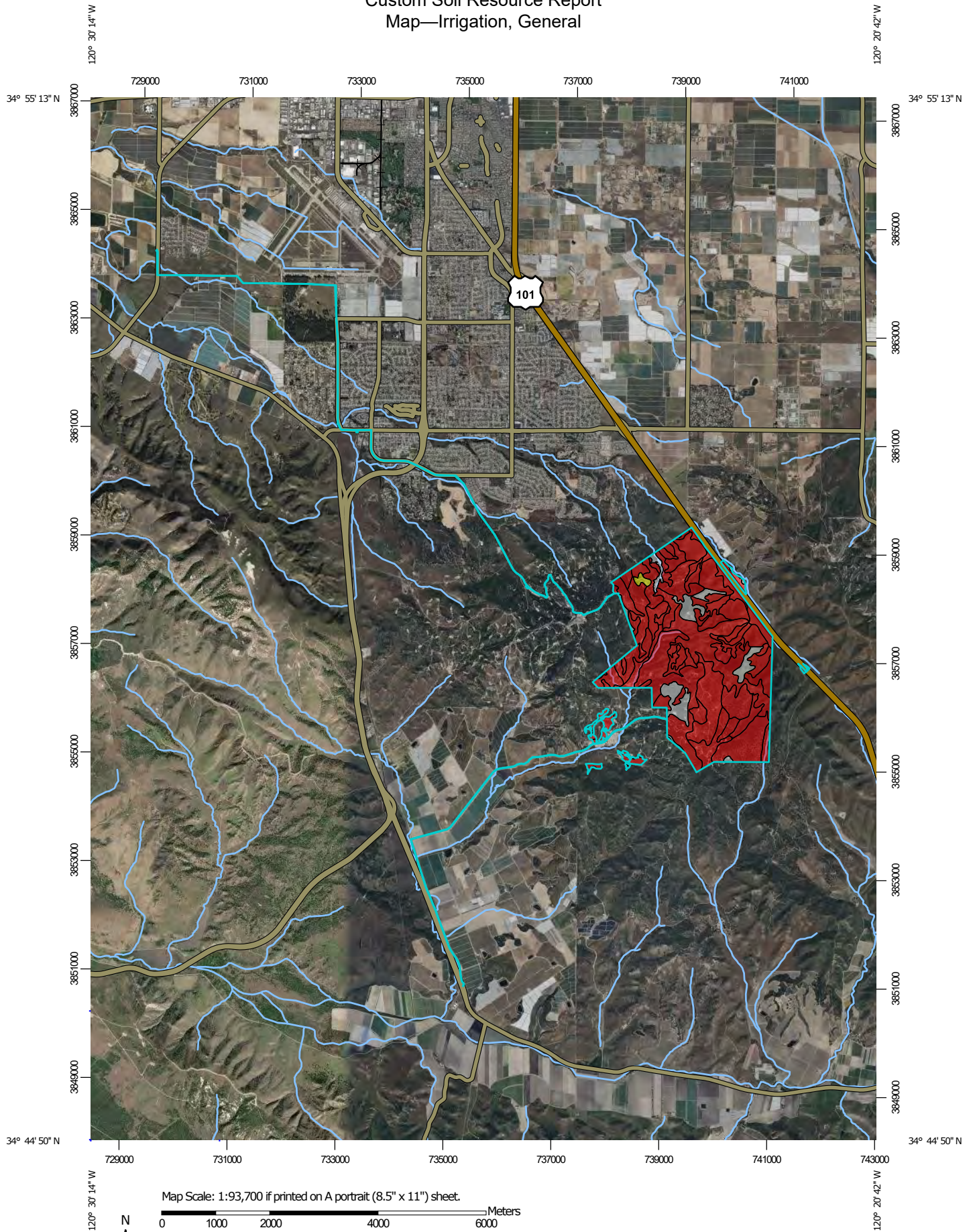
Lesser soil restrictive features have a lower numerical value than the maximum used to rate the soil, and they are identified to provide the user with additional information about soil limitations for the specific use. Lesser soil restrictive features also need to be considered in planning, design, installation, and management.

The results of this interpretation are not designed or intended to be used in a regulatory manner.

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.

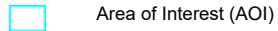
Custom Soil Resource Report Map—Irrigation, General



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)



Area of Interest (AOI)

Background



Aerial Photography

Soils

Soil Rating Polygons



Very limited



Somewhat limited



Not limited



Not rated or not available

Soil Rating Lines



Very limited



Somewhat limited



Not limited



Not rated or not available

Soil Rating Points



Very limited



Somewhat limited



Not limited



Not rated or not available

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

MAP INFORMATION

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

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)

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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 19, Sep 9, 2024

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

Date(s) aerial images were photographed: Dec 31, 2009—Apr 12, 2022

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Custom Soil Resource Report

Tables—Irrigation, General

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
300	CorduCCI and Typic Xerofluvents, 0 to 5 percent slopes, occasionally flooded, MLRA 14	Very limited	CorduCCI (50%)	Rapid water movement (1.00)	1.2	0.1%
				Seepage (1.00)		
				Low water holding capacity (0.99)		
				Occasional flooding (0.40)		
				Slope (0.01)		
			Typic Xerofluvents (30%)	Rapid water movement (1.00)		
				Seepage (1.00)		
				Low water holding capacity (0.90)		
				Occasional flooding (0.40)		
				Slope (0.01)		
			Tujunga, very rarely flooded (5%)	Rapid water movement (1.00)		
				Seepage (1.00)		
				Low water holding capacity (0.67)		
				Slope (0.01)		
			Metz, very rarely flooded (5%)	Rapid water movement (1.00)		
				Seepage (1.00)		
				Low water holding capacity (0.83)		
				Slope (0.01)		
			Xerofluvents, frequently flooded (5%)	Rapid water movement (1.00)		
				Low water holding capacity (1.00)		
				Seepage (1.00)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Xeropsamments, frequently flooded (5%)	Frequent or very frequent flooding (0.70)		
				Slope (0.01)		
				Seepage (1.00)		
				Low water holding capacity (1.00)		
				Rapid water movement (0.71)		
				Frequent or very frequent flooding (0.70)		
				Slope (0.01)		
ArD	Arnold sand, 5 to 15 percent slopes	Very limited	Arnold (85%)	Rapid water movement (1.00)	253.2	11.0%
				Seepage (1.00)		
				Low water holding capacity (0.95)		
				Slope (0.75)		
				Depth to soft bedrock (0.02)		
ArF	Arnold sand, 15 to 45 percent slopes	Very limited	Arnold (85%)	Rapid water movement (1.00)	538.1	23.4%
				Slope (1.00)		
				Seepage (1.00)		
				Low water holding capacity (0.95)		
				Depth to soft bedrock (0.02)		
ArF3	Arnold sand, 9 to 45 percent slopes, severely eroded	Very limited	Arnold (85%)	Rapid water movement (1.00)	77.6	3.4%
				Low water holding capacity (1.00)		
				Seepage (1.00)		
				Slope (1.00)		
				Depth to soft bedrock (0.96)		
BmA	Betteravia loamy sand, 0 to 2 percent slopes	Very limited	Betteravia (85%)	Rapid water movement (1.00)	2.5	0.1%

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Low water holding capacity (1.00)		
				Seepage (1.00)		
BmA3	Betteravia loamy sand, 0 to 2 percent slopes, severely eroded	Very limited	Betteravia (85%)	Rapid water movement (1.00)	1.5	0.1%
				Low water holding capacity (1.00)		
				Seepage (1.00)		
BnB2	Betteravia loamy sand, dark variant, 0 to 5 percent slopes, eroded	Very limited	Betteravia, dark variant (85%)	Rapid water movement (1.00)	37.3	1.6%
				Seepage (1.00)		
				Low water holding capacity (0.77)		
				Occasional flooding (0.40)		
				Slope (0.04)		
BnD2	Betteravia loamy sand, dark variant, 5 to 15 percent slopes, eroded	Very limited	Betteravia, dark variant (85%)	Rapid water movement (1.00)	51.4	2.2%
				Seepage (1.00)		
				Low water holding capacity (0.77)		
				Slope (0.75)		
BoA2	Botella loam, 0 to 2 percent slopes, eroded	Somewhat limited	Botella (85%)	Rapid water movement (0.02)	0.7	0.0%
BoD2	Botella loam, 2 to 15 percent slopes, eroded	Somewhat limited	Botella (85%)	Slope (0.91)	3.1	0.1%
				Rapid water movement (0.02)		
ChF	Chamise shaly loam, 15 to 45 percent slopes	Very limited	Chamise (85%)	Low water holding capacity (1.00)	61.3	2.7%
				Slope (1.00)		
CtA	Corralitos sand, 0 to 2 percent slopes	Very limited	Corralitos (85%)	Rapid water movement (1.00)	2.0	0.1%
				Seepage (1.00)		
				Low water holding capacity (0.84)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Occasional flooding (0.40)		
CtD	Corralitos sand, 2 to 15 percent slopes	Very limited	Corralitos (85%)	Rapid water movement (1.00)	99.9	4.3%
				Seepage (1.00)		
				Low water holding capacity (0.84)		
				Slope (0.63)		
CtD2	Corralitos sand, 2 to 15 percent slopes, eroded	Very limited	Corralitos (85%)	Rapid water movement (1.00)	6.2	0.3%
				Seepage (1.00)		
				Low water holding capacity (0.84)		
				Slope (0.63)		
CuA	Corralitos loamy sand, 0 to 2 percent slopes	Very limited	Corralitos (85%)	Rapid water movement (1.00)	0.3	0.0%
				Seepage (1.00)		
				Low water holding capacity (0.63)		
CuC	Corralitos loamy sand, 2 to 9 percent slopes	Very limited	Corralitos (85%)	Rapid water movement (1.00)	1.6	0.1%
				Seepage (1.00)		
				Low water holding capacity (0.63)		
				Slope (0.26)		
CwG3	Crow Hill loam, 15 to 75 percent slopes, severely eroded	Very limited	Crow Hill (85%)	Slope (1.00)	11.0	0.5%
				Depth to soft bedrock (0.99)		
				Low water holding capacity (0.86)		
				Rapid water movement (0.02)		
DaF	Diablo silty clay, 30 to 45 percent slopes	Very limited	Diablo (85%)	Slope (1.00)	137.6	6.0%
				Depth to soft bedrock (0.70)		
				Low water holding capacity (0.39)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
EdA	Elder sandy loam, 0 to 2 percent slopes, MLRA 14	Very limited	Elder (85%)	Rapid water movement (1.00)	0.8	0.0%
				Seepage (1.00)		
				Low water holding capacity (0.04)		
EdA2	Elder sandy loam, 0 to 2 percent slopes, eroded	Very limited	Elder (85%)	Rapid water movement (1.00)	1.2	0.1%
				Seepage (0.45)		
			Corralitos (5%)	Rapid water movement (1.00)		
				Seepage (1.00)		
EdC2	Elder sandy loam, 2 to 9 percent slopes, eroded	Very limited	Elder (85%)	Rapid water movement (1.00)	113.8	4.9%
				Seepage (0.45)		
				Slope (0.26)		
			Corralitos (5%)	Rapid water movement (1.00)		
				Seepage (1.00)		
				Low water holding capacity (0.63)		
				Slope (0.26)		
EdD2	Elder sandy loam, 9 to 15 percent slopes, eroded	Very limited	Elder (85%)	Rapid water movement (1.00)	70.8	3.1%
				Slope (0.91)		
				Seepage (0.45)		
			Corralitos (5%)	Rapid water movement (1.00)		
				Seepage (1.00)		
				Slope (0.91)		
				Low water holding capacity (0.63)		
GaC2	Garey sandy loam, 2 to 9 percent slopes, eroded	Very limited	Garey (85%)	Rapid water movement (1.00)	1.8	0.1%
				Seepage (0.43)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slope (0.26)		
				Low water holding capacity (0.19)		
GmE	Gaviota sandy loam, 15 to 30 percent slopes, MLRA 15	Very limited	Gaviota (80%)	Low water holding capacity (1.00)	8.1	0.4%
				Slope (1.00)		
				Depth to hard bedrock (1.00)		
GmG	Gaviota sandy loam, 30 to 75 percent slopes	Very limited	Gaviota (80%)	Low water holding capacity (1.00)	326.7	14.2%
				Slope (1.00)		
				Depth to hard bedrock (1.00)		
			Arnold (10%)	Rapid water movement (1.00)		
				Slope (1.00)		
				Seepage (1.00)		
				Low water holding capacity (1.00)		
				Depth to soft bedrock (0.74)		
			Gilroy (5%)	Slope (1.00)		
				Depth to hard bedrock (0.97)		
				Low water holding capacity (0.90)		
				Rapid water movement (0.06)		
GuE	Gullied land	Not rated	Gullied land (85%)		19.4	0.8%
			Unnamed (10%)			
			Unnamed (5%)			
LmG	Lopez gravelly clay loam, 15 to 75 percent slopes	Very limited	Lopez (90%)	Low water holding capacity (1.00)	1.7	0.1%
				Slope (1.00)		
				Depth to hard bedrock (1.00)		
			Crow Hill (5%)	Slope (1.00)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Rapid water movement (0.66)		
				Depth to soft bedrock (0.21)		
			Santa Lucia (5%)	Low water holding capacity (1.00)		
				Slope (1.00)		
				Depth to hard bedrock (0.98)		
				Rapid water movement (0.01)		
MaA	Marina sand, 0 to 2 percent slopes	Very limited	Marina (85%)	Rapid water movement (1.00)	1.3	0.1%
				Seepage (1.00)		
				Low water holding capacity (0.80)		
NvA	Narlon sand, hardpan variant, 0 to 2 percent slopes	Very limited	Narlon variant (85%)	Rapid water movement (1.00)	0.7	0.0%
				Low water holding capacity (1.00)		
				Seepage (1.00)		
OcD3	Oceano sand, 2 to 15 percent slopes, severely eroded	Very limited	Oceano (85%)	Rapid water movement (1.00)	0.3	0.0%
				Seepage (1.00)		
				Low water holding capacity (0.85)		
				Slope (0.63)		
RuG	Rough broken land	Not rated	Rough broken land (50%)		149.4	6.5%
			Lithic Xerorthents (40%)			
			Unnamed (10%)			
SfD	San Andreas-Tierra complex, 5 to 15 percent slopes	Somewhat limited	San Andreas (50%)	Depth to soft bedrock (0.91)	10.9	0.5%
				Slope (0.91)		
				Low water holding capacity (0.90)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Rapid water movement (0.69)		
				Seepage (0.43)		
			Tierra (40%)	Slope (0.75)		
				Low water holding capacity (0.50)		
SfE	San Andreas-Tierra complex, 15 to 30 percent slopes	Very limited	San Andreas (60%)	Slope (1.00)	120.0	5.2%
				Depth to soft bedrock (0.91)		
				Low water holding capacity (0.90)		
				Rapid water movement (0.69)		
				Seepage (0.43)		
			Tierra (25%)	Slope (1.00)		
				Low water holding capacity (0.50)		
SfF3	San Andreas-Tierra complex, 9 to 45 percent slopes, severely eroded	Very limited	San Andreas (50%)	Slope (1.00)	41.5	1.8%
				Depth to soft bedrock (0.91)		
				Low water holding capacity (0.90)		
				Rapid water movement (0.69)		
				Seepage (0.43)		
			Tierra (40%)	Slope (1.00)		
				Low water holding capacity (0.50)		
SfG	San Andreas-Tierra complex, 30 to 75 percent slopes	Very limited	San Andreas (60%)	Slope (1.00)	124.5	5.4%
				Depth to soft bedrock (0.91)		
				Low water holding capacity (0.90)		
				Rapid water movement (0.69)		
				Seepage (0.43)		
			Tierra (25%)	Slope (1.00)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Low water holding capacity (0.50)		
SpG	Sedimentary rock land	Not rated	Sedimentary rock land (40%)		0.4	0.0%
			Lithic Xerorthents (30%)			
			Rock outcrop (30%)			
TcG	Terrace escarpments, sandy	Not rated	Terrace escarpments (85%)		1.3	0.1%
			Unnamed (15%)			
TrE3	Tierra loam, 5 to 30 percent slopes, severely eroded	Very limited	Tierra (85%)	Slope (1.00)	20.4	0.9%
				Low water holding capacity (0.63)		
Totals for Area of Interest					2,301.6	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	2,116.4	92.0%
Somewhat limited	14.7	0.6%
Null or Not Rated	170.5	7.4%
Totals for Area of Interest	2,301.6	100.0%

Rating Options—Irrigation, General

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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APPENDIX D. RANGELAND ANALYSIS PLATFORM RESULTS

Historical (2001-2022) Production Report using Rangeland Analysis Platform (RAP) data

Land unit name: Onsite Site
Date of report: July 23 2025
Long-term period: 2001-2022

Long-term averages

Average annual production 2239 lbs/acre
150% of average annual production 3358 lbs/acre
125% of average annual production 2799 lbs/acre
75% of average annual production 1679 lbs/acre
50% of average annual production 1120 lbs/acre

gSSURGO production estimates

Normal 1691 lbs/acre
Favorable 2223 lbs/acre
Unfavorable 1168 lbs/acre

Table 1: Historical data

Year	Annual production (lbs/acre)	Percent of average
2001	2065	92.2%
2002	2097	93.7%
2003	2835	126.6%
2004	2690	120.2%
2005	2970	132.7%
2006	2346	104.8%
2007	1742	77.8%
2008	2240	100.1%
2009	2200	98.3%
2010	2322	103.7%
2011	2119	94.7%
2012	1840	82.2%
2013	1947	87%
2014	2080	92.9%
2015	2093	93.5%
2016	2541	113.5%
2017	2419	108.1%
2018	2325	103.9%
2019	1993	89%
2020	2015	90%
2021	2198	98.2%
2022	2175	97.2%

Figure 1: Historical production



Historical (2001-2022) Production Report using Rangeland Analysis Platform (RAP) data

Land unit name: CTS area
Date of report: July 23 2025
Long-term period: 2001-2022

Long-term averages

Average annual production 2023 lbs/acre
150% of average annual production 3034 lbs/acre
125% of average annual production 2529 lbs/acre
75% of average annual production 1517 lbs/acre
50% of average annual production 1012 lbs/acre

gSSURGO production estimates

Normal 1709 lbs/acre
Favorable 2194 lbs/acre
Unfavorable 1266 lbs/acre

Table 1: Historical data

Year	Annual production (lbs/acre)	Percent of average
2001	1925	95.2%
2002	1891	93.5%
2003	2561	126.6%
2004	2528	125%
2005	2659	131.5%
2006	2056	101.7%
2007	1621	80.1%
2008	2045	101.1%
2009	1984	98.1%
2010	2016	99.7%
2011	1815	89.7%
2012	1615	79.8%
2013	1884	93.1%
2014	1841	91%
2015	1973	97.6%
2016	2290	113.2%
2017	2137	105.7%
2018	2081	102.9%
2019	1840	91%
2020	1832	90.6%
2021	1936	95.7%
2022	1966	97.2%

Figure 1: Historical production



Historical (2001-2022) Production Report using Rangeland Analysis Platform (RAP) data

Land unit name: Solomon Hills- Oak Planting Site 1

Date of report: July 22 2025

Long-term period: 2001-2022

Long-term averages

Average annual production 3152 lbs/acre
150% of average annual production 4728 lbs/acre
125% of average annual production 3940 lbs/acre
75% of average annual production 2364 lbs/acre
50% of average annual production 1576 lbs/acre

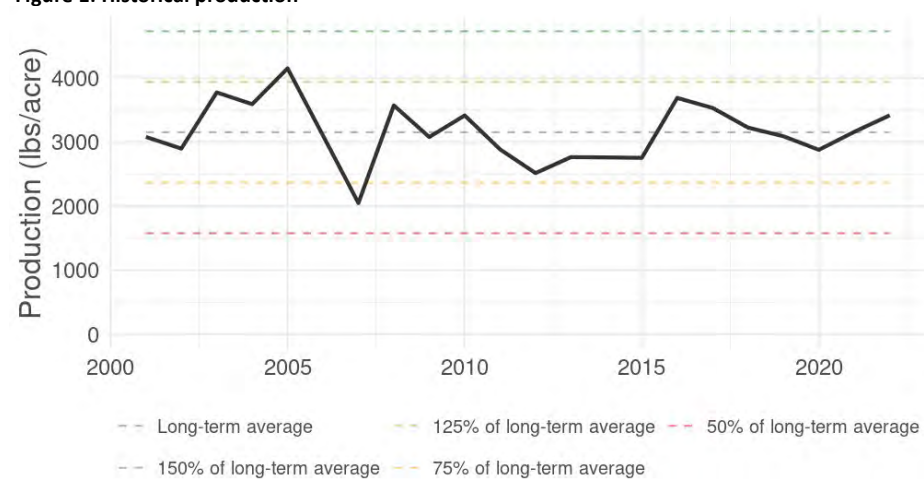
gSSURGO production estimates

Normal 1422 lbs/acre
Favorable 1776 lbs/acre
Unfavorable 920 lbs/acre

Table 1: Historical data

Year	Annual production (lbs/acre)	Percent of average
2001	3079	97.7%
2002	2896	91.9%
2003	3773	119.7%
2004	3590	113.9%
2005	4149	131.6%
2006	3100	98.3%
2007	2047	64.9%
2008	3570	113.3%
2009	3077	97.6%
2010	3414	108.3%
2011	2884	91.5%
2012	2514	79.8%
2013	2763	87.7%
2014	2759	87.5%
2015	2752	87.3%
2016	3687	117%
2017	3531	112%
2018	3224	102.3%
2019	3089	98%
2020	2877	91.3%
2021	3158	100.2%
2022	3416	108.4%

Figure 1: Historical production



Historical (2001-2022) Production Report using Rangeland Analysis Platform (RAP) data

Land unit name: Solomon Hills- Oak Planting Site 2

Date of report: July 22 2025

Long-term period: 2001-2022

Long-term averages

Average annual production 3659 lbs/acre
150% of average annual production 5488 lbs/acre
125% of average annual production 4574 lbs/acre
75% of average annual production 2744 lbs/acre
50% of average annual production 1830 lbs/acre

gSSURGO production estimates

Normal 1287 lbs/acre
Favorable 2110 lbs/acre
Unfavorable 913 lbs/acre

Table 1: Historical data

Year	Annual production (lbs/acre)	Percent of average
2001	2837	77.5%
2002	3283	89.7%
2003	4238	115.8%
2004	3731	102%
2005	4362	119.2%
2006	3297	90.1%
2007	2410	65.9%
2008	3754	102.6%
2009	4040	110.4%
2010	4052	110.8%
2011	3439	94%
2012	2959	80.9%
2013	3638	99.4%
2014	3511	96%
2015	3898	106.5%
2016	4757	130%
2017	3895	106.5%
2018	3994	109.2%
2019	3262	89.2%
2020	2975	81.3%
2021	3877	106%
2022	4279	117%

Figure 1: Historical production



Historical (2001-2022) Production Report using Rangeland Analysis Platform (RAP) data

Land unit name: Solomon Hills- Oak Planting Site: 3

Date of report: July 22 2025

Long-term period: 2001-2022

Long-term averages

Average annual production 3152 lbs/acre
150% of average annual production 4728 lbs/acre
125% of average annual production 3940 lbs/acre
75% of average annual production 2364 lbs/acre
50% of average annual production 1576 lbs/acre

gSSURGO production estimates

Normal 1296 lbs/acre
Favorable 2172 lbs/acre
Unfavorable 904 lbs/acre

Table 1: Historical data

Year	Annual production (lbs/acre)	Percent of average
2001	2244	71.2%
2002	2689	85.3%
2003	4084	129.6%
2004	3536	112.2%
2005	4261	135.2%
2006	3209	101.8%
2007	1896	60.1%
2008	3157	100.1%
2009	3108	98.6%
2010	3189	101.2%
2011	2574	81.7%
2012	2390	75.8%
2013	2881	91.4%
2014	2692	85.4%
2015	3515	111.5%
2016	4241	134.5%
2017	3467	110%
2018	3559	112.9%
2019	2922	92.7%
2020	2749	87.2%
2021	3425	108.6%
2022	3564	113.1%

Figure 1: Historical production



Historical (2001-2022) Production Report using Rangeland Analysis Platform (RAP) data

Land unit name: Solomon Hills- Oak Planting Site 4

Date of report: July 22 2025

Long-term period: 2001-2022

Long-term averages

Average annual production 3703 lbs/acre
150% of average annual production 5554 lbs/acre
125% of average annual production 4629 lbs/acre
75% of average annual production 2777 lbs/acre
50% of average annual production 1852 lbs/acre

gSSURGO production estimates

Normal 1283 lbs/acre
Favorable 2083 lbs/acre
Unfavorable 883 lbs/acre

Table 1: Historical data

Year	Annual production (lbs/acre)	Percent of average
2001	3240	87.5%
2002	3398	91.8%
2003	4539	122.6%
2004	3756	101.4%
2005	4896	132.2%
2006	3405	92%
2007	2219	59.9%
2008	3567	96.3%
2009	3483	94.1%
2010	4203	113.5%
2011	3607	97.4%
2012	3104	83.8%
2013	3465	93.6%
2014	3340	90.2%
2015	3619	97.7%
2016	4433	119.7%
2017	4312	116.5%
2018	3706	100.1%
2019	3496	94.4%
2020	3241	87.5%
2021	4062	109.7%
2022	4370	118%

Figure 1: Historical production



Historical (2001-2022) Production Report using Rangeland Analysis Platform (RAP) data

Land unit name: Solomon Hills- Oak Planting Site 5

Date of report: July 22 2025

Long-term period: 2001-2022

Long-term averages

Average annual production 3478 lbs/acre
150% of average annual production 5217 lbs/acre
125% of average annual production 4348 lbs/acre
75% of average annual production 2608 lbs/acre
50% of average annual production 1739 lbs/acre

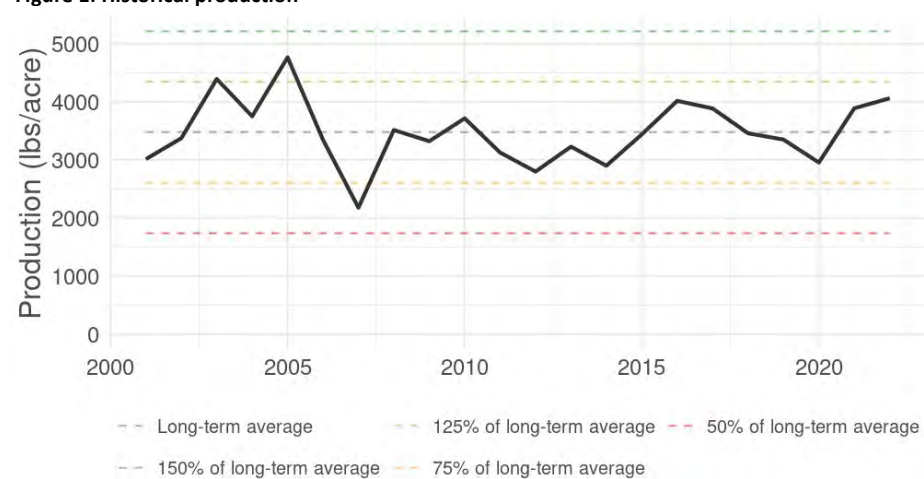
gSSURGO production estimates

Normal 1281 lbs/acre
Favorable 2066 lbs/acre
Unfavorable 886 lbs/acre

Table 1: Historical data

Year	Annual production (lbs/acre)	Percent of average
2001	3015	86.7%
2002	3375	97%
2003	4395	126.4%
2004	3752	107.9%
2005	4768	137.1%
2006	3348	96.3%
2007	2179	62.7%
2008	3516	101.1%
2009	3323	95.5%
2010	3716	106.8%
2011	3128	89.9%
2012	2800	80.5%
2013	3229	92.8%
2014	2901	83.4%
2015	3441	98.9%
2016	4018	115.5%
2017	3887	111.8%
2018	3460	99.5%
2019	3351	96.4%
2020	2956	85%
2021	3890	111.9%
2022	4063	116.8%

Figure 1: Historical production



Production Report for 2023 using Rangeland Analysis Platform (RAP) data

Land unit name: Onsite Site
Date of report: July 23 2025
Long-term period: 2001-2022

Current year

Production through Dec 31 of 2023: 1815lbs/acre

Long-term averages

Average production through Dec 31: 2248lbs/acre
150% of average production through Dec 31: 3372lbs/acre
125% of average production through Dec 31: 2810lbs/acre
75% of average production through Dec 31: 1686lbs/acre
50% of average production through Dec 31: 1124lbs/acre

Table 1: Current year data

Date	16-day production (lbs/acre)	Cumulative production (lbs/acre)	Percent of average
01/01/2023	0	0	NA%
01/16/2023	50	50	70.42%
02/01/2023	80	130	81.76%
02/17/2023	98	228	84.76%
03/05/2023	76	304	76.96%
03/21/2023	104	408	73.65%
04/06/2023	131	539	74.04%
04/22/2023	160	699	78.01%
05/08/2023	141	840	79.92%
05/24/2023	136	976	82.15%
06/09/2023	108	1084	83.07%
06/25/2023	100	1184	84.09%
07/11/2023	91	1275	84.72%
07/27/2023	72	1347	84.24%
08/12/2023	74	1421	84.13%
08/28/2023	69	1490	84.09%
09/13/2023	59	1549	83.96%
09/29/2023	57	1606	84%
10/15/2023	40	1646	83.51%
10/31/2023	38	1684	83.04%
11/16/2023	29	1713	82.12%
12/02/2023	33	1746	81.47%
12/18/2023	39	1785	81.1%
12/31/2023	30	1815	80.74%

Figure 1: 16-day production plot

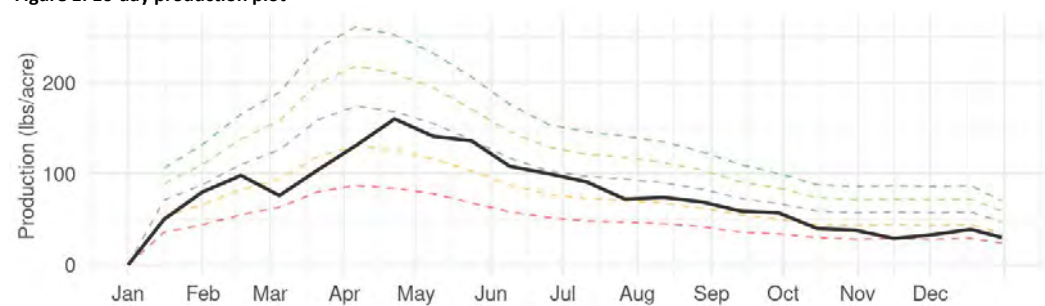
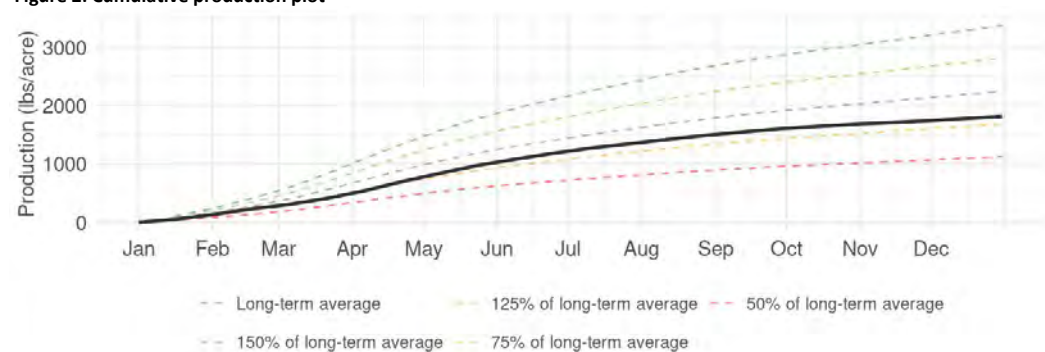


Figure 2: Cumulative production plot



Production Report for 2023 using Rangeland Analysis Platform (RAP) data

Land unit name: CTS area
Date of report: July 23 2025
Long-term period: 2001-2022

Current year

Production through Dec 31 of 2023: 1640lbs/acre

Long-term averages

Average production through Dec 31: 2032lbs/acre
150% of average production through Dec 31: 3048lbs/acre
125% of average production through Dec 31: 2540lbs/acre
75% of average production through Dec 31: 1524lbs/acre
50% of average production through Dec 31: 1016lbs/acre

Table 1: Current year data

Date	16-day production (lbs/acre)	Cumulative production (lbs/acre)	Percent of average
01/01/2023	0	0	NA%
01/16/2023	44	44	69.84%
02/01/2023	67	111	78.72%
02/17/2023	82	193	81.43%
03/05/2023	64	257	74.06%
03/21/2023	87	344	70.78%
04/06/2023	110	454	71.16%
04/22/2023	136	590	75.26%
05/08/2023	124	714	77.69%
05/24/2023	126	840	80.69%
06/09/2023	102	942	82.06%
06/25/2023	95	1037	83.29%
07/11/2023	88	1125	84.14%
07/27/2023	71	1196	83.81%
08/12/2023	72	1268	83.81%
08/28/2023	66	1334	83.74%
09/13/2023	57	1391	83.64%
09/29/2023	56	1447	83.79%
10/15/2023	39	1486	83.34%
10/31/2023	37	1523	82.95%
11/16/2023	29	1552	82.16%
12/02/2023	30	1582	81.55%
12/18/2023	33	1615	81.12%
12/31/2023	25	1640	80.71%

Figure 1: 16-day production plot

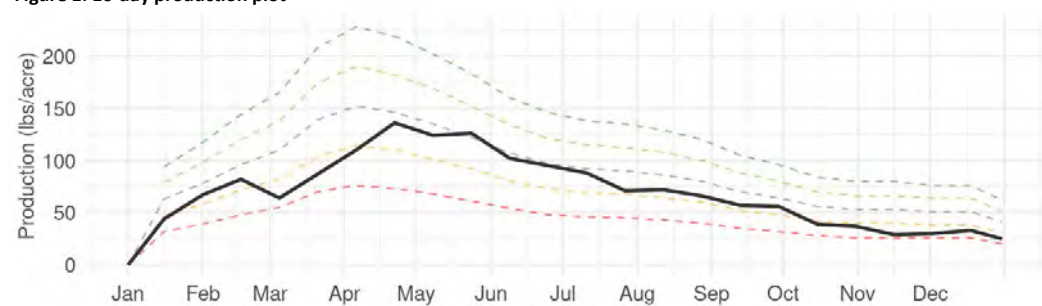
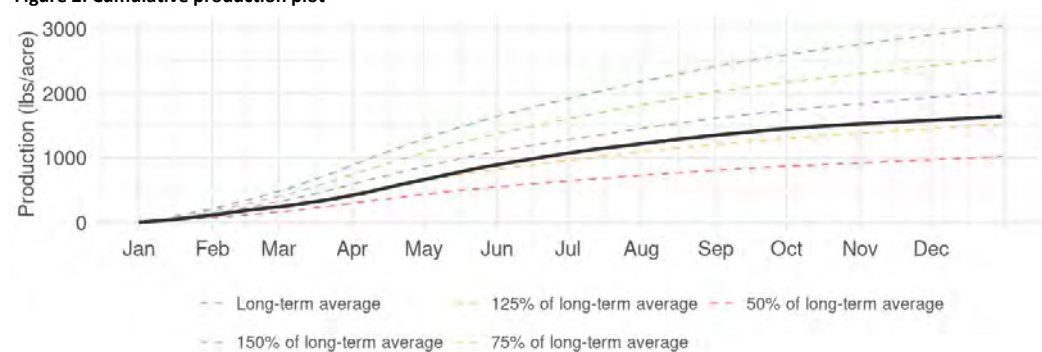


Figure 2: Cumulative production plot



Production Report for 2023 using Rangeland Analysis Platform (RAP) data

Land unit name: Solomon Hills_Oak Planting Site 1

Date of report: July 23 2025

Long-term period: 2001-2022

Current year

Production through Dec 31 of 2023: 2761lbs/acre

Long-term averages

Average production through Dec 31: 3166lbs/acre

150% of average production through Dec 31: 4749lbs/acre

125% of average production through Dec 31: 3958lbs/acre

75% of average production through Dec 31: 2374lbs/acre

50% of average production through Dec 31: 1583lbs/acre

Table 1: Current year data

Date	16-day production (lbs/acre)	Cumulative production (lbs/acre)	Percent of average
01/01/2023	0	0	NA%
01/16/2023	78	78	74.29%
02/01/2023	133	211	90.17%
02/17/2023	162	373	95.15%
03/05/2023	124	497	87.19%
03/21/2023	164	661	83.78%
04/06/2023	202	863	84.52%
04/22/2023	233	1096	88.53%
05/08/2023	198	1294	90.17%
05/24/2023	189	1483	91.94%
06/09/2023	154	1637	92.28%
06/25/2023	153	1790	93.18%
07/11/2023	141	1931	93.56%
07/27/2023	114	2045	92.83%
08/12/2023	117	2162	92.51%
08/28/2023	106	2268	92.08%
09/13/2023	93	2361	91.8%
09/29/2023	90	2451	91.73%
10/15/2023	62	2513	91.05%
10/31/2023	59	2572	90.44%
11/16/2023	46	2618	89.35%
12/02/2023	46	2664	88.39%
12/18/2023	51	2715	87.64%
12/31/2023	46	2761	87.21%

Figure 1: 16-day production plot

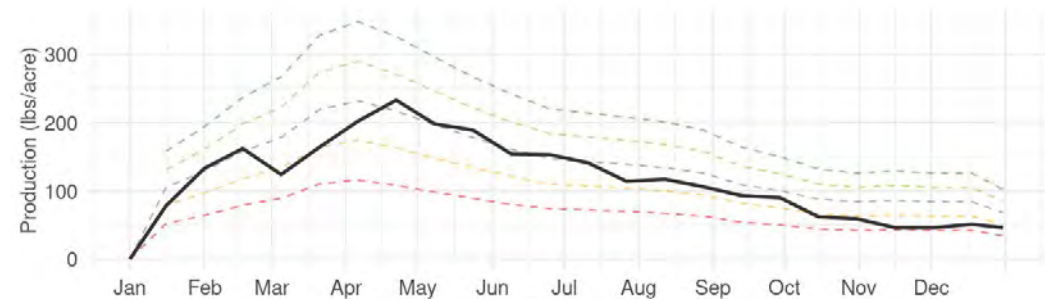
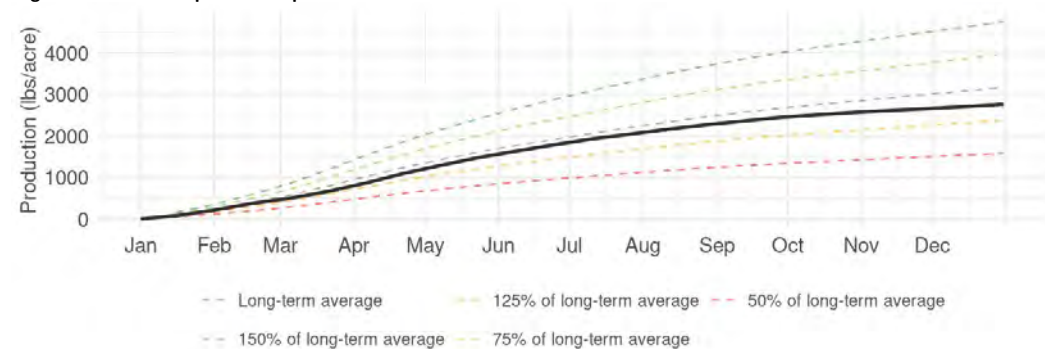


Figure 2: Cumulative production plot



Production Report for 2023 using Rangeland Analysis Platform (RAP) data

Land unit name: Solomon Hills_Oak Planting Site 2

Date of report: July 23 2025

Long-term period: 2001-2022

Current year

Production through Dec 31 of 2023: 3466lbs/acre

Long-term averages

Average production through Dec 31: 3676lbs/acre

150% of average production through Dec 31: 5514lbs/acre

125% of average production through Dec 31: 4595lbs/acre

75% of average production through Dec 31: 2757lbs/acre

50% of average production through Dec 31: 1838lbs/acre

Table 1: Current year data

Date	16-day production (lbs/acre)	Cumulative production (lbs/acre)	Percent of average
01/01/2023	0	0	NA%
01/16/2023	96	96	82.05%
02/01/2023	158	254	96.95%
02/17/2023	193	447	100.9%
03/05/2023	149	596	91.98%
03/21/2023	205	801	88.61%
04/06/2023	258	1059	89.52%
04/22/2023	300	1359	93.98%
05/08/2023	247	1606	95.54%
05/24/2023	225	1831	97.08%
06/09/2023	183	2014	97.53%
06/25/2023	189	2203	98.88%
07/11/2023	181	2384	99.87%
07/27/2023	148	2532	99.57%
08/12/2023	151	2683	99.52%
08/28/2023	140	2823	99.44%
09/13/2023	124	2947	99.43%
09/29/2023	122	3069	99.58%
10/15/2023	81	3150	98.81%
10/31/2023	75	3225	97.99%
11/16/2023	60	3285	96.7%
12/02/2023	61	3346	95.63%
12/18/2023	66	3412	94.86%
12/31/2023	54	3466	94.29%

Figure 1: 16-day production plot

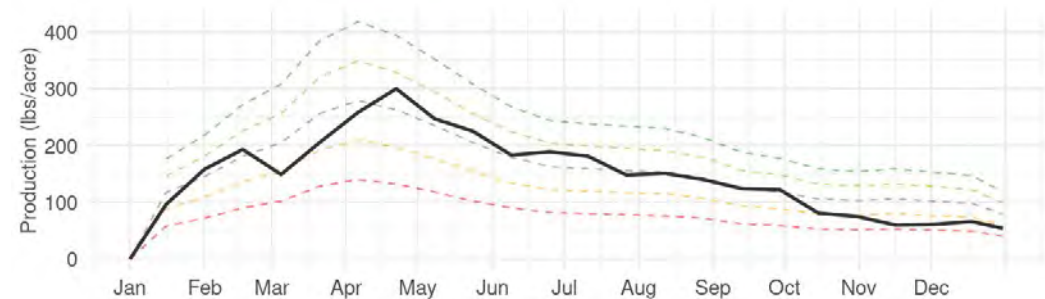
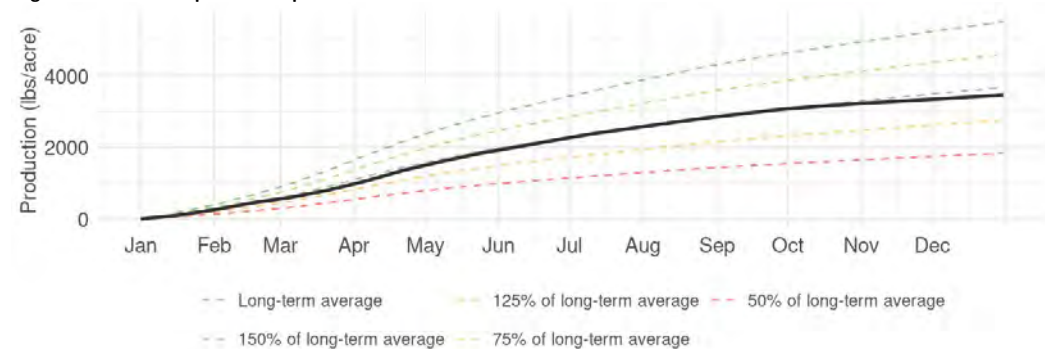


Figure 2: Cumulative production plot



Production Report for 2023 using Rangeland Analysis Platform (RAP) data

Land unit name: Solomon Hills_Oak Planting Site 3

Date of report: July 23 2025

Long-term period: 2001-2022

Current year

Production through Dec 31 of 2023: 3092lbs/acre

Long-term averages

Average production through Dec 31: 3169lbs/acre

150% of average production through Dec 31: 4754lbs/acre

125% of average production through Dec 31: 3961lbs/acre

75% of average production through Dec 31: 2377lbs/acre

50% of average production through Dec 31: 1584lbs/acre

Table 1: Current year data

Date	16-day production (lbs/acre)	Cumulative production (lbs/acre)	Percent of average
01/01/2023	0	0	NA%
01/16/2023	88	88	88.89%
02/01/2023	142	230	103.6%
02/17/2023	171	401	106.93%
03/05/2023	131	532	97.08%
03/21/2023	181	713	93.45%
04/06/2023	227	940	93.91%
04/22/2023	275	1215	98.94%
05/08/2023	232	1447	101.05%
05/24/2023	199	1646	102.11%
06/09/2023	159	1805	101.8%
06/25/2023	167	1972	102.71%
07/11/2023	156	2128	103.25%
07/27/2023	127	2255	102.55%
08/12/2023	131	2386	102.27%
08/28/2023	122	2508	102.03%
09/13/2023	106	2614	101.83%
09/29/2023	104	2718	101.84%
10/15/2023	74	2792	101.2%
10/31/2023	71	2863	100.63%
11/16/2023	55	2918	99.45%
12/02/2023	59	2977	98.58%
12/18/2023	64	3041	98%
12/31/2023	51	3092	97.57%

Figure 1: 16-day production plot

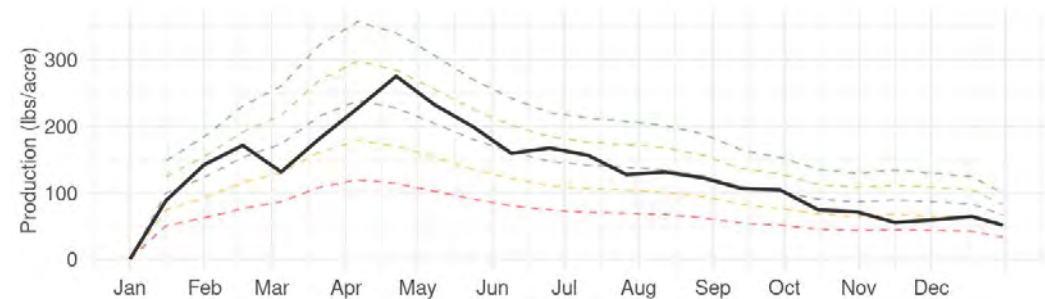
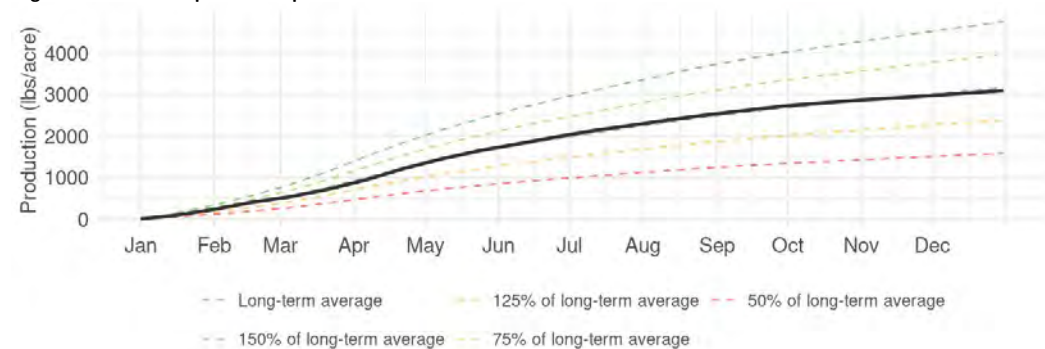


Figure 2: Cumulative production plot



Production Report for 2023 using Rangeland Analysis Platform (RAP) data

Land unit name: Solomon Hills_Oak Planting Site 4

Date of report: July 23 2025

Long-term period: 2001-2022

Current year

Production through Dec 31 of 2023: 3566lbs/acre

Long-term averages

Average production through Dec 31: 3723lbs/acre

150% of average production through Dec 31: 5584lbs/acre

125% of average production through Dec 31: 4654lbs/acre

75% of average production through Dec 31: 2792lbs/acre

50% of average production through Dec 31: 1862lbs/acre

Table 1: Current year data

Date	16-day production (lbs/acre)	Cumulative production (lbs/acre)	Percent of average
01/01/2023	0	0	NA%
01/16/2023	100	100	82.64%
02/01/2023	161	261	96.31%
02/17/2023	195	456	99.56%
03/05/2023	152	608	90.61%
03/21/2023	210	818	87.3%
04/06/2023	264	1082	88.18%
04/22/2023	320	1402	93.4%
05/08/2023	281	1683	96.5%
05/24/2023	266	1949	99.85%
06/09/2023	202	2151	100.89%
06/25/2023	184	2335	101.88%
07/11/2023	179	2514	102.7%
07/27/2023	149	2663	102.31%
08/12/2023	154	2817	102.21%
08/28/2023	143	2960	102.07%
09/13/2023	125	3085	102.02%
09/29/2023	118	3203	101.97%
10/15/2023	78	3281	101.17%
10/31/2023	72	3353	100.36%
11/16/2023	53	3406	98.93%
12/02/2023	51	3457	97.6%
12/18/2023	58	3515	96.51%
12/31/2023	51	3566	95.78%

Figure 1: 16-day production plot

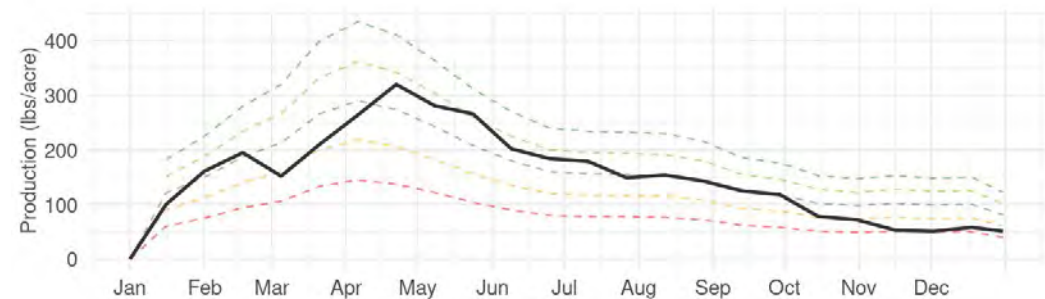
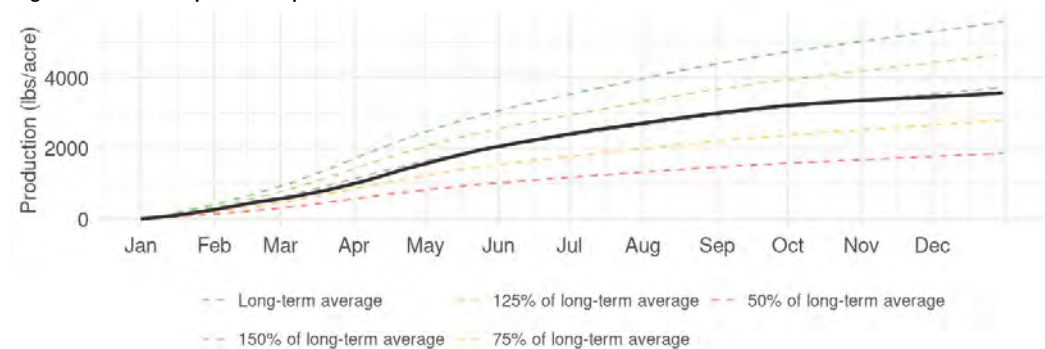


Figure 2: Cumulative production plot



Production Report for 2023 using Rangeland Analysis Platform (RAP) data

Land unit name: Solomon Hills_Oak Planting Site 5

Date of report: July 23 2025

Long-term period: 2001-2022

Current year

Production through Dec 31 of 2023: 3347lbs/acre

Long-term averages

Average production through Dec 31: 3493lbs/acre

150% of average production through Dec 31: 5240lbs/acre

125% of average production through Dec 31: 4366lbs/acre

75% of average production through Dec 31: 2620lbs/acre

50% of average production through Dec 31: 1746lbs/acre

Table 1: Current year data

Date	16-day production (lbs/acre)	Cumulative production (lbs/acre)	Percent of average
01/01/2023	0	0	NA%
01/16/2023	92	92	82.14%
02/01/2023	149	241	96.4%
02/17/2023	180	421	100%
03/05/2023	139	560	90.91%
03/21/2023	192	752	87.65%
04/06/2023	243	995	88.6%
04/22/2023	291	1286	93.46%
05/08/2023	254	1540	96.13%
05/24/2023	246	1786	99.28%
06/09/2023	195	1981	100.46%
06/25/2023	181	2162	101.6%
07/11/2023	171	2333	102.41%
07/27/2023	139	2472	101.85%
08/12/2023	143	2615	101.63%
08/28/2023	135	2750	101.48%
09/13/2023	116	2866	101.31%
09/29/2023	109	2975	101.16%
10/15/2023	77	3052	100.43%
10/31/2023	72	3124	99.74%
11/16/2023	55	3179	98.48%
12/02/2023	55	3234	97.32%
12/18/2023	61	3295	96.43%
12/31/2023	52	3347	95.82%

Figure 1: 16-day production plot

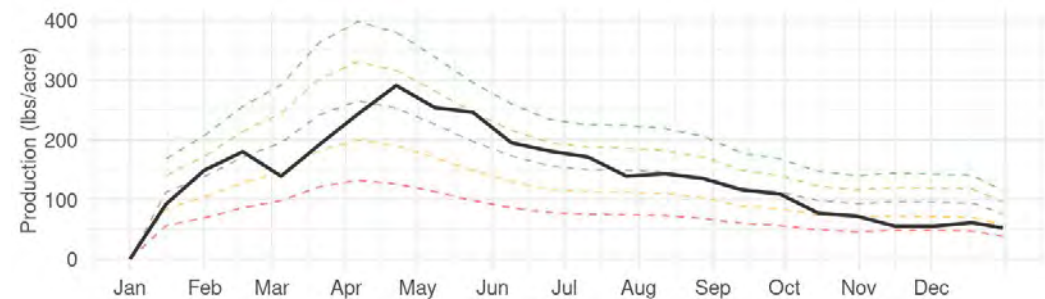
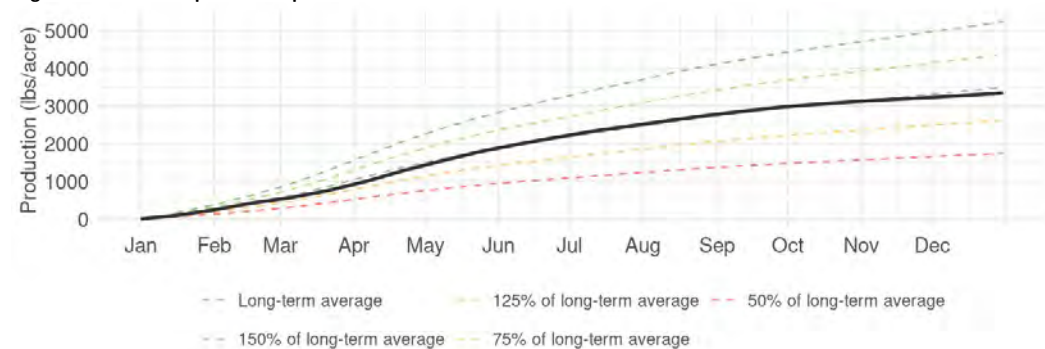


Figure 2: Cumulative production plot



APPENDIX E. STOCKING RATE CALCULATIONS

Proper Stocking Rate Estimate Using Rangeland Analysis Platform (RAP) Rangeland Production Data

Client:

Land unit: **Onsite Area**

The following responses were provided to generate this stocking rate report:

What is the number of acres of the land unit?

1694.64 acres

What is the animal type that will be grazing the land unit?

1000 pounds (lbs)

What is the average intake (% of body weight) that the animal consumes each day?

3% of live body weight

How many days will the livestock be grazing this land unit?

365 days

What is the expected harvest efficiency (%) for the grazing system planned?

25% harvest efficiency

What is the adjustment factor for influence of topographic slope and distance to water?

100%

Table 2: Annual summary data

Year	Herbaceous production (lbs/acre)	Percent perennial production	Percent annual production	Estimated total animals for proper stocking	Estimated acres per animal
2012	1840	11.3%	88.7%	71	23.87
2013	1947	5.1%	94.9%	75	22.6
2014	2080	6.6%	93.4%	80	21.18
2015	2093	4.1%	95.9%	81	20.92
2016	2541	3.7%	96.3%	98	17.29
2017	2419	8.3%	91.7%	94	18.03
2018	2325	10.1%	89.9%	90	18.83
2019	1993	9.6%	90.4%	77	22.01
2020	2015	16.9%	83.1%	78	21.73
2021	2198	8.1%	91.9%	85	19.94
2022	2175	5.6%	94.4%	84	20.17

NOTE: The vegetation biomass data and maps from RAP are intended to be used alongside local knowledge and on-the-ground data to inform management actions that improve rangelands and wildlife habitat. They should not be used in isolation to quantify rangeland resources, determine or define thresholds, or evaluate the efficacy of management practices or treatments. Data can be used to evaluate resources in concert with site-specific information about the area under investigation, such as past land management practices, vegetation treatments, conservation efforts, or natural disturbances.

NOTE: Summary statistics reported in Table 1 and Figure 1 calculated for long-term average period of 2001-2022

Table 1: Summary statistics

	Average	Lowest value	Highest value	Range
Production (lbs/acre)	2,239	1,742	2,970	1,228
Stocking rate (animals)	87	67	115	48

Figure 1: Herbaceous Biomass Production (lbs/ac) from RAP

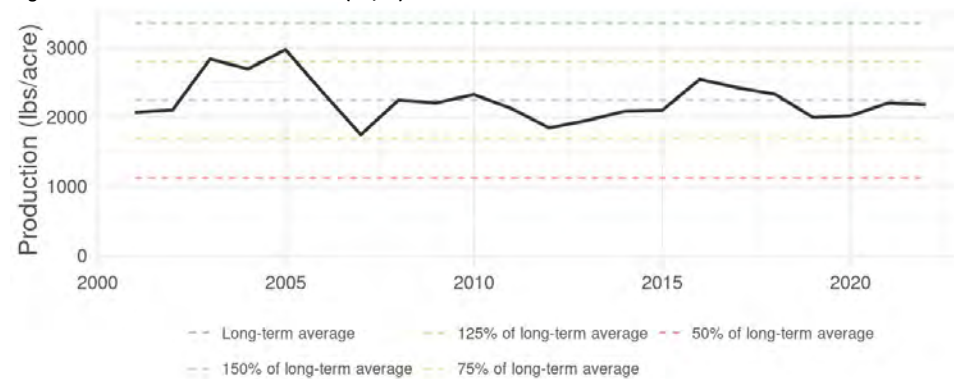
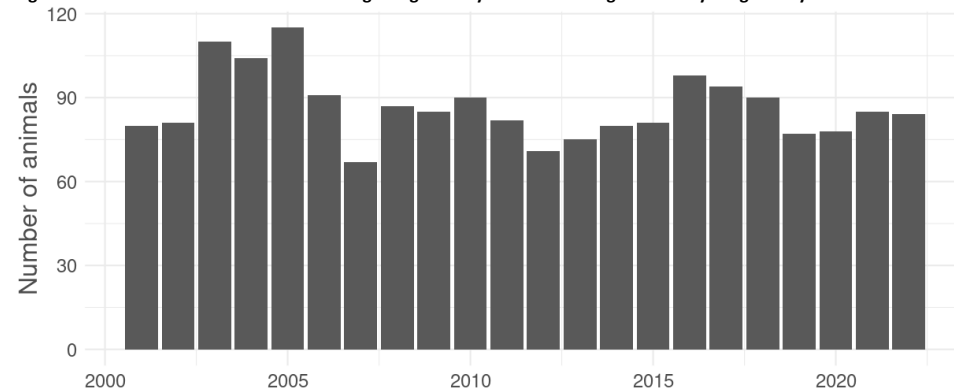


Figure 2: Estimated number 1000 lb animals grazing 365 days and consuming 3% of body weight daily



Details of the Stocking Rate Calculations Using Average (2001-2022) Biomass Production

Land Unit: Onsite Area

1) Determine the Forage Available in the Fields

Acres in Field(s)			Forage Dry Matter Production (Lbs per Acre)			Total Lbs of Forage Dry Matter in Field(s)			Harvest Efficiency (%)			Available Lbs of Forage Dry Matter in Field(s)
1694.64	X		2,239	=		3,793,836	X		25%	=		948,458

2) Determine the Individual Animal's Forage Demand for Grazing Event

Average Live Weight of each Grazing Animal (lbs)			Forage intake Rate (% of body weight per day)			Forage Dry Matter Demand per Head per Day (lbs)			Number of Planned Grazing Days			Forage Dry Matter Demand per Head per Grazing Event (lbs)
1,000	X		3%	=		30	X		365	=		10,950

3) Determine the Suggested Number of Head

Available Lbs of Forage Dry Matter in Field(s)			Forage Dry Matter Demand per Head per Grazing Event (lbs)			Adjustment factor for water availability and slope			Suggested Number of Head			Suggested Acres per Head
948,458	/		10,950	x		100%	=		87	OR		19.57

Proper Stocking Rate Estimate Using Rangeland Analysis Platform (RAP) Rangeland Production Data

Client:

Land unit: Solomon Hills- CTS Site

The following responses were provided to generate this stocking rate report:

What is the number of acres of the land unit?

505.96 acres

What is the animal type that will be grazing the land unit?

1000 pounds (lbs)

What is the average intake (% of body weight) that the animal consumes each day?

3% of live body weight

How many days will the livestock be grazing this land unit?

365 days

What is the expected harvest efficiency (%) for the grazing system planned?

25% harvest efficiency

What is the adjustment factor for influence of topographic slope and distance to water?

100%

Table 2: Annual summary data

Year	Herbaceous production (lbs/acre)	Percent perennial production	Percent annual production	Estimated total animals for proper stocking	Estimated acres per animal
2012	1615	14.7%	85.3%	19	26.63
2013	1884	4.5%	95.5%	22	23
2014	1841	7.7%	92.3%	21	24.09
2015	1973	4.2%	95.8%	23	22
2016	2290	4.4%	95.6%	26	19.46
2017	2137	8.8%	91.2%	25	20.24
2018	2081	12.3%	87.7%	24	21.08
2019	1840	10.7%	89.3%	21	24.09
2020	1832	17.8%	82.2%	21	24.09
2021	1936	9.6%	90.4%	22	23
2022	1966	6.1%	93.9%	23	22

NOTE: The vegetation biomass data and maps from RAP are intended to be used alongside local knowledge and on-the-ground data to inform management actions that improve rangelands and wildlife habitat. They should not be used in isolation to quantify rangeland resources, determine or define thresholds, or evaluate the efficacy of management practices or treatments. Data can be used to evaluate resources in concert with site-specific information about the area under investigation, such as past land management practices, vegetation treatments, conservation efforts, or natural disturbances.

NOTE: Summary statistics reported in Table 1 and Figure 1 calculated for long-term average period of 2001-2022

Table 1: Summary statistics

	Average	Lowest value	Highest value	Range
Production (lbs/acre)	2,023	1,615	2,659	1,044
Stocking rate (animals)	23	19	31	12

Figure 1: Herbaceous Biomass Production (lbs/ac) from RAP

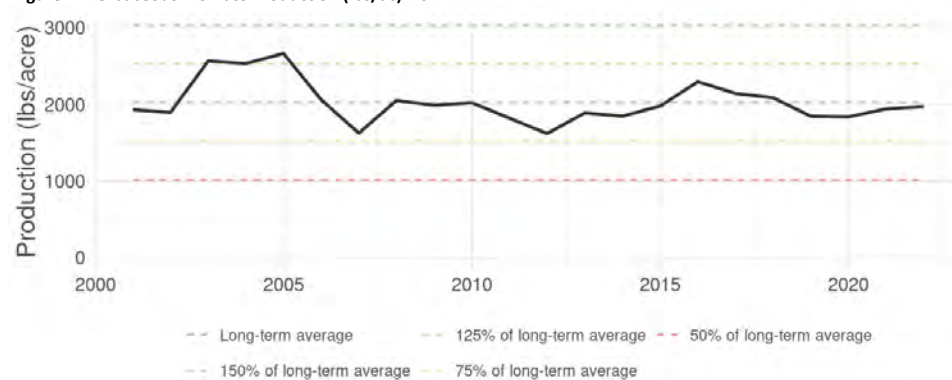
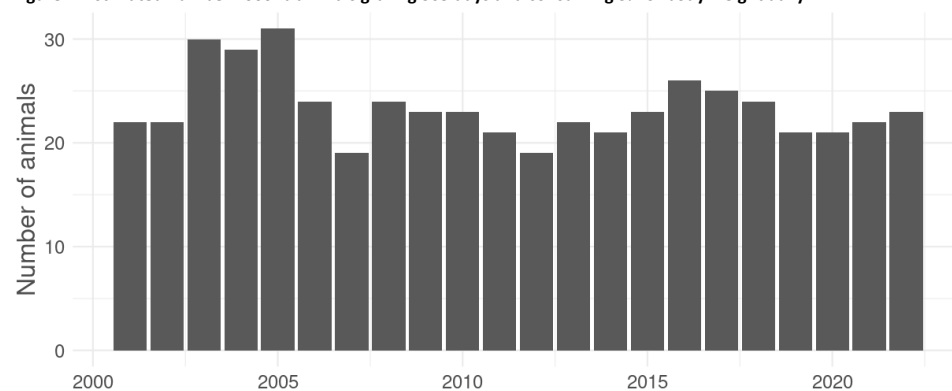


Figure 2: Estimated number 1000 lb animals grazing 365 days and consuming 3% of body weight daily



Details of the Stocking Rate Calculations Using Average (2001-2022) Biomass Production

Land Unit: Solomon Hills- CTS Site

1) Determine the Forage Available in the Fields

Acres in Field(s)			Forage Dry Matter Production (Lbs per Acre)			Total Lbs of Forage Dry Matter in Field(s)			Harvest Efficiency (%)			Available Lbs of Forage Dry Matter in Field(s)
505.96	X		2,023	=		1,023,326	X		25%	=		255,832

2) Determine the Individual Animal's Forage Demand for Grazing Event

Average Live Weight of each Grazing Animal (lbs)			Forage intake Rate (% of body weight per day)			Forage Dry Matter Demand per Head per Day (lbs)			Number of Planned Grazing Days			Forage Dry Matter Demand per Head per Grazing Event (lbs)
1,000	X		3%	=		30	X		365	=		10,950

3) Determine the Suggested Number of Head

Available Lbs of Forage Dry Matter in Field(s)			Forage Dry Matter Demand per Head per Grazing Event (lbs)			Adjustment factor for water availability and slope			Suggested Number of Head			Suggested Acres per Head
255,832	/		10,950	x		100%	=		23	OR		21.66

Proper Stocking Rate Estimate Using Rangeland Analysis Platform (RAP) Rangeland Production Data

Client: [REDACTED]
Land unit: **Solomon Hills- Oak Planting Site 1**

The following responses were provided to generate this stocking rate report:

What is the number of acres of the land unit?

28.72 acres

What is the animal type that will be grazing the land unit?

1000 pounds (lbs)

What is the average intake (% of body weight) that the animal consumes each day?

3% of live body weight

How many days will the livestock be grazing this land unit?

365 days

What is the expected harvest efficiency (%) for the grazing system planned?

25% harvest efficiency

What is the adjustment factor for influence of topographic slope and distance to water?

100%

Table 2: Annual summary data

Year	Herbaceous production (lbs/acre)	Percent perennial production	Percent annual production	Estimated total animals for proper stocking	Estimated acres per animal
2012	2514	3.8%	96.2%	2	14.36
2013	2763	1.6%	98.4%	2	14.36
2014	2759	4.1%	95.9%	2	14.36
2015	2752	0.4%	99.6%	2	14.36
2016	3687	0.1%	99.9%	2	14.36
2017	3531	1.2%	98.8%	2	14.36
2018	3224	5.7%	94.3%	2	14.36
2019	3089	1.7%	98.3%	2	14.36
2020	2877	7.8%	92.2%	2	14.36
2021	3158	4.5%	95.5%	2	14.36
2022	3416	2%	98%	2	14.36

NOTE: The vegetation biomass data and maps from RAP are intended to be used alongside local knowledge and on-the-ground data to inform management actions that improve rangelands and wildlife habitat. They should not be used in isolation to quantify rangeland resources, determine or define thresholds, or evaluate the efficacy of management practices or treatments. Data can be used to evaluate resources in concert with site-specific information about the area under investigation, such as past land management practices, vegetation treatments, conservation efforts, or natural disturbances.

NOTE: Summary statistics reported in Table 1 and Figure 1 calculated for long-term average period of 2001-2022

Table 1: Summary statistics

	Average	Lowest value	Highest value	Range
Production (lbs/acre)	3,152	2,047	4,149	2,102
Stocking rate (animals)	2	1	3	2

Figure 1: Herbaceous Biomass Production (lbs/ac) from RAP

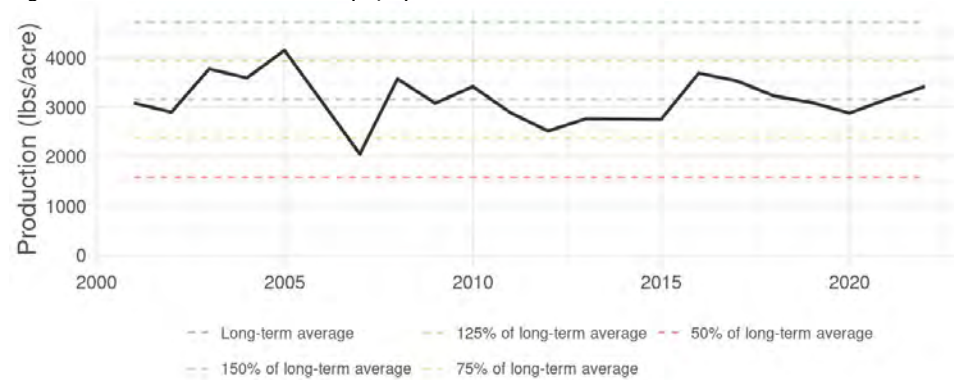
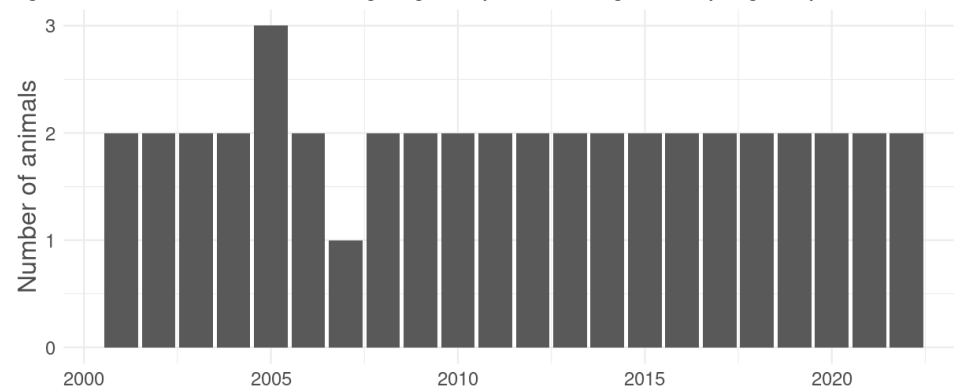


Figure 2: Estimated number 1000 lb animals grazing 365 days and consuming 3% of body weight daily



Details of the Stocking Rate Calculations Using Average (2001-2022) Biomass Production

Land Unit: Solomon Hills

1) Determine the Forage Available in the Fields

Acres in Field(s)			Forage Dry Matter Production (Lbs per Acre)			Total Lbs of Forage Dry Matter in Field(s)			Harvest Efficiency (%)			Available Lbs of Forage Dry Matter in Field(s)
28.72	X		3,152	=		90,532	X		25%	=		22,632

2) Determine the Individual Animal's Forage Demand for Grazing Event

Average Live Weight of each Grazing Animal (lbs)			Forage intake Rate (% of body weight per day)			Forage Dry Matter Demand per Head per Day (lbs)			Number of Planned Grazing Days			Forage Dry Matter Demand per Head per Grazing Event (lbs)
1,000	X		3%	=		30	X		365	=		10,950

3) Determine the Suggested Number of Head

Available Lbs of Forage Dry Matter in Field(s)			Forage Dry Matter Demand per Head per Grazing Event (lbs)			Adjustment factor for water availability and slope			Suggested Number of Head			Suggested Acres per Head
22,632	/		10,950	x		100%	=		2	OR		13.89

Proper Stocking Rate Estimate Using Rangeland Analysis Platform (RAP) Rangeland Production Data

Client: [REDACTED]
Land unit: **Solomon Hills- Oak Planting Site 2**

The following responses were provided to generate this stocking rate report:

What is the number of acres of the land unit?

6.15 acres

What is the animal type that will be grazing the land unit?

1000 pounds (lbs)

What is the average intake (% of body weight) that the animal consumes each day?

3% of live body weight

How many days will the livestock be grazing this land unit?

365 days

What is the expected harvest efficiency (%) for the grazing system planned?

25% harvest efficiency

What is the adjustment factor for influence of topographic slope and distance to water?

100%

Table 2: Annual summary data

Year	Herbaceous production (lbs/acre)	Percent perennial production	Percent annual production	Estimated total animals for proper stocking	Estimated acres per animal
2012	2959	1%	99%	0	#NUM!
2013	3638	0.6%	99.4%	1	6.15
2014	3511	1.4%	98.6%	0	#NUM!
2015	3898	0.1%	99.9%	1	6.15
2016	4757	0%	100%	1	6.15
2017	3895	1%	99%	1	6.15
2018	3994	0.9%	99.1%	1	6.15
2019	3262	2.9%	97.1%	0	#NUM!
2020	2975	6.6%	93.4%	0	#NUM!
2021	3877	2%	98%	1	6.15
2022	4279	1.5%	98.5%	1	6.15

NOTE: The vegetation biomass data and maps from RAP are intended to be used alongside local knowledge and on-the-ground data to inform management actions that improve rangelands and wildlife habitat. They should not be used in isolation to quantify rangeland resources, determine or define thresholds, or evaluate the efficacy of management practices or treatments. Data can be used to evaluate resources in concert with site-specific information about the area under investigation, such as past land management practices, vegetation treatments, conservation efforts, or natural disturbances.

NOTE: Summary statistics reported in Table 1 and Figure 1 calculated for long-term average period of 2001-2022

Table 1: Summary statistics

	Average	Lowest value	Highest value	Range
Production (lbs/acre)	3,659	2,410	4,757	2,347
Stocking rate (animals)	1	0	1	1

Figure 1: Herbaceous Biomass Production (lbs/ac) from RAP

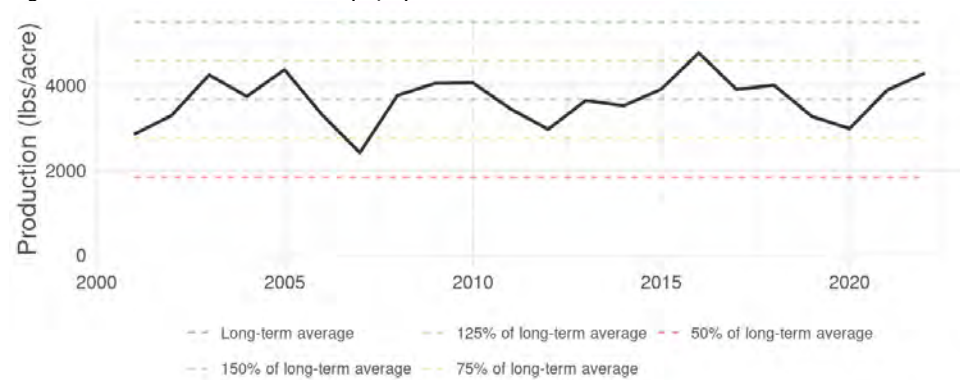
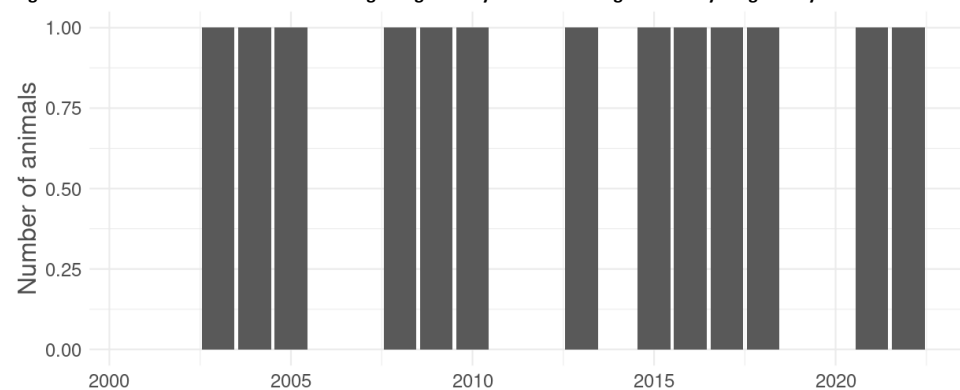


Figure 2: Estimated number 1000 lb animals grazing 365 days and consuming 3% of body weight daily



Details of the Stocking Rate Calculations Using Average (2001-2022) Biomass Production

Land Unit: Solomon Hills

1) Determine the Forage Available in the Fields

Acres in Field(s)			Forage Dry Matter Production (Lbs per Acre)			Total Lbs of Forage Dry Matter in Field(s)			Harvest Efficiency (%)			Available Lbs of Forage Dry Matter in Field(s)
6.15	X		3,659	=		22,500	X		25%	=		5,624

2) Determine the Individual Animal's Forage Demand for Grazing Event

Average Live Weight of each Grazing Animal (lbs)			Forage intake Rate (% of body weight per day)			Forage Dry Matter Demand per Head per Day (lbs)			Number of Planned Grazing Days			Forage Dry Matter Demand per Head per Grazing Event (lbs)
1,000	X		3%	=		30	X		365	=		10,950

3) Determine the Suggested Number of Head

Available Lbs of Forage Dry Matter in Field(s)			Forage Dry Matter Demand per Head per Grazing Event (lbs)			Adjustment factor for water availability and slope			Suggested Number of Head			Suggested Acres per Head
5,624	/		10,950	x		100%	=		1	OR		11.96

Proper Stocking Rate Estimate Using Rangeland Analysis Platform (RAP) Rangeland Production Data

Client: [REDACTED]
Land unit: **Solomon Hills- Oak Planting Site 3**

The following responses were provided to generate this stocking rate report:

What is the number of acres of the land unit?

1.55 acres

What is the animal type that will be grazing the land unit?

1000 pounds (lbs)

What is the average intake (% of body weight) that the animal consumes each day?

3% of live body weight

How many days will the livestock be grazing this land unit?

365 days

What is the expected harvest efficiency (%) for the grazing system planned?

25% harvest efficiency

What is the adjustment factor for influence of topographic slope and distance to water?

100%

Table 2: Annual summary data

Year	Herbaceous production (lbs/acre)	Percent perennial production	Percent annual production	Estimated total animals for proper stocking	Estimated acres per animal
2012	2390	3.3%	96.7%	0	#NUM!
2013	2881	0.1%	99.9%	0	#NUM!
2014	2692	4.2%	95.8%	0	#NUM!
2015	3515	0.3%	99.7%	0	#NUM!
2016	4241	0%	100%	0	#NUM!
2017	3467	1.6%	98.4%	0	#NUM!
2018	3559	1.5%	98.5%	0	#NUM!
2019	2922	1.2%	98.8%	0	#NUM!
2020	2749	4.6%	95.4%	0	#NUM!
2021	3425	0.9%	99.1%	0	#NUM!
2022	3564	0.8%	99.2%	0	#NUM!

NOTE: The vegetation biomass data and maps from RAP are intended to be used alongside local knowledge and on-the-ground data to inform management actions that improve rangelands and wildlife habitat. They should not be used in isolation to quantify rangeland resources, determine or define thresholds, or evaluate the efficacy of management practices or treatments. Data can be used to evaluate resources in concert with site-specific information about the area under investigation, such as past land management practices, vegetation treatments, conservation efforts, or natural disturbances.

NOTE: Summary statistics reported in Table 1 and Figure 1 calculated for long-term average period of 2001-2022

Table 1: Summary statistics

	Average	Lowest value	Highest value	Range
Production (lbs/acre)	3,152	1,896	4,261	2,365
Stocking rate (animals)	0	0	0	0

Figure 1: Herbaceous Biomass Production (lbs/ac) from RAP

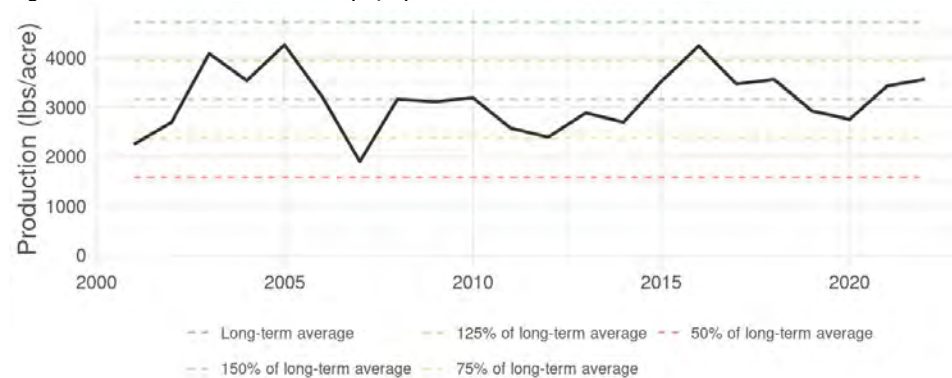
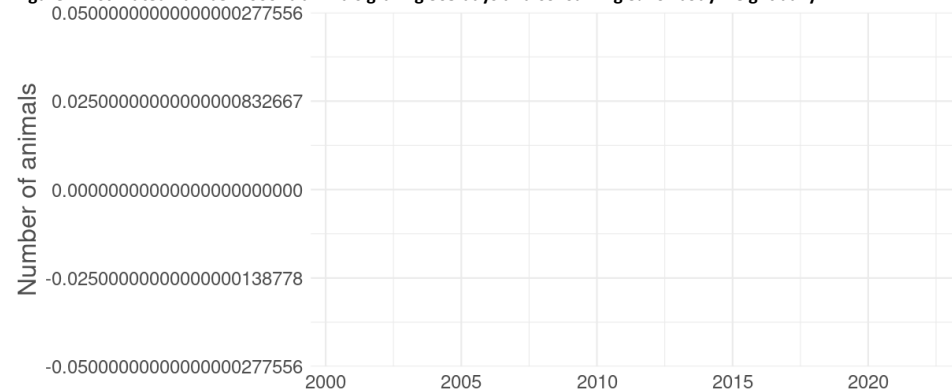


Figure 2: Estimated number 1000 lb animals grazing 365 days and consuming 3% of body weight daily



Details of the Stocking Rate Calculations Using Average (2001-2022) Biomass Production

Land Unit: Solomon Hills

1) Determine the Forage Available in the Fields

Acres in Field(s)			Forage Dry Matter Production (Lbs per Acre)			Total Lbs of Forage Dry Matter in Field(s)			Harvest Efficiency (%)			Available Lbs of Forage Dry Matter in Field(s)
1.55	X		3,152	=		4,886	X		25%	=		1,222

2) Determine the Individual Animal's Forage Demand for Grazing Event

Average Live Weight of each Grazing Animal (lbs)			Forage intake Rate (% of body weight per day)			Forage Dry Matter Demand per Head per Day (lbs)			Number of Planned Grazing Days			Forage Dry Matter Demand per Head per Grazing Event (lbs)
1,000	X		3%	=		30	X		365	=		10,950

3) Determine the Suggested Number of Head

Available Lbs of Forage Dry Matter in Field(s)			Forage Dry Matter Demand per Head per Grazing Event (lbs)			Adjustment factor for water availability and slope			Suggested Number of Head			Suggested Acres per Head
1,222	/		10,950	x		100%	=		0	OR		13.84

Proper Stocking Rate Estimate Using Rangeland Analysis Platform (RAP) Rangeland Production Data

Client: [REDACTED]
Land unit: **Solomon Hills- Oak Planting Site 4**

The following responses were provided to generate this stocking rate report:

What is the number of acres of the land unit?

8.79 acres

What is the animal type that will be grazing the land unit?

1000 pounds (lbs)

What is the average intake (% of body weight) that the animal consumes each day?

3% of live body weight

How many days will the livestock be grazing this land unit?

365 days

What is the expected harvest efficiency (%) for the grazing system planned?

25% harvest efficiency

What is the adjustment factor for influence of topographic slope and distance to water?

100%

Table 2: Annual summary data

Year	Herbaceous production (lbs/acre)	Percent perennial production	Percent annual production	Estimated total animals for proper stocking	Estimated acres per animal
2012	3104	2.4%	97.6%	1	8.79
2013	3465	0.9%	99.1%	1	8.79
2014	3340	3.8%	96.2%	1	8.79
2015	3619	0.1%	99.9%	1	8.79
2016	4433	0%	100%	1	8.79
2017	4312	3.7%	96.3%	1	8.79
2018	3706	6.4%	93.6%	1	8.79
2019	3496	3.3%	96.7%	1	8.79
2020	3241	10%	90%	1	8.79
2021	4062	3.2%	96.8%	1	8.79
2022	4370	1%	99%	1	8.79

NOTE: The vegetation biomass data and maps from RAP are intended to be used alongside local knowledge and on-the-ground data to inform management actions that improve rangelands and wildlife habitat. They should not be used in isolation to quantify rangeland resources, determine or define thresholds, or evaluate the efficacy of management practices or treatments. Data can be used to evaluate resources in concert with site-specific information about the area under investigation, such as past land management practices, vegetation treatments, conservation efforts, or natural disturbances.

NOTE: Summary statistics reported in Table 1 and Figure 1 calculated for long-term average period of 2001-2022

Table 1: Summary statistics

	Average	Lowest value	Highest value	Range
Production (lbs/acre)	3,703	2,219	4,896	2,677
Stocking rate (animals)	1	0	1	1

Figure 1: Herbaceous Biomass Production (lbs/ac) from RAP

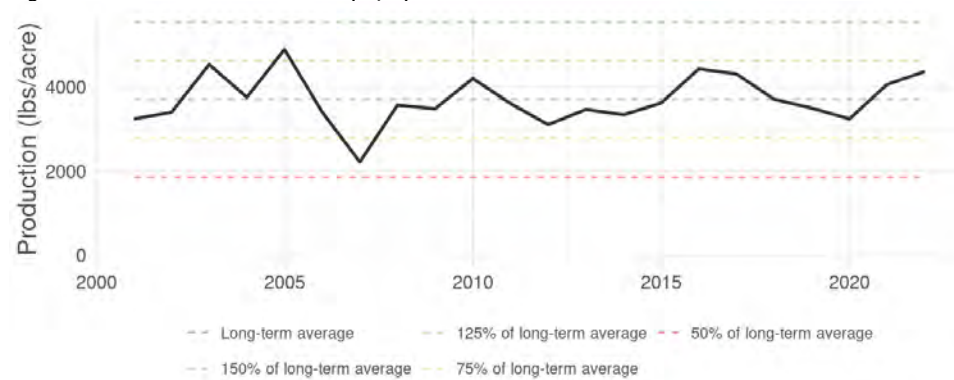
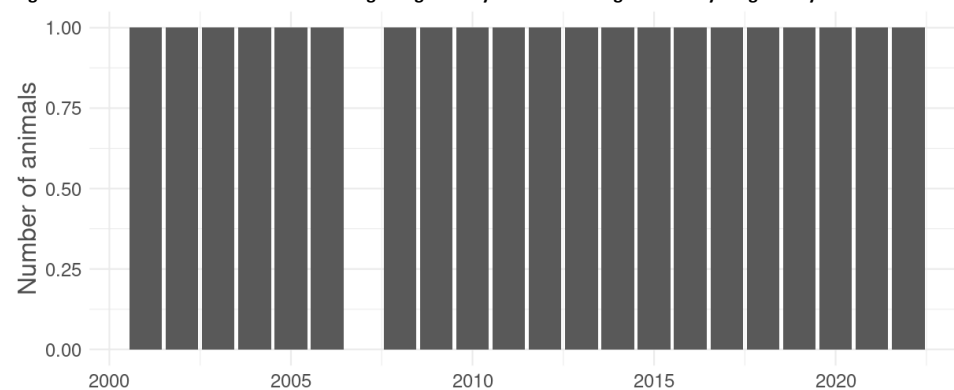


Figure 2: Estimated number 1000 lb animals grazing 365 days and consuming 3% of body weight daily



Details of the Stocking Rate Calculations Using Average (2001-2022) Biomass Production

Land Unit: Solomon Hills (5)

1) Determine the Forage Available in the Fields

Acres in Field(s)		Forage Dry Matter Production (Lbs per Acre)		Total Lbs of Forage Dry Matter in Field(s)		Harvest Efficiency (%)		Available Lbs of Forage Dry Matter in Field(s)
8.79	X	3,703	=	32,548	X	25%	=	8,138

2) Determine the Individual Animal's Forage Demand for Grazing Event

Average Live Weight of each Grazing Animal (lbs)		Forage intake Rate (% of body weight per day)		Forage Dry Matter Demand per Head per Day (lbs)		Number of Planned Grazing Days		Forage Dry Matter Demand per Head per Grazing Event (lbs)
1,000	X	3%	=	30	X	365	=	10,950

3) Determine the Suggested Number of Head

Available Lbs of Forage Dry Matter in Field(s)		Forage Dry Matter Demand per Head per Grazing Event (lbs)		Adjustment factor for water availability and slope		Suggested Number of Head		Suggested Acres per Head
8,138	/	10,950	x	100%	=	1	OR	11.83

Proper Stocking Rate Estimate Using Rangeland Analysis Platform (RAP) Rangeland Production Data

Client: [REDACTED]
Land unit: **Solomon Hills- Oak Planting Site 5**

The following responses were provided to generate this stocking rate report:

What is the number of acres of the land unit?

5.9 acres

What is the animal type that will be grazing the land unit?

1000 pounds (lbs)

What is the average intake (% of body weight) that the animal consumes each day?

3% of live body weight

How many days will the livestock be grazing this land unit?

365 days

What is the expected harvest efficiency (%) for the grazing system planned?

25% harvest efficiency

What is the adjustment factor for influence of topographic slope and distance to water?

100%

Table 2: Annual summary data

Year	Herbaceous production (lbs/acre)	Percent perennial production	Percent annual production	Estimated total animals for proper stocking	Estimated acres per animal
2012	2800	2.8%	97.2%	0	#NUM!
2013	3229	0.7%	99.3%	0	#NUM!
2014	2901	5%	95%	0	#NUM!
2015	3441	0.3%	99.7%	0	#NUM!
2016	4018	0%	100%	1	5.9
2017	3887	4.3%	95.7%	1	5.9
2018	3460	4.5%	95.5%	0	#NUM!
2019	3351	4.8%	95.2%	0	#NUM!
2020	2956	12.2%	87.8%	0	#NUM!
2021	3890	2.7%	97.3%	1	5.9
2022	4063	1.2%	98.8%	1	5.9

NOTE: The vegetation biomass data and maps from RAP are intended to be used alongside local knowledge and on-the-ground data to inform management actions that improve rangelands and wildlife habitat. They should not be used in isolation to quantify rangeland resources, determine or define thresholds, or evaluate the efficacy of management practices or treatments. Data can be used to evaluate resources in concert with site-specific information about the area under investigation, such as past land management practices, vegetation treatments, conservation efforts, or natural disturbances.

NOTE: Summary statistics reported in Table 1 and Figure 1 calculated for long-term average period of 2001-2022

Table 1: Summary statistics

	Average	Lowest value	Highest value	Range
Production (lbs/acre)	3,478	2,179	4,768	2,589
Stocking rate (animals)	0	0	1	1

Figure 1: Herbaceous Biomass Production (lbs/ac) from RAP

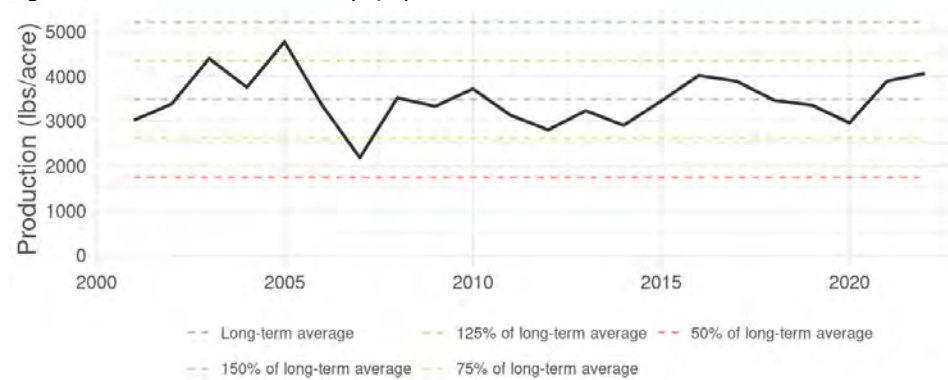
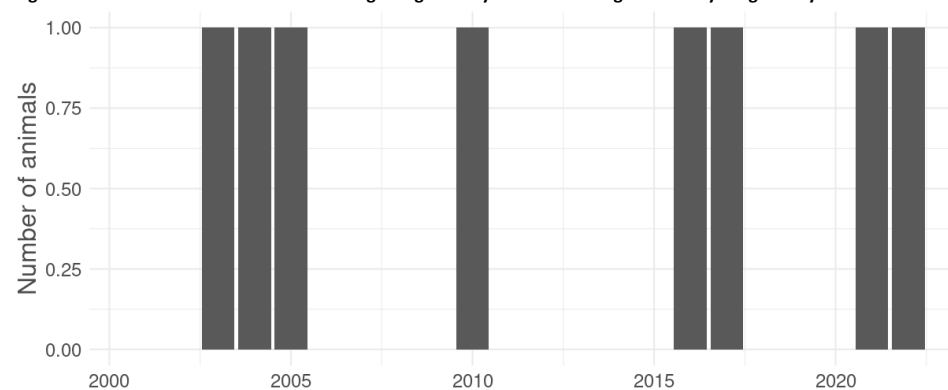


Figure 2: Estimated number 1000 lb animals grazing 365 days and consuming 3% of body weight daily



Details of the Stocking Rate Calculations Using Average (2001-2022) Biomass Production

Land Unit: Solomon Hills

1) Determine the Forage Available in the Fields

Acres in Field(s)			Forage Dry Matter Production (Lbs per Acre)			Total Lbs of Forage Dry Matter in Field(s)			Harvest Efficiency (%)			Available Lbs of Forage Dry Matter in Field(s)
5.9	X		3,478	=		20,518	X		25%	=		5,130

2) Determine the Individual Animal's Forage Demand for Grazing Event

Average Live Weight of each Grazing Animal (lbs)			Forage intake Rate (% of body weight per day)			Forage Dry Matter Demand per Head per Day (lbs)			Number of Planned Grazing Days			Forage Dry Matter Demand per Head per Grazing Event (lbs)
1,000	X		3%	=		30	X		365	=		10,950

3) Determine the Suggested Number of Head

Available Lbs of Forage Dry Matter in Field(s)			Forage Dry Matter Demand per Head per Grazing Event (lbs)			Adjustment factor for water availability and slope			Suggested Number of Head			Suggested Acres per Head
5,130	/		10,950	x		100%	=		0	OR		12.61