Soils Report for Estrella River Vineyard, LLC

Prepared by

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February 1, 2007

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Introduction

The purpose of this soils report of the Estrella River Vineyard (Estrella Vineyard) is to determine the prime farmland status and prime farmland acreage of the Estrella Vineyard's soils. These vineyard soils were mechanically cross-ripped to six (6) feet deep and homogenized prior to vineyard establishment (in the year 2000). Therefore, the past soils information (Lindsey, 1983) was updated to reflect current vineyard soils' conditions.

Methodology

In order to test whether the Estrella Vineyard's soils meet the requirements of prime farmland as defined by the USDA-Natural Resources Conservation Service (NRCS), the NRCS definition of prime farmland was examined. The NRCS has ten (10) characteristics, which are used as criteria to determine prime farmland (see Appendix A). Soils must meet the minimum standards for the following criteria in order to be considered prime farmland: water holding capacity and supply, soil temperature regime, acid-alkali balance, water table depth, soil sodium content, flooding, soil erodibility, soil permeability, rock fragment content and rooting depth.

In addition, the vineyard's chemical and physical soil properties were used to classify each soil into a Land Capability Class (LCC) using the most recent "Guide for placing soils in capability classes in California," which is attached to this report (Soil Survey Staff, California, 2006; see Appendix A). Soils that classify as LCC I and II (irrigated) are defined as prime farmlands.

In order to test whether Estrella Vineyard's soils meet the minimum standards for prime farmlands as defined by the NRCS, I designed testing procedures for each soil and land (e.g., slope of the land) property. Dan Rodrigues of California AgQuest Consulting, Inc. (California AgQuest) supervised the soil sampling work. During the third week of October, 2006, California AgQuest employees sampled soils at eighteen (18) locations within the Estrella River Vineyard (see Appendix B: Map B). A 1,200-foot by 1,200-foot sample grid was used on the vineyards and soil sampling was conducted to 3.2 feet depth at each sample location. These eighteen soil

samples were sent to Grower's Testing Services, Visalia, CA for chemical and physical analyses. The soil testing results are attached (see Appendix B).

Modern (as of January, 2007) topographic and slope maps were prepared for the Estrella Vineyard by engineers employed by North Coast Engineering, Inc. These maps were used to determine the total acreages of prime farmlands within the total planted vineyard acres. These maps are attached (see Appendix C).

Conclusions

The "Testing Procedures and Results", which are attached (see Appendix D), support the following conclusions:

The results of the soil testing procedures, on-site land inspections, and analysis of the slope maps indicate that about 204 acres out of 226 total planted vineyard acres of the Estrella River Vineyard's soils meet the minimum standards for all the characteristics of prime farmlands as defined by the NRCS. Likewise, about 204 acres out of 226 total planted vineyard acres of the Estrella River Vineyard's soils classify as LCC I and II (irrigated) and, therefore, meet the definition of prime farmlands.

The productivity of the existing vineyards (planted in 2000) is also evidence of the current soil fertility for growing wine grapes, which are the largest agricultural commodity in the local economy. Estrella River Vineyard is a highly productive vineyard due to the annual quantity of wine grapes grown and the high fruit quality.

As a result of these soil analyses, the vineyard slope map, and my on-site observations, I certify that about 204 acres out of 226 total planted vineyard acres of Estrella Vineyard's soils classify as prime farmlands as defined by the USDA-NRCS guidelines.

Bibliography

Lindsey, W.C. 1983. Soil Survey of San Luis Obispo County, California, Paso Robles Area. USDA Soil Conservation Service in cooperation with Univ. Calif. Ag. Expt. Station. U.S. Govt. Print. Office, Washington, D.C.

Soil Survey Staff. 2000. Soil Survey Manual. USDA Handbook No. 18. U.S. Govt. Print. Office, Washington, D.C.

Soil Survey Staff. 2006. Keys to Soil Taxonomy, 10th ed. SMSS Technical Monograph no. 20. U.S. Govt. Print. Office, Washington, D.C.

Soil Survey Staff, California. 2006. Guide for placing soils in capability classes in California. Internet site: http://www.ca.nrcs.usda.gov/intranet/techres/mlra02/guides/interp/landcapabcl.html Verified November 14, 2006.

Appendix A

USDA-NRCS "Prime Farmland Criteria"

and

"Guide for Placing Soils into Capability Classes"

Prime Farmland Criteria

The following definition for Prime Farmland was developed by the USDA-NRCS as part of their nationwide Land Inventory and Monitoring (LIM) system (Internet source: http://www.consrv.ca.gov/DLRP/fmmp/overview/prime_farmland_fmmp.htm).

Prime Farmland is land, which has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods. Prime Farmland must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

Prime Farmland must meet all the following criteria:

1. Water holding capacity and supply

   The soils have xeric, ustic, or aridic (torric) moisture regimes in which the available water capacity is at least 4.0 inches (10 cm) per 40 to 60 inches (1.02 to 1.52 meters) of soil, and a developed irrigation water supply that is dependable and of adequate quality. A dependable water supply is one which is available for the production of the commonly grown crops in 8 out of 10 years; and

2. Soil temperature regime

   The soils have a temperature regime that is frigid, mesic, thermic, or hyperthermic (pergelic and cryic regimes are excluded). These are soils that, at a depth of 20 inches (50.8 cm), have a mean annual temperature higher than 32° F (0° C). In addition, the mean summer temperature at this depth in soils with an O horizon is higher than 47° F (8° C); in soils that have no O horizon, the mean summer temperature is higher than 59° F (15° C); and

3. Acid-alkali balance

   The soils have a pH between 4.5 and 8.4 in all horizons within a depth of 40 inches (1.02 meters); and

4. Water table depth

   The soils have no water table or have a water table that is maintained at a sufficient depth during the cropping season to allow cultivated crops common to the area to be grown; and

Prime Farmland Criteria (page 2)

5. Soil sodium content

The soils can be managed so that, in all horizons within a depth of 40 inches (1.02 meters), during part of each year the conductivity of the saturation extract is less than 4 mmhos/cm and the exchangeable sodium percentage is less than 15; and

6. Flooding

Flooding of the soil (uncontrolled runoff from natural precipitation) during the growing season occurs infrequently, taking place less often than once every two years; and

7. Soil erodibility

The product of K (erodibility factor) multiplied by the percent of slope is less than 2.0; and

8. Soil permeability

The soils have a permeability rate of at least 0.06 inch (0.15 cm) per hour in the upper 20 inches (50.8 cm) and the mean annual soil temperature at a depth of 20 inches (50.8 cm) is less than 59° F (15° C); the permeability rate is not a limiting factor if the mean annual soil temperature is 59° F (15° C) or higher; and

9. Rock fragment content

Less than 10 percent of the upper 6 inches (15.24 cm) in these soils consists of rock fragments coarser than 3 inches (7.62 cm); and

10. Rooting depth

The soils have a minimum rooting depth of 40 inches (1.02 meters).

Guide for Placing Soils in Capability Classes in California (http://www.ca.nrcs.usda.gov/intranet/techres/mlra02/guides/interp/landcapabcl.html)

Capa-biltiy Class	Effective Soil depth (inches) 1/	Climate Thornthwaite 1948 indices (inches) Irr. ETp 32F	Dry 4ETa	Surface Layer Texture Irrigated	Dryland	Permea-bility 2/	Drainage Class 3/	Available Water Capacity 4/	Slope A 5/	B 6/ 7/	Erosion Hazard	Flooding Hazard	Salinity ECx1U @ 25o C 8/	Alkali ESP 8/	Toxic Sub-stances 9/	Frost Free Season
1	≥ 40	≥ 20	≥ 20	Sandy Loam thru Clay Loam	Sandy Loam thru Clay Loam	Mod. Rapid thru Mod. Slow	Well or Mod. Well >60"	≥ 7.5 inch av. AWC ≥ 0.13 In/In.	<2%	<2%	None or slight	None or rare	<4 mmhos (none)	None	None	≥ 140 Days
2	≥ 40	≥ 14	≥ 16	Loamy Sand thru Clay may be Gravelly	Sandy Loams thru Clay (may be Gravelly)	Rapid thru Slow	Somewhat Poorly thru Somewhat Excessively >36"	≥ 5.0 inch av. AWC ≥ 0.08 In/In.	<5%	<8%	None thru Mod.	None thru Occas.	<8 mmhos	< 25	None or Slight	≥ 100 Days
3	≥ 20	≥ 10	≥ 12	Any, may be Gravelly or Cobbly	Sandy Loam thru Clay (may be Gravelly or Cobbly)	Rapid thru Very Slow	Poorly thru Excessively > 20"	≥ 3.5 inch av. AWC ≥ 0.06 In/In.	<8%	<15%	None thru High	None thru Occas.	<16 mmhos	< 50	None thru Mod.	≥ 80 Days
4	≥ 10	≥ 6	≥ 8	Any, may be Very Gravelly, Very Cobbly or Stony 10/	Loamy Sand thru Clay, Very Gravelly Very Cobbly or Stony 10/	Any	Poorly thru Excessively > 20"	≥ 2.5 inch av. AWC ≥ 0.04 In/In.	<15%	<25%	Any	None thru Frequent 11/	<16 mmhos	< 50	None thru Mod.	≥ 50 Days
5	≥ 20	≥ 6	≥ 8	Any, may be Extremely Gravelly, Ext. Cobbly or Very Stony	Any, may be Extremely Gravelly, Ext. Cobbly or Very Stony	Any	Any	≥3.0 inch av. AWC	<2%	<2%	None or Slight	Any	<8 mmhos	< 25	None or Slight	Any
6 12/	≥ 10	≥ 4	≥ 6	Any, may be Extremely Gravelly, Ext. Cobbly or Very Stony	Any, may be Extremely Gravelly, Ext. Cobbly or Very Stony	Any	Any	≥ 2.0 inch av. AWC	<25%	<50%	Any	Any	Dry Land <16 mmhos Irr. Any	Dry Land <25 Irr. <50	Dry Land Slight Irr. Slight thru Moderate	Any
7 13/	Any		≥ 2	Any	Any	Any	Any	≥ 1.0 inch av. AWC	<50%	<75%	Any	Any	Any	Any	Any	Any
8 14/	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any

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Footnotes for "Guide for Placing Soils in Capability Classes in California"

1/ Clay pans with permeabilities less than 0.06 in/hr., will be treated as limiting the effective depth.

2/ Permeability of the least permeable subsurface horizon.

3/ Depth to water table during growing season.

4/ Available moisture between field capacity and wilting point.

5/ Use erosion hazard to help determine upper slope percent.

6/ In existing mapping units 9% and 30% can be substituted for 8% and 25%.

7/ Column A is used for soils w/ K factors of 0.37 or greater and soils subject to rill and gully erosion, such as soils formed from granitic parent material or w/ claypans. Other soils are in grp B.

8/ For salts and alkali to be a major limitation, there should be other soil limitations, such as slow permeabilities or high water tables.

9/ Such as boron and magnesium that leach with difficulty.

10/ Coarse fragments interfere with tillage, but do not prevent cropping.

11/ Frequent flooding that does not prevent normal cropping.

12/ Range & wdlnd. mechanical practices can be applied to class 6 land.

13/ Range & wdlnd. mechanical practices are impractical on class 7 land.

14/ Class 8 lands have limitations that preclude their use for commercial plant production and restrict their use to recreation, water supply or esthetic purposes.

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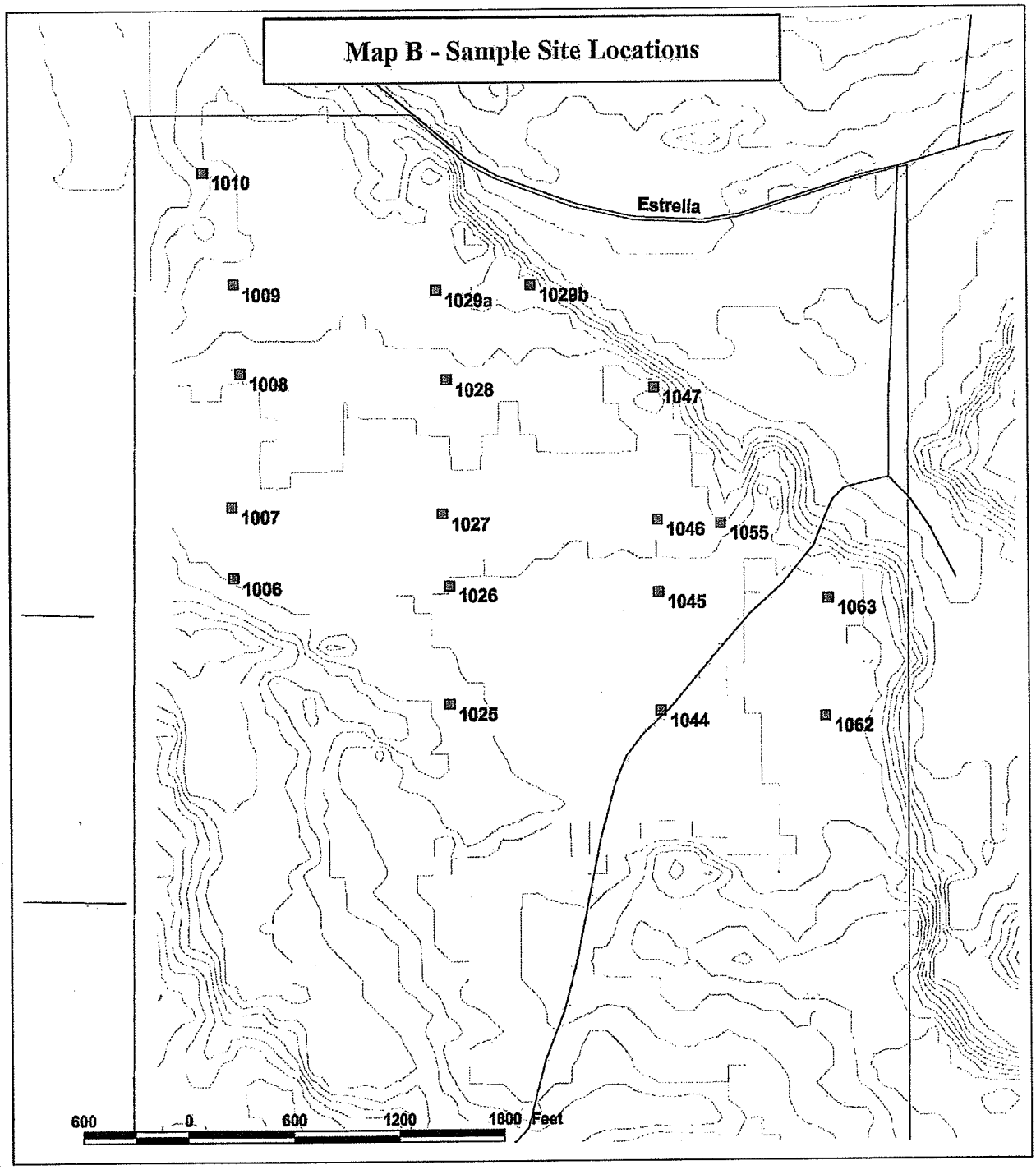
Appendix B

Soil Sample Site Map and Soil Test Results for Estrella River Vineyard

Provided by California AgQuest, Inc.



Soil Sample Sites
Estimated Boundary
Roads
Contours - 10 ft

N

Estrella River Vineyard

Prepared For: Rob Murray

CALIFORNIA AgQuest	Scale: 1 : 13,818	Prepared By: HRJ
	Date rev: 11/8/06	Approved By:
	Project: 11930P01	Map Name: Site Location
	I:\Data-arcview\EstrellaRiverVnyd\estriver_11930p01.apr	

4545 N. Brawley Avenue Ste 101 * Fresno, CA 93722 * PH: (559) 275-8095

CALIFORNIA
AgQuest Consulting, Inc.

11930/ 11930P01/ 48/ 2006/
11/28/06

Report of Soil Analysis and Recommendations
Grapes

Rob Murray
Reserve Vineyard Management
Estrella River Vineyard
214 Oro Drive
Arroyo Grande, Ca 93420

Rob Murray
Reserve Vineyard Management
214 Oro Drive
Arroyo Grande, CA 93420

Field Name / Area	Sample Date / Sample Id	Depth	Sat %	pH	Salinity and Permeability: Total Salts ECe dS/m	meq/l Ca+Mg	meq/l Na	SAR	Free Lime	Total CEC meg/ 100g	Exchangeable Cations: percentage of Ca	Mg	K	Na	H	Ca/Mg Ratio	Nutrients: ppm NO3-N	PO4-P	K	Zn	B	meq/l K	SMP Lime Req	Ammendment Recommendations: Lime tns/ac	100% Gypsum tons/ac	Soil Sulfur lbs/ac
Vineyard																										
Site 1006	10/16/06 15159 - 7	0.0 - 3.2	29	6.4	1.56	2.8	12.8	10.8	None 0.0%	11.3	59%	25%	2%	10%	4%	2.4	2	19	94	0.9	0.5	0.1	0.1	1.0	3.0	None
Site 1007	10/16/06 15159 - 3	0.0 - 3.2	25	5.3	2.00	8.5	13.3	6.4	None 0.0%	6.5	54%	14%	3%	13%	16%	3.8	2	14	72	0.9	0.4	0.2	0.3	1.0	None	None
Site 1008	10/16/06 15159 - 12	0.0 - 3.2	30	6.0	1.80	5.7	12.2	7.3	None 0.0%	7.7	60%	19%	2%	11%	7%	3.1	3	21	64	1.1	0.4	0.1	0.1	1.0	2.0	None
Site 1009	10/16/06 15159 - 13	0.0 - 3.2	38	6.6	0.59	3.4	2.4	1.8	None 0.0%	13.3	63%	27%	2%	5%	2%	2.3	3	16	118	1.0	0.3	0.1	0.1	1.0	2.0	None
Site 1010	10/16/06 15160 - 2	0.0 - 3.2	24	6.1	0.70	3.1	3.7	2.9	None 0.0%	7.6	61%	20%	5%	9%	6%	3.1	8	28	148	1.1	0.3	0.3	0.1	1.0	2.0	None
Site 1025	10/16/06 15160 - 3	0.0 - 3.2	25	6.0	1.28	4.1	8.3	5.8	None 0.0%	8.8	59%	21%	2%	11%	7%	2.8	11	14	88	0.9	0.3	0.1	0.1	1.0	2.0	None
Site 1026	10/16/06 15159 - 2	0.0 - 3.2	24	5.3	2.00	9.0	12.2	5.8	None 0.0%	6.8	57%	10%	4%	14%	16%	5.8	2	12	104	1.2	0.4	0.2	1	1.5	None	None
Site 1027	10/16/06 15159 - 14	0.0 - 3.2	60	7.1	1.73	6.5	10.7	5.9	None 0.0%	20.6	54%	36%	2%	7%	0%	1.5	1	8	194	1.1	0.3	0.1	0.1	1.0	1.0	None
Site 1028	10/16/06 15159 - 15	0.0 - 3.2	28	6.4	1.50	3.8	11.1	8.0	None 0.0%	7.6	63%	18%	3%	13%	4%	3.6	5	14	66	1.1	0.5	0.1	0.1	1.0	2.0	None
Desirable Levels For Grapes				6.0-7.5	<1.5	8.0+		<5.0			40%+	10-30	2-5%	<5%		2 +	10+	5+	125+	1.0+	.3-1	0.2+				

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CALIFORNIA AgQuest Consulting, Inc.

Report of Soil Analysis and Recommendations
Grapes

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Arroyo Grande, CA 93420

Field Name / Area	Sample Date / Sample Id	Depth	Sat %	pH	Salinity and Permeability: Total Salts ECe dS/m	meq/l Ca+Mg	meq/l Na	SAR	Free Lime	Total CEC meq/100g	Exchangeable Cations: percentage of Ca	Mg	K	Na	H	Ca/Mg Ratio	Nutrients: ppm NO3-N	PO4-P	K	Zn	B	meq/l K	SMP Lime Req	Ammendment Recommendations: Lime tns/ac	100% Gypsum tons/ac	Soil Sulfur lbs/ac
Site 1029A	10/16/06 15159 - 11	0.0 - 3.2	38	6.2	0.88	3.2	5.4	4.3	None 0.0%	14.3	55%	30%	3%	6%	6%	1.8	7	19	182	1.0	0.3	0.2	0.1	1.0	2.0	None
Site 1029B	10/16/06 15159 - 8	0.0 - 3.2	50	6.3	1.54	8.5	6.7	3.3	None 0.0%	20.3	53%	36%	2%	4%	5%	1.5	6	12	170	0.9	0.3	0.1	0.1	1.0	None	None
Site 1044	10/16/06 15159 - 1	0.0 - 3.2	75	6.5	2.29	12.1	13.1	5.3	None 0.0%	28.9	52%	36%	1%	9%	3%	1.5	2	41	124	0.9	0.4	0.2	0.3	1.0	2.0	None
Site 1045	10/16/06 15159 - 9	0.0 - 3.2	23	5.8	0.93	1.9	7.2	7.4	None 0.0%	5.7	62%	13%	5%	11%	10%	4.9	4	30	122	0.9	0.4	0.2	0.1	1.0	3.0	None
Site 1046	10/16/06 15159 - 4	0.0 - 3.2	50	6.9	2.33	12.6	12.6	5.0	None 0.0%	19.6	62%	28%	2%	9%	0%	2.2	2	11	126	0.9	0.3	0.7	0.1	1.0	None	None
Site 1047	10/16/06 15160 - 1	0.0 - 3.2	55	7.1	1.20	5.4	6.5	4.0	Low 0.0%	21.1	63%	30%	2%	5%	0%	2.1	2	9	154	0.8	0.3	0.1		None	1.5	None
Site 1055	10/16/06 15159 - 6	0.0 - 3.2	28	6.3	1.70	6.8	10.2	5.6	None 0.0%	8.4	64%	18%	2%	10%	5%	3.6	1	14	84	0.8	0.3	0.1	0.1	1.0	1.5	None
Site 1062	10/16/06 15159 - 10	0.0 - 3.2	48	6.6	1.30	3.3	9.8	7.6	None 0.0%	17.2	60%	27%	2%	10%	2%	2.2	1	13	112	0.8	0.4	0.1	0.1	1.0	2.0	None
Site 1063	10/16/06 15159 - 5	0.0 - 3.2	24	6.2	1.54	4.6	10.7	7.0	None 0.0%	7.5	61%	16%	3%	14%	6%	3.8	1	13	62	1.0	0.5	0.1	0.1	1.0	2.0	None
Desirable Levels For Grapes				6.0-7.5	<1.5	8.0+		<5.0			40%+	10-30	2-5%	<5%		2 +	10+	5+	125+	1.0+	.3-1	0.2+				

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Estrella River Vineyard
PSA Results

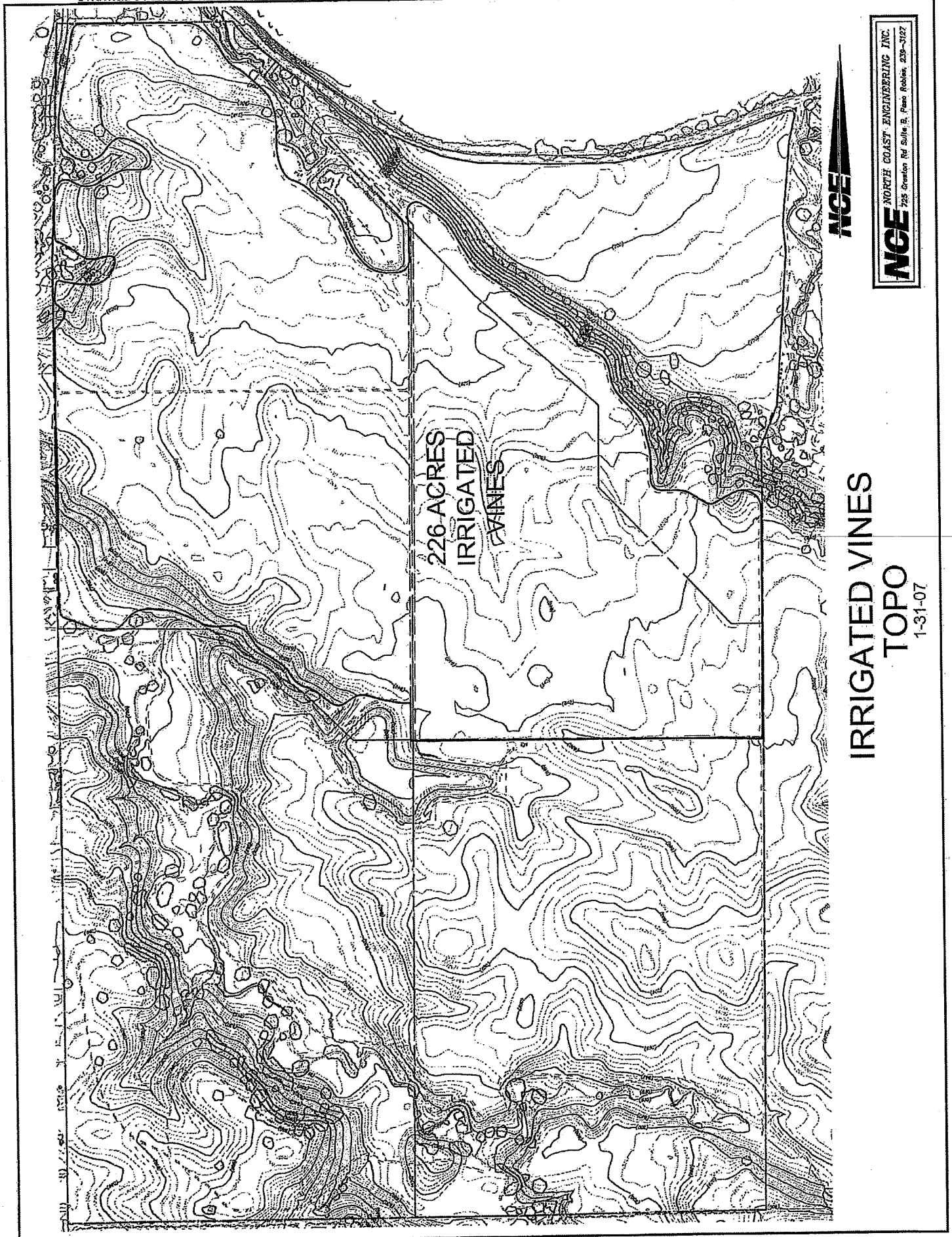
Site location	% Sand	% Silt	% Clay
1006	39	44	17
1007	40	47	13
1008	36	46	18
1009	38	45	17
1010	43	47	10
1025	38	46	16
1026	41	48	11
1027	33	42	25
1028	37	46	17
1029A	41	45	14
1029B	35	43	22
1044	33	42	25
1045	42	47	11
1046	37	45	18
1047	35	44	21
1055	38	46	16
1062	36	43	21
1063	39	47	14

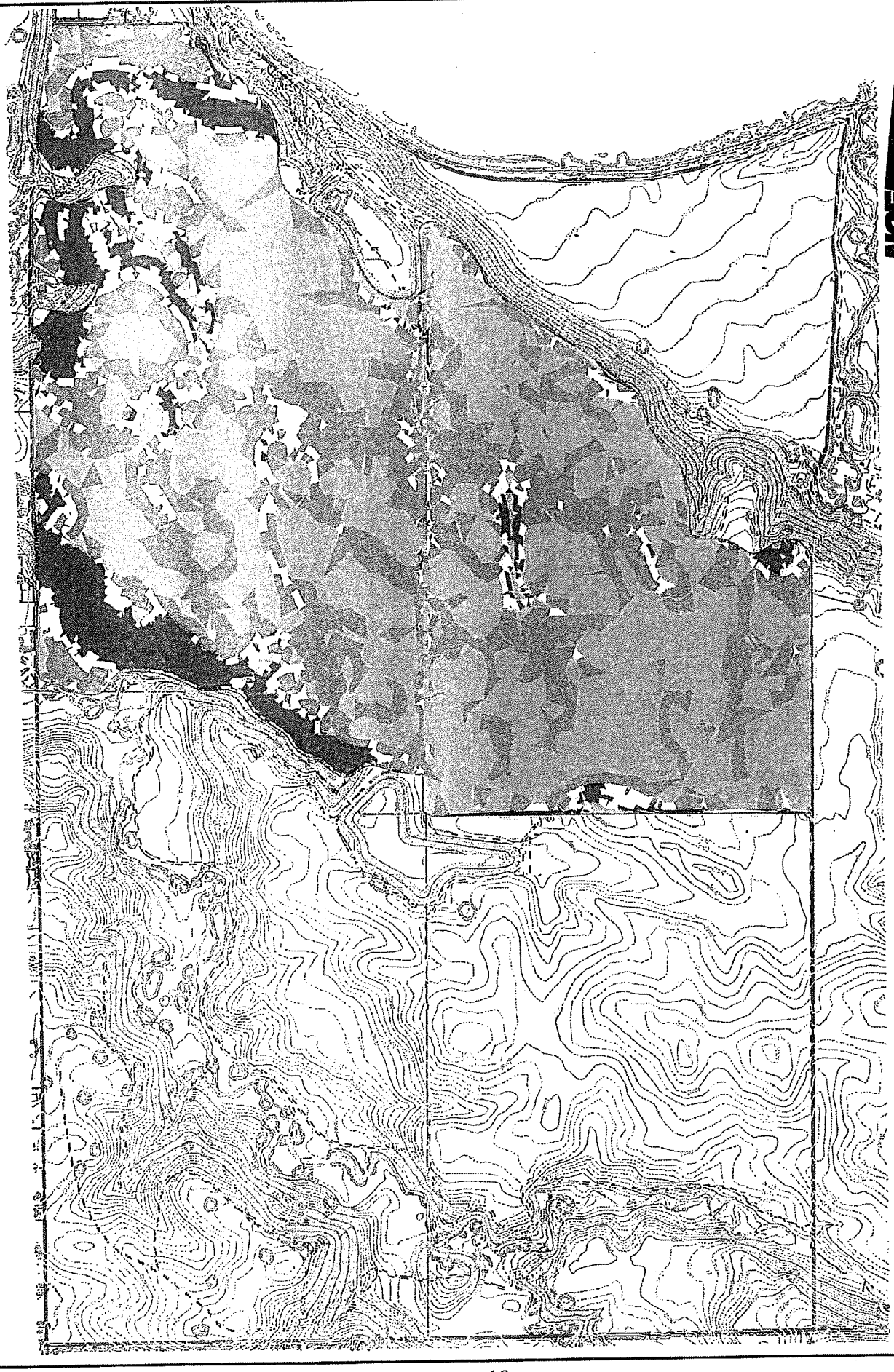
1) samples taken on 10/17/06
2) Results based on sample taken from 0.0 - 3.2 foot

Appendix C

Topographic Map and Slope Map for Estrella River Vineyard

Provided by North Coast Engineering, Inc.


226 ACRES
IRRIGATED
VINES
NCE
NORTH COAST ENGINEERING INC.
725 Grandon Rd Suite B, Paso Robles, 239-3127
IRRIGATED VINES
TOPO
1-31-07


NCE
NORTH COAST ENGINEERING, INC.
IRRIGATED VINES
SLOPE MAP
1-31-07
SLOPE LEGEND
Color Range Beg. Range End Percent Area ACRES
0.00 2.00 47.2 4641704.90 107
2.00 5.00 34.1 3355772.10 77
5.00 8.00 8.8 862884.26 20
8.00 99999.00 9.9 978862.33 22

Appendix D

Prime Farmland Testing Procedures and Results for Estrella River Vineyard

Testing and analysis conducted by
Thomas J. Rice, Ph.D., C.P.S.S.

Prime Farmland Testing Procedures and Results for Estrella River Vineyard

The testing procedures conducted for each of the prime farmland criteria and the testing results are summarized below.

	Characteristic	Criteria	Testing Procedure	Testing Result
1.	Water holding capacity and supply	The soils have xeric, or aridic moisture regimes in which the available water capacity is at least 4.0 inches per 40 to 60 inches of soil, and a developed water supply that is dependable and of adequate quality. A dependable water supply is one, which is available for the production of the commonly grown crops in 8 out of 10 years.	Soil testing, soil particle size analysis and USDA guide tables for determination of soil available water capacity.	Confirmed: Soil moisture regime is xeric, available water capacity is 8.0 to 12.0 inches (see Appendix B). Irrigation water is present and dependable.
2.	Soil temperature regime	The soils have a temperature regime that is frigid, mesic, thermic, or hyperthermic. These are soils that, at a depth of 20 inches, have a mean annual temperature higher than 32 degrees. In addition, the mean summer temperature at this depth in soils with an O horizon is higher than 47 degrees: in soils that have no O horizon 50 degrees.	Examine "Soil Survey Report for:..Paso Robles Area" (Lindsey, 1983).	Confirmed: Xeric soil moisture regime and thermic soil temperature regime for all soils within Estrella River Vineyard, Paso Robles, CA.
3.	Acid-alkali balance	The soils have a pH between 4.5 and 8.4 in all horizons within a depth of 40 inches.	Soil testing and laboratory results.	Confirmed: Soil pH values range from 5.3 to 7.1. (see Appendix B).
4.	Water table depth	The soils have no water table or have a water table that is maintained at a sufficient depth during the cropping season to allow cultivated crops common to the area to be grown.	Site analysis and on-site inspection. Slope and topo. maps.	Confirmed: Current site analysis of vineyard shows no high water table. The vineyard is located on an Estrella River terrace over 40 feet above the floodplain.
5.	Soil sodium content	The soils can be managed so that, in all horizons within a depth of 40 inches, during part of each year the conductivity of the saturation extract is less than 4 mmhos/cm and the exchangeable sodium percentage is less than 15.	Soil testing and laboratory results.	Confirmed: The conductivity (ECe) of the saturation extract ranges from 0.59 to 2.33 mmhos/cm (or dS/m) and the exchangeable sodium (Na) percentage ranges from 5% to 14% for these vineyard soils (see Appendix B).

	Characteristic	Criteria	Testing Procedure	Testing Result
6.	Flooding	Flooding of the soil during the growing season occurs infrequently, taking place less than once every two years.	Site analysis and on-site inspection. Slope and topo. maps.	Confirmed: The vineyard is located on an Estrella River terrace over 40 feet above the floodplain and is not prone to overflow flooding.
7.	Soil erodibility	The product of K (erodibility factor) multiplied by the percent of slope is less than 2.0.	Use of USDA soil K-factor nomograph and soil particle size analyses (Appendix B). Site analysis and inspection of modern (year 2007) topographic and slope maps.	Confirmed: The average K-factor determined for these vineyard soils is 0.24. Of 226 total planted vineyard acres, there are about 204 vineyard acres, which occur on slopes of less than eight percent (8%) (see Appendix C). The product of K-factor (0.24) times eight (8) percent slope is less than 2.0. All the irrigated vineyard soils located on slopes less than 8% are considered prime farmlands.
8.	Soil permeability	The soils have a permeability rate of at least 0.06 in. per hour in the upper 20 inches of soil and the mean annual soil temperature at a depth of 20 inches is less that 59 degrees. The permeability rate is not a limiting factor if the mean annual soil temperature is 50 degrees of higher.	Soil testing and USDA guide tables. Site analysis and on-site inspection.	Confirmed: The soil permeability rate ranges from 0.6 to 2.0 inches per hour for these loam soil textures (see Appendix B).
9.	Rock fragment content	Less than 10% of the upper 6 inches in these soils consists of rock fragments coarser than three inches.	Soil testing and site inspection.	Confirmed: There is less than 10% of the upper 6 inches in these soils, which consists of rock fragments coarser than three inches.
10.	Rooting depth	The soils have a minimum rooting depth of 40 inches.	Soil testing and site inspection.	Confirmed: The vineyard soils were ripped to a depth of 72 inches (six feet) in year 2000. Grape vine rooting depth is greater than 72 inches in these soils.

Prime Farmland Testing Procedures and Results (LCC) for Estrella River Vineyard

The testing procedures conducted for each of the prime farmland criteria and the testing results to classify the soils into a land capability class (LCC) are summarized below.

	Soil or Land Property	Criteria for LCC I and II	Testing Procedure	Testing Result
1.	Effective Soil Depth (inches)	Greater than or equal to 40 inches (≥ 40").	Soil testing, soil particle size analysis and USDA guide tables for determination of soil available water capacity.	The vineyard soils were ripped to a depth of 72 inches (six feet) in year 2000. Grape vine rooting depth is greater than 72 inches in these soils. LCC I and II for all irrigated Estrella River Vineyard soils.
2.	Climate (Thornthwaite 1948 indices). Irrigated (Irr.), ETp 32F (inches)	Annual Potential Evapotranspiration, using a frost-free season base temperature of 32F (ETp 32F) of greater than or equal to 14 inches (≥ 14").	Examine "Soil Survey Report for…Paso Robles Area" (Lindsey, 1983) and climatic data.	The annual potential evapotranspiration, using a frost-free season base temperature of 32F (ETp 32F), is greater than 14 inches for this vineyard. Also, there is a xeric soil moisture regime and a thermic soil temperature regime for soils in Estrella River Vineyards, Paso Robles, CA. LCC I and II for all irrigated Estrella River Vineyard soils.
3.	Surface Layer Texture (Irrigated)	Loamy Sand thru Clay; may be Gravelly.	Soil testing and laboratory results.	Surface layer soil textures are Loam (see Appendix B). LCC I and II for all irrigated Estrella River Vineyard soils.
4.	Permeability	Rapid thru Slow.	Soil testing and on-site inspection. USDA guide tables for determination of permeability.	Soil permeability rates are moderate for these soils. LCC I and II for all irrigated Estrella River Vineyard soils.
5.	Drainage Class	Somewhat Poorly thru Somewhat Excessively. Depth to water table is greater than or equal to 36 inches (≥ 36").	Site analysis and on-site inspection. Slope and topo. maps.	Current site analysis of vineyard shows no high water table. The vineyard is located on an Estrella River terrace over 40 feet above the floodplain. All vineyard soils are well drained. LCC I and II for all irrigated Estrella River Vineyard soils.

	Soil or Land Property	Criteria for LCC I and II	Testing Procedure	Testing Result
6.	Available Water Capacity (AWC)	Greater than or equal to 5.0 inches (≥ 5.0 inch) total AWC. Greater than or equal to 0.08 inches (≥ 0.08 In) average AWC per one inch of soil.	Soil testing and USDA guide tables used to determine AWC.	Total available water capacity (AWC) is 8.0 to 12.0 inches. Average AWC is 0.13 to 0.20 inches available water per inch of soil. LCC I and II for all irrigated Estrella River Vineyard soils.
7.	Slope Percent (%)	Less than or equal to 8.0 percent (≤ 8%) slope.	Use of USDA soil K-factor nomograph and soil particle size analyses (Appendix B). Site analysis and inspection of modern (year 2007) topographic and slope maps (see Appendix C). Use column B in LCC guide (see Appendix A).	The average K-factor determined for these vineyard soils is 0.24 (use column B in LCC guide: Appendix A). Of the 226 total planted vineyard acres, there are about 107 acres of LCC I soils and 97 acres of Class II soils, which occur on slopes of less than eight percent (8%) (see Appendix C). LCC I and/or II for about 204 irrigated acres of Estrella River Vineyard soils.
8.	Erosion Hazard	None thru Moderate (Mod.).	Soil testing and USDA guide tables for soil erosion. Site analysis and on-site inspection.	Hazard of erosion is slight to moderate. LCC I and II for all irrigated Estrella River Vineyard soils.
9.	Flooding Hazard	None thru occasional (occas.)	Site analysis and on-site inspection. Slope and topo. maps (see Appendix C).	No overflow flooding occurs. The vineyard is located on an Estrella River terrace over 40 feet above the floodplain and is not prone to overflow flooding. LCC I and II for all irrigated Estrella River Vineyard soils.
10.	Salinity (EC: electrical conductivity)	The electrical conductivity (EC) is less than 8.0 mmhos/cm (or < 8.0 dS/m) in the soil saturation extract.	Soil testing and laboratory results (see Appendix B).	The electrical conductivity (ECe) of the saturation extract ranges from 0.59 to 2.33 mmhos/cm (or dS/m). LCC I and II for all irrigated Estrella River Vineyard soils.
11.	Alkali (ESP: exchangeable sodium percentage)	The exchangeable sodium (Na) percentage (ESP) in the soil is less than 25 percent (< 25%).	Soil testing and laboratory results (see Appendix B).	The exchangeable sodium (Na) percentage (ESP) ranges from 5% to 14% for these vineyard soils. LCC I and II for all irrigated Estrella River Vineyard soils.

	Soil or Land Property	Criteria for LCC I and II	Testing Procedure	Testing Result
12.	Toxic Substances	None or slight (excess boron or magnesium).	Soil testing and laboratory results (see Appendix B). Site analysis and on-site inspection.	There is no excess boron (B) or magnesium (Mg) in these soils. No other toxic substances that adversely affect the growth of grape vines occur within these vineyard soils. LCC I and II for all irrigated Estrella River Vineyard soils.
13.	Frost Free Season	Greater than or equal to 100 ($\geq$ 100) days	Examine "Soil Survey Report for…Paso Robles Area" (Lindsey, 1983) and climatic data.	The average frost-free season is 200 days in Paso Robles, CA. LCC I and II for all irrigated Estrella River Vineyard soils.