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M E M O R A N D U M

TO: **Cameron Welch, Senior Planner**

FROM: **Dave Romano, Licensed Civil Engineer, Newman-Romano, LLC**
Bre Moebius, Partner, Hefner Law

DATE: **March 31, 2025**

RE: **Lime Rock Valley Specific Plan – General Plan Policy 8.1.2.2 Analysis in Support of Findings to Subdivide FMMP Grazing Land**

Introduction and Executive Summary

This memorandum is submitted in response to input from the El Dorado County ("County") Agricultural Commission at its August 14, 2024 meeting discussing the Lime Rock Valley Specific Plan ("Project"). The analysis herein addresses the Project's consistency with policies in the Agricultural and Forestry Element of the County's General Plan and explains why the Board of Supervisors can and should make the findings under General Plan Policy 8.1.2.2 to support the future subdivision of parcels less than 40 acres for the Project. This memorandum relies on the attached March 10, 2025 *Lime Rock Valley Project Grazing Viability Assessment* prepared by Koopmann Rangeland Consulting ("*Grazing Viability Assessment*"). The approximately 284 acres addressed in the *Grazing Viability Assessment* and this memorandum is identified as "Grazing Land" in the Farmland Mapping and Monitoring Program ("FMMP"). The FMMP Grazing Land determination was made by the California Department of Conservation and there is no grazing land overlay in the General Plan or General Plan Policy adopting the FMMP determination.

As detailed in the *Grazing Viability Assessment*, the approximately 284 acres of FMMP Grazing Land at the Project site has not historically sustained commercial grazing of livestock and is not currently capable of sustaining commercial grazing of livestock. Approval of the Project allowing for the future subdivision of parcels less than 40 acres is therefore consistent with General Plan Policy 8.1.2.2. Even if a commercial grazing operation could somehow be sustained despite the marginal feed, significant investment costs, and additional factors addressed in the *Grazing Viability Assessment*, economic, social, and other considerations justify the creation of smaller parcels for residential development as detailed herein.

Lastly, this memorandum references the Land Use Planning and Agricultural Resources Chapter of the Project's Draft Environmental Impact Report ("DEIR") for

informational purposes and further explains why the consideration of FMMP Grazing Land is limited to General Plan Policy 8.1.2.2 and is not evaluated under the California Environmental Quality Act ("CEQA").

A. Overview of General Plan Objective 8.1.2 and Agricultural Commission "Input"

Objective 8.1.2 in the Agricultural and Forestry Element of the County General Plan addresses the "[p]rotection of range lands for grazing of domestic livestock" and includes three policies. The first policy (Policy 8.1.2.1) provides:

> The County Agricultural Commission shall identify lands suitable for sustained grazing purposes which the Commission believes should be managed as grazing lands. Once such lands have been identified by the Commission, the Board of Supervisors shall determine whether to initiate incentive based programs to retain such lands as productive grazing units.

The Agricultural Commission has not identified any area of the Project site under Policy 8.1.2.1 and the Board of Supervisors has not identified "incentive based" programs to convert any area of the Project site to productive grazing units. While the FMMP identifies 284 acres of Grazing Land, the County Department of Agriculture confirmed that the identification of Grazing Land on the FMMP was made by the California Department of Conservation, not the County Agricultural Commission under Policy 8.1.2.1. Policy 8.1.2.1 is therefore irrelevant to the Project and was not discussed by the Agricultural Commission at its meeting on August 14, 2024.

The third policy (Policy 8.1.2.3) provides:

> The County shall encourage the assignment of the Agricultural Land (AL) designation to rangelands currently used for grazing or suitable for sustained grazing of domestic livestock.

The Project does not include any parcels with an Agricultural Land ("AL") land use designation. Instead, the Project site has approximately 120 acres with an Open Space ("OS") land use designation and approximately 620.41 acres with a Rural Residential ("RR") land use designation. Policy 8.1.2.3 is therefore not applicable to the Project. The lack of an AL land use designation may also reflect the inability of the Project site to sustain commercially viable grazing as discussed in the *Grazing Viability Assessment*.

The second policy (Policy 8.1.2.2) is therefore the only policy within Objective 8.1.2 potentially applicable to the Project. Policy 8.1.2.2 provides:

> Some lands within Rural Regions have <u>historically been used for commercial grazing</u> of livestock and <u>are currently capable of sustaining commercial grazing</u> of livestock. <u>If they can be demonstrated to be suitable land for grazing</u>, and if they were not assigned urban or other

> nonagricultural uses in the Land Use Map for the 1996 General Plan, those lands shall be protected with a minimum of 40 acres *unless* such lands already have smaller parcels or the Board of Supervisors determines that economic, social, or other considerations justify the creation of smaller parcels for development or other nonagricultural uses. Where 40-acre minimum parcel sizes are maintained, planned developments may be considered which are consistent with the underlying land use designation. Before taking any actions to create parcels of less than 40 acres in areas subject to this policy, the Board of Supervisors and/or Planning Commission shall solicit and consider input from the Agricultural Commission.

As a threshold matter, the Department of Agriculture determined that Policy 8.1.2.2 applies based on the identification of Grazing Land by the California Department of Conservation in the FMMP even though Policy 8.1.2.2 does not rely on the FMMP to identify historic commercial grazing land and the General Plan did not adopt the FMMP or any similar grazing overlay. There does not appear to have been an independent analysis or determination of whether historic commercial grazing existed aside from the FMMP. The Board of Supervisors could therefore find that Policy 8.1.2.2 is not applicable if it determines that the FMMP Grazing Land has not historically been used for commercial grazing operations.

The Board of Supervisors can thus approve the Project consistent with Policy 8.1.2.2 by making one of the following findings: (1) the FMMP Grazing Land has not been historically used for commercial grazing of livestock; (2) the FMMP Grazing Land is not currently capable of sustaining commercial grazing of livestock; *or* (3) even if the FMMP Grazing Land is suitable for commercial grazing, "economic, social, or other considerations justify the creation of smaller parcels for development or other nonagricultural uses." While only one of the findings is required, this memorandum addresses all three and explains why the Board of Supervisors can make one or all three findings to allow the subdivision of lots smaller than 40 acres.

In making these findings, the Board of Supervisors is required to "consider input from the Agricultural Commission." As reflected in the minutes from the August 14, 2024 Agricultural Commission meeting, one Project parcel (APN 109-020-001) that is approximately 391.47 acres has approximately 215 acres of FMMP Grazing Land "on roughly half the parcel on its eastern and northern portions." The "parcel is surrounded by existing residential development to the north, east, and partially along the southern boundary of this parcel." The minutes further explain that the remaining parcels within the FMMP Grazing Land are "approximately or possibly less than 40 acres each" and the FMMP identifies Grazing Land on parcels that are "less than 5 acres in size on the northeast or southwest corners of the parcels." Therefore, the Agricultural Commission was requested to provide input under Policy 8.1.2.2 for only APN 109-020-001, and the Board of Supervisors is required to make one of the findings under Policy 8.1.2.2 only for the subdivision of APN 109-020-001.

The staff report reflected in the minutes indicated that APN 109-020-001 "could *potentially* be capable of sustaining commercial grazing." A representative for the Project applicant at the Agricultural Commission meeting, however, explained that any historic grazing had been limited and inconsistent and a sustained grazing operation was not commercially viable given the marginal quality of the grazing land. The intermittent grazing for partial years was done primarily for wildfire management without economic revenue to the landowner. Without discussing the commercial viability of a grazing operation on only APN 109-020-001, the Agricultural Commission ultimately adopted a motion to "recommend staying consistent with General Plan Policy 8.1.2.2 (Grazing Lands) within the Agricultural and Forestry Element to maintain 40 acres parcels in these areas [Grazing Land on the FMMP map] on the Lime Rock Valley Specific Plan." (Agricultural Commission Minutes, Item 4, Legistar 24-1454.) While the Agricultural Commission did not provide more detailed analysis to support its input, one Commissioner commented that the areas identified as FMMP Grazing Land are capable of grazing approximately 40 pairs of cattle.

B. Evaluation of Project under Policy 8.1.2.2

1. The FMMP Grazing Land has not been historically used for commercial grazing.

The FMMP "is a nonregulatory program of the California Department of Conservation that inventories the state's important farmlands and tracks the conversion of farmland to other land uses." (DEIR p. 3.9-2.) "The FMMP publishes reports of mapped farmland and conversions every 2 years" and "categorizes farmland on the basis of its soil quality, the availability of irrigation water, current use, and slope, among other criteria." (DEIR p. 3.9-2.) Categories of farmland identified in the FMMP include Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land. (DEIR p. 3.9-2.) It does not appear the County has records indicating why the approximately 284 acres were designated FMMP Grazing Land or that the designation was based on a determination that the approximately 284 acres have historically been used for commercial grazing of livestock.

As detailed in the DEIR and *Grazing Viability Assessment*, the predominant use of the Project site has been the historic lime mine. The *Grazing Viability Assessment* explains that approximately 40 head of cattle were intermittently grazed at the Project site for limited and inconsistent durations as feed allowed approximately 20 years ago. There are insufficient records of this historic use to determine if it was profitable, but the discontinuation of that grazing and marginal quality of the land for grazing suggest it was not economically sustainable. More recently, approximately 12 head of cattle were grazed for partial years on the Project site intermittently over the last 10 years. Critically, the *Grazing Viability Assessment* explains that this grazing occurred through a mutually beneficial relationship between the landowner and cattleman in that (1) the landowner obtained the benefit of some brush clearing and vegetation management; and (2) the cattleman obtained open space land at no cost and marginal feed for limited durations of the year. The grazing did not produce income and there was no economic benefit or

commercial grazing operation. While the undeveloped land has been inconsistently made available for grazing for limited durations, the Project site and 284 acres of FMMP Grazing Land has not historically been used for commercial grazing of livestock. Absent historic commercial grazing, Policy 8.1.2.2 would not apply.

2. The FMMP Grazing Land is not suitable for commercial grazing.

After a site visit and detailed evaluation of the soils, limited desirable vegetation, and lack of infrastructure and water at the Project site, the *Grazing Viability Assessment* concluded that "the Project site is not capable of sustaining an economically viable commercial grazing operation." (*Grazing Viability Assessment* p. 1, 8-18.) Even assuming zero death loss of cattle and successful marketing of all calves, the *Grazing Viability Assessment* concluded that any commercial grazing operation for cattle would operate at a loss each year and could not be economically sustained. The *Grazing Viability Assessment* also explained that a commercial grazing operation for sheep or goats would not be commercially viable. (*Grazing Viability Assessment* p. 17.)

The inability to sustain an economically viable grazing operation based on the minimal carrying capacity of the FMMP Grazing Land is further illustrated by the objective standards in the Williamson Act. The Williamson Act seeks to preserve certain agricultural lands by providing reductions in property tax for real property when the use of the land is restricted through contract. While "Prime Farmland" as defined by the United States Department of Agriculture does not include grazing land, the Wiliamson Act defines "[p]rime agricultural land" to include grazing land <u>if</u> the land can yield a minimum carrying capacity. Specifically, the Williamson Act defines "[p]rime agricultural land" as including "[l]and which supports livestock used for the production of food and fiber and which has <u>an annual carrying capacity equivalent to at least one animal unit per acre</u> as defined by the United States Department of Agriculture." (Gov. Code, § 51201, subd. (c)(3).) As detailed in the *Grazing Viability Assessment*, the entire 284 acres would have an annual carrying capacity of only 18.2 to 10.2 cows, which falls drastically short of the one animal unit per acre threshold to qualify for a Williamson Act contract.

3. Even if the FMMP Grazing Land was suitable for commercial grazing, economic, social, and other considerations justify the creation of smaller parcels for low density residential development.

As demonstrated above, commercial grazing has not occurred historically and the limited intermittent grazing for partial years has not produced income in at least the past two decades. While vacant land may still allow opportunities for limited grazing, the loss of this very marginal grazing land surrounded by 5-acre or smaller parcels should be allowed for "economic, social or other considerations" consistent with Policy 8.1.2.2. In fact, subdivision of the Project FMMP Grazing Land would be consistent with the surrounding residential lots on the east and north boundary of the Project site that are approximately 5 acres each and also identified as FMMP Grazing Land. (*Grazing Viability Assessment* p. 7.) The proposed use would be more consistent with and less likely to generate conflicts with these adjacent residential developments, would provide much

needed housing within the County near Highway 50 at the western edge of the County as contemplated by the General Plan, would reduce the risks of wildfires spreading to existing communities and provide improved evacuation routes to existing communities, and would have financially positive impacts upon the County General Fund, County Road Fund, the Community Services District to which it is annexed, and Fire District within which it is situated. As compared to development under existing zoning, the clustered development the Project provides greater protection of open space and allows an adequate number of units to shoulder the substantial costs of infrastructure necessary for any residential development, including the substantial costs for water connections and access. These economic, social, and other considerations justify further subdivision that may prevent minimal grazing, especially when objective criteria and limited and intermittent historic use confirm that such grazing is neither economically viable nor sustainable.

In determining that other considerations justify the subdivision of APN 109-020-001, the Board of Supervisors can also consider the fact that the Project is not within or near an Agricultural District and does not meet the County's established objective standard for land that is important to preserve for agricultural uses, including grazing. These standards are addressed more below.

C. The FMMP Grazing Land is not significant agricultural land under the County's objective scoring criteria in the General Plan.

1. The Project site and FMMP Grazing Land do not contain "good agricultural capability" when evaluated under the County's objective criteria adopted in the General Plan to evaluate agricultural lands, including grazing land.

While Policy 8.1.2.2 provides for additional consideration before land historically used for grazing is subdivided, neither Policy 8.1.2.2 nor any other General Plan policy provide for the preservation of FMMP grazing land based on that designation alone. Goal 8.1 of the General Plan identifies the County policy for Agricultural Conservation and Protection, including the "[l]ong-term conservation and use of existing and potential agricultural lands within the County and limiting the intrusion of incompatible uses into agricultural lands." To implement this goal, Objective 8.1.1 first prioritizes the identification of agricultural lands and provides for the "[i]dentification of agricultural lands within the County that are important to the local agricultural economy including important crop lands and grazing lands." If land is identified as "important agricultural lands," Policy 8.1.1.1 provides for the establishment of "Agricultural Districts" for the "purposes of conserving, protecting, and encouraging the agricultural use of important agricultural lands and associated activities throughout the County . . . ." To determine whether parcels include important agricultural lands, including grazing lands, for purposes of Objective 8.1.1, Policy 8.1.1.4 provides: "The procedures set forth in *The Procedure for Evaluating the Suitability of Land for Agriculture* shall be used for evaluating the suitability of agricultural lands in Agricultural Districts and Williamson Act Contract lands (agricultural preserves)."

While the Agricultural Commission did not consider *The Procedure for Evaluating the Suitability of Land for Agriculture*, the County's General Plan adopts that objective criterion as the means to determine whether agricultural lands, including grazing lands, have "good agricultural capability" and warrant protection through Agricultural Districts. The objective criteria for "evaluating the suitability of agricultural lands" should also be considered for Policy 8.1.2.2 when, as here, the landowner disputes the general opinion expressed by an Agricultural Commissioner that the Project site has suitable land for grazing that could sustain commercial grazing of livestock.

The Procedure for Evaluating the Suitability of Land for Agriculture attached to this memorandum provides:

> The following methodology has been developed as a rational procedure to evaluate lands for agricultural potential and to offer protective policies that will act to preserve these lands for agricultural use. This system is the result of extensive meetings between the El Dorado County Agricultural Commission, the Soil Conservation Service and the County Planning Department staff. This system may be used to analyze any parcel of land in El Dorado County for its potential for agricultural use.

(Page 1, underscores in original.)

Similar to the California Agricultural Land Evaluation and Site Assessment Model ("LESA") discussed below, *The Procedure for Evaluating the Suitability of Land for Agriculture* rates parcels based on five criteria on a scale of 0 to 100 and provides that a "cumulative point total of 60 points or greater will signify that a parcel has good agricultural capability, and is to be protected as potential agricultural land suitable for agricultural use." (Page 1, underscore in original.) The five criteria, which are not equally weighted, include: 1) Soils; 2) Climate; 3) Water; 4) Land Use; and 5) Parcel Size.

The Procedure for Evaluating the Suitability of Land for Agriculture further provides that "[c]ontiguous parcels under a common ownership shall be considered as a single unit," but "[w]hen the parcel or unit is variable in characteristics such as soil type or depth, slopes, climate, etc., it may be evaluated in segments, provided that each segment is 20 acres or larger." (Page 1.) Given the common ownership of the entire Project site that includes the FMMP Grazing Land, the scores were conservatively calculated based on (1) the entire Project site under common ownership; and (2) the FMMP Grazing Land area.

As demonstrated below, for the entire Project site and the FMMP Grazing Land, the score is only 32 points, which is well below the threshold score of 60. The objective scoring adopted in the General Plan therefore demonstrates that the entire Project site and the FMMP Grazing Land do not have "good agricultural capability."

The scores for each are as follows:

Entire Project Site (Common Ownership)		
Category	**Type**	**Points**
Soils[1]	Classes IV to VIII < 24 inches	0
Climate[2]	1,000 feet	12
Water[3]	Future EID	5
Parcel Size	~ 740 acres	10
Land Use[4]	At least half surrounding parcels urbanized	5
Total Score		**32**

Notes:
[1] Page 2 provides: "Parcels with mixed soil classifications or types shall be evaluated on the 'Choice Soils' present, provided that 'Choice Soils' constitutes 30% or more of the parcel. For those parcels that contain less than 30% 'Choice Soils,' the parcel shall be evaluated on the dominate soil class or type." "Choice Soils" are only 34.4 acres of a total 757.6 acres or 4.5% of the Project site and there are no "Choice Soils" within the FMMP Grazing Land.
[2] The elevation of the site ranges from 1,280' at the northeast corner to 880' where Deer Creek flows out of the property and thus an approximate median of 1,000' elevation was used. An elevation of 1,300' would be 21 points and an elevation of 1,200' would be 17 points, which would still result in a score below 60.
[3] Project site does not have existing water by public entity or on-site water system, but is within Sphere of Influence and has a reasonable potential to annex to EID.
[4] Score of 5 is if "[p]arcel is located in an area of good crop potential, but about half of the surrounding parcels are urbanized (less than 5 acres in size)" and score of 2 is if "[p]arcel is located within an existing community." More than half of the Project site is surrounded by parcels approximately less than 5 acres in size, but the Project site does not have good crop potential. Score of 5 was conservatively used, although a score of 2 is likely more appropriate given the existing community and lack of crop potential.

FMMP Grazing Land Only		
Category	**Type**	**Points**
Soils[1]	Classes IV to VIII < 24 inches	0
Climate[2]	1,000 feet	12
Water[3]	Future EID	5
Parcel Size	~ 313 acres	10
Land Use[4]	At least half surrounding parcels urbanized	5
Total Score		**32**
See notes above.		

The soil type and depth are identified in the March 12, 2010 United States Department of Agriculture ("USDA") Custom Soil Resource Report for El Dorado Area, California prepared for the Project site and attached hereto. The soil types and percentages identified therein are as follows:

El Dorado Area, California (CA624)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
AwD	Auburn silt loam, 2 to 30 percent slopes	82.8	10.9%
AxD	Auburn very rocky silt loam, 2 to 30 percent slopes	230.4	30.4%
Qu	Quarries	16.0	2.1%
SaF	Serpentine rock land	394.0	52.0%
SuC	Sobrante silt loam, 3 to 15 percent slopes	34.4	4.5%
Totals for Area of Interest		**757.6**	**100.0%**

The depths as stated in the USDA Custom Soil Resource Report for each soil type are as follows:

Soil Type	Depth
Auburn silt loam, 2 to 30 percent slopes	14 to 18 inches to lithic bedrock
Auburn very rocky silt loam	14 to 18 inches to lithic bedrock
Serpentine rock land	0 to 4 inches to lithic bedrock
Sobrante silt loam	24 to 30 inches to paralithic bedrock; 30 to 34 inches to lithic bedrock

As identified in the USDA Custom Soil Resource Report, approximately 4.5% of the Project site has sobrante silt loam soil, which is a Class III choice soil and reflects the Farmland of Local Importance. This Farmland of Local Importance does not overlap with the FMMP Grazing Land and, especially given the prior lime mine operations at the site, there is no known prior farming in the area with that soil. It is also worth noting that Farmland of Local Importance is not considered in "agricultural land" for purposes of CEQA. (See Pub. Resources Code, § 21060.1, subd. (a).)

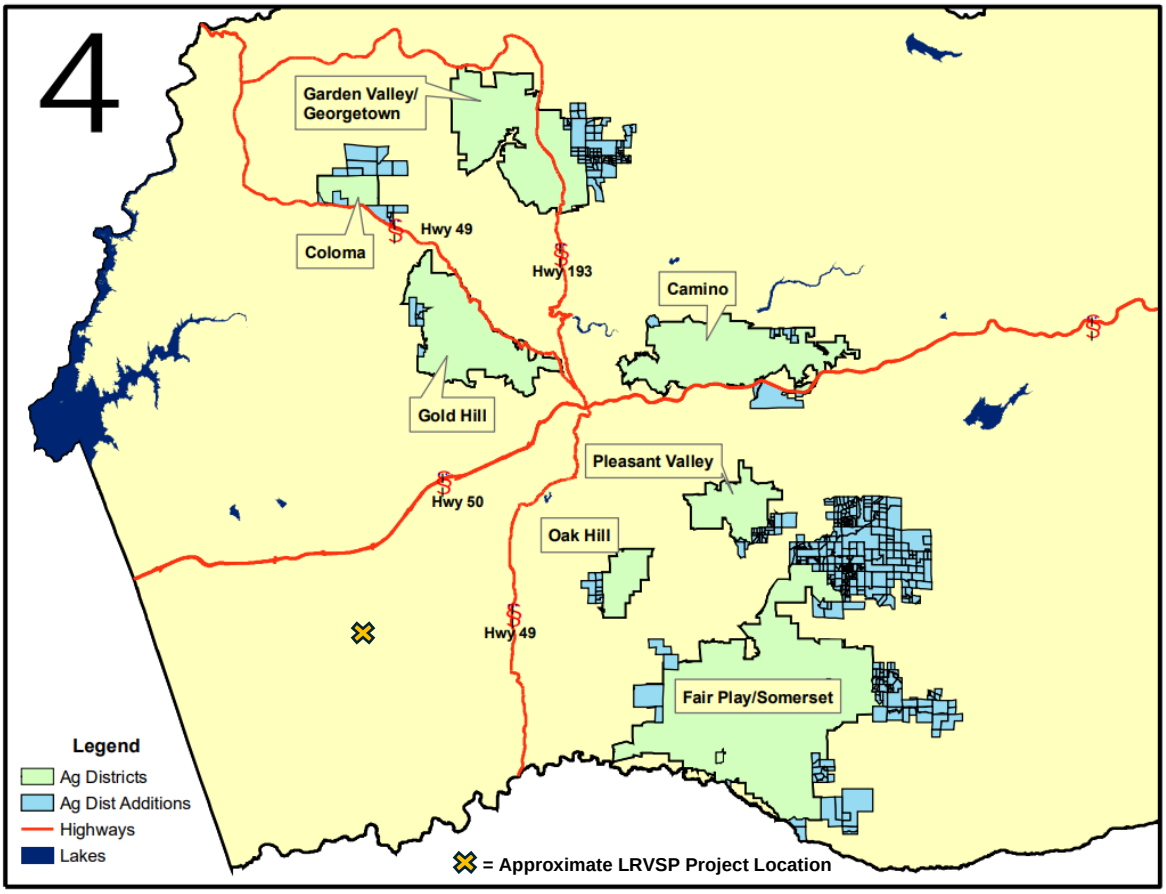
2. The Project site does not include any parcels that have been identified for protection as agricultural lands, including grazing, through an Agricultural District.

The General Plan provides for the creation of Agricultural Districts as the tool to implement Objective 8.1.1, which provides for the "[i]dentification of agricultural lands within the County that are important to the local agricultural economy including important crop lands *and grazing lands*." To implement Objective 8.1.1, Policy 8.1.1.1 provides:

> "Agricultural Districts" shall be created and maintained for the purposes of conserving, protecting, and encouraging the agricultural use of important agricultural lands and associated activities throughout the County; maintaining viable agricultural-based communities; and encouraging the expansion of agricultural activities and production. These districts shall be delineated on the General Plan land use map as an overlay land use designation.

While Objective 8.1.1 identifies "Agricultural District" overlays as the means to conserve, protect, and encourage agricultural use, including grazing, it is important to note that the Project site is not included in an Agricultural District. As depicted below, the County has established seven Agricultural Districts and none of those Agricultural Districts are within the vicinity of the Project. In fact, the County has not established an Agricultural District south of Highway 50 that is west of Highway 49. The Project is not within or remotely near areas of the County that have been protected with Agricultural Districts or identified for potential expansion of Agricultural Districts. The absence of an Agricultural District in the vicinity of the Project reflects the lack of an intent by the County that the Project site or vicinity are "agricultural lands within the County that are important to the local agricultural economy including important crop lands and grazing lands."

The County's Agricultural District Map with Proposed Expansion[1] is depicted below and the approximate location of the Project site is roughly depicted with an orange "x":



[1] The County's Agricultural District Map with Proposed Expansion is also available online at https://www.eldoradocounty.ca.gov/Land-Use/Agriculture-Weights-and-Measures/Agricultural-Land-Management-Resources.

D. Neither Policy 8.1.2.2 nor the Agricultural Commission "input" is considered for purposes considering potential impacts to "agricultural land" under CEQA.

While this additional analysis is being provided in support of the Board of Supervisors findings under General Plan Policy 8.1.2.2, neither Policy 8.1.2.2 nor the Agricultural Commission's input under that policy affect the CEQA analysis and conclusions in the DEIR. Policy 8.1.2.2 is not relevant for purposes of CEQA analysis for several reasons. First, DEIR Impact LU-3 evaluated whether the project would "[c]onvert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use" and concluded this impact was less that significant because the Project site does not contain Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. This threshold of significance was taken directly from CEQA Guidelines Appendix G. It is also consistent with the definition of "agricultural land" in Public Resources Code subdivision 21060.1(a), which excludes FMMP Grazing Land and Farmland of Local Importance from the definition of "agricultural land" for purposes of CEQA. (Pub. Resources Code, § 21061.1, subd. (a); see also *King & Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814, 870, fn. 30 ["This opinion uses the term 'agricultural land' as defined in CEQA and the EIR. Approximately 980,000 acres of grazing land in the project area is excluded from this definition of agricultural land."].) The FMMP Grazing Land is therefore not relevant to the consideration of potential impacts to agricultural land for purposes of CEQA.

CEQA Guidelines Appendix G also provides that, "[i]n determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to rate "the relative quality of land resources based on specific measurable features." (LESA Instruction Manual (1997) p. 1.) The LESA model is "intended 'to provide lead agencies with an optional methodology to ensure that significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process.'" (LESA Instruction Manual (1997) p. 1. [quoting Pub. Resources Code, § 21095].)

The LESA model considers six factors with two factors evaluating the soil resource quality and four site assessment factors that consider the project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. (LESA Instruction Manual (1997) p. 1.) The factors are then weighted and combined resulting in a maximum score of 100 and then the project's score and underlying component scores are used to objectively assess whether conversion of the land is a significant impact under CEQA. To further support the conclusions in the DEIR, the LESA model was utilized for the Project that evaluated (1) the LESA level of significance for the entire Project site; (2) the LESA level of significance for the FMMP Grazing Land; and (3) the LESA level of significance for the Farmland of Local Importance. Under all three

scenarios and making the most conservative assumptions regarding the quality of the soil, the LESA model confirms that development of the Project would have a less than significant impact on agricultural lands.

LESA establishes the following thresholds for significance based on the objective scores:

Table 9. California LESA Model Scoring Thresholds

Total LESA Score	Scoring Decision
0 to 39 Points	Not Considered Significant
40 to 59 Points	Considered Significant only if LE and SA subscores are each greater than or equal to 20 points
60 to 79 Points	Considered Significant unless either LE or SA subscore is less than 20 points
80 to 100 Points	Considered Significant

These LESA calculations and underlying assumptions are as follows:

LESA Score – Entire Project Site					
Factor Name	Factor Rating (0-100 points)	x	Factor Weighting (Total = 1.00)	=	Weighted Factor Rating
Land Evaluation					
1. Land Capability Classification	13.0[1]	x	0.25	=	3.25
2. Storie Index Rating	29.34[1]	x	0.25	=	7.34
Site Assessment					
1. Project Size	100[1]	x	0.15	=	15.0
2. Water Resources Availability	25[2]	x	0.15	=	3.75
3. Surrounding Agricultural Lands	0[3]	x	0.15	=	0
4. Protected Resource Lands	0	x	0.05	=	0
Total LESA Score (sum of weighted factor ratings)					**29.34**

Notes:

[1] LESA Tables 1A and 1B (Land Capability Classification and Storie Index Scores) and Site Assessment Worksheet 1:

A	B	C	D	E	F	G	H	I	J	K
Soil Map Unit	Project Acres	Proportion of Project Area	LCC	LCC Rating	LCC Score	Storie Index	Storie Index Score	LCC Class I-II	LCC Class III	LCC Class IV-VIII
AwD	82.8	.109	4e	50	5.45	28[A]	3.05			82.8
AxD	230.4	.304	6s	20	6.08	28[A]	8.51			230.4
Qu	16.0	.021	n/a	0	0	0	0			16.0
SaF	394.0	.52	8s	0	0	28[B]	14.56			394.0
SuC	34.4	.046	3e	70	1.47	70[C]	3.22		34.4	
Totals	757.6	1			**13.0**		**29.34**		34.4	732.2
								Project Size Scores	30	100

[A] Conservatively used exchequer and auburn soils for highest potential rating (range 20-28).

[B] No index found. With lower LCC than auburn soils, conservatively used 28.

[C] Conservatively used high Storie rating of 70 at top end for typical soil in LCC 3 range.

[2] No water resources onsite, which results in a score of 0 under LESA Table 4 (Site Assessment Worksheet 2). For LESA Table 5, conservatively used the highest possible score without irrigated land of 25.

[3] Site Assessment Worksheet 3 and Table 6:

A	B	C	D	E	F	G
Zone of Influence					Surrounding Agricultural Land Score (From Table 6)	Surrounding Protected Resource Land Score (From Table 6)
Total Acres	Acres in Agriculture	Acres of Protected Resource Land	Percent in Agriculture (A/B)	Percent Protected Resource Land (A/C)	0 (Less than 40%)	0 (Less than 40%)
2,500	200	0	8%	0		

LESA Score – FMMP Grazing Land Only					
Factor Name	Factor Rating (0-100 points)	x	Factor Weighting (Total = 1.00)	=	Weighted Factor Rating
Land Evaluation					
3. Land Capability Classification	27.9[1]	x	0.25	=	6.98
4. Storie Index Rating	28[1]	x	0.25	=	7.00
Site Assessment					
5. Project Size	80[1]	x	0.15	=	12.0
6. Water Resources Availability	25[2]	x	0.15	=	3.75
7. Surrounding Agricultural Lands	0[3]	x	0.15	=	0
8. Protected Resource Lands	0	x	0.05	=	0
Total LESA Score (sum of weighted factor ratings)					**29.73**

Notes:

[1] LESA Tables 1A and 1B (Land Capability Classification and Storie Index Scores) and Site Assessment Worksheet 1:

A	B	C	D	E	F	G	H	I	J	K
Soil Map Unit	Project Acres	Proportion of Project Area	LCC	LCC Rating	LCC Score	Storie Index	Storie Index Score	LCC Class I-II	LCC Class III	LCC Class IV-VIII
AwD	82.8	.264	4e	50	13.2	28[A]	7.4			82.8
AxD	230.4	.736	6s	20	14.7	28[A]	20.6			230.4
Totals	313.2	1			**27.9**		**28**			313.2
							Project Size Scores			80

[A] Conservatively used exchequer and auburn soils for highest potential rating (range 20-28).

[2] No water resources onsite, which results in a score of 0 under LESA Table 4 (Site Assessment Worksheet 2). For LESA Table 5, conservatively used the highest possible score without irrigated land of 25.

[3] Site Assessment Worksheet 3 and Table 6:

A	B	C	D	E	F	G
Zone of Influence					Surrounding Agricultural Land Score (From Table 6)	Surrounding Protected Resource Land Score (From Table 6)
Total Acres	Acres in Agriculture	Acres of Protected Resource Land	Percent in Agriculture (A/B)	Percent Protected Resource Land (A/C)	0 (Less than 40%)	0 (Less than 40%)
2,500	200	0	8%	0		

While not considered for CEQA, if the Farmland of Local Importance was evaluated under the LESA model, development of that land would also have a less than significant impact to agricultural resources because the score is 43.25 and, for a score of 40 to 59 points, the LESA model provides that an impact is considered significant only if the Land Evaluation and Site Assessment scores are both greater than or equal to 20. Here is the LESA assessment for the Farmland of Local Importance:

LESA Score – Farmland of Local Importance Only					
Factor Name	Factor Rating (0-100 points)	x	Factor Weighting (Total = 1.00)	=	Weighted Factor Rating
Land Evaluation					
5. Land Capability Classification	70[1]	x	0.25	=	17.5
6. Storie Index Rating	70[1]	x	0.25	=	17.5
Site Assessment					
9. Project Size	30[1]	x	0.15	=	4.5
10. Water Resources Availability	25[2]	x	0.15	=	3.75
11. Surrounding Agricultural Lands	0[3]	x	0.15	=	0
12. Protected Resource Lands	0	x	0.05	=	0
Total LESA Score (sum of weighted factor ratings)					**43.25**

Notes:

[1] LESA Tables 1A and 1B (Land Capability Classification and Storie Index Scores) and Site Assessment Worksheet 1:

A	B	C	D	E	F	G	H	I	J	K
Soil Map Unit	Project Acres	Proportion of Project Area	LCC	LCC Rating	LCC Score	Storie Index	Storie Index Score	LCC Class I-II	LCC Class III	LCC Class IV-VIII
SuC	34.4	1	3e	70	70	70[C]	70		34.4	
Totals	34.4	1			**70**		**70**		34.4	
							Project Size Scores		30	

[C] Conservatively used high Storie rating of 70 at top end for typical soil in LCC 3 range.

[2] No water resources onsite, which results in a score of 0 under LESA Table 4 (Site Assessment Worksheet 2). For LESA Table 5, conservatively used the highest possible score without irrigated land of 25.

[3] Site Assessment Worksheet 3 and Table 6:

A	B	C	D	E	F	G
Zone of Influence					Surrounding Agricultural Land Score (From Table 6)	Surrounding Protected Resource Land Score (From Table 6)
Total Acres	Acres in Agriculture	Acres of Protected Resource Land	Percent in Agriculture (A/B)	Percent Protected Resource Land (A/C)	0 (Less than 40%)	0 (Less than 40%)
2,500	200	0	8%	0		

Attachments:

1. Koopman Rangeland Consulting, *Lime Rock Valley Project Grazing Viability Assessment* (March 10, 2025)
2. El Dorado County, *The Procedure for Evaluating the Suitability of Land for Agriculture*
3. California Department of Conservation, *Agricultural Land Evaluation and Site Assessment Model, Instruction Manual* (1997)
4. United States Department of Agriculture, *Custom Soil Resource Report for El Dorado Area, California* (March 12, 2010)

Attachment 1

Koopman Rangeland Consulting
Lime Rock Valley Project Grazing Viability Assessment

Koopmann Rangeland Consulting

Rangeland Resource Management Services

LIME ROCK VALLEY PROJECT

UNINCORPORATED EL DORADO COUNTY, CALIFORNIA

GRAZING VIABILITY ASSESSMENT

Prepared By:

KOOPMANN RANGELAND CONSULTING

Clayton Koopmann, Principal & CA Certified Rangeland Manager (Lic. #M-100)

Prepared for:

LIME ROCK VALLEY, LLC

C/O Amy Wolfe

March 10, 2025

Koopmann.Consulting@gmail.com **(925) 819-0413** **PO Box 227 – Sunol, CA - 94586**

EXECUTIVE SUMMARY

This report provides an in-depth assessment of the economic viability of a commercial livestock grazing operation on the Lime Rock Valley property located near the town of Cameron Park in unincorporated El Dorado County, California. The property encompasses 738± acres of land comprised of oak woodlands and dense manzanita brush with sporadic patches of annual grasslands, primarily found along the eastern boundary. The property historically hosted a limestone mining/quarry operation that dates back to the 1800s but has since been decommissioned. Remnants of the former mining operation are present including roads, mining equipment in various conditions, and tailings/shale rock (byproducts of the mining operation).

The landowner of the Lime Rock Valley property ("Landowner") has submitted the "Lime Rock Valley Specific Plan" ("Project") to the County of El Dorado proposing the future development of 800 residential units on the property with 335± acres of the property designated as "open space". The Project was recently reviewed by the El Dorado County Agricultural Commission under County of El Dorado General Plan Policy 8.1.2.2, which required the Agricultural Commission to provide input about the suitability of the Property to sustain commercial livestock production/grazing. The particular parcel in question (APN 109-020-001) encompasses approximately 391.47-acres, of which, 215± acres of "grazing land" is identified in the County's Farmland Mapping and Monitoring Program ("FMMP"). An additional strip of 60± acres of the Project site are also considered as "grazing land" for a total of 284± acres. The economic viability assessment of commercial livestock production in this report will focus on the 284± acres of FMMP "grazing land" located along the eastern and northern property boundaries.

While the predominant use of the Project site has historically been mining operations, the Landowner has maintained ownership of the Project site under various related entities since approximately the 1970s. A consistent commercial grazing operation has not occurred during this time, but there has been limited and intermittent grazing for sporadic and inconsistent durations. More recently, approximately 12 head of cattle were grazed intermittently on the Project site over the past 10 years as a means to control brush/grass for wildfire fuel reduction. The mutually beneficial relationship between the landowner and cattle rancher provided: (1) the Landowner obtained the benefit of forage/fuels reduction, and (2) the grazer obtained marginal forage for livestock grazing, at no cost, for a short duration of the year.

The Project site lacks adequate infrastructure including perimeter fencing, corrals, or a water source to support commercial livestock grazing. Of the 284± acres of "grazing land", approximately 50 percent of the area is comprised of annual grasslands while the remaining 50 percent is comprised of woodlands, brush, and other non-palatable woody vegetation. Based on the lack of infrastructure and the limited availability of quality forage for livestock, the Project site is not capable of sustaining an economically viable commercial grazing operation.

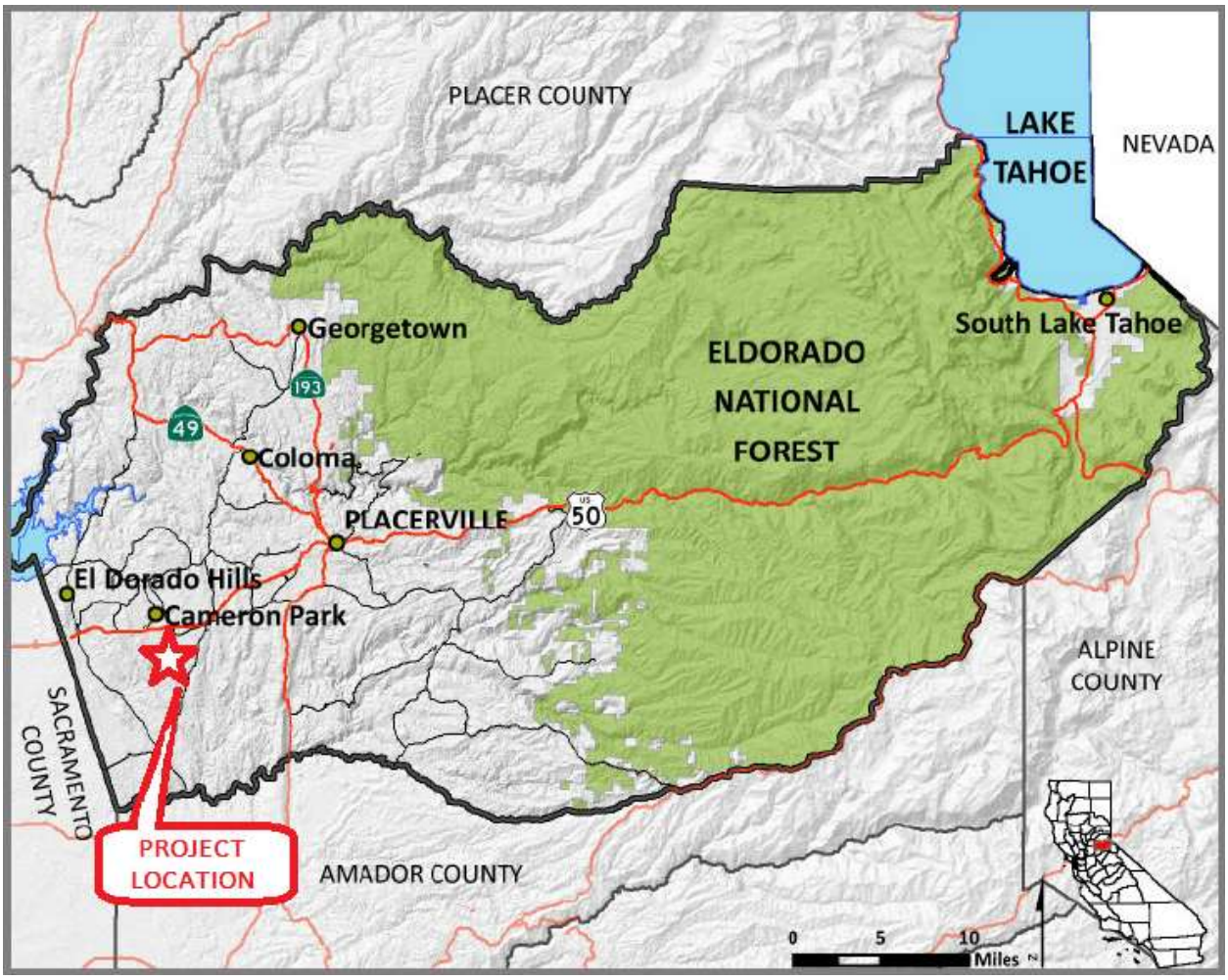
TABLE OF CONTENTS

INTRODUCTION

1.1 PROPERTY DESCRIPTION

The Lime Rock Valley property is located in unincorporated western El Dorado County, California approximately 1.5-miles south of the town of Cameron Park (Exhbit-1). The property encompasses 738± acres and sits at an elevation of 1,125 feet above sea level. Access to the property is from Shingle Lime Mine Road to the East. A well-developed network of gravel roads provides access throughout the property. Vegetative composition within the site primarily consists of oak woodlands and dense manzanita brush with sporadic patches of annual grasslands, primarily found along the eastern boundary. Remnant infrastructure and equipment from a historic limestone mining operation can be found throughout the property and several residential units provide housing for an on-site caretaker.

Exhibit-1: Project Location Map



1.2 HISTORICAL & CURRENT LAND USE

The Lime Rock Valley property historically hosted a limestone mining and quarry operation that dates back to the 1800s but has since been decommissioned. Remnants of the former mining operation are present including roads, mining equipment in various condition, and tailings/shale rock (byproducts of the mining operation) throughout the property.

While the predominant use of the Project site has been the historic limestone mine operations, grazing with cattle has intermittently occurred on the site over time. The landowner is not aware of a commercial grazing operation prior to acquiring the site under a related entity in approximately March 1977 for the limestone mine. Since acquiring the site in approximately March 1977, there has not been a consistent commercial grazing operation. More than 20 years ago, up to 40 head of cattle were intermittently grazed at the site for limited and inconsistent periods. The lack of a consistent grazing operation, analysis herein regarding the marginal feed, and discontinuation of the use suggests that cattle grazing was not economically sustainable on the site. More recently, approximately 12 head of cattle have grazed seasonally and intermittently on the Project site over the past 10 years. The grazing was not consistent for the entire 10 years and occurred through a mutually beneficial relationship between the Landowner and the grazer whereas (1) the Landowner obtained the benefit vegetation control for wildfire fuels reduction and (2) the grazer obtained grazing land, with marginal forage, for a short duration of time at no cost. The short duration seasonal grazing did not produce income for the Landowner.

On-site resident caretakers reside on the property to perform property maintenance and site security. The caretaker lives in existing residential units near the center of the property.

1.3 PROPOSED FUTURE LAND USE

The Landowner of the Lime Rock Valley property has submitted the Lime Rock Valley Specific Plan to the County of El Dorado proposing the future development of 800 residential units on the property. Key features of the plan include 335± acres of the property designated as open space, 15± acres of public space, and includes the preservation and restoration of an old lime kiln and other mining relics, as feasible. The plan includes a rezone to various land use districts including residential, open space, and public open space.

1.4 SURROUNDING LAND USE

Lands surrounding the Lime Rock Valley property to the north, east, and south have predominantly been subdivided and developed into 5-acre residential parcels (Exhibit-2). A 131-acre parcel along the western property boundary is owned by the El Dorado Irrigation District and houses the Deer Creek Waste Water Treatment Plant. Adjacent land to the southwest and west of the Project site are proposed for development under the Village of Marble Valley Specific Plan. The 2,341-acre proposed Village of Marble Valley development would include 3,236 residential units, 475,000 square feet of commercial use, 55-acres of agricultural use, 1,284-acres of open space, and 87-acres of public facilities/recreational use. While currently undeveloped, the Village of Marble Valley Property does not have any FMMP grazing lands or agricultural uses. If the Village of Marble Valley project is approved and developed, the Lime Rock Valley property will become an island of open space completely surrounded by development with no connectivity to any adjacent open space land.

1.5 REPORT FOCUSED "GRAZING LANDS"

The Project was recently reviewed by the El Dorado County Agricultural Commission which raised questions regarding the capacity for the Property to sustain commercial livestock production/grazing on the FMMP grazing land. The particular parcel in question (APN 109-020-001) encompasses approximately 391.47-acres, of which, 215± acres of "grazing land" is identified in the County's Farmland Mapping and Monitoring Program (FMMP) in the northeastern area of the project site. An additional 60± acres of the Project site in an independent strip are also considered as "grazing land" for a total of 284± acres. While the 60 acres is not sufficiently connected to the 215 acres to benefit from the efficiencies of a single fenced grazing area, this analysis considers the entire 284 acres. The 284 acres considered as "grazing land" is primarily located along the eastern half and norther boundary of the Lime Rock Valley property (Exhibit-2). The economic viability of commercial livestock production in this report will focus on the 284± acres of FMMP "grazing land" located along the eastern and northern property boundaries.

This report was prepared to assist the Board of Supervisors in making findings under General Plan Policy 8.1.2.2, which provides:

> Some lands within Rural Regions have historically been used for commercial grazing of livestock and <u>are currently capable of sustaining</u> <u>commercial grazing</u> of livestock. <u>If they can be demonstrated to be suitable land for grazing</u>, and if they were not assigned urban or other nonagricultural uses in the Land Use Map for

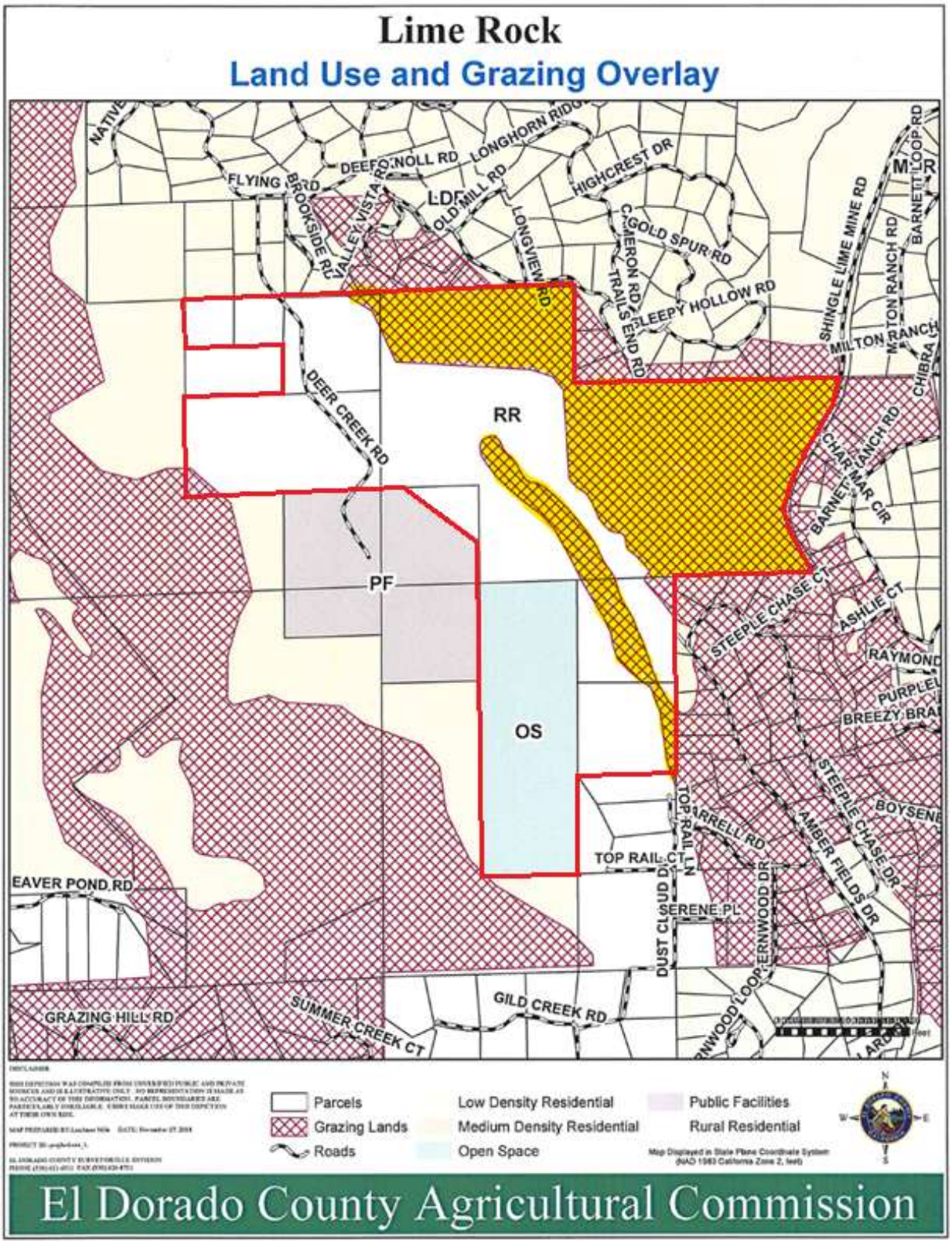
> the 1996 General Plan, those lands shall be protected with a minimum of 40 acres *unless* such lands already have smaller parcels or the Board of Supervisors determines that economic, social, or other considerations justify the creation of smaller parcels for development or other nonagricultural uses. Where 40-acre minimum parcel sizes are maintained, planned developments may be considered which are consistent with the underlying land use designation. Before taking any actions to create parcels of less than 40 acres in areas subject to this policy, the Board of Supervisors and/or Planning Commission shall solicit and consider input from the Agricultural Commission.

This report will therefore focus on determining the following:

- Are the 284-acre FMMP designated acres as "grazing land" suitable for sustained commercial grazing purposes?
- Has the property historically been used for commercial grazing of livestock?
- Is the property currently capable of sustaining commercial grazing of livestock?

Throughout the remainder of this report, an analysis of field conditions during a site visit on February 20, 2025, existing infrastructure, required infrastructure, water resources, forage production, soil quality, grazing land connectivity, carrying capacity, and agricultural economics will be utilized to determine answers to the aforementioned questions.

Exhibit-2: Lime Rock Valley project site map (produced by El Dorado County Surveyor/G.I.S. Division, 2018) showing the Project site boundary (outlined in red) and the FMMP identified acres (highlighted in yellow). Note the 5-acre subdivided residential lots along the east & north boundary, most of which are classified as FMMP "grazing lands".



BASELINE EVALUATION & AVAILABLE RESOURCES

2.1 GRAZING INFRASTRUCTURE

2.1.1 Livestock Fencing

Portions of the FMMP lands, primarily the portion along the eastern property boundary, contain remnants of old livestock fence consisting of wooden posts and 2 to 4 strands of old rusted barbed wire, much of which is dilapidated and non-functional. Many of the posts are broken and the wires are not taught. The fence appears to be approximately 80-100 years old and has been neglected for decades. The remainder of the FMMP designated lands near the center of the property and along the northern boundary do not contain any livestock fencing.

2.1.2 Corrals

Livestock corrals, essential for basic livestock husbandry and ingress/egress of livestock to/from the property, do not exist on the premise.

2.1.3 Stock Water

There are no water troughs or water storage tanks located within the FMMP lands. Clean, fresh water is essential to the sustenance of grazing livestock and there is no stock water infrastructure located on the property.

2.2 WATER SOURCES

There are no developed water sources such as wells or a domestic water supply and there are no natural water sources such as stockponds, natural springs, or creeks/streams located on the premises that are available to supply adequate stockwater for grazing livestock. The only current option to provide adequate stockwater for grazing livestock is to truck/haul water onto the property from an outside water source.

2.3 SITE SOIL DESCRIPTIONS

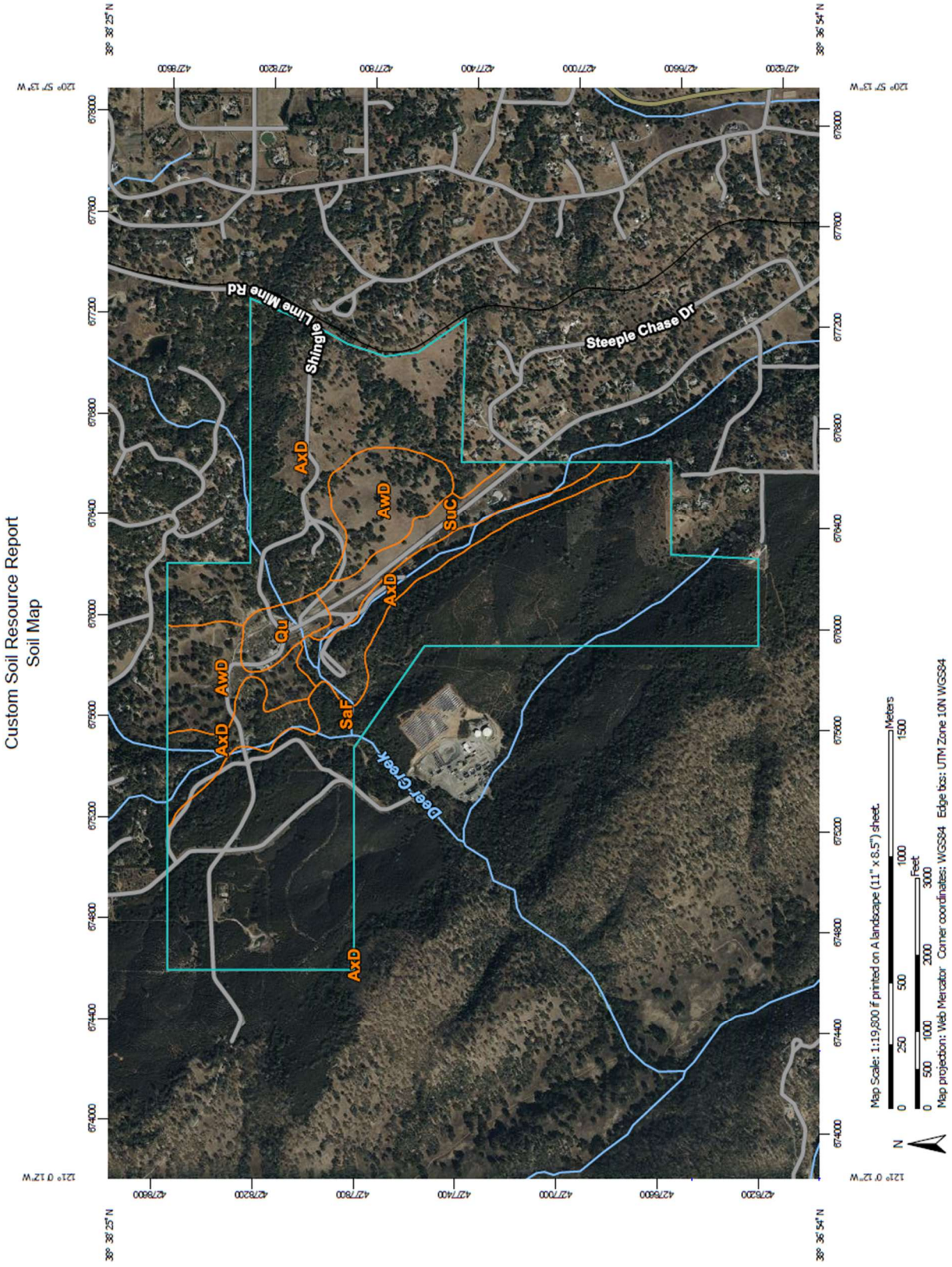
The Lime Rock Valley property is comprised of five (5) soil series types identified on the soils map (Exhibit-3) and detailed in Table-1. Soil composition on the property varies delineated by slope, aspect, and elevation. Most of the Project site is comprised of Serpentine rock land (52.0 percent), and Auburn very rocky silt loam (30.4 percent). Auburn silt loam (10.9 percent), Sobrante silt loam (4.6 percent), and Quarries (2.1 percent) make up the remaining soil composition on the property. None of the soils found on the Project site are classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Sobrante silt loam (SuC) is identified as Farmland of Local Importance under the FMMP but is irrelevant to this report valuation because Farmland of Local Importance is not considered under Policy 8.1.2.2 and the soils giving rise to the designation of Farmland of Local Importance are not designated based on grazing potential. Soil classes found on the Project site that are recognized under the FMMP as "Grazing Land" include Auburn silt loam (AwD) and Auburn very rocky silt loam (AxD).

Table-1: Delineation of soil types per acre and percentage on the Lime Rock Valley property.

SOIL SURVEY DATA – LIME ROCK VALLEY, EL DORADO COUNTY, CA			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
AwD	Auburn silt loam, 2 to 30 percent slopes	82.8	10.9%
AxD	Auburn very rocky silt loam, 2 to 30 percent slopes	230.4	30.4%
Qu	Quarries	16.0	2.1%
SaF	Serpentine rock land	394.0	52.0%
SuC	Sobrante silt loam, 3 to 15 percent slopes	34.4	4.6%
Totals for Area of Interest (AOI)		**757.6**	**100.0%**

The **Auburn silt loam** soils series consist of shallow to moderately deep, well drained soils formed in material weathered from amphibolite schist. Auburn soils are found on foothills and have slopes of 2 to 75 percent. The mean annual precipitation of 24 inches and a mean annual air temperature of 61 degrees Fahrenheit. The native vegetation is typically annual grasses and forbs such as soft chess, wild oats, ripgut brome, and filaree with stands of blue oak, interior live oak, scattered California foothill pine, and brush. Forage productivity can be limited, particularly in areas with higher rock content and extensive presence of brush and other non-palatable woody vegetation. Auburn silt loam soils are best suited for use as rangeland with small areas sometimes used as irrigated pasture. These soils have a xeric moisture regime and soil moisture in all horizons is dry from about May to October creating a short, seasonal window limiting annual forage production.

Exhibit-3: Custom Soil Classification Map – Lime Rock Valley



2.4 VEGETATIVE DESCRIPTION

The FMMP designated "grazing lands" encompass approximately 284-acres on the Project site. Of the 284-acres of FMMP lands, annual grassland habitat covers approximately 50 percent (142.0 acres) of the area, primarily comprised of annual grasses, perennial grasses, and forbs. The remaining approximately 50 percent (142.0 acres) of the FMMP grazing lands are comprised of oak woodlands and dense brush/manzanita which provide minimal forage for grazing animals. Grassland forage species observed during a February 2025 site visit were a mix of palatable grasses and forbs as well as non-palatable vegetation that is undesirable for livestock forage. The palatable grassland forage species observed on the FMMP lands are introduced non-native palatable grasses and low forbs that are desirable for livestock grazing including wild oats, soft chess, filaree, and clovers. The remaining makeup of grassland species includes ripgut brome, yellow starthistle, milk thistle, Italian thistle, Medusahead, and fiddleneck which are highly undesirable forage species for livestock grazing.

2.5 FORAGE PRODUCTION

Palatable forage production on the FMMP grazing lands ranges from fair to moderate excluding the forested areas and dense brush. Forage production on the Auburn silt loam soils (82.8 acres) is moderately good, however, forage production on the Auburn very rocky silt loam soils (230.4 acres) ranges from fair to poor as forage production tends to be much lower in rocky soils and around rocky outcroppings, as the soil tends to be shallow, which can limit rooting and nutrient/water uptake by plants.

Estimated annual forage production for the FMMP lands is determined through estimates based on soil class provided in the National Cooperative Soil Survey (USDA) and through field observations of grasslands on the Project site. Non-forage producing areas of the FMMP grazing lands, including the historic mining facilities, tailings piles, and densely wooded/brushy areas are deducted from the total grassland acres utilized to calculate available forage production. Forage productions estimates are shown for unfavorable, normal, and favorable productions years. Dry weight forage production estimates per soil class for the FMMP lands are shown in Table-2:

Table-2: Forage production estimates – Lime Rock Valley FMMP lands.

Soil Map Unit		Approx. Acres	Total Dry Weight Forage Production (lbs./acre)		
			Unfavorable Year	Normal	Favorable Year
AwD	Auburn silt loam, 2 to 30 percent slopes	82.8	1,500	2,500	3,000
AxD	Auburn very rocky silt loam, 2 to 30 percent slopes	230.4	1,000	1,500	2,000
	Total Grazed Acres	**313.2**			

2.6 ESTIMATED CARRYING CAPACITY

Table-3 depicts available forage, per the Soil Survey descriptions, for 'favorable', 'normal', and 'unfavorable' production years. 'Available forage' is calculated by deducting the residual dry matter (RDM) desired at the end of the grazing season (average of 750 lbs. per acre) from the total forage production. An additional 10 percent reduction in available forage is factored into account for natural loss due to wind, trampling, etc.

Table-3: Available dry-weight forage for grazing livestock (FMMP Lands). Calculations assume leaving an average of 750 pounds per acre of RDM and 10% forage loss due to natural conditions such as wind, trampling, etc.

Soil Map Unit		Approx. Acres	Available Dry Weight Forage Production (lbs./acre)		
			Unfavorable Year	Normal	Favorable Year
AwD	Auburn silt loam, 2 to 30 percent slopes	49.7	675	1,575	2,025
AxD	Auburn very rocky silt loam, 2 to 30 percent slopes	92.3	225	675	1,125
	Total Grazed Acres	**142.0**			

Non-forage producing areas of the FMMP lands, including densely wooded areas, were deducted from the total acres utilized to calculate available forage production. Approximately 142.0-acres (50 percent of FMMP lands) is considered non-forage producing or marginal in terms of forage production. Approximately 142.0-acres (50 percent of the FMMP lands) is considered as forage producing and used to calculate available forage production in Table-4.

Table-4: Estimated carrying capacity for Lime Rock Valley FMMP lands based on calculated available forage production.

Soil Map Unit	Approximate Grazeable Acres	Estimated Carrying Capacity (Animal Unit Months)		
		Unfavorable Year	Normal	Favorable Year
AwD	49.7	27.7	39.1	49.5
AxD	92.3	33.5	47.3	59.7
TOTAL	**142.0**	**61.2**	**86.4**	**109.2**
Year-round Stocking Rate in Animal Units (AUs) (AUMs ÷ 12 months)		**5.1**	**7.2**	**9.1**

Based on available forage production on the FMMP grazing lands, leaving an average of 750 pounds of RDM, the estimated carrying capacity ranges from 109.2 AUMs in a favorable year to 61.2 AUMs in an unfavorable year with an average carrying capacity of 86.4 AUMs in normal production years. An Animal Unit Month (AUM) is simply a system used to standardize the forage needs of grazing livestock and forage available. In this system a 1,000-pound animal is considered 1 Animal Unit (AU) and 1 AUM is considered to be 1 AU grazing for a period of 1 month. As a

general rule of thumb, it requires 18-20 acres of unirrigated annual rangelands in the Sierra Foothills to support an average sized cow (1,200 pounds) for a year, providing limited supplemental forage. Due to moderately poor forage quality on the FMMP lands, seasonal fall/winter grazing (October-April) would be an appropriate grazing window with the cattle being moved to irrigated pasture the remainder of the year (May-September). If cattle were to graze the site year-round, substantial supplemental forage (hay) and mineral/protein would be required to sustain the health and body condition of the cattle through the hot, dry summer months. Based on the estimated carrying capacity, the below stocking rate estimates were determined to be suitable for the FMMP grazing lands.

- Favorable Production Year:
  109.2 AUMs = 18.2 cows grazing for 6-months.
- Average Production Year:
  86.4 AUMs = 14.4 cows grazing for 6 months.
- Unfavorable Production Year:
  61.2 AUMs = 10.2 cows grazing for 6 months.

These carrying capacity estimates are consistent with the limited historic use over the past decade which has consisted of sporadic and intermittent grazing with 12 cow/calf pairs primarily for vegetation management without an economic benefit to the landowner. The 12 cow/calf pairs grazed the property for approximately 6-months and grazing did not occur continuously over that time period.

This limited carrying capacity is consistent with the University of California Agriculture and Natural Resources Cooperative Extension produced Publication Number 31-1005 (June 2018) ("Carrying Capacity Publication") that addresses the number of livestock a property can generally support. The Carrying Capacity Publication explains: "A critical component of grazing livestock sustainably is understanding the concept of carrying capacity; that is, the amount of forage an acre of pasture or rangeland will produce." Generally, it requires "15-18 acres of unirrigated annual rangelands in the Sierra Foothills to support one average sized cow (1,200 lbs.) for a year," and the cattle can graze on this unirrigated rangeland from only approximately October 15 through April 15. For the remaining six months of the year, the cattle would require supplement with hay at a significant cost or irrigated pasture at a different location. Based on these assumptions, the FMMP Grazing Land would allow for approximately 10 to 18 cattle for half of the year, which is consistent with the site-specific carrying capacity calculated above.

ECONOMIC ANALYSIS

3.1 GRAZING INFRASTRUCTURE IMPROVEMENTS

While the FMMP lands produce forage that has the potential to support livestock grazing in a limited capacity, there is no infrastructure in place to support a livestock grazing operation. In order to implement a consistent grazing regime on the FMMP lands, substantial infrastructure improvements would be required including new perimeter fencing, development of a water source, stock water infrastructure, and corrals. Regardless of the size of a grazing operation, appropriate infrastructure is necessary to successfully and consistently graze a property. While the estimated carrying capacity and seasonal grazing use of the FMMP lands are very low, the cost for installing the necessary infrastructure is exceptionally high. Estimated costs for grazing infrastructure necessary to support consistent seasonal-use grazing on the FMMP lands are shown below.

Table-5: Grazing Infrastructure Improvement Budget – Lime Rock Valley FMMP lands.

INFRASTRUCTURE	UNIT MEASURE	QUANTITY	PRICE/UNIT	TOTAL PRICE
WATER SYSTEM				
Waterline (installed)	Linear feet (lf)	2,500	$3.50/lf.	$8,750.00
Prefab Concrete Water Trough (plumbed/installed)	Each	3	$3,500.00/ea.	$10,500.00
5,000-gallon poly water tank	Each	1	$2,500.00/ea.	$2,500.00
Drill new well for water source	Each	1	$45,000.00	$45,000.00
Solar Powered Water Pump (Grundfos brand)	Each	1	$12,500.00/ea.	$12,500.00
		TOTAL:		**$79,250.00**
LIVESTOCK FENCING				
5-strand barbed wire fencing	Linear feet (lf)	26,154	$9.50/lf.	$248,463.00
		TOTAL:		**$248,463.00**
LIVESTOCK CORRAL				
Steel pipe/panel corral	Each	1	$45,500.00/ea.	$45,500.00
Powder River Manual Squeeze Chute	Each	1	$7,500.00/ea.	$7,500.00
Powder River Lead-up/Alley	Each	1	$4,750.00/ea.	$4,750.00
		TOTAL:		**$57,750.00**
Sub-Total:				$385,463.00
Add 15% Contingency:				$57,819.45
GRAND TOTAL:				**$443,282.45**

3.2 PROJECTED INCOME FROM LIVESTOCK GRAZING

The following spreadsheet provides a detailed annual operating budget for a cow/calf enterprise in California using the most recent market values for beef commodities ("CattleFax Update", weekly publication. Issue 7-Vol LVII. February 14, 2025). The budget assumes that all 14 cows raise calves to weaning/market age and that no heifer calves are retained as "replacement heifers". The operating budget assumes that the cows will run on dryland pasture for 6-months and irrigated pasture for 6-month. The budget assumes that the livestock producer owns the cattle (paid for) and does not account for depreciation of livestock or interest on an operating line of credit.

Table-6: Cow/Calf Enterprise Budget – Lime Rock Valley FMMP lands.

Detailed Cow-Calf Enterprise Budget

Revenue:	Price	Unit		Qty	Unit			Total per Year Entire Herd
(7) Weaned Steer Calves	$ 300.00	*per cwt*	x	650	*lbs*	x	=	$ 13,650.00
(7) Weaned Heifer Calves	$ 290.00	*per cwt*	x	600	*lbs*	x	=	$ 12,180.00
(1) Cull Cows	$ 145.00	*per cwt*	x	1300	*lbs*	x	=	$ 1,885.00
Other Income								$ -
Gross Income								**$ 27,715.00**
Feed Costs:								
Dryland Pasture (6 months)	$31.00	*per AUM*	x	84.0	*AUMs*			$ 2,604.00
Irrigated Pasture (6 months)	$45.00	*per AUM*	x	84.0	*AUMs*			$ 3,780.00
Hay and Forage	$300.00	*per Ton*	x	12.0	*tons*			$ 3,600.00
Grain/Protein/Mineral	$1,250	*per Ton*	x	1.0	*tons*			$ 1,250.00
Total Feed Costs								**$ 11,234.00**
Non-Feed Cash Costs:								
Veterinary Care and Pharmaceuticals								$ 850.00
Marketing/Sale Barn fees								$ 1,075.00
Annual Bull Charge								$ 2,800.00
Hired Labor								$ 1,500.00
Total Non-Feed Cash Costs								**$ 6,225.00**
Total Cash Costs								**$ 17,459.00**
Overhead Costs:								
Replacement Heifers*								
Cow Depreciation*								
Vehicle, Facility/Equip. Depreciation								$ 2,500.00
Vehicle, Facility/Equip. Repairs								$ 4,000.00
Utilities								$ 1,500.00
Fuel								$ 3,000.00
Taxes								$ 1,500.00
Farm/Livestock Insurance								$ 1,500.00
Other costs (cattle freight)								$ 900.00
Total Overhead Costs								**$ 14,900.00**
Total Costs								**$ 32,359.00**
Income Over Cash Costs								**$ 10,256.00**
Income Over Total Costs								**$ (4,644.00)**

Based on the "Income over Cash Cost," the operation shows an annual profit of $10,256.00 ($732.57 per cow), however, upon applying overhead operating costs, the "Income Over Total Costs" shows an annual loss of $4,644.00 (-$331.71 loss per cow). Production of agricultural commodities will often show proportionate savings in costs gained by an increased level of production. In the case of livestock production, the more cattle you produce and market will allow the operator to amortize the overhead costs over a larger number of cattle (cost/head) ultimately reducing the cost per cow.

Assuming zero death loss and marketing of all calves produced (no heifers retained as replacement heifers), the annual operating cost per cow is $2,311.00/head for 14 cows. To reach a "break even", the per cow cost of operation would need to be reduced to $1,845.00/head, based on current feeder cattle and cull cow prices in California ("CattleFax"). To achieve the $1,845.00/head operating cost, it would require an additional 12 cows to be run annually as part of the grazing enterprise. This is nearly double the estimated carrying capacity for the FMMP grazing lands for a normal forage production year. Based on the above information, a 14-head cow/calf enterprise will not show a profit and is not an economically sustainable operation.

GRAZING VIABILITY DETERMINATION

4.1 DEFINITION OF "COMMERCIAL GRAZING"

The County of El Dorado has not formally adopted a definition for "commercial grazing". Based on my professional experience, use of the term "commercial", defined as "for profit", dictates that the term "commercial grazing" can be defined as:

"The practice of raising livestock on land, either seasonally or year-round, for a profit."

The definition of "commercial grazing" can be further expanded to include:

"The practice of raising livestock on land for a profit, either seasonally or year-round, with the sale of livestock being the primary source of income for the livestock producer."

Livestock grazing at a smaller scale is commonly referred to as "hobby farming", particularly if profitability of the enterprise is not a top priority and/or the operator relies on a secondary source of income to support oneself financially.

4.2 VIABILITY OF "COMMERCIAL GRAZING" ON LIME ROCK VALLEY

The Lime Rock Valley FMMP lands have not historically supported a "commercial grazing" operation and are not currently capable of sustaining "commercial grazing" of livestock. The primary purpose of sporadic and intermittent historic grazing activity on the FMMP lands has been to reduce vegetation to mitigate the risk of wildfire. Based on my professional experience, similar properties within the region utilize goats for grazing to reduce fine fuels for wildfire mitigation at a cost to the Landowner of $1,500-$3,500 per acre. While the FMMP lands annually produce some forage suitable for livestock consumption, the FMMP lands are not capable of sustaining a "commercial grazing" operation for the following reasons:

- There is no infrastructure in place to support livestock grazing on the FMMP lands.
- The estimated cost to install necessary grazing infrastructure is exceptionally high in comparison to the limited capacity for grazing on the FMMP lands (Table-5).
- The poor-quality soil found on the FMMP lands produces a low yield of forage for grazing livestock. Forage production is further impacted by the heavy presence of woody vegetation and brush. Limited forage production yields a low carrying capacity for grazing.
- Based on the estimated carrying capacity/seasonal grazing use, a commercial grazing operation is not economically viable or sustainable on the FMMP lands (Table-6), even if irrigated pasture is incorporated into the grazing rotation for 6-months out of the year.
- While the economic viability of commercial grazing was considered for cattle grazing (the most likely and suitable livestock to graze the property), the economic viability of "commercial grazing" with sheep is exceptionally worse due to poor lamb prices.
- While sheep and beef producers pay pasture rent to the landowner for grazing lands, goat grazing is a niche market with a focus on forage reduction for wildfire fuel mitigation. Regionally, goat grazers charge landowners $1500-$3500/acre for goat grazing services. There is a very limited market for goat production in terms of a "meat market" or food source and the economic viability is less likely than grazing with beef cattle.
- There is no continuity or connectivity between the FMMP grazing lands and any other adjacent grazing lands (private or public) that would ease the economic or infrastructure constraints of commercially grazing livestock on the FMMP lands.
- Based on the above referenced definition of "commercial grazing", the FMMP lands do not qualify as economically viable or sustainable "commercial grazing" lands.

REPORT AUTHOR BIOGRAPHY:

Koopmann Rangeland Consulting provides a wide variety of rangeland resource management services, specializing in general consulting, research, monitoring, management plan development & review, and base line reports for public agencies, private landowners, conservation easements, and mitigation. Koopmann Rangeland Consulting was formally established in 2013 by principal and primary consultant, Clayton Koopmann.

Clayton W. Koopmann, B.S., Agricultural Management & Rangeland Resources, UC Davis 2007; Owner Koopmann Rangeland Consulting; California Board of Forestry Registered Certified Rangeland Manager License #M100.

Clayton is a fifth-generation cattle rancher from the central coast of California. He received a Bachelor of Science degree in Agricultural Management & Rangeland Resources from the University of California, Davis in 2007. He worked full-time as the Rangeland Resource Manager for the Midpeninsula Regional Open Space District for 9+ years (2008-2017) and currently serves as the Rangeland Manager for the San Francisco Public Utilities Commission (SFPUC) on their 40,000-acre Alameda Watershed lands. Clayton provides a unique perspective and approach to rangeland management providing vast knowledge and firsthand experience in livestock production in addition to years of experience managing large tracts of public land, learning to navigate the political and regulatory world in California. He strives to provide simple, practical approaches to rangeland management, livestock grazing, and natural resource management.

RESOURCES

1. United States Department of Agriculture Custom Soil Resources Report for El Dorado Area, California. (March 10, 2010)

2. CattleFax Update, weekly publication. Issue 7. Volume LVII. February 14, 2025.

3. University of California Agriculture and Natural Resources Cooperative Extension Publication Number 31-1005 (June 2018)

Attachment 2

El Dorado County
Procedure for Evaluating the Suitability of Land for Agriculture

THE PROCEDURE FOR EVALUATING THE SUITABILITY OF LAND FOR AGRICULTURAL USE

The following methodology has been developed as a rational procedure to evaluate lands for agricultural potential and to offer protective policies that will act to preserve these lands for agricultural use. This system is the result of extensive meetings between the El Dorado County Agricultural Commission, the Soil Conservation Service and the County Planning Department staff. This system may be used to analyze any parcel of land in El Dorado County for its potential for agricultural use.

The agricultural potential of parcels will be rated on a scale of 0 to 100 points upon an evaluation of each of these five categories:

1. Soils
2. Climate
3. Water
4. Land Use
5. Parcel Size

Contiguous parcels under a common ownership shall be considered as a single unit. When the parcel or unit is variable in characteristics such as soil type or depth, slopes, climate, etc., it may be evaluated in segments, provided that each segment is 20 acres or larger.

The following criteria may exclude any parcel or land segment from being considered as potential agricultural land:

1. Soil depth less than 18 inches;
2. Elevation greater than 4,000 feet (except for timberlands);
3. Slopes in excess of 30 percent (except timber lands).

In arriving at the points to be awarded for each category, analyze each parcel or segment according to the array of information which is most applicable in the category. The cumulative total of points in all categories will determine the agricultural potential of a parcel of segment based upon major factors considered in this methodology.

Categories I, II, and III are the core of the most important prerequisite for agricultural lands, while Categories IV and V are modifiers based upon parcel size and surrounding land use.

The cumulative total of points in all categories determines the overall suitability of a parcel for agricultural use. By examining each category, then a cumulative point total of 60 points or greater will signify that a parcel has good agricultural capability, and is to be protected as potential agricultural land suitable for agricultural use.

CATEGORY I
SOIL CAPABILITY AND CHARACTERISTICS
(40 points possible)

Points	Criteria
40	Assigned to all Class II and III soils located in a site.
30	Assigned to those Class IV, V and VI soils with a minimum depth of 40 inches.
20	Assigned to those Class IV, V and VI soils below 40 inches in depth, but with a minimum depth of 30 inches.
10	Assigned to those Class IV, V and VI soils below 30 inches in depth, but with a minimum depth of 24 inches.
0	Assigned to those Class IV, V and VI soils below 24 inches in depth, but with a minimum depth of 18 inches.
0	Assigned to those Class VII and VIII soils.

NOTES:

- There are no Class I soils located in El Dorado County.
- Parcels with mixed soil classifications or types shall be evaluated on the "Choice Soils" present, provided that "Choice Soils" constitutes 30% or more of the parcel. For those parcels that contain less than 30% "Choice Soils," the parcel shall be evaluated on the dominate soil class or type.
- Soils "Capability Classes" are defined on page 38 of the *Soils Survey of El Dorado Area, CA, USDA Soil Conservation Service and Forest Service, April 1974.*
- The "Guide to Mapping Units," found in the back of *Soils Survey of El Dorado Area, CA, USDA Soil Conservation Service and Forest Service, April 1974,* shows capability class each soil is in.

CATEGORY II
CLIMATE
(25 points possible)

Elevation. Assign 25 points if elevation at parcel or segment is between 1,500 and 3,000 feet; otherwise, assign points as listed on the following table.

NOTE: For timber, assign the total of 25 points for this category.

Points	Elevation
10	4,000'
11	3,900'
12	3,800'
13	3,700'
14	3,600'
16	3,500'
18	3,400'
20	3,300'

Points	Elevation
24	3,100'
25	1,500' - 3,000'
24	1,400'
21	1,300'
17	1,200'
14	1,100'
12	1,000'
10	900' or less

CATEGORY III
AGRICULTURAL WATER
(15 points possible)

Adequate agricultural water is necessary for the majority of crops in El Dorado County with most of the existing agricultural areas in the County being served by the EID or GDPUD systems. Some crops in the County can be dry-farmed successfully; established walnut orchards and vineyards are notable examples.

The intent of this category is to assign points to a parcel or segment based upon the criteria of water availability. Lands with agricultural potential and having piped water available allow for a greater range of choices for the type of crop to grow. These same lands having agricultural potential are also suitable for residential use. Due to the very limited extent of agriculturally-suited lands in El Dorado County, it is in the best interest of the residents in this County to utilize existing services where possible to serve these lands,but also to recognize that protection of good agricultural lands not currently served with public water is equally important.

The effect of this category will be to "weight" points to lands currently served by public water, where active protection by the County is most often required to reserve the good agricultural lands from being converted to primarily residential uses.

NOTE: For lands that are to be utilized for timber, assign 15 points for Category III.

Points	Criteria
15	Parcel or segment has existing water supplied by a public entity or existing on-site water systems.
10	(a) Parcel or segment is within the EID or GDPUD District; is not currently supplied by these entities but is adjacent to and has a reasonable and realistic potential to be served; or (b) Parcel or segment has a reasonable and realistic potential to develop an adequate on-site agricultural water system, most commonly in the form of deep wells or reservoirs.
5	Parcel or segment is not within the EID or GDPUD Districts and is not currently served by a public agency, but is within the LAFCO "Sphere of Influence" and has a reasonable potential to annex.
0	Parcel or segment is not within the EID or GDPUD Districts, is not within the LAFCO "Sphere of Influence," does not have a reasonable potential to annex and no reasonable potential to develop well water as determined by surrounding well reports or on-site drilling to at least a 300-foot depth.

CATEGORY IV
PARCEL SIZE
(10 points possible)

Points	Parcel Size
10	20 to 100+ acres
7	10 to 19.99 acres
5	5 to 9.99 acres
1	1 to 4.99 acres

CATEGORY V
SURROUNDING LAND USE
(10 points possible)

Points	Surrounding Land Use
10	Parcel is located within an established and recognized agricultural area (Agricultural District)
7	Parcel is located in an area having good crop potential but not yet intensively planted. Urbanization on adjacent parcels is slight to moderate.
5	Parcel is located in an area of good crop potential, but about half of the surrounding parcels are urbanized (less than 5 acres in size).
2	Parcel is located within an existing community.

A cumulative score of 60 points or more in all 5 categories signifies that a parcel or segment has a good agricultural capability.

EL DORADO COUNTY CHOICE AGRICULTURAL SOILS*

Prime Farmland	Statewide Important Farmland	Unique & Soils of Local Importance		
AfB	AsC	AfC	CoE	MsC
AfB2	AsC	AfC2	DfC	ReC
ArB	BhC	AfD	DfD	SbD
CmB	DfB	AgD	DmD	SfC2
HgB	HgC	ArC	HgD	SfD2
HhC	HrC	ArD	JrC	SkC
LaB	PgB	BhD	JrD	SkD
ReB	Rk	BpC	JtC	SkE
	SbC	BpD	JtD	SsC
	ScC	CkD	JvD	SsD
	SgC	CmC	MaD	SsE
	WaB	CmD	MrC	SuC
		CoC	MrD	SuD

*El Dorado County Choice Soils are defined as soil types that exhibit "choice" agricultural characteristics as delineated by the USDA-SCS and a local adhoc committee.

Submit by Email

Attachment 3

California Department of Conservation
Agricultural Land Evaluation and Site Assessment Model Instruction Manual

CALIFORNIA AGRICULTURAL

LAND EVALUATION AND SITE ASSESSMENT MODEL

Instruction Manual

For further information, please contact:

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CALIFORNIA AGRICULTURAL

LAND EVALUATION AND SITE ASSESSMENT MODEL

Instruction Manual
1997

Department of Conservation
Office of Land Conservation

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EXECUTIVE SUMMARY

Land Evaluation and Site Assessment (LESA) is a term used to define an approach for rating the relative quality of land resources based upon specific measurable features. The formulation of a California Agricultural LESA Model is the result of Senate Bill 850 (Chapter 812 /1993), which charges the Resources Agency, in consultation with the Governor's Office of Planning and Research, with developing an amendment to Appendix G of the California Environmental Quality Act (CEQA) Guidelines concerning agricultural lands. Such an amendment is intended "to provide lead agencies with an optional methodology to ensure that significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process" (Public Resources Code Section 21095).

The California Agricultural LESA Model is composed of six different factors. Two Land Evaluation factors are based upon measures of soil resource quality. Four Site Assessment factors provide measures of a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, each of these factors is separately rated on a 100 point scale. The factors are then weighted relative to one another and combined, resulting in a single numeric score for a given project, with a maximum attainable score of 100 points. It is this project score that becomes the basis for making a determination of a project's potential significance, based upon a range of established scoring thresholds. This Manual provides detailed instructions on how to utilize the California LESA Model, and includes worksheets for applying the Model to specific projects.

INTRODUCTION

Defining the LESA System

The Land Evaluation and Site Assessment (LESA) system is a point-based approach that is generally used for rating the relative value of agricultural land resources. In basic terms, a given LESA model is created by defining and measuring two separate sets of factors. The first set, Land Evaluation, includes factors that measure the inherent soil-based qualities of land as they relate to agricultural suitability. The second set, Site Assessment, includes factors that are intended to measure social, economic, and geographic attributes that also contribute to the overall value of agricultural land. While this dual rating approach is common to all LESA models, the individual land evaluation and site assessment factors that are ultimately utilized and measured can vary considerably, and can be selected to meet the local or regional needs and conditions for which a LESA model is being designed to address. In short, the LESA methodology lends itself well to adaptation and customization in individual states and localities. Considerable additional information on LESA may be found in *A Decade with LESA - the Evolution of Land Evaluation and Site Assessment* (8).

Background on LESA Nationwide

In 1981, the federal Natural Resources Conservation Service (NRCS), known then as the Soil Conservation Service, released a new system that was designed to provide objective ratings of the agricultural suitability of land compared to demands for nonagricultural uses of lands. The system became known as Land Evaluation and Site Assessment, or LESA. Soon after it was designed, LESA was adopted as a procedural tool at the federal level for identifying and addressing the potential adverse effects of federal programs (e.g., funding of highway construction) on farmland protection. The Farmland Protection Policy Act of 1981 (5) spells out requirements to ensure that federal programs, to the extent practical, are compatible with state, local, and private programs and policies to protect farmland, and calls for the use of LESA to aid in this analysis. Typically, staff of the NRCS is involved in performing LESA scoring analyses of individual projects that involve other agencies of the federal government.

Since its inception, the LESA approach has received substantial attention from state and local governments as well. Nationwide, over two hundred jurisdictions have developed local LESA methodologies (7). One of the attractive features of the LESA approach is that it is well suited to being modified to reflect regional and local conditions. Typical local applications of LESA include assisting in decision making concerning the sitting of projects, changes in zoning, and spheres of influence determinations. LESA is

also increasingly being utilized for farmland protection programs, such as the identification of priority areas to concentrate conservation easement acquisition efforts.

Because of the inherent flexibility in LESA model design, there is a broad array of factors that a given LESA model can utilize. Some LESA models require the measurement of as many as twenty different factors. Over the past 15 years, the body of knowledge concerning LESA model development and application has begun to indicate that LESA models utilizing only several basic factors can capture much of the variability associated with the determination of the relative value of agricultural lands. In fact, LESA models with many factors are increasingly viewed as having redundancies, with different factors essentially measuring the same features, or being highly correlated with one another. Additional information on the evolution and development of the LESA approach is provided in, A *Decade with LESA -The Evolution of Land Evaluation and Site Assessment* (8).

Development of the California Agricultural LESA Model

In 1990 the Department of Conservation commissioned a study to investigate land use decisions that affect the conversion of agricultural lands in California. The study, conducted by Jones and Stokes Associates, Inc., was prepared in response to concerns about agricultural land conversion identified in the *California Soil Conservation Plan* (1) (developed by the ad hoc Soil Conservation Advisory Committee serving the Department of Conservation in 1987). Among these concerns was the belief that there was inadequate information available concerning the socioeconomic and environmental implications of farmland conversions, and that the adequacy of current farmland conversion impact analysis under the California Environmental Quality Act (CEQA) was not fully known. The findings of this study are included in the publication, *The Impacts of Farmland Conversion in California* (2).

Currently, neither CEQA nor the State CEQA Guidelines contains procedures or specific guidance concerning how agencies should address farmland conversion impacts of projects. The only specific mention of agricultural issues is contained in Appendix G of the State CEQA Guidelines, which states that a project will normally have a significant effect on the environment if it will “convert prime agricultural land to non-agricultural use or impair the agricultural productivity of prime agricultural land”.

Among the conclusions contained in *The Impacts of Farmland Conversion in California* study was that the lack of guidance in how lead agencies should address the significance of farmland conversion impacts resulted in many instances of no impact analysis at all. A survey of environmental documents sent to the Governor's Office of Planning and Research (OPR) between 1986 and 1988 was performed. The survey

showed that among projects that affected at least 100 acres of land and for which agriculture was a project issue, nearly 30 percent received Negative Declarations, and therefore did not did not receive the environmental impact analysis that would be provided by an Environmental Impact Report (EIR).

Of those projects involving the conversion of agricultural lands and being the subject of an EIR, the study found a broad range of approaches and levels of detail in describing the environmental setting, performing an impact analysis, and providing alternative mitigation measures. The only agricultural impacts found to be significant in the EIRs were those involving the direct removal of prime agricultural lands from production by the project itself. The focus on prime farmland conversion in the projects surveyed was deemed to be related to the narrow direction provided in Appendix G of the State CEQA Guidelines.

The formulation of a California LESA Model is the result of Senate Bill 850 (Chapter 812 /1993), which charges the Resources Agency, in consultation with the Governor's Office of Planning and Research, to develop an amendment to Appendix G of the California Environmental Quality Act (CEQA) Guidelines. Such an amendment is intended "to provide lead agencies with an optional methodology to ensure that significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process" (Public Resources Code Section 21095). This legislation authorizes the Department of Conservation to develop a California LESA Model, which can in turn be adopted as the required amendment to Appendix G of the CEQA Guidelines.

Presentation of the California LESA Model

The California LESA Model is presented in this Manual in the following sections:

Section I. provides a listing of the information and tools that will typically be needed to develop LESA scores for individual projects.

Section II. provides step-by-step instructions for scoring each of the six Land Evaluation and Site Assessment factors that are utilized in the Model, with an explanation of the rationale for the use of each factor.

Section III. defines the assignment of weights to each of the factors relative to one another, and the creation of a final LESA score for a given project.

Section IV. assigns scoring thresholds to final LESA scores for the purpose of determining the significance of a given project under CEQA where the conversion of agricultural lands is a project issue.

Additionally:

Appendix A. provides an abridged set of step-by-step LESA scoring instructions that can be used and reproduced for scoring individual projects.

Appendix B. demonstrates the application of the California LESA Model to the scoring of a hypothetical project.

The California Agricultural LESA Model

Section I. Required Resources and Information

The California Land Evaluation and Site Assessment (LESA) Model requires the use and interpretation of basic land resource information concerning a given project. A series of measurements and calculations is also necessary to obtain a LESA score. Listed below are the materials and tools that will generally be needed to make these determinations.

Land Evaluation and Site Assessment calculations will require:

1. A calculator or other means of tabulating numbers

2. An accurately scaled map of the project area, such as a parcel map

3. A means for making acreage determinations of irregularly shaped map units. Options include, from least to most technical:

    - A transparent grid-square or dot-planimeter method of aerial measurement

    - A hand operated electronic planimeter

    - The automatic planimetry capabilities of a Geographic Information System (GIS)

4. A modern soil survey, generally produced by the USDA Natural Resources Conservation Service, which delineates the soil-mapping units for a given project. [Note: If modern soil survey information is not available for a given area of study, it may be necessary to draw upon the services of a professional soil scientist to perform a specific project survey].

5. Maps that depict land uses for parcels including and surrounding the project site, such as the Department of Conservation's Important Farmland Map series, the Department of Water Resources Land Use map series, or other appropriate information.

6. Maps or information that indicate the location of parcels including and surrounding the project site that are within agricultural preserves, are under public ownership, have conservation easements, or have other forms of long term commitments that are considered compatible with the agricultural use of a given project site.

Section II. Defining and Scoring the California Land Evaluation and Site Assessment Model Factors

This section provides detailed step-by-step instructions for the measurement and scoring of each of the Land Evaluation and Site Assessment factors that are utilized in the California Agricultural LESA Model, and is intended to serve as an introduction to the process of utilizing the Model. Once users are familiar with the Model, a more streamlined set of instructions and scoring sheets is available in Appendix A. In addition, the scoring of a hypothetical project is presented using these scoring sheets in Appendix B.

Scoring of Land Evaluation Factors

The California LESA Model includes two Land Evaluation factors that are separately rated:

1. The Land Capability Classification Rating
2. The Storie Index Rating

The information needed to make these ratings is typically available from soil surveys that have been conducted by the federal Natural Resources Conservation Service (formerly known as the Soil Conservation Service). Consultation should be made with NRCS staff (field offices exist in most counties) to assure that valid and current soil resource information is available for the project site. Copies of soil surveys are available at local field offices of the NRCS, and may also be available through libraries, city and county planning departments, the Cooperative Extension, and other sources. In addition, a Certified Professional Soil Scientist (CPSS) may also be consulted to obtain appropriate soil resource information for the project site. A directory of CPSS registered soil consultants is available through the Professional Soil Scientists Association of California, P.O. Box 3213, Yuba City, CA 95992-3213; phone: (916) 671-4276.

1) The USDA Land Capability Classification (LCC) - The LCC indicates the suitability of soils for most kinds of crops. Groupings are made according to the limitations of the soils when used to grow crops, and the risk of damage to soils when they are used in agriculture. Soils are rated from Class I to Class VIII, with soils having the fewest limitations receive the highest rating (Class I). Specific subclasses are also utilized to further characterize soils. An expanded explanation of the LCC is included in most soil surveys.

2) The Storie Index - The Storie Index provides a numeric rating (based upon a 100 point scale) of the relative degree of suitability or value of a given soil for intensive agriculture. The rating is based upon soil characteristics only. Four factors that represent the inherent characteristics and qualities of the soil are

considered in the index rating. The factors are: profile characteristics, texture of the surface layer, slope, and other factors (e.g., drainage, salinity).

In some situations, only the USDA Land Capability Classification information may be currently available from a given published soil survey. However, Storie Index ratings can readily be calculated from information contained in soil surveys by qualified soil scientists. Users are encouraged to seek assistance from NRCS staff or Certified Professional Soil Scientists to derive Storie Index information for the soils as well. If, however, limitations of time or resources restrict the derivation of Storie Index ratings for the soils within a region, it may be possible to adapt the Land Evaluation by relying solely upon the LCC rating. Under this scenario the LCC rating would account for 50 percent of the overall LESA factor weighting.

Identifying a Project's Soils

In order to rate the Land Capability Classification and Storie Index factors, the evaluator must identify the soils that exist on a given project site and determine their relative proportions. A **Land Evaluation Worksheet** (Table 1A.) is used to tabulate these figures, based upon the following:

Step 1.
Locate the project on the appropriate map sheet in the Soil Survey.

Step 2.
Photocopy the map sheet and clearly delineate the project boundaries on the map, paying close attention to the map scale.

Step 3.
Identify all of the soil mapping units existing in the project site (each mapping unit will have a different map unit symbol) and enter the each mapping unit symbol in **Column A** of the **Land Evaluation Worksheet** (Table 1A).

Step 4.
Calculate the acreage of each soil mapping unit present within the project site using any of the means identified in **Section 1**, **Required Resources and Information**, and enter this information in **Column B**.

Step 5.

Divide the acres of each soil mapping unit by the total project acreage to determine the proportion of each unit that comprises the project, and enter this information in Column C.

1. Land Evaluation - The Land Capability Classification Rating

Step 1.
In the Guide to Mapping Units typically found within soil surveys, identify the Land Capability Classification (LCC) designation (e.g., IV-e) for each mapping unit that has been identified in the project and enter these designations in **Column D** of the **Land Evaluation Worksheet** (Table 1A.).

Step 2.
From Table 2., **The Numeric Conversion of Land Capability Classification Units**, obtain a numeric score for each mapping unit, and enter these scores in **Column E**.

Step 3.
Multiply the proportion of each soil mapping unit (**Column C**) by the LCC points for each mapping unit (**Column E**) and enter the resulting scores in **Column F**.

Step 4.
Sum the LCC scores in **Column F** to obtain a single LCC Score for the project. Enter this LCC Score in **Line 1** of the **Final LESA Worksheet** (Table 8)

Table 2. Numeric Conversion of Land Capability Classification Units

Land Capability Classification	LCC Point Rating
I	100
IIe	90
IIs,w	80
IIIe	70
IIIs,w	60
IVe	50
IVs,w	40
V	30
VI	20
VII	10
VIII	0

Table 1A.
Land Evaluation Worksheet

Land Capability Classification (LCC) and Storie Index Scores

A	B	C	D	E	F	G	H
Soil Map Unit	Project Acres	Proportion of Project Area	LCC	LCC Rating	LCC Score	Storie Index	Storie Index Score
Totals		(Must Sum to 1.0)		***LCC Total***		***Storie Index Total***	

Table 1B.
Site Assessment Worksheet 1.

Project Size Score

	I	J	K
	LCC Class I - II	LCC Class III	LCC Class IV - VIII
Total Acres			
Project Size Scores			

Highest Project Size Score |

2. Land Evaluation - The Storie Index Rating Score

Step 1.
From the appropriate soil survey or other sources of information identified in Appendix C, determine the Storie Index Rating (the Storie Index Rating is already based upon a 100 point scale) for each mapping unit and enter these values in **Column G** of the **Land Evaluation Worksheet** (Table 1A.).

Step 2.
Multiply the proportion of each soil mapping unit found within the project (**Column C**) by the Storie Index Rating (**Column G**), and enter these scores in **Column H**.

Step 3.
Sum the Storie Index Rating scores in **Column H** to obtain a single Storie Index Rating score for the project. Enter this Storie Index Rating Score in **Line 2** of the **Final LESA Worksheet** (Table 8)

Scoring of Site Assessment Factors

The California LESA Model includes four Site Assessment factors that are separately rated:

1. **The Project Size Rating**
2. **The Water Resources Availability Rating**
3. **The Surrounding Agricultural Land Rating**
4. **The Surrounding Protected Resource Land Rating**

1. Site Assessment - The Project Size Rating

The Project Size Rating relies upon acreage figures that were tabulated under the Land Capability Classification Rating in Table 1A. The Project Size rating is based upon identifying acreage figures for three separate groupings of soil classes within the project site, and then determining which grouping generates the highest Project Size Score.

Step 1.
Using information tabulated in **Columns B** and **D** of the **Land Evaluation Worksheet** (Table 1A), enter acreage figures in **Site Assessment Worksheet 1. - Project Size** (Table 1B) using either **Column I, J,** or **K** for each of the soil mapping units in a given project.

Step 2.
Sum the entries in **Column I** to determine the total acreage of Class I and II soils on the project site.

Sum the entries in **Column J** to determine the total acreage of Class III soils on the project site.

Sum the entries in **Column K** to determine the total acreage of Class IV and lower rated soils on the project site.

Step 3.
For each of the three columns, apply the appropriate scoring plan provided in Table 3, **Project Size Scoring**, and enter the **Project Size Score** for each grouping in the **Site Assessment Worksheet 1. - Project Size** (Table 1B). Determine which column generates the highest score. The highest score becomes the overall **Project Size Score**. Enter this number in **Line 3** of the **Final LESA Scoresheet** (Table 8).

Table 3. Project Size Scoring

LCC Class I or II soils		LCC Class III soils		LCC Class IV or lower	
Acres	***Score***	***Acres***	***Score***	***Acres***	***Score***
80 or above	100	160 or above	100	320 or above	100
60-79	90	120-159	90	240-319	80
40-59	80	80-119	80	160-239	60
20-39	50	60-79	70	100-159	40
10-19	30	40-59	60	40-99	20
fewer than 10	0	20-39	30	fewer than 40	0
		10-19	10		
		fewer than 10	0		

Explanation of the Project Size Factor

The Project Size factor in the California Agricultural LESA Model was developed in cooperation with Nichols-Berman, a consulting firm under contract with the Department of Conservation. A thorough discussion of the development of this rating is presented by Nichols-Berman in a report to the Department entitled, *Statewide LESA Methodologies Report - Project Size and Water Resource Availability Factors* (3).

The inclusion of the measure of a project's size in the California Agricultural LESA Models is a recognition of the role that farm size plays in the viability of commercial agricultural operations. In general, larger farming operations can provide greater flexibility in farm management and marketing decisions. Certain economies of scale for equipment and infrastructure can also be more favorable for larger operations. In addition, larger operations tend to have greater impacts upon the local economy through direct employment, as well as impacts upon support industries (e.g., fertilizers, farm equipment, and shipping) and food processing industries.

While the size of a given farming operation may in many cases serve as a direct indicator of the overall economic viability of the operation, The California Agricultural LESA Model does not specifically consider the issue of economic viability. The variables of economic viability for a specific farm include such factors as the financial management and farming skills of the operator, as well as the debt load and interest rates being paid by an individual operator, which are issues that cannot readily be included in a statewide LESA model.

In terms of agricultural productivity, the size of a farming operation can be considered not just from its total acreage, but the acreage of different quality lands that comprise the operation. Lands with higher quality soils lend themselves to greater management and cropping flexibility and have the potential to provide a greater economic return per unit acre. For a given project, instead of relying upon a single acreage figure in the Project Size rating, the project is divided into three acreage groupings based upon the Land Capability Classification ratings that were previously determined in the Land Evaluation analysis. Under the Project Size rating, relatively fewer acres of high quality soils are required to achieve a maximum Project Size score. Alternatively, a maximum score on lesser quality soils could also be derived, provided there is a sufficiently large acreage present. Acreage figures utilized in scoring are the synthesis of interviews that were conducted statewide for growers of a broad range of crops. In the interviews growers were queried as to what acreage they felt would be necessary in order for a given parcel to be considered attractive for them to farm.

The USDA LCC continues to be the most widely available source of information on land quality. Project Size under this definition is readily measurable, and utilizes much of the same information needed to score a given project under the Land Evaluation component of the methodology. This approach also complements the LE determination, which, while addressing soil quality, does not account for the total acreage of soils of given qualities within a project.

This approach allows for an accounting of the significance of high quality agricultural land as well as lesser quality agricultural lands, which by virtue of their large area can be considered significant agricultural resources. In this way, no single acreage figure for a specific class of soils (e.g., soils defined as “prime”) is necessary.

2. Site Assessment - The Water Resources Availability Rating

The Water Resources Availability Rating is based upon identifying the various water sources that may supply a given property, and then determining whether different restrictions in supply are likely to take place in years that are characterized as being periods of drought and non-drought. **Site Assessment Worksheet 2. - Water Resources Availability Worksheet** (Table 4) is used to tabulate the score.

Step 1.
Identify the different water resource types that are used to supply the proposed project site (for example, irrigation district water, ground water, and riparian water are considered to be three different types of water resources). Where there is only one water source identified for the proposed project, skip to Step 4.

Step 2.
Divide the proposed project site into portions, with the boundaries of each portion being defined by the irrigation water source(s) supplying it. A site that is fully served by a single source of water will have a single portion, encompassing the entire site. A site that is fully served by two or more sources that are consistently merged together to serve a crop's needs would also have a single portion. (e.g., a portion of the proposed project may receive both irrigation district and groundwater). If the project site includes land that has no irrigation supply, consider this acreage as a separate portion as well. Enter the water resource portions of the project in **Column B** of Table 4, **Site Assessment Worksheet 2. - Water Resources Availability**.

[As an example, a hypothetical project site is determined to have four separate water supply portions:

Portion 1 is served by irrigation district water only;
Portion 2 is served by ground water only;
Portion 3 is served by *both* irrigation district water and ground water;
Portion 4 is not irrigated at all.**]**

Step 3.
Calculate the proportion of the total project area that is represented by each water resource portion, and enter these figures in **Column C** of **Site Assessment Worksheet 2. - Water Resources Availability**, verifying that the sum of the proportions equals 1.0.

Table 4. Site Assessment Worksheet 2. - Water Resources Availability

A	B	C	D	E
Project Portion	Water Source	Proportion of Project Area	Water Availability Score	Weighted Availability Score (C x D)
1				
2				
3				
4				
5				
6				
		(Must Sum to 1.0)	***Total Water Resource Score***	

Step 4.
For each water resource supply portion of the project site, determine whether irrigated and dryland agriculture is *feasible*, and if any *physical* or *economic restrictions* exist, during both *drought* and *non-drought* years. These italicized terms are defined below:

- A *physical restriction* is an occasional or regular interruption or reduction in a water supply, or a shortened irrigation season, that forces a change in agricultural practices -- such as planting a crop that uses less water, or leaving land fallow. (This could be from cutbacks in supply by irrigation and water districts, or by ground or surface water becoming depleted or unusable. Poor water quality can also result in a physical restriction -- for example by requiring the planting of salt-tolerant plants, or by effectively reducing the amount of available water.)

- An *economic restriction* is a rise in the cost of water to a level that forces a reduction in consumption. (This could be from surcharge increases from water suppliers as they pass along the cost of finding new water supplies, the extra cost of pumping more ground water to make up for losses in surface water supplies, or the extra energy costs of pumping the same amount of ground water from deeper within an aquifer.)

- Irrigated agricultural production is *feasible* when:

  1) There is an existing irrigation system on the project site that can serve the portion of the project identified in Step 2;

  2) *Physical* and/or *economic restrictions* are not severe enough to halt production; and

  3) It is possible to achieve a viable economic return on crops though irrigated production.

(A major question that should be considered is, if there is an irrigated crop that can be grown within the region, can it actually be grown on the project site? Depending upon the jurisdiction, some typical crops that have a large water demand may not be feasible to grow on the project site, while others that require less water are feasible. Information to aid in making this determination can be obtained from county agricultural commissioners, the UC Cooperative Extension, irrigation districts, and other sources.)

- *Dryland production* is *feasible* when rainfall is adequate to allow an economically viable return on a nonirrigated crop.

- A *drought year* is a year that lies within a defined drought period, as defined by the Department of Water Resources or by a local water agency. Many regions of the state are by their arid nature dependent upon imports of water to support irrigated agriculture. These regions shall not be considered under periods of drought unless a condition of drought is declared for the regions that typically would be providing water exports.

Step 5.
Each of the project's water resource supply portions identified in **Step 2** is scored separately. Water Resources Availability scoring is performed by identifying the appropriate condition that applies to each portion of the project, as identified in Table 5., **Water Resource Availability Scoring**. Using Table 5, identify the option that best describes the water resource availability for that portion and its corresponding water resource score. Option 1 defines the condition of no restrictions on water resource availability and is followed progressively with increasing restrictions to Option 14, the most severe condition, where neither irrigated nor dryland production is considered feasible. Enter each score into **Column D** of Table 4.

Step 6.
For each portion of the project site, determine the section's weighted score by multiplying the portion's score (**Column D**), by its proportion of the project area (**Column C**), and enter these scores in **Column E**, the weighted Water Availability Score. Sum the **Column E** scores to obtain the total Water Resource Availability Score, and enter this figure in **Line 4** of the **Final LESA Score Sheet** (Table 8).

Table 5. Water Resource Availability Scoring

Option	Non-Drought Years			Drought Years			WATER RESOURCE SCORE
	RESTRICTIONS			RESTRICTIONS			
	Irrigated Production Feasible?	Physical Restrictions ?	Economic Restrictions ?	Irrigated Production Feasible?	Physical Restrictions ?	Economic Restrictions ?	
1	YES	NO	NO	YES	NO	NO	100
2	YES	NO	NO	YES	NO	YES	95
3	YES	NO	YES	YES	NO	YES	90
4	YES	NO	NO	YES	YES	NO	85
5	YES	NO	NO	YES	YES	YES	80
6	YES	YES	NO	YES	YES	NO	75
7	YES	YES	YES	YES	YES	YES	65
8	YES	NO	NO	NO	-- --	-- --	50
9	YES	NO	YES	NO	-- --	-- --	45
10	YES	YES	NO	NO	-- --	-- --	35
11	YES	YES	YES	NO	-- --	-- --	30
12	Irrigated production not feasible, but rainfall adequate for dryland production in both drought and non-drought years						25
13	Irrigated production not feasible, but rainfall adequate for dryland production in non-drought years (but not in drought years)						20
14	Neither irrigated nor dryland production feasible						0

Explanation of the Water Resource Availability Rating

The Water Resource Availability factor in the California Agricultural LESA Model was developed in cooperation with Nichols-Berman, a consulting firm under contract with the Department of Conservation. A thorough discussion of the development of this rating is presented by Nichols-Berman in a report to the Department entitled, *Statewide LESA Methodologies Report - Project Size and Water Resource Availability Factors* (3). During the development of this factor it became apparent that certain conditions unique to California would need to be represented in this system.

First, it was decided to classify water reliability based upon the *effects* on agricultural production (such as being forced to change to lower-value crops, putting in groundwater pumps, or cutting back on the acreage farmed) rather than the actual *type* of limitation (such as a limitation on the quantity, frequency, or duration of water delivery). LESA systems have traditionally focused on the latter. However, it was found that the many types of limitations are too varied in California to adequately represent in the LESA system. In the Statewide LESA system, these effects are referred to as *restrictions*.

Second, the factor had to include an interrelation with cost. The historical shortages and unreliability of California water use has led to the establishment of various interconnected and dual systems. Probably more than any other state, reliability is related with cost -- a more reliable water supply can sometimes be obtained, but at a greater cost. Therefore, *restrictions* were classified into two major categories -- *physical* and *economic*. These are separated because, generally, a physical restriction is more severe than an economic restriction and this should be reflected in the LESA system.

Third, the factor had to include the effects of the drought cycle in California. During the drought of 1987 to 1992, many agricultural areas of the state experienced water shortages. The impact of these shortages resulted in a number of different actions. Some areas were able to avoid the worst effects of the drought simply by implementing water conservation measures. Other areas were able to obtain additional water supplies, such as by securing water transfers or simply pumping more groundwater, but at an increase in the overall price of water. Other options included shifting crops, replanting to higher value crops to offset the increase in water prices, or leaving land fallow. A project site that experiences restrictions during a drought year should not be scored as high as a similar project site that does not.

The easiest way to make determinations of irrigation feasibility and the potential restrictions of water sources is to investigate the cropping history of the project site. For instance, was the water supply to the project site reduced by the local irrigation district during the last drought? If the site has a ground water supply, do area ground water levels sometimes drop to levels that force markedly higher energy costs to pump the water?

If the history of the project site is unavailable (including when the site has recently installed an irrigation system), look at the history of the general area. However, remember that the project site may have different conditions than the rest of the region. For instance, the project site could have an older water right than others in the region. Although certain areas of the state had severe restrictions on water deliveries during the last drought, some parcels within these areas had very secure deliveries due to more senior water rights. If this was the case in the region of the project site, check the date of water right and compare it with parcels that received their total allotment during the last drought. The local irrigation district should have information on water deliveries.

The scoring of water resource availability for a project site should not just reflect the adequacies of water supply in the past -- it should be a *prediction* of how the water system will perform in the future. For instance, a local jurisdiction might find that the allocation of flows to stream and river systems has been recently increased for environmental reasons, which will decrease the future available surface water supply. In this case, the past history of the site is not an adequate representation of future water supply and water system performance.

3. Site Assessment - The Surrounding Agricultural Land Rating

Determination of the surrounding agricultural land use rating is based upon the identification of a project's "Zone of Influence" (ZOI), which is defined as that land near a given project, both directly adjoining and within a defined distance away, that is likely to influence, and be influenced by, the agricultural land use of the subject project site. The determination of the ZOI is described below, and is illustrated with an example in Figure 1.

Defining a Project's "Zone of Influence"

Step 1.
Locate the proposed project on an appropriate map and outline the area and dimensions of the proposed project site.

Step 2.
Determine the smallest rectangle that will completely contain the project site (Rectangle A).

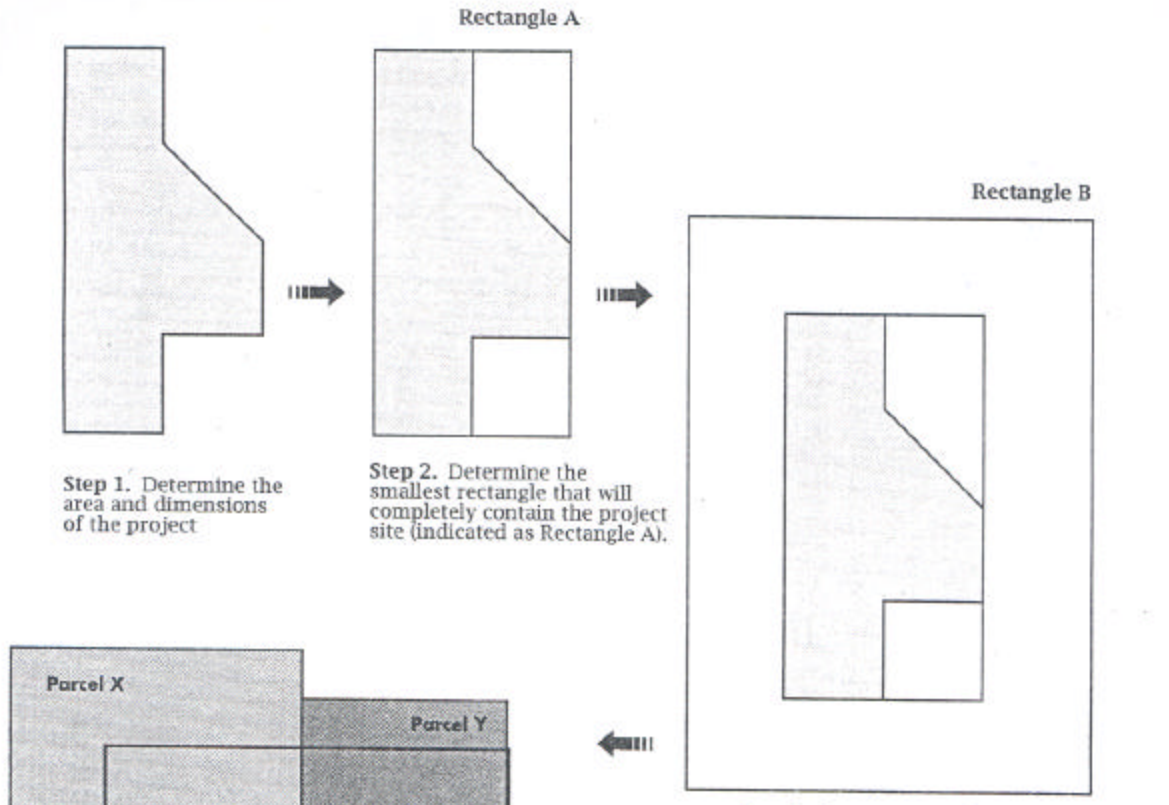
Step 3.
Create a second rectangle (Rectangle B) that extends 0.25 mile (1320 feet) beyond Rectangle A on all sides.

Step 4.
Identify all parcels that are within or are intersected by Rectangle B.

Step 5.
Define the project site's "zone of influence" as the entire area of all parcels identified in Step 4, less the area of the proposed project from Step 1.

[In the illustration provided in Figure 1, Parcels W, X, and Y extend beyond Rectangle B and are therefore included in their entirety in defining the project site's Zone of Influence.**]**

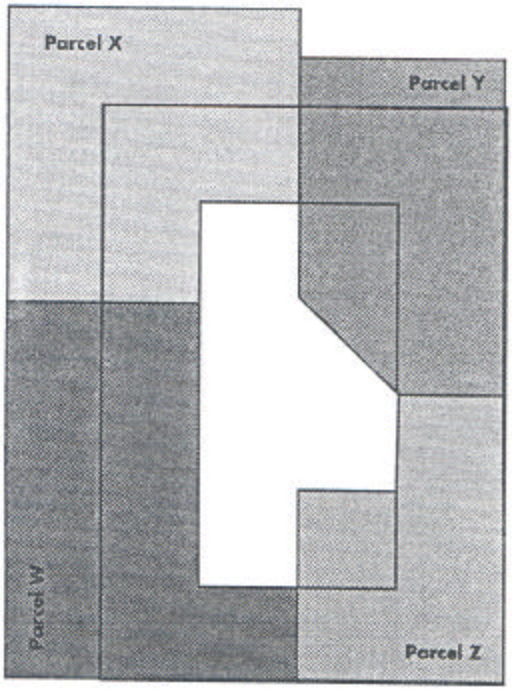
Figure 1: Defining a Project's Zone of Influence



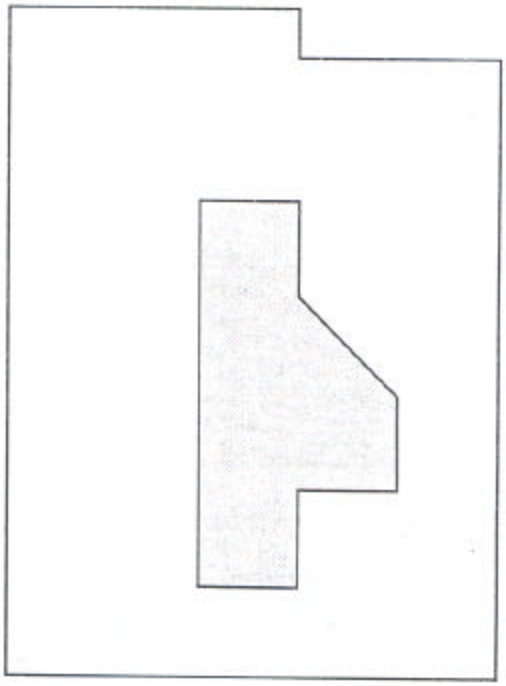
Step 1. Determine the area and dimensions of the project

Step 2. Determine the smallest rectangle that will completely contain the project site (indicated as Rectangle A).

Step 3. Create a second rectangle (Rectangle B) that extends 0.25 mile (1320 feet) beyond Rectangle A on all sides.



Step 4. Identify all parcels that are within or are intersected by Rectangle B.



Step 5. Define the project's "zone of influence" as the entire area of all parcels identified in Step 4, less the area of the proposed project from Step 1.

In this example, parcels W, X, and Y extend beyond Rectangle B and are therefore included in the their entirety in defining the project's zone of influence.

Measuring Surrounding Agricultural Land

Step 1.
Calculate the percentage of the project's Zone of Influence that is currently producing agricultural crops. **[**This figure can be determined using information from the Department of Conservation's Important Farmland Map Series, the Department of Water Resources' Land Use Map Series, locally derived maps, or direct site inspection. For agricultural land that is currently fallowed, a determination must be made concerning whether the land has been fallowed as part of a rotational sequence during normal agricultural operations, or because the land has become formally "committed" to a nonagricultural use. Land that has become formally committed, whether fallow or not, should not generally be included in determining the proportion of the Zone of Influence that is agricultural land. For further information on the definition of Committed Land, refer to the following Explanation of the Surrounding Agricultural Land Rating.**]**

Step 2.
Based on the percentage of agricultural land in the ZOI determined in Step 1, assign a Surrounding Agricultural Land score to the project according to Table 6, and enter this score in **Line 5** of the **Final LESA Scoresheet** (Table 8) .

Table 6. Surrounding Agricultural Land Rating

Percent of Project's Zone of Influence in Agricultural Use	Surrounding Agricultural Land Score
90 - 100%	100 Points
80 - 89	90
75 - 79	80
70 - 74	70
65 - 69	60
60 - 64	50
55 - 59	40
50 - 54	30
45 - 49	20
40 - 44	10
40 <	0

Explanation of the Surrounding Agricultural Land Rating

The Surrounding Agricultural Land Rating is designed to provide a measurement of the level of agricultural land use for lands in close proximity to a subject project. The California Agricultural LESA Model rates the potential significance of the conversion of an agricultural parcel that has a large proportion of surrounding land in agricultural production more highly than one that has a relatively small percentage of surrounding land in agricultural production. The definition of a "Zone of Influence" that accounts for surrounding lands up to a minimum of one quarter mile from the project boundary is the result of several iterations during model development for assessing an area that will generally be a representative sample of surrounding land use. In a simple example, a single one quarter mile square project (160 acres) would have a Zone of Influence that is a minimum of eight times greater (1280 acres) that the parcel itself.

Land within a Zone of Influence that is observed to be fallow will require a case by case determination of whether this land should be considered agricultural land. The Department of Conservation's Important Farmland Maps may be of assistance in making this determination. In addition, land currently in agricultural production may be designated as being "committed" to future nonagricultural development. The Department of Conservation's Farmland Mapping and Monitoring Program has a land use designation of Land Committed to Nonagricultural Use, and is defined as "land that is permanently committed by local elected officials to nonagricultural development by virtue of decisions which cannot be reversed simply by a majority vote of a city council or county board of supervisors. The "committed" land must be so designated in an adopted local general plan, and must also meet the requirements of either (a) or (b) below:

(a). It must have received one of the following final discretionary approvals:

1. Tentative subdivision map (approved per the Subdivision Map Act);
2. Tentative or final parcel map (approved per the Subdivision Map Act);
3. Recorded development agreement (per Government Code §65864);
4. Other decisions by a local government which are analogous to items #1-3 above and which exhibit an element of permanence. Zoning by itself does <u>not</u> qualify as a permanent commitment.

<u>Or</u>

(b) It must be the subject of one of the final fiscal commitments to finance the capital improvements specifically required for future development of the land in question as shown below:

1. Recorded Resolution of Intent to form a district and levy an assessment;
2. Payment of assessment;
3. Sale of bonds;
4. Binding contract, secured by bonds, guaranteeing installation of infrastructure;
5. Other fiscal commitments which are analogous to items #1-4 above and exhibit an element of permanence."

Lead agencies are encouraged to identify Land Committed to Nonagricultural Use within a project's ZOI and make the determination whether this land, while still in agricultural production, be considered nonagricultural land for the purposes of the calculation performed here.

4. Site Assessment - The Surrounding Protected Resource Land Rating

The Surrounding Protected Resource Land Rating is essentially an extension of the Surrounding Agricultural Land Rating, and is scored in a similar manner. Protected resource lands are those lands with long term use restrictions that are compatible with or supportive of agricultural uses of land. Included among them are the following:

- Williamson Act contracted lands
- Publicly owned lands maintained as park, forest, or watershed resources
- Lands with agricultural, wildlife habitat, open space, or other natural resource easements that restrict the conversion of such land to urban or industrial uses.

Instructions for the Surrounding Protected Resource Land Rating

Step 1.
Utilizing the same "Zone of Influence" (ZOI) area calculated for a project under the Surrounding Agricultural Land Rating, calculate the percentage of the ZOI that is Protected Resource Land, as defined above.

Step 2.
Assign a Surrounding Protected Resource Land score to the project according to Table 7, and enter this score on **Line 6** of the **Final LESA Scoresheet** (Table 8).

Table 7. Surrounding Protected Resource Land Rating

Percent of Project's Zone of Influence Defined as Protected	Surrounding Protected Resource Land Score
90 - 100%	100 Points
80 - 89	90
75 - 79	80
70 - 74	70
65 - 69	60
60 - 64	50
55 - 59	40
50 - 54	30
45 - 49	20
40 - 44	10
40 <	0

Section III. Weighting of Factors and Final LESA Scoring

The California LESA Model is weighted so that 50 percent of the total LESA score of a given project is derived from the Land Evaluation factors, and 50 percent from the Site Assessment factors. Individual factor weights are listed below, with the sum of the factor weights required to equal 100 percent.

Land Evaluation Factors

Land Capability Classification	25%
Storie Index Rating	25%
Land Evaluation Subtotal	**50%**

Site Assessment Factors

Project Size	15%
Water Resource Availability	15%
Surrounding Agricultural Lands	15%
Surrounding Protected Resource Lands	5%
Site Assessment Subtotal	**50%**
Total LESA Factor Weighting	**100%**

Each factor is measured separately (each on 100 point scale) and entered in the appropriate line in **Column B** of the **Final LESA Scoresheet** (Table 8). Each factor's score is then multiplied by its respective factor weight, resulting in a weighted factor score in **Column D** as indicated in Table 8. The weighted factor scores are summed, yielding a Total LESA Score (100 points maximum) for a given project, which is entered in **Line 7** of **Column D**.

Table 8. Final LESA Scoresheet

A	B		C		D
Factor Name	Factor Rating (0-100 points)	X	Factor Weighting (Total = 1.00)	=	Weighted Factor Rating
Land Evaluation					
1. Land Capability Classification	<Line 1>_____	X	0.25	=	_____
2. Storie Index Rating	<Line 2>_____	X	0.25	=	_____
Site Assessment					
1. Project Size	<Line 3>_____	X	0.15	=	_____
2. Water Resource Availability	<Line 4>_____	X	0.15	=	_____
3. Surrounding Agricultural Lands	<Line 5>_____	X	0.15	=	_____
4. Protected Resource Lands	<Line 6>_____	X	0.05	=	_____
			Total LESA Score (sum of weighted factor ratings)		<Line 7>_____

Section IV. California Agricultural LESA Scoring Thresholds - Making Determinations of Significance Under CEQA

A single LESA score is generated for a given project after all of the individual Land Evaluation and Site Assessment factors have been scored and weighted as detailed in Sections 2 and 3. Just as with the scoring of individual factors that comprise the California Agricultural LESA Model, final project scoring is based on a scale of 100 points, with a given project being capable of deriving a maximum of 50 points from the Land Evaluation factors and 50 points from the Site Assessment factors.

The California Agricultural LESA Model is designed to make determinations of the potential significance of a project's conversion of agricultural lands during the Initial Study phase of the CEQA review process. Scoring thresholds are based upon both the total LESA score as well as the component LE and SA subscores. In this manner the scoring thresholds are dependent upon the attainment of a minimum score for the LE and SA subscores so that a single threshold is not the result of heavily skewed subscores (i.e., a site with a very high LE score, but a very low SA score, or vice versa). Table 9 presents the California Agricultural LESA scoring thresholds.

Table 9. California LESA Model Scoring Thresholds

Total LESA Score	Scoring Decision
0 to 39 Points	Not Considered Significant
40 to 59 Points	Considered Significant only if LE and SA subscores are each greater than or equal to 20 points
60 to 79 Points	Considered Significant unless either LE or SA subscore is less than 20 points
80 to 100 Points	Considered Significant

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Attachment 4

United States Department of Agriculture
Custom Soil Resource Report for El Dorado Area, California

United States Department of Agriculture

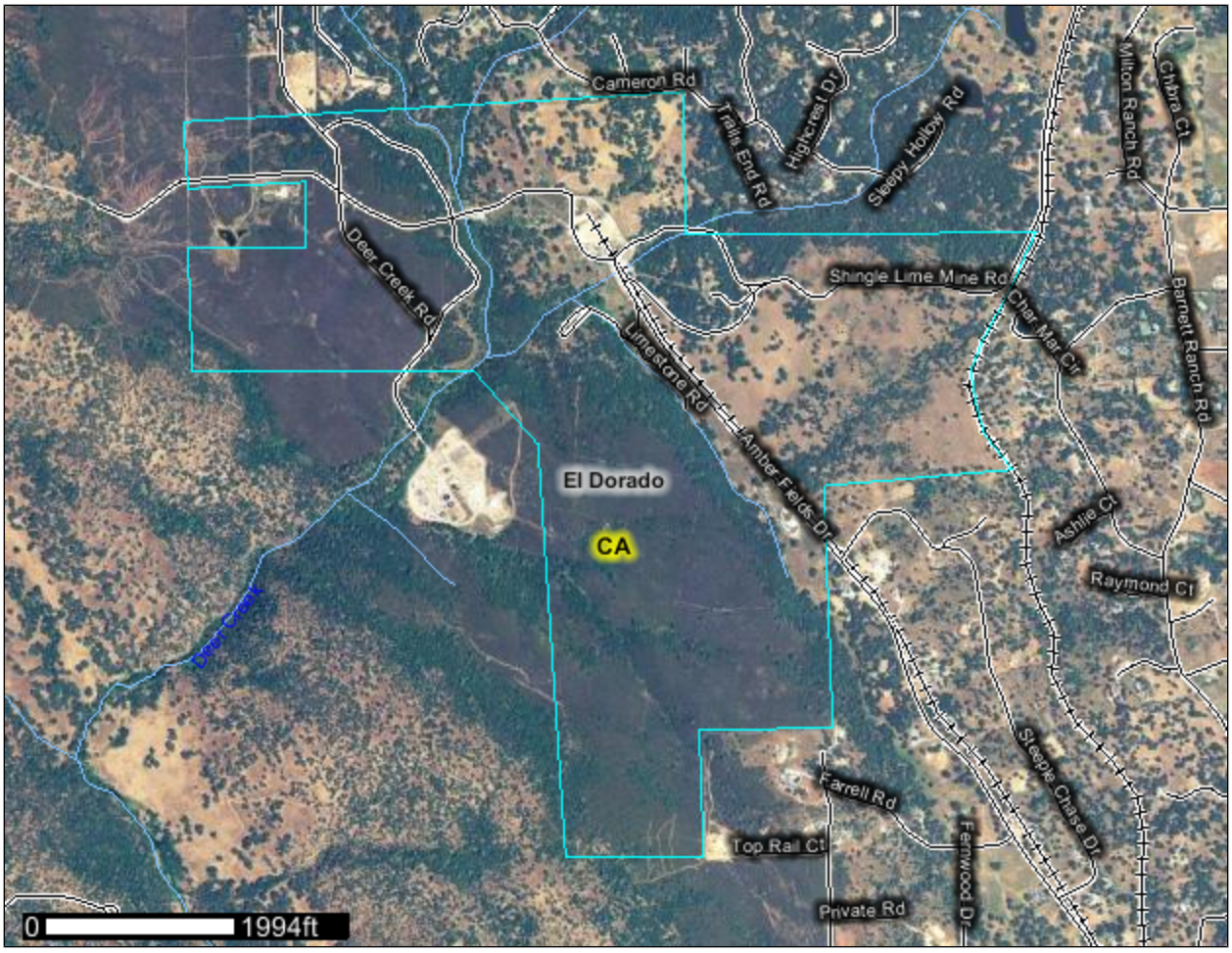
NRCS

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 El Dorado Area, California

G3 Enterprises



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://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

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 Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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Contents

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.

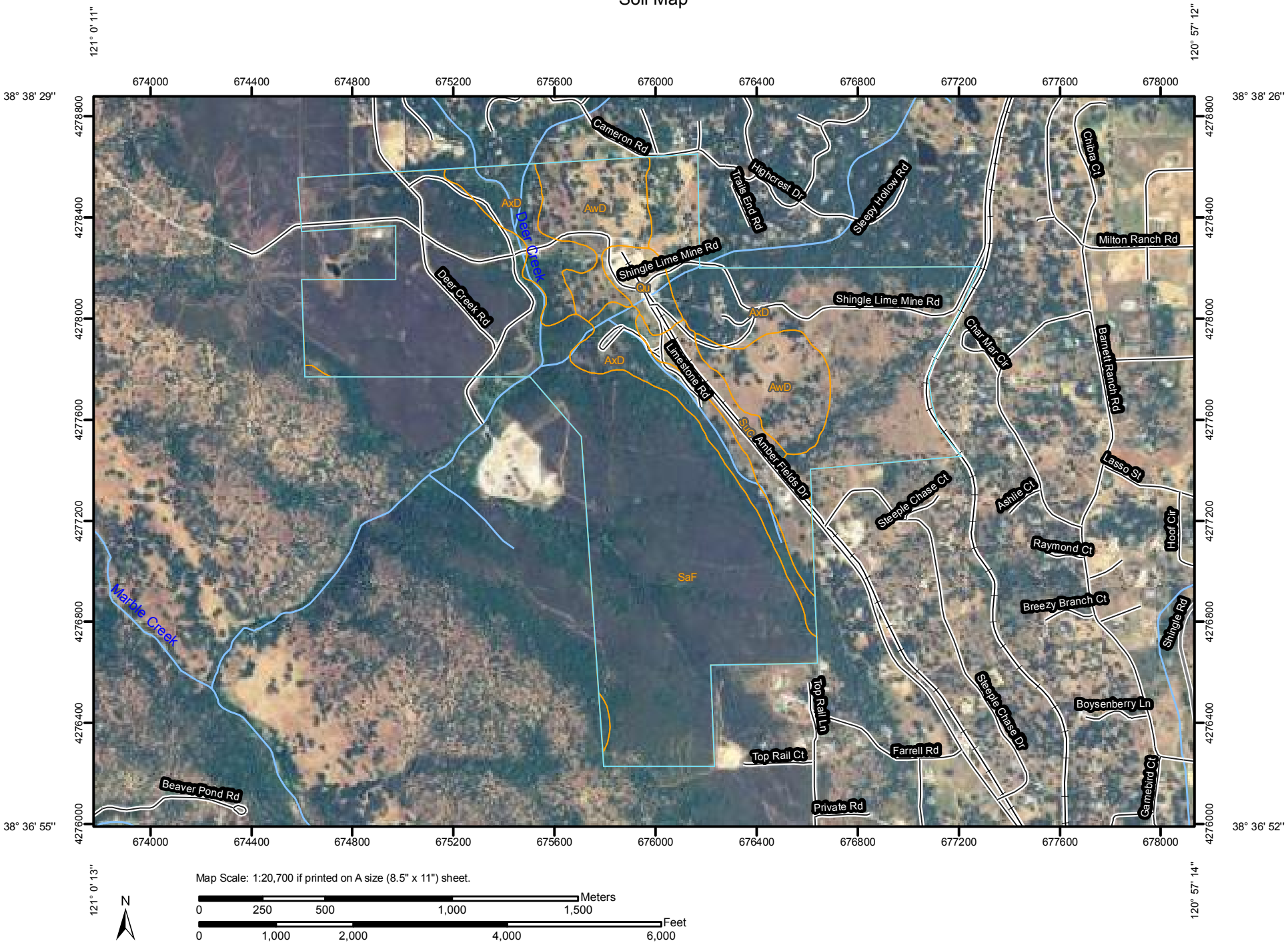
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree 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 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



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

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
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

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

MAP INFORMATION

Map Scale: 1:20,700 if printed on A size (8.5" × 11") sheet.

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

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

Soil Survey Area: El Dorado Area, California
Survey Area Data: Version 4, Dec 14, 2007

Date(s) aerial images were photographed: 6/30/2005

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

El Dorado Area, California (CA624)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
AwD	Auburn silt loam, 2 to 30 percent slopes	82.8	10.9%
AxD	Auburn very rocky silt loam, 2 to 30 percent slopes	230.4	30.4%
Qu	Quarries	16.0	2.1%
SaF	Serpentine rock land	394.0	52.0%
SuC	Sobrante silt loam, 3 to 15 percent slopes	34.4	4.5%
Totals for Area of Interest		**757.6**	**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 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.

El Dorado Area, California

AwD—Auburn silt loam, 2 to 30 percent slopes

Map Unit Setting

Elevation: 120 to 3,000 feet
Mean annual precipitation: 20 to 40 inches
Mean annual air temperature: 55 to 63 degrees F
Frost-free period: 175 to 275 days

Map Unit Composition

Auburn and similar soils: 85 percent
Minor components: 15 percent

Description of Auburn

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Amphibolite schist

Properties and qualities

Slope: 2 to 30 percent
Depth to restrictive feature: 14 to 18 inches to lithic bedrock
Drainage class: 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
Available water capacity: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability (nonirrigated): 4e
Ecological site: SHALLOW LOAMY (R018XD076CA)

Typical profile

0 to 14 inches: Silt loam
14 to 18 inches: Unweathered bedrock

Minor Components

Argonaut

Percent of map unit: 4 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear

Perkins

Percent of map unit: 4 percent

Sobrante

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex

Rock outcrop

Percent of map unit: 3 percent

AxD—Auburn very rocky silt loam, 2 to 30 percent slopes

Map Unit Setting

Elevation: 120 to 3,000 feet
Mean annual precipitation: 20 to 40 inches
Mean annual air temperature: 55 to 63 degrees F
Frost-free period: 175 to 275 days

Map Unit Composition

Auburn and similar soils: 75 percent
Rock outcrop: 15 percent
Minor components: 10 percent

Description of Auburn

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Amphibolite schist

Properties and qualities

Slope: 2 to 30 percent
Depth to restrictive feature: 14 to 18 inches to lithic bedrock
Drainage class: 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
Available water capacity: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): 6s
Land capability (nonirrigated): 6s
Ecological site: SHALLOW LOAMY (R018XD076CA)

Typical profile
0 to 14 inches: Silt loam
14 to 18 inches: Unweathered bedrock

Description of Rock Outcrop

Setting
Parent material: Metamorphic rock

Minor Components

Argonaut
Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear

Boomer
Percent of map unit: 3 percent
Landform: Hillslopes, mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave
Across-slope shape: Convex

Sobrante
Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex

Unnamed
Percent of map unit: 2 percent

Qu—Quarries

Map Unit Composition
Quarries: 100 percent

SaF—Serpentine rock land

Map Unit Setting
Elevation: 650 to 4,000 feet
Mean annual precipitation: 8 to 15 inches

Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 110 to 180 days

Map Unit Composition
Serpentine rock land: 90 percent
Minor components: 10 percent

Description of Serpentine Rock Land

Setting
Parent material: Serpentinite

Properties and qualities
Slope: 15 to 70 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Low to very high (0.01 to 19.98 in/hr)
Available water capacity: Very low (about 0.0 inches)

Interpretive groups
Land capability (nonirrigated): 8s

Typical profile
0 to 4 inches: Unweathered bedrock

Minor Components

Unnamed
Percent of map unit: 10 percent

SuC—Sobrante silt loam, 3 to 15 percent slopes

Map Unit Setting
Elevation: 120 to 3,500 feet
Mean annual precipitation: 15 to 50 inches
Mean annual air temperature: 55 to 63 degrees F
Frost-free period: 200 to 270 days

Map Unit Composition
Sobrante and similar soils: 85 percent
Minor components: 15 percent

Description of Sobrante

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

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: 24 to 30 inches to paralithic bedrock; 30 to 34 inches to lithic bedrock
Drainage class: 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
Available water capacity: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 3e
Ecological site: LOAMY (R018XD075CA)

Typical profile

0 to 11 inches: Silt loam
11 to 24 inches: Clay loam
24 to 30 inches: Weathered bedrock
30 to 34 inches: Unweathered bedrock

Minor Components

Auburn

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex

Argonaut

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear

Boomer

Percent of map unit: 5 percent
Landform: Hillslopes, mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave
Across-slope shape: Convex

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