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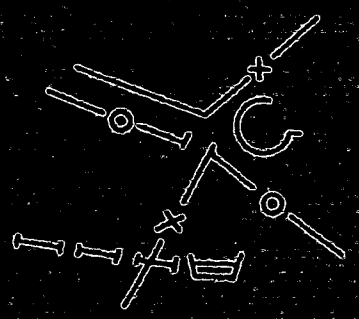
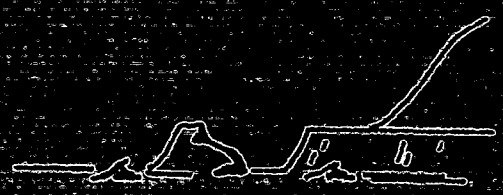


A GRAZING MANAGEMENT PLAN

PECHO RANCH

SAN LUIS OBISPO COUNTY
CALIFORNIA



1978

JOHN V. STECHMAN

LETTER OF TRANSMITTAL

To the Trustees of the Pecho Ranch:

Virginia H. Field Bruno
Resident Trustee
Box 6289
Los Osos, California 93402

July 31, 1978

Ladies and Gentlemen:

It is with pleasure that I submit the results of the investigation requested and contracted by your ranch this summer. Herein please find a narrative report and included maps, photos, tables, and diagrams presenting information on the physical, cultural, and vegetative features of the Pecho. It is believed that sufficient knowledge was gained about the ranch to make pertinent recommendations concerning an improvement program and grazing plan which will be compatible with the concepts and policies of the trustees and utilize the agricultural potential of the ranch.

My gratitude is extended in particular to Virginia Bruno and Tom Tolman for their continuous aid and cooperation given me during the study. It is my sincere hope that the information contained in this report will be of value in planning, improvement, and management of the Pecho. Further, I wish to offer my assistance at any time in the future in the grazing management of your lands.

Sincerely,

John V. Stechman

John V. Stechman
Consultant, Professor of
Range Management, and Rancher
San Luis Obispo, California

A GRAZING MANAGEMENT PLAN

FOR THE

PECHO RANCH

San Luis Obispo County, California

1978

John V. Stechman

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INTRODUCTION

The principal purpose of the work reported herein was to gather sufficient information concerning the Pecho Ranch to enable design of a grazing management plan and make recommendations necessary to implement a ranch improvement and grazing program.

In order that this be accomplished, an inventory and assessment of the physical, cultural, and vegetative features pertinent to prospective utilization by cattle was assumed as a primary objective. As a result of this work, recommendations could thus be made as to needed improvements or developments of fencing, water, and other factors conducive to better use of the forage resource. Secondary objectives included recommendations for corral relocation and improvement of the grazing lease document.

Effort was expended only on areas of the ranch suitable, in the author's opinion, for grazing and of primary forage availability. Time did not allow a thorough investigation and inventory of all features of the Pecho, nor even intensive survey of certain areas of the ranch of marginal or questionable grazing value.

METHODS AND PROCEDURES

The approach used for inventory of the Pecho was similar to that used in other surveys by the author, more particularly Montana de Oro State Park, and Permanente Creek Park (Stechman, 1965, 1977). Field investigations and accumulation of information began June 13, and continued intermittently through July 10, 1978. Traverse was accomplished by truck, on foot, and by horseback. All ranch acreage was observed, but thorough coverage was difficult or impossible on certain steep or brushy areas.

Ranch boundaries and physical and vegetative features were established and studied by continuing reference to maps and aerial photos provided by the ranch, namely: (1) the U.S.G.S. 7.5 minute Port San Luis and Morro Bay South Quad contour maps, 1: 24,000; (2) Dames and Moore Preliminary Master Plan-Soil Types/Contour Map, 1"=1,430', (3) An aerial photo mosaic black and white print (1954), Fairchild Aerial Surveys, 1"=850', and (4) both 9-1/2 x 9-1/2" contact and 18 x 18" aerial color photos (1976), the latter of 1"=1,250' used as base maps for the report herein. All photos were field-checked for scale accuracy against the USGS quad.

All pertinent features were field mapped and symbolized on the black and white photo, later used for planimetry of grazable acreage and transfer of information to color photo base maps. Management overlays were then prepared to indicate appropriate features and recommend changes for ranch improvement.

Field sheets were completed for each existing or prospective grazing unit, excepting in the Diablo Creek area due to time limitation. Record was made of principal plant cover data on identification, symbolization, percent composition and forage value of species, litter, vigor, and density estimates, as well as field notes on potential or needed improvements and soil characteristics. Plant identity and nomenclature was confirmed according to a manual by Jepson (1936).

Sufficient paced transects were made on the primary grassland, employing the "grab sample" technique, to adequately represent the acreage involved. Species observed but not sampled were also recorded. Nearly 1,800 species-samplings were made. It must be noted that certainly not all species inhabiting the grassland were sampled nor observed; a number of annuals of minor importance were doubtless undetected.

Apparent grazing capacity or estimated proper stocking rate expressed in head-months was determined using the condition class equivalent and forage acre methods, both of which yield a figure in acres per animal unit month (A/AUM)involving procedures too detailed to discuss here. One AUM is equivalent to one 1,000 lb. animal grazing for 30 days. Thus, one head-month, assuming 400-500 lb. steers as used in this report is equal to about 0.4- 0.5 AUM (one steer grazing for one month).

Grazable grassland acres on the Pecho (above the main road) was determined by field delineation on the aerial photos (1954 checked against the 1976) of shrub-grass and woodland-grass boundaries. Essentially, all fenced land on the marine terrace was mapped as

grazable grassland, including portions of those acres within the farming lease, but later excepted from the grazing lease. All grasslands have been included as grazable, without regard to slope and distance to stock water, assuming that future ranch improvements and livestock management practices will make them available to production.

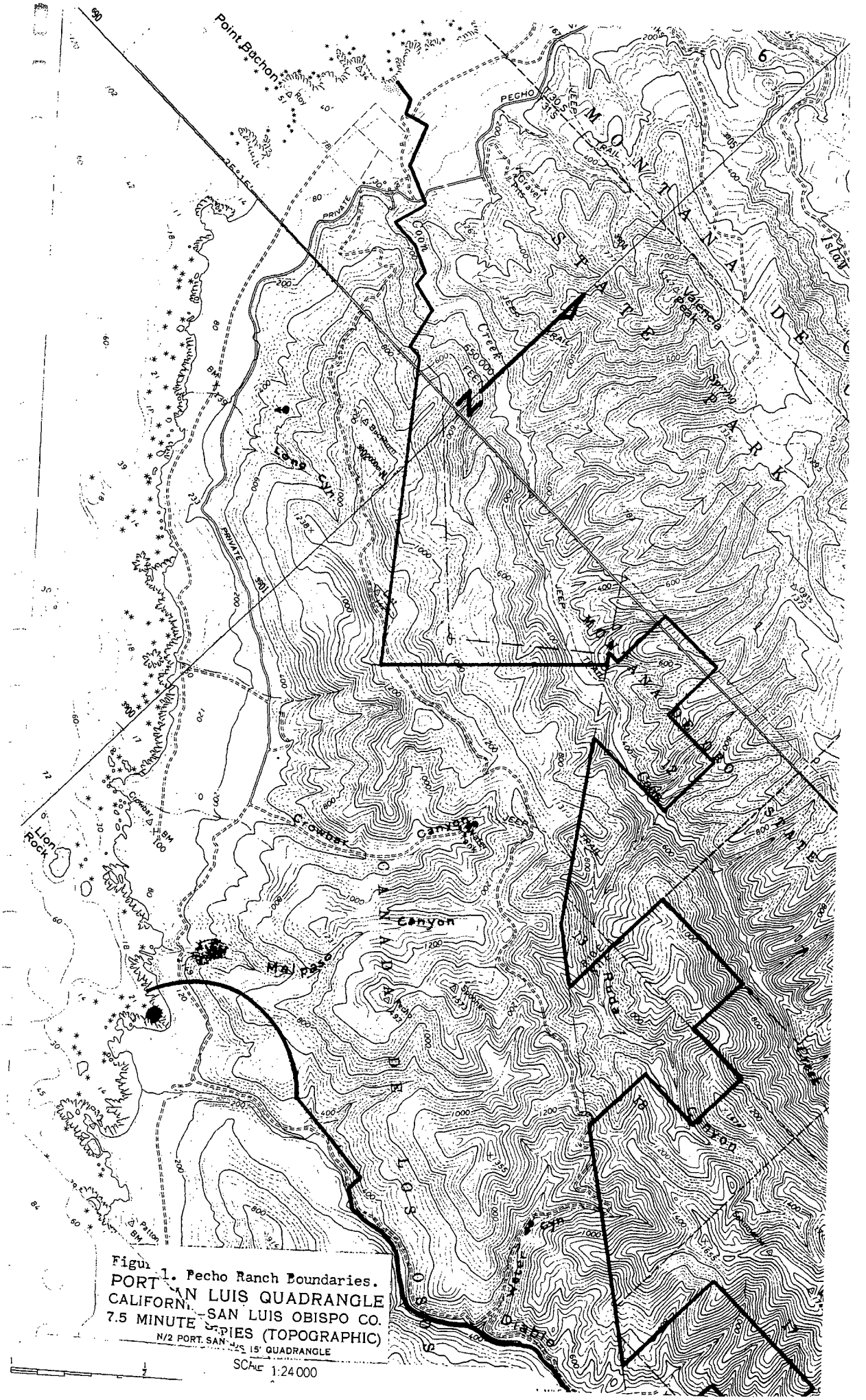
Results of field studies and compilation of information is presented herein, including two base maps and overlays which indicate the location and nature of existing and recommended improvements, as well as the name, acreage, stocking rate, and principal plants of each grazable unit on the Pecho.

LOCATION AND PHYSICAL FEATURES RELATED TO GRAZING

Pecho Ranch is located in western San Luis Obispo County adjoining the ocean for about four miles in the vicinity of Point Buchon, south. Its boundaries are irregular and encompass about 3,600 acres of land. Figure 1 depicts the extent of the ranch (not including an 800± acre parcel to the southeast of no concern to this study). Figure 2 illustrates the central, coastal portion of the Pecho.

Figure 2. View south over the Pecho from the main, east ridge.

The ranch is situated within an area classified as having a Mediterranean or dry-summer tropical climate of mild, wet winters. The Pecho, however is in a marine-modified location, typified by cooler summers having frequent morning fog, and little temperature range year-long. Mean annual precipitation approximates 14 inches, occurring primarily during November through April, and fog is incident about 111 days each year, most of which occurs during the period May through October (Stechman, 1965). Mild, stable temperatures associated with late fall, winter and early spring rainfall create a six-month green range forage season typically existing from about November 15, when germination is


Point Buchon
PECHO
JEEP TRAIL
MONTANA DE ORO STATE PARK
Valencia Peak
Cook Creek
Long Cyn
PRIVATE
Crowbar Canyon
Lion Rock
Malpaso
Canyon
Fossil Canyon
Hazard Cyn
Canada
Canyon
Canada de los Osos
Dorado
Canyon
Canada
Canada
Canada

initiated, until May 15 at maturation of the predominant annual forage species. Dry forage is available the remainder of the year, but is detrimentally affected in quality and palatability by fog, particularly at elevations of less than 800 feet where it is of greater duration and moisture content. The growing season preceding the survey (1977-78) was the best in recent history in both amount and distribution of rainfall; no doubt the exceptional growth as a result has had some effect on the author's evaluation of the ranch.

The topography, hydrology, soils, and geology, all closely related, have a marked influence on the agricultural values of the Pecho. The ranch has three principle geologic formations (Jennings, 1958), each characterized by rather distinct physical features. The majority of the upland area - about 2,800 acres ranging in elevation from 300 to 1500 feet is underlain by Middle Miocene Marine Monterey Shale (sedimentary rock). Topography is moderate to very steeply sloping and drainage is south-southwest, including Long, Crowbar, Water, and much of Malpaso Canyon watersheds (Figure 1). The Monterey Shale leads to the development of loose, very coarse-textured, acid Santa Lucia soils of low fertility and water-holding capacity (Stechman, 1965). With the exception of the Windy Point area, these soils are occupied by chaparral and woodland. Excepting in canyon bottoms, ridges, or flats, grazing potential is low or nonexistent due to steep slopes and heavy, unpalatable brush cover.

An area south and west of Pecho Peak from the mouth of Crowbar Canyon south to lower Malpaso Creek of perhaps 200 acres is of Miocene Volcanic origin (Figure 1). Here, slopes are gentle to moderate and

soils darker, finer-textured and more productive. An extensive, dense grass cover inhabits upland areas above and below the main road to the ocean (toward Lion Rock) where Cropley clay and clay loam soils were formed (Dames and Moore, 1976?). This area has the highest grazing capacity and crop production potential on the ranch.

The remainder of the Pecho is a marine terrace adjacent to the ocean, occupying about 500 acres and originating from Pliestocene Marine and Marine Terrace Deposits (Figure 2). The Santa Lucia and Elder soils developed here on gentle slopes are mostly coarse, shaley loams of only moderate productivity. Nearly all of the terrace, most of which was no doubt cultivated in the past to dryland crops, is presently covered with volunteer grass, forbs and sparse, low shrubs. About 120 acres remain under a farming program just south of Coon Creek.

Grazing use of the terraces is limited only in certain locales where precipitous ocean bluffs present a hazard to livestock (injury or loss) and fencing is necessary. However, optimal grazing use of the Pecho uplands is limited not only by steep slopes, dense brush, and inadequate fencing, but as much by lack of naturally-occurring water within cattle travel to the grasslands. Further development of two springs of the four above the main road, and of Diablo Creek is needed.

PRINCIPAL PLANTS AND FORAGE VALUE OF THE GRASSLANDS

More than sixty species of plants were identified, occurring on about 1,000 acres of the ranch classified as grassland. The balance of the Pecho includes the coastal-shrub, woodland-shrub, and conifer vegetation cover types. These woody types are predominated by California (coast) liveoak, chamise, manzanita, ceanothus, California sage, black sage, poison oak, and Bishop pine (Figure 3). They were mapped as unsuitable for grazing and will not be considered here. A list of the principal plants of the ranch is presented in Appendix A; the list is most complete for the grassland type which is emphasized in the following.

Figure 3. Most of the Pecho is occupied by woody plant cover unsuitable for grazing.

Grassland of the central coast and the Pecho is of the "annual type" including primarily alien grasses and a variety of forbs (broad-leaved, non-woody) species, all of which complete their growth (life cycle) in three to nine months. The majority have some palatability to livestock, principally when green, and are often of forage value after maturity in late spring. Nine annual species are predominant in abundance (proportion of the cover) and frequency (how wide-spread).

These are listed in Table 1 which includes their relative palatability (desirability to, or percent use by cattle). It is readily apparent that seven of these plants provide most of the grazing value for cattle on the ranch, especially bur clover, a high-protein legume. Soft chess, wildoat, and ryegrass are all excellent forage grasses. Ripgut and mouse barley, shown in Figure 4, however, are palatable only in early development, becoming unpalatable and even injurious to the soft membranes of the face of cattle as the heads mature. The "foxtail" seeds often enter or scratch the eyes, causing aggravation and predisposition of cattle to "pink eye". Loss of condition and weight gain results. (Foxtail fescue is not implicated.)

Figure 4. Mouse barley (left) and ripgut brome, two common grasses of the Pecho.

Bur clover, while widely found on the ranch, is most common (at least in 1978) on the terraces and flats having more available moisture and fertility, as are ryegrass and mouse barley. Wildoats, lupines, and fescue are most common on upland, well-drained slopes. Ripgut, windmill pink (a forb), and soft chess are found rather commonly within all the grass lands. It should be recognized that the relative abundance of any annual species will vary from year to year with changing patterns and extremes of rainfall and temperature. Reference to the field sheets, Appendix B, and plant list, Appendix A, will afford more complete information on the plant cover.

Table 1. Most Common Plants of the Pecho Grasslands.

Name	Approx. % of the cover	Approx. % frequency	% palatability
Bur clover	18.7	100	80
Ripgut brome	16.8	100	30
Mouse barley (foxtail)	11.2	100	30
Soft chess brome	10.0	100	60
Windmill Pink	6.8	100	0
Wildoat (two species)	4.5	70	60
Ryegrass (Italian)	4.0	70	60
Foxtail fescue	3.8	70	30
Lupines (mixed species)	3.5	70	0-10

The grasslands adjacent to the main road, especially below on the terrace, are infested with wild radish, black mustard, hazard bush, and in certain areas, coyote brush and California sage (Figure 5). The first two are annuals, the rest perennials, all of large stature and little or no grazing value. All can be reduced or controlled to some extent with herbicide.

Figure 5. Some areas of grassland are infested with woody or herbaceous plants of little grazing value.

More discussion is presented in a later section concerning the grazing value of the grasslands relative to stocking rate and seasonal use.

CULTURAL FEATURES AND THEIR DEVELOPMENT FOR GRAZING MANAGEMENT

The existing cultural features, principally roads, fences, and water developments, are illustrated directly on the color photos, Figure 6, Maps No. 1 and 2 on the following pages. Recommended changes in these features to improve the ranch, as well as other pertinent information are depicted on the "Management Map" overlays for each photo.

At present, there are about 7 miles of fence on the ranch, most of which needs checking and some, repair or removal. Improvement of existing fencelines and construction of certain new segments will, with certain stock water improvements, improve livestock and grazing management. Little control of grazing is being accomplished now; uplands show a history of light use, the terraces, localized, heavy use.

Seven grazing units (fields, pastures) are proposed, including three new units and exclusion of cattle from unsuitable areas. These units are outlined and titled on the Management Maps, Figure 6. A brief discussion of each and improvements necessary for their implementation is given below. The "Pea Units" (Map, Unit No. 1) half of which has been grazed in the past, are not included; the 150 acres involved will be managed under a separate farming lease.

"Big Wash" Unit, No. 2, will include 152 acres following removal of 815 feet of old fence on the south end running from the ocean to the main road, and construction of the same length of new fence below the

Figure 6.

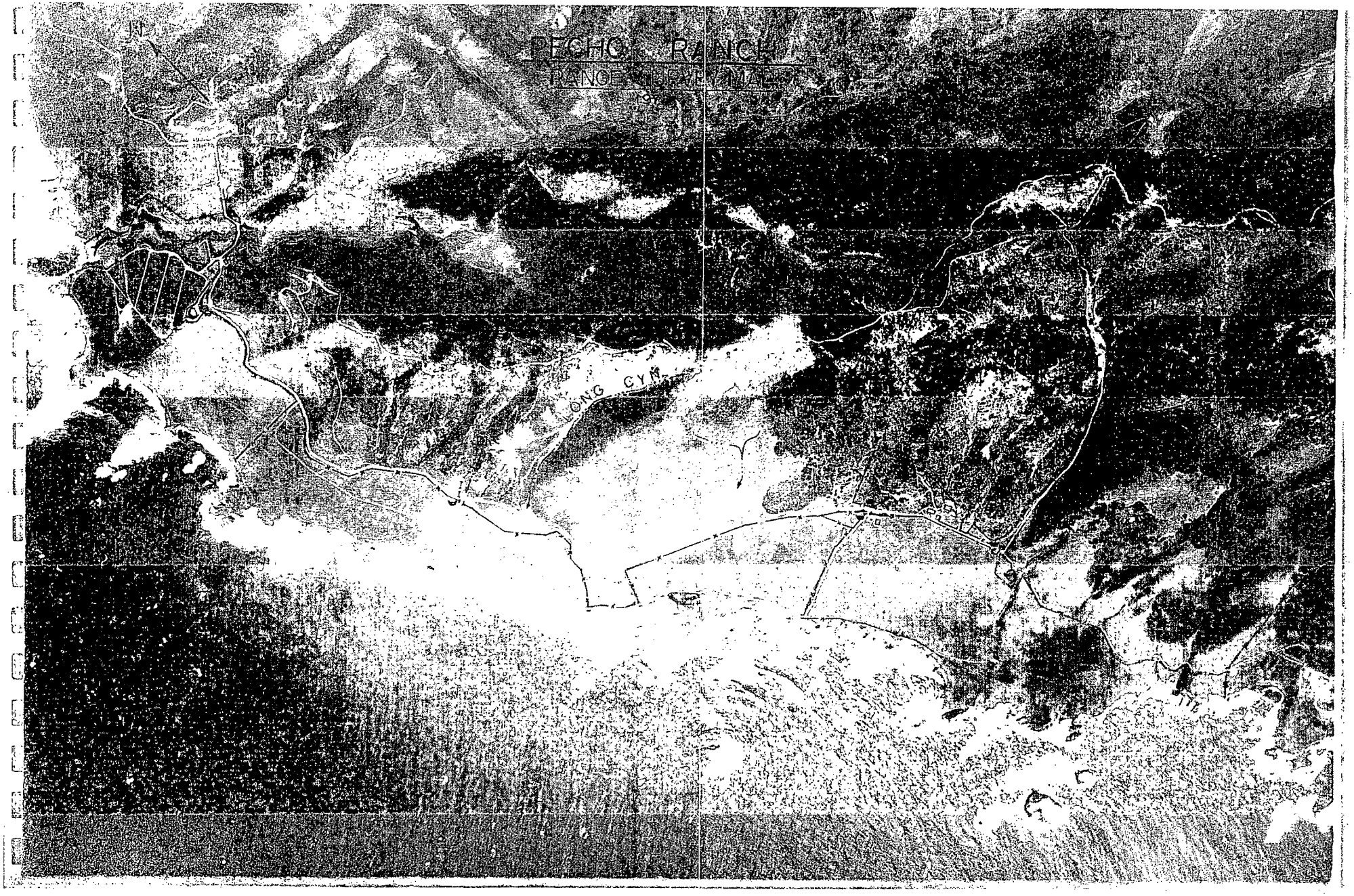
Color Aerial Photo Base

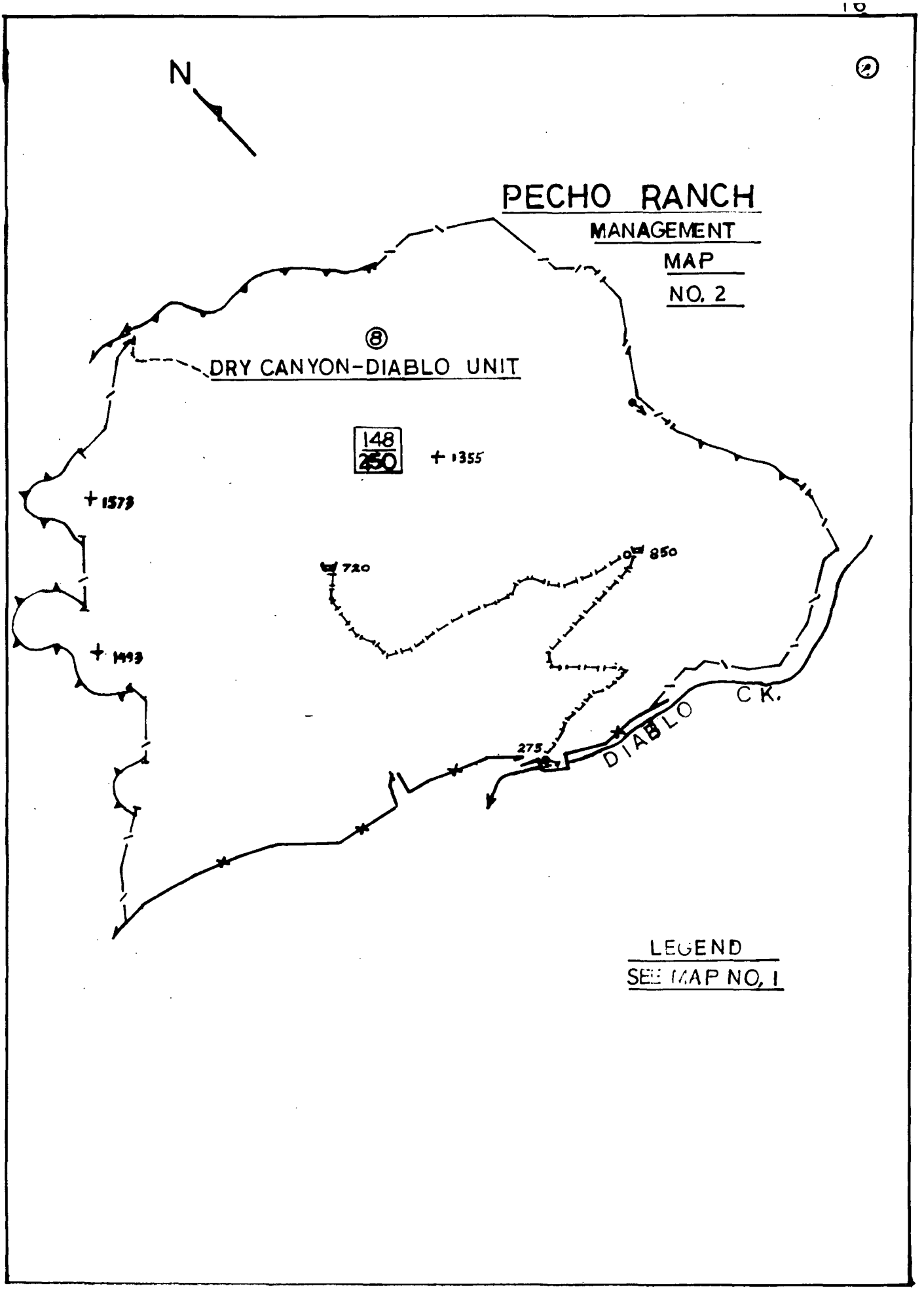
Maps No. 1 and No. 2

and Management Map

Overlays, Pecho Ranch,

1978.


PECHO RANCH
RANGE
LONG CYN


N
PECHO RANCH
MANAGEMENT
MAP
NO. 2
8
DRY CANYON-DIABLO UNIT
148
250
1355
1573
720
850
1493
275
DIABLO
CK.
LEGEND
SEE MAP NO. 1

RECHO RANCH
TOLY CANYON-NIAGARA
1974

road (boundary of Windy Point Unit). The hill of about 11-1/2 acres presently excluded from cattle on the terrace will be better used as part of the Big Wash Unit. The road fence along the east boundary is in need of much repair, particularly in the vicinity of the water trough and gate. Water is well-located and the trough serviceable; continuing erosion-deposition will require frequent checking of fence, gate, road, and water supply structures in the area. The principal forage plants of this unit are ripgut bromegrass and bur clover (BRRI-MEHI on map). However, more than 35% of the total cover is occupied by woody and herbaceous weeds of no forage value (Figure 5).

The "Reservoir" Unit, No. 3, is an 86 acre field bordering the Big Wash Unit on the southeast. Boundary fences appear adequate but should be carefully checked. A gate should be re-installed at the northeast corner into Big Wash. Stock water is available from the spring-fed reservoir near the coast, or from a trough within a 2 acre enclosure at the east point below the road.

Figure 7. The Windy Point Unit, center distant, seen from the Front Grazing Unit.

"Windy Point" Unit, No. 7, shown in Figure 7 borders the preceding units along and below the main road. The creation of this new grazing unit of 187 acres requires considerable investment. Five new fence segments are needed along the north and east (ridge) boundaries to enclose the unit

and prevent cattle from drifting into the unsuitable areas within and off the ranch (Figures 6 and 9). Included are three 12-foot wire gates on the upland area and two 16-foot cattle guards or steel gates on the main road (Figures 6 and 8). Approximately 4,300 feet of 4-wire fence will be required. In addition, two water developments are needed for proper use. One is imperative, consisting of 1,400 feet of 1-1/2" plastic line from Big Wash Spring at 520' elevation south and east into Long Canyon (Figure 9) to a trough at about 480-500'. A float value is needed on both troughs leading from the spring. A second is the extention of existing water line, 2,000 feet from the guest BBQ area (Reserved premises) with similar plastic pipe northwest to about 720' elevation and a trough with a float value. A narrow dozer road leading up to a shallow slump on the hill at trough location will be needed. Pressure (160± lbs.) from Crowbar Spring (810' elev.) should provide (with friction loss) at least 10 lbs. at the trough.

Figure 9. View down Long Canyon from the ridge road; proposed unit boundary is indicated.

The "Front" Unit, No. 4, is 118 acres, including the holding field (3± acres) around the present corrals (Figure 10). Water is available from 3 troughs. Particular repair is needed on south and east fence lines to include gate reconstruction following relocation of the existing, old corrals.

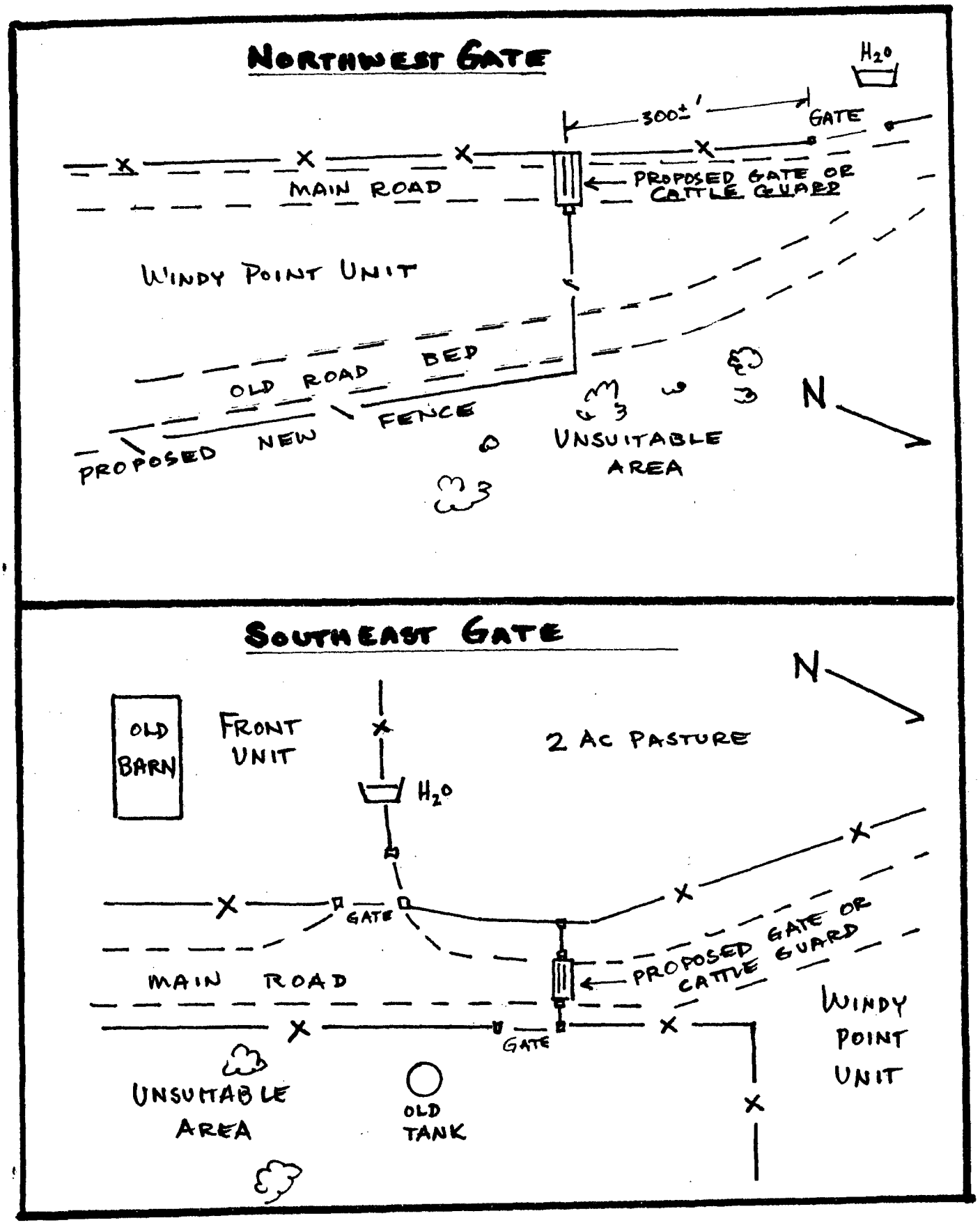


Figure 8. Gate or Cattle Guard Installations on the main road for the Windy Point Grazing Unit.

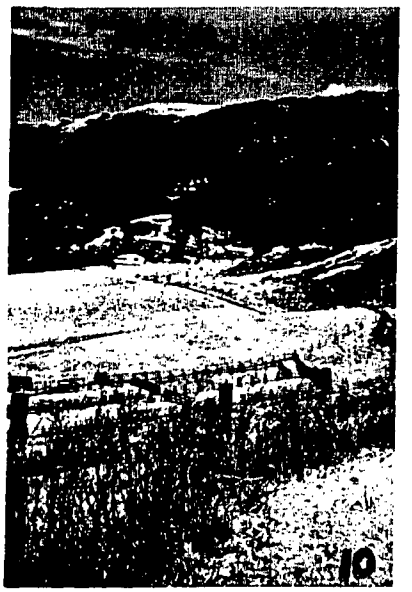


Figure 10. View north over old corrals and Front Unit.

The old corral with condemed scales is in dilapidated condition and is on an unsatisfactory site; the slope and heavy soil make access by cattle truck during wet periods difficult and hazardous. The corral appears to contain sufficient reusable posts and side board to rebuild another, smaller corral on a well-drained, gently sloping site on the north corner at the intersection of Crowbar Canyon and the main road (Figure 11). Some site grading with a dozer will be needed before construction begins. The old, small corral just across the road (west) should be repaired to enable transfer of cattle from the present holding field to the new corral and provide a sorting area. Gathering of stock into the new corral facility will be easy from grazing units 4, 5, 6, and 8 (Figure 6). Figure 12 illustrates an approximate design of the working facility, based on information given in Appendix C. Exact dimensions can be varied at will, of course.

Figure 11. Proposed site for construction of new corral facility.

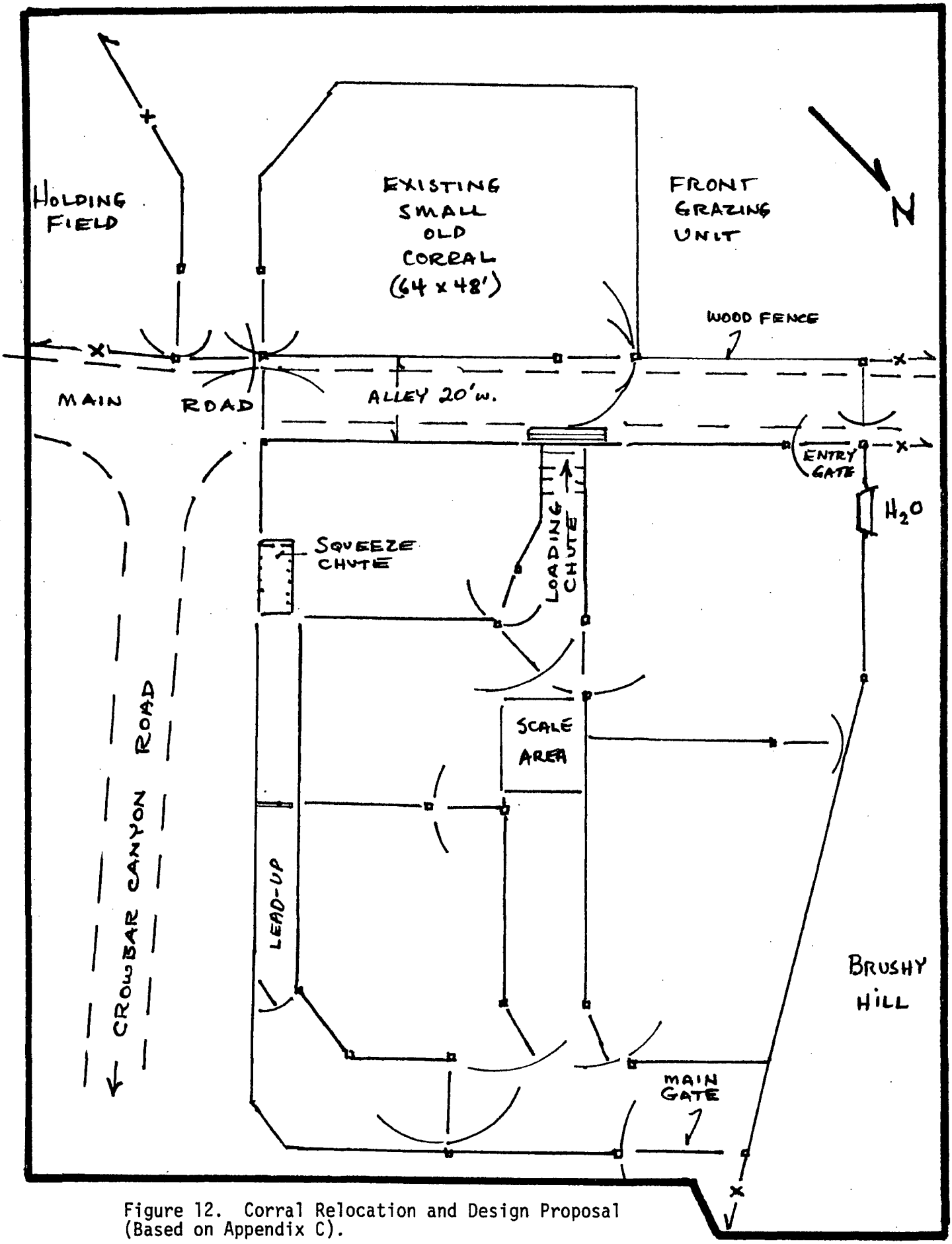


Figure 12. Corral Relocation and Design Proposal (Based on Appendix C).

The 67 acre "Lion Rock" Unit, No. 5, requires only fence repair on the north and east (road) boundaries to make it useful. Water is available from a trough shared with the Front Unit. It should be emphasized that Lion Rock soil (and forage) is the best on the ranch and offers potential for increasing irrigated cropland acreage were water to become available from Diablo Creek through pipeline-reservoir system development.

The "Crowbar-Malpaso" Unit, No. 6 includes the most grazable acres of the proposed units, to total 210 following removal of about 2,400 feet of irreparable fences between Lion Rock Unit and the P.G.E. boundary fence. Four segments of fence totalling about 4,000 feet on the north side of Crowbar Canyon--at the mouth of Bee Canyon, and near the road on the ridge (including one gate) above Crowbar and Malpaso Canyons--will form boundaries to prevent cattle roaming north and east into unsuitable areas of the ranch (Figures 6, 13 and 14). A drift fence and gate at the upper mouth of Crowbar is strongly recommended. The most important will lead from the upper Crowbar storage tank (180' elev.) south and east to a 3,000 gallon tank at 1,120' elevation on the ridge between the canyons. A positive action pump and gas engine at the Crowbar tank and 3,000 feet of

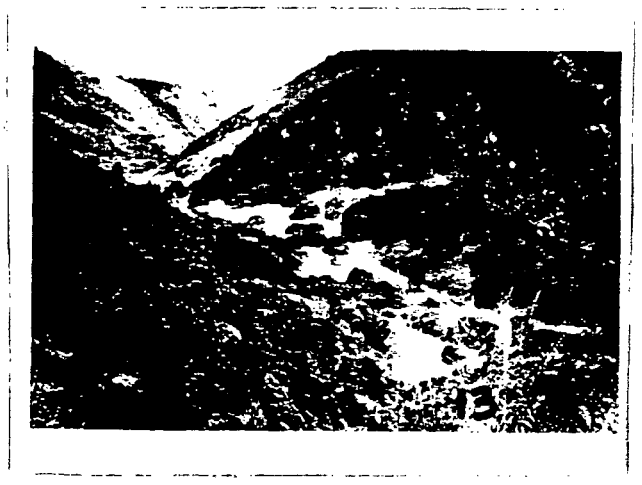


Figure 13. View down Crowbar Canyon. Proposed unit boundary is indicated.

"Golden Jet" 1-1/2" (160 psi) plastic pipe are required following construction of a road to the new tank site (14-15% grade). An additional 600' of pipe and road then would run east and down to a trough in Malpaso valley (Figure 14). This water and road development would assure good access and grazing use of Malpaso and improved grazing of the Spooner-Pecho Peak ridge - all little-grazed to the present. It would also provide water for cattle (or a dwelling) south in the grass-oak slope facing the ocean (800-900' elev.). The cost of materials (only) for the project approximates $4,000*. Additional road development (2,000') is recommended from the east (main) ridge down into Malpaso and from the proposed tank south along the ridge to connect Malpaso-Crowbar valley grasslands with that facing the ocean (Figure 15). These roads would facilitate grazing use and the drifting, checking, and gathering of cattle.

Figure 14. Upper Malpaso. Proposed trough and road locations are indicated.

With the construction of a new corral at (over) the water trough between the horse pasture and mouth of Crowbar Canyon, a pipeline running from the main line south to a trough as far as possible (1,000-2,000 feet) is suggested to encourage

*San Luis Obispo Farm Supply Co. figures: pump and engine - $400, tank -$1100, pipe $67/100', troughs, 275 gal -$100; installation -$23/hr.

grazing in the south portion of this important forage area, shown in Figure 15; water would not otherwise be available on the coastal slope.

Figure 15. South coastal slope in the Crowbar-Malpaso grazing unit.

While Figure 6 shows a recommendation for drift fences (3,000 feet) used in conjunction with natural barriers (steep slopes, outcrops, dense brush) to separate Crowbar-Malpaso Unit from the proposed "Dry Canyon-Diablo" Unit No. 8, the division may be unnecessary or even undesirable. Access may be too difficult to allow installation of the fences, excepting from the ridge road toward Spooner's Peak. Although the boundary would aid in cattle and grazing management, it should be considered only if a negative decision to develop water and contain cattle on the Diablo Creek and east Water Canyon boundary is made.

The Dry Canyon-Diablo Unit contains only about 150 acres of grassland, much of which, at present, is not readily grazable due to excessive distance to water in Diablo Creek, steep (40-80%) slopes, and intervening stands of dense chaparral (Figures 3 and 6, Map No. 2). New road construction (about 950 feet) from the ridge road into upper Dry Canyon is suggested to improve use in that area. However, full use of most of the forage produced will necessitate extensive fencing and water distribution, mostly in conjunction with existing roads. Over 8,000 feet of new fence including 4 gates are needed, running from the

old fence at Diablo Creek up from the creek and below the road to Water Canyon, thence north up the canyon, following the present road to the ridge, there turning west on the ridge road (Figure 6, Map No. 2). A water system is possible, involving about 7,800 feet of pipe*, a positive-action pump and electric or gas engine, one storage tank, and two troughs. Based on costs provided by Farm Supply Co. (footnote, p. 24) materials alone for the water development would approximate nearly $6,800, and for fencing, almost $2,200. Total cost, including labor would appear to exceed $12,000. The grazing value involved is estimated at only about $1,500 per year, so the expenditure outlined in the preceding would seem prohibitive. Furthermore, livestock management in the Diablo area, even after development is, at best, difficult due to the distance from corrals requiring relatively long drives of few cattle (25-50 head) to and from the unit over a change in elevation of 1,000'. Access would appear limited to the Crowbar-south ridge-Dry Canyon route. Gathering scattered stock around and east of Spooner-Pecho Peak ridge is arduous and hazardous; very steep slopes, variable, dense chaparral, and soft, loose, rodent-infested soils make riding, locating, bunching, and moving cattle a difficult proposition for horse and rider.

More consideration of the value and policies concerning the Dry Canyon-Diablo area is needed by trustees of the Pecho. The management time, effort and money needed to optimize its grazing use would seem better spent on other, more productive areas of the ranch.

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*Pipe from the creek to tank must withstand pressure as high as 250 psi, thus added expense must be anticipated for a higher quality pipe than suggested for other water developments.

STOCKING RATE, GRAZING MANAGEMENT AND APPARENT VALUE OF THE LEASE

Stocking rates for the grazing units discussed in the preceding are based on field data and observations recorded on the Field Sheets given in Appendix B. It was assumed that all areas delineated as grassland are, or could be made available through improved management. No deductions were made for slope or distance to water. However, no values were accredited for browse or grass within chaparral stands. Grazing use by stocker steers was assumed in all determinations. Maximum stocking rates were assumed for recommendations since admittedly, technical methods result in conservative estimates. And, ranch grazing history, according to Pecho residents, indicates even higher stocking rates (up to 900 head) than are recommended here.

Table 2 presents information on stocking of the Pecho grazing units, assuming their creation and improvement as depicted on the maps, Figure 6. Nearly 1,000 acres of grazable land is present and will support from 200 to 400 steers for the winter-spring period. Stocking rates will vary widely, as suggested. "Poor" years are a result of delayed first fall rain, scanty, or unfavorable occurrence of rainfall during the growth season, and/or little residual forage from the previous growing season. "Good" years begin with early (October) rains, have above-normal amount of moisture, frequent rains, or may follow another good year when aboundant carry-over feed is available. Stocking is flexible as to: (1) the number and time new-purchased steers

Table 2. Estimated Proper Stocking Rate for Proposed Grazing Units on the Pecho Ranch*.

Grazing Unit	Grazable Acres	Stocking Rate - Head Months Min.	Aver.	Max.	Approx. %
(1 - Pea, Farming)+	(150)	-	-	-	-
2 - Big Wash	152	90	130	270	14
3 - Reservoir	86	90	120	180	9
4 - Front	118	160	210	300	16
5 - Lion Rock	67	230	290	320	17
6 - Crowbar - Malpaso	210	260	320	360	19
7 - Windy Point	187	170	210	230	12
8 - Dry Canyon - Diablo	148	150	200	250	13
Total	968	1150	1480	1910	100

Approximate Number of Steers for the 6 month season:	"Poor" Year	"Aver." Year	"Good" Year
Heavier, 500 lbs +	190	250	320
Lighter, 400 lbs -	240	310	400

*All head-month figures rounded up to nearest 10 and apply to units after road, fencing, water development.

+Value not included in total for grazing lease

are shipped onto the ranch in the fall (October-November), (2) premature removal of cattle in the early spring ("topping-off" heavy steers in "short" years); and (3) leaving cattle on the ranch through the summer (lighter "hold-over" steers) or even into or through the next growing season ("two-season" cattle).

The product of number of head times number of months (or portions of months) those head grazed is total head-months for that period; a summation of all periods is the annual total of grazing on a unit or the entire ranch. Figures for total head-months of steers and the percentage which each grazing unit should provide of the total stocking rate are suggested in Table 2. Allocation of cattle, using these percentages is recommended, as is requiring lessee to keep and make available to the lessors, records of cattle numbers in each unit of the ranch on a year-round basis. Although no stocking rates are stipulated in the lease, the practice is useful for future comparison and reference in better understanding proper grazing of the Pecho. It is emphasized that Table 2 recommendations are generally made based on improved conditions (see footnote). If ranch is stocked to maximum potential in 1978-79 (up to 400 head or more) before or without implementation of improvements, over-grazing of the terrace units, under-use of the upland units, and poor accountability and performance of cattle will result. A rate of perhaps 250-300 head is advisable, increasing as fencing and water make full use of the upland feasible.

There is, for annual grasslands, of the Central Coast, a rule of thumb, "three acres per steer for the season" regarding stocking rates. When applied to the Pecho, 330 to 350 steers could be carried. The

"season" implies primarily November through June, about 180-250 days, to include mostly green forage normally available December--May. Steers may lose weight during December and January, gain as much as two pounds per day during March and April, and make a total seasonal gain of about 150 to 200 pounds, depending on forage yield, nutritive quality, and palatability.

Seasonal use of the Pecho should follow the normal practices suggested above, excepting that cattle carried over after sometime in June might be better stocked on the upland grazing units where shade is abundant, green browse available, and dry feed, little affected by fog, is present. Heavy summer fogs cause some mildew and leaching of sugars from dry forage of the marine terrace units, reducing palatability. More important is the abundance of ripgut brome and mouse barley on the terrace (Figure 16)*. These, while good feed when green in the winter, thereafter lose palatability and become injurious after maturation with the formation of bristly seed heads, which may cause "foxtail" problems in the summer, as suggested earlier.

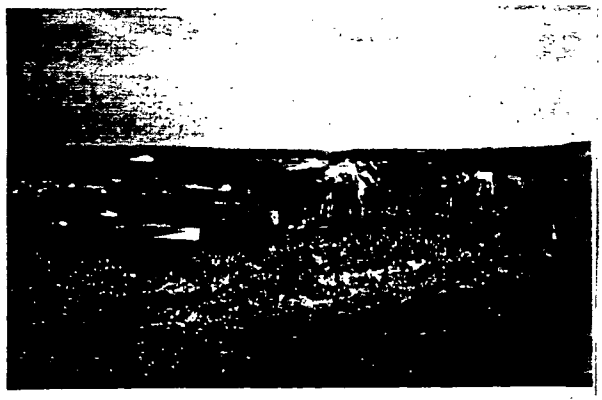

Figure 16. Steers on the marine terrace, summer of 1978.

While salt is not a potent tool for aiding cattle distribution in marine climates, salt is being taken now by steers on the Pecho and should be used.

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*Also of note is the presence of locoweed (*Astragalus* sp.) along the bluffs which may be a livestock poisoning hazard.

Salting away from water and on road beds where easy access and travel by cattle is assurred is a good practice. Checking and drifting small groups of cattle out of canyon bottoms or into areas of underuse should be done in upland units 6, 7, and 8 when possible. Use of protein or molasses blocks is suggested with salt during summer grazing periods to attract and hold cattle on ridges or other areas of underuse. Of course, proper fence construction and maintenance is still the most effective tool to control livestock distribution.

Proper stocking, then, is a function of number of head, season and duration of grazing, and cattle distribution--all leading to optimal harvest of available forage. Optimal infers maximum short and long term benefits to the resources and economic return.

Recognizing that it is speculative, a comparison of stocking rate, probable gross income, and apparent value of the Pecho lease may be revealing. Table 3 presents potential gross incomes to a lessee at five stocking rates and two seasonal gains of steers, assuming a market value of $.40/lb.* Stocking more than 500 head is inadvisable; it is a well-established principle that gross return may increase over the short run with increasing cattle numbers, but at the expense of soil stability and forage productivity; thus over the long term returns will diminish. Optimal gain per head and per acre is reached at some "moderate" rate of stocking.

Estimated value of the ranch lease is given on three bases, so that the apparent relationship between gross income of lessee and

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*Average for 500-750 lb. steers, 1972-1978, local markets.

Table 3. Speculative Relationship Among Stocking Rate and Gross Values of Cattle Gain and Lease of the Pecho.

Stocking Rate*		Seasonal Gain-lbs.	Gross Value of Gain at $.40/lb.	Gross Income to Lease (Lessor) Based upon:		
No. Head	Head-months			$5.00 per Head-month	One-half Value of Gain	Per Acre, Per Year
150	900	150	$9,000	$4,500	$4,500	1,000 acres of grass:
200	1,200	150	12,000	6,000	6,000	
200	1,200	200	16,000	6,000	8,000	$8,000 at $8.00
300	1,800	150	18,000	9,000	9,000	10,000 at $10.00
300	1,800	200	24,000	9,000	12,000	
400	2,400	150	24,000	12,000	12,000	12,000 at $12.00
400	2,400	200	32,000	12,000	16,000	
500	3,000	150	30,000	15,000	15,000	

*Number of head of steers averaging 400-500 lbs. for a 6 month season, or any other number of head for any number of months resulting in total head-month values given.

lessor is possible. A head-month charge of $5.00 is reasonable, based on up-dated rates from University of California (1974-1978) and local surveys (Stechman, 1974-1977). One-half the market value (here, 40¢) of the total seasonal gain (lbs.) by cattle is not an uncommon agreement for leases. And, an assessment of from $8 to $12 per acre for grassland is quite reasonable in this area.

It would seem, then, that grazing of the Pecho should gross a cattle owner-lessee from $9,000 to around $30,000 per year, depending on stocking rate and the factors influencing it. The land owner-lessor would (should?) realize about 50% of the average potential cattle income or approximately $10,000 per year on a flat fee basis for the grazing lease. It is apparent that although the lessee may gross $50-90 per head, his net may vary from a loss of $5.00 or more to a return of $25.00 at a fixed (cost) lease fee, depending on cash costs (interest, trucking, commissions, death loss, labor, veterinary, etc.), market prices ("margin": purchase and sale), and the weather as it controls stocking rate and gain of cattle. This conclusion is apparent from study of Table 3 and the University of California references cited above.

SOME FURTHER MANAGEMENT RECOMMENDATIONS

Conventional range improvement practices include the use of prescribed burning, chemicals--including herbicides, pesticides and fertilizers--and mechanical means to reduce unwanted species and promote forage for livestock by natural or artificial revegetation.

Herbicides can be used to advantage, it is believed, to control about half of the (35%) weed cover in Big Wash unit (Figure 5). Reduction is possible by proper herbicide application after maturation and therefore without harm to the forage species (esp. bur clover). Spraying with 2, 4-D and/or 2, 4, 5-T in the morning between May 15 and July 1 (once or twice) for two successive years should be effective against coyote bush, hazard bush, and California sage, and reduce wild radish, lupine, and California poppy. About 10 to 20 gallons per acre spray mix including 2 to 3 lbs. of herbicide and one gallon diesel with water should be suitable. However, investigation as to related herbicides, method, rate, cost, timing and relationship to adjacent cropland must be made before a regular weed control program is implemented. The County Farm Advisor should be contacted for assistance in this regard. It would appear that a 25% increase in grazing capacity could be accomplished, worth about $350 per year.

Application of fertilizers to rangeland of the Pecho requires further study and is not recommended now. Relatively low rainfall and coarse soils discourage their use. The same is true of artifical reseeding, which does not appear to be needed on the ranch.

Some mechanical brush control may be possible along the brush-grass margins at the bottoms of Long, Crowbar, Bee, Malpaso, Dry, and other, smaller canyons by windrowing or bunching brush back about 10 to 20 feet. The row of stacked brush can act as a barrier to cattle where needed, and as quail habitat. If soil is not much disturbed, grass will volunteer on the cleared strips or edges. Also, oaks can be thinned and pruned to produce firewood, improve cattle access, and increase forage availability between the grass "head" of Malpaso valley (east) and the ridge road in the vicinity of the recommended new road (Figures 6, 14). Fire is not recommended for brush range improvement on the Pecho since the modest increases in forage yield which would result would not be reflected as an increase in cash return to the ranch. The political, ecological, and economic liability to be assumed out-weighs any real benefits to be derived. Generally, slopes are too steep, soils too coarse, and winds too prevalent to either facilitate a safe, prescribed broadcast burn, or justify a program agriculturally.

Additional water developments not suggested before should be considered as follows: (1) discovery and digging out of an intermittent seep reputed to be under the trees in the upper, east area of Windy Point Unit (Figure 6, Map No. 1); and (2) ponding of the Malpaso and Water Canyon springs and winter in-flow. These developments, particularly on Windy Point, would appreciably improve grazing use.

Rodent control appears to be needed in many areas of the ranch, especially of ground squirrels along road cuts and other structural areas. Control measures are well-presented by the County Agricultural

Commissioners Office in leaflets included as Appendix D, for consideration by the trustees.

SUMMARY AND CONCLUSIONS

A survey and assessment was made of the Pecho Ranch with grazing utilization as a primary concern. Nearly 1,000 acres of forage grassland was discovered, mapped, and evaluated. All pertinent cultural features were located and mapped as were recommended changes or additions to improve management of the ranch. More than 125 hours were expended in the study, of which about one-third were spent on the ranch.

As a result, the following conclusions and recommendations are made:

1. The majority of the Pecho Ranch acreage includes moderate to steeply sloping lands and coarse, loose soils supporting chaparral or brushgrass vegetation. All lead to a relatively low value of the ranch for grazing.

2. At present, a significant portion of the grassland is not effectively used or is improperly grazed because of poor cattle distribution. Eight grazing units are proposed and a number of improvements recommended, including particularly the following, scheduled in order of need:

   (1) Repair of the principal north-south fence adjacent or below the main road and dividing upland range from terrace grazing units (1978-79);

   (2) Installation of pipe from Big Wash Spring to a trough in Long Canyon, and construction of fence segments and gates as necessary to enclose the Windy Point Unit (1979);

   (3) Repair, removal, or installation of short fence segments involved in isolation of the Big Wash, Reservoir, Front, and Lion Rock Units (1979);

   (4) Installation of drift fences as needed within and at the north side and head of Crowbar and Malpaso Canyons and construction of the Crowbar-Malpaso ridge roads (1979-80);

(5) Installation of pipe from main line at the mouth of Crowbar, south to a trough followed by relocation of the main corrals (1980);

(6) Installation of pump, pipeline, tank, and trough as needed for the Crowbar-Malpaso ridge water project (1980-1981);

(7) Installation of pipe from the main within the Reserved Premises northwest to a trough in Windy Point Unit (1981);

(8) Investigation into feasibility of shrub control on the terraces by herbicide application, and of rodent control methods (1981-82);

(9) Installation of containment fences from Diablo Creek east and north up Water Canyon and on the Ridge, and/or along Spooner-Pecho ridge (1982);

(10) Consideration and evaluation of the feasibility and costs for installation of the Dry Canyon-Diablo water development system (1982-83).

3. From 200 to 400 head of stocker steers can be grazed for a 5 to 8 month season, depending on size of cattle, forage (weather) conditions, and ranch improvements; the lease for this grazing should generate between $8,000 and $12,000 per year, after improvements.

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APPENDIX A

PRINCIPAL PLANTS OF THE PECHO RANCH GRASSLANDS

BOTANICAL NAME	COMMON NAME	SYMBOL	RATING	P.U.F.
Forbs: (Cont'd)				
Daucus spp.	Wild carrot	DAPU	UA	0
Eremocarpus setigerus	Turkey mullein	ERSE	UA	0
Erodium moschatum	White stem filaree	ERMO	DA	70
Eschscholtzia californica	California poppy	ESCA	UP	0
Hemizonia fasciculata	Coast tarweed (yellow)	HEFA	UA	10
Lepidium niditum	Pepper grass	LENI	DA	20
Lupinus nanus	Dove lupine	LUNA	UA	10
Lupinus spp.	Lupine (unknown)	LUP	UA	0
Marrubium vulgare	Horehound	MAVU	UP	0
Medicago hispida	Bur clover	MEHI	DA	80
Melilotus spp.	Melilot	MELN	LA	20
Orthocarpus sp.	Owl's clover	ORDE	UA	10
Phacelia sp.	Phacelia	PHA	UP	10
Plantago erecta	Dwarf plantain	PLER	UA	0
Raphanus sativus	Wild radish	RASA	UA	0
Rumex acetosella	Sheep sorrel	RUAC	UP	10
Silene gallica	Windmill pink	SIGA	UA	0
Silybum marianum	Milk thistle	SIMA-2	UA	10
Sonchus asper	Sow thistle	SOAS	LA	10
Taraxacum sp.	Common dandelion	TAR	LP	60
Trifolium spp.	Native clovers	TRI	DA	70
Shrubs & Trees:				
Adenostoma fasciculatum	Chamise	ADFA	UP	0
Artemisia californica	California sage	ARCA	UP	0
Arctostaphylos	Manzanita	ARC	UP	0
Baccharis pilularis	Coyote brush	BAPI	UP	0
Ceanothus cuneatus	Wedgeleaf ceanothus	CECU	LP	20
Diplacus aurantiacus	Bush monkey flower	DIAU	UP	0
Eriogonum	Buckweat	ERI	LP	20
Hazzardia squarrosa	Hazard bush	HASQ	UP	0
Pinus muricata	Bishop pine	PIMU	UP	0
Quercus agrifolia	Coast live oak	QUAG	LP	10
Rhamnus californica	Coffee berry	RHCA	UP	10
Rhus diversiloba	Poison oak	RHDI	DP	40
Salvia mellifera	Black sage	SAME	UP	0

APPENDIX B

FIELD DATA SHEETS FOR GRAZING UNITS OF THE PECHO

RECONNAISSANCE SURVEY SHEET - SAN LUIS OBISPO AREA RANGE SITES

RANCH PECHO GRAZING UNIT PEA (North) DATE JUNE 22

TECHNICIAN J. STECHMAN FIELD SHEET NUMBER 1

RANGE SITE/TYPE MARINE TERRACE SOIL SANTA LUCIA SHALEY CLAY LOAM MAPPING CODE HOLE-MEHI

TOTAL ACREAGE 67.5 (Av. 2 Fields) AVERAGE CAPACITY A/AUM* 1.34 TOTAL AUM 50.4

AV.HM 101
MIN. 68
MAX. 199

PLANT COMPOSITION and EVALUATION (147)

Desirables				Less Desirables				Undesirables			
Sym	%	P.U.F.	F.V.F.	Sym	%	P.U.F.	F.V.F.	Sym	%	P.U.F.	F.V.F.
MEHI	26.5	.80	.212	HOLE	34.5	.30	.104	SIGA	3.5	0	0
ERMO	3.0	.70	.021	MEIN	6.0	.20	.012	ANAR	5.5	0	0
BRMO	5.0	.60	.030	BRRI	13.0	.30	.039	BRNI	0.5	.20	.001
LOMU	0.5	.70	.004	FES	1.5	.30	.005	AST	0.5	0	0
PHTU	T	--	---					MAVU	T	-	0
								RUM	T	-	0
								RASA	T	-	0
								POL	T	-	0
								TAR	T	-	0
								ESCA	T	-	0
								HASQ	T	-	0
								LUP	T	-	0
								ARCA	T	-	0
Total	35.0		.267	Total	55.0		.160	Total	10.0		.001

VIGOR OF KEY FORAGE SPECIES: Good X Fair ____ Poor ____ Species Rated: MEHI

LIVE PLANT COVER DENSITY: 90 % LITTER: Excessive X Adequate ____ Inadequate ____

SOIL EROSION: None X Slight ____ Moderate ____ Kind: ____

CONDITION CLASS - RANGE SITE - CAPACITY A/AUM

	Excellent	Good	Fair	Poor	Very Poor
% Desirables	80-100	60-79	40-59	20-39	19 -
% Less Desirables	0-15	10-30	20-45	25-60	60 +
% Undesirables	0-5	6-10	11-40	25-50	50 +
Serpentine lands FAR 0.58	2.0-3.0	3.0-4.5	4.5-6.5	6.5-10.0	0.0
Loamy Uplands FAR 0.26	0.25-0.5	0.5-1.0	1.0-2.0	2.0- 4.0	0.0

CONDITION CLASS HIGH POOR EQUIVALENT CAPACITY = 2.0 A/AUM*

TOTAL F.V.F. .428 X DENSITY .90 = F.V.F. .385 F.A.R./F.V.F. = 0.68 A/AUM*

JVS/78

RECONNAISSANCE SURVEY SHEET - SAN LUIS OBISPO AREA RANGE SITES

RANCH PECHO GRAZING UNIT BIG WASH DATE JUNE 22

TECHNICIAN J. STECHMAN FIELD SHEET NUMBER 2

RANGE SITE/TYPE MARINE TERRACE SOIL SANTA LUCIA--ELDER LOAM VAR. MAPPING CODE BRRI-MEHI

TOTAL ACREAGE 152 AVERAGE CAPACITY A/AUM* 2.33 TOTAL AUM 65.2

AV HM 130
MIN. 87
MAX. 264

PLANT COMPOSITION and EVALUATION (251)

Desirables				Less Desirables				Undesirables			
Sym	%	P.U.F.	F.V.F.	Sym	%	P.U.F.	F.V.F.	Sym	%	P.U.F.	F.V.F.
MEHI	13.0	.80	.104	FES	12.0	.30	.036	RASA	8.0	0	0
BRMO	7.0	.60	.042	AGO	3.5	.50	.018	SIGA	9.5	0	0
ERMO	T	---		HOLF	7.5	.30	.023	ESLA	2.5	0	0
STPU	T	---		BRRI	19.5	.30	.059	ANAR	3.0	0	0
LOMU	T	---		CON	0.5	.10	.001	BAPI	1.5	0	0
AVE	T	---		BRDI	T	---		LUP	1.0	0	0
				LOSC	T	---		HASQ	9.5	0	0
								ARCA	1.0	0	0
								RUAC	T	--	0
								BRNI	T	--	0
								HEM	T	--	0
								ERPA	T	--	0
								CON	T	--	0
Total	20.0		.146	Total	43.0		.137	Total	37.0		0

VIGOR OF KEY FORAGE SPECIES: Good X Fair ____ Poor ____ Species Rated: MEHI

LIVE PLANT COVER DENSITY: 80 % LITTER: Excessive X Adequate ____ Inadequate ____

SOIL EROSION: None ____ Slight ____ Moderate X Kind: GULLY-DEPOSITION LOCALIZED

CONDITION CLASS - RANGE SITE - CAPACITY A/AUM

	Excellent	Good	Fair	Poor	Very Poor
% Desirables	80-100	60-79	40-59	20-39	19 -
% Less Desirables	0-15	10-30	20-45	25-60	60 +
% Undesirables	0-5	6-10	11-40	25-50	50 +
Serpentine lands FAR 0.58	2.0-3.0	3.0-4.5	4.5-6.5	6.5-10.0	0.0
Loamy Uplands FAR 0.26	0.25-0.5	0.5-1.0	1.0-2.0	2.0- 4.0	0.0

CONDITION CLASS LOW POOR EQUIVALENT CAPACITY = 3.5 A/AUM*

TOTAL F.V.F. .283 X DENSITY .80 = F.V.F. .226 F.A.R./F.V.F. = 1.15 A/AUM*

JVS/78

RECONNAISSANCE SURVEY SHEET - SAN LUIS OBISPO AREA RANGE SITES

RANCH PECHO GRAZING UNIT RESERVOIR DATE JUNE 22, 23

TECHNICIAN J. STECHMAN FIELD SHEET NUMBER 3

RANGE SITE/TYPE MARINE TERRACE SOIL SANTA LUCIA LOAM MAPPING CODE MEHI-BRRI

TOTAL ACREAGE 86 AVERAGE CAPACITY A/AUM* 1.50 TOTAL AUM 57.3

AV HM 115
MIN. 86
MAX. 173

PLANT COMPOSITION and EVALUATION (244)

Desirables				Less Desirables				Undesirables			
Sym	%	P.U.F.	F.V.F.	Sym	%	P.U.F.	F.V.F.	Sym	%	P.U.F.	F.V.F.
AGR	0.5	.70	.004	HOLE	9.5	.30	.029	AMS	3.0	.10	.003
LOMU	1.0	.70	.001	BRRI	27.0	.30	.081	CHE	0.5	.20	.001
MEHI	26.0	.80	.208	FES	5.0	.30	.015	SIGA	9.0	0	0
BRMO	7.0	.60	.042	CAR	0.5	.50	.003	LEP	0.5	.20	.001
ERMO	0.5	.70	.004					HASQ	6.5	0	0
AVE	1.5	.60	.009					RASA	1.0	0	0
TRI	0.5	.70	.004					LUP	0.5	0	0
								TAR	T	-	0
								ANAR	T	-	0
								MAVU	T	-	0
								ESCA	T	-	0
Total	37.0		.272	Total	42.0		.128	Total	21.0		.005

VIGOR OF KEY FORAGE SPECIES: Good X Fair ____ Poor ____ Species Rated: MEHI

LIVE PLANT COVER DENSITY: 65 % LITTER: Excessive X Adequate ____ Inadequate ____

SOIL EROSION: None ____ Slight ____ Moderate ____ Kind: ____

CONDITION CLASS - RANGE SITE - CAPACITY A/AUM

	Excellent	Good	Fair	Poor	Very Poor
% Desirables	80-100	60-79	40-59	20-39	19 -
% Less Desirables	0-15	10-30	20-45	25-60	60 +
% Undesirables	0-5	6-10	11-40	25-50	50 +
Serpentine lands FAR 0.58	2.0-3.0	3.0-4.5	4.5-6.5	6.5-10.0	0.0
Loamy Uplands FAR 0.26	0.25-0.5	0.5-1.0	1.0-2.0	2.0- 4.0	0.0

CONDITION CLASS HIGH POOR EQUIVALENT CAPACITY = 2.0 A/AUM*

TOTAL F.V.F. .405 X DENSITY .65 = F.V.F. .263 F.A.R. / F.V.F. = 0.99 A/AUM*

JVS/78

RECONNAISSANCE SURVEY SHEET - SAN LUIS OBISPO AREA RANGE SITES

RANCH PECHO GRAZING UNIT FRONT DATE JUNE 23

TECHNICIAN J. STECHMAN FIELD SHEET NUMBER 4

RANGE SITE/TYPE MARINE TERRACE SOIL ELDER SHALEY LOAM MAPPING CODE MEHI-BRRI

TOTAL ACREAGE 118 AVERAGE CAPACITY A/AUM* 1.15 TOTAL AUM 103

AV HM 206
MIN. 157
MAX. 295

PLANT COMPOSITION and EVALUATION (222)

Desirables				Less Desirables				Undesirables			
Sym	%	P.U.F.	F.V.F.	Sym	%	P.U.F.	F.V.F.	Sym	%	P.U.F.	F.V.F.
MEHI	26.5	.80	.212	HOLE	15.0	.30	.045	RUAC	0.5	.10	.001
BRMO	16.0	.60	.096	BRRI	24.0	.30	.072	AMS	6.0	.10	.006
AVE	3.0	.60	.018	FES	1.0	.30	.003	SIGA	4.5	0	0
LOMU	0.5	.70	.004					RASA	0.5	0	0
ERMO	1.0	.70	.007					LUP	1.0	0	0
								ANAR	0.5	0	0
								CIR	T	--	0
Total	47.0		.337	Total	40.0		.120	Total	13.0		.007

VIGOR OF KEY FORAGE SPECIES: Good X Fair ____ Poor ____ Species Rated: MEHI

LIVE PLANT COVER DENSITY: 70% LITTER: Excessive ____ Adequate X Inadequate ____

SOIL EROSION: None X Slight ____ Moderate ____ Kind: ____

CONDITION CLASS - RANGE SITE - CAPACITY A/AUM

	Excellent	Good	Fair	Poor	Very Poor
% Desirables	80-100	60-79	40-59	20-39	19 -
% Less Desirables	0-15	10-30	20-45	25-60	60 +
% Undesirables	0-5	6-10	11-40	25-50	50 +
Serpentine lands FAR 0.58	2.0-3.0	3.0-4.5	4.5-6.5	6.5-10.0	0.0
Loamy Uplands FAR 0.26	0.25-0.5	0.5-1.0	1.0-2.0	2.0- 4.0	0.0

CONDITION CLASS FAIR EQUIVALENT CAPACITY = 1.5 A/AUM*

TOTAL F.V.F. .464 X DENSITY .70 = F.V.F. .325 $\frac{\text{F.A.R.}}{\text{F.V.F.}}$ = 0.80 A/AUM*

JVS/78

RECONNAISSANCE SURVEY SHEET - SAN LUIS OBISPO AREA RANGE SITES

RANCH PECHO GRAZING UNIT LION ROCK DATE JUNE 23

TECHNICIAN J. STECHMAN FIELD SHEET NUMBER 5

RANGE SITE/TYPE MARINE TERRACE SOIL CROPLEY ~~GRV CLAY~~ MAPPING CODE MEHI-BRMO

TOTAL ACREAGE 67 AVERAGE CAPACITY A/AUM* 0.47 TOTAL AUM 143

AV HM 285
MIN. 227
MAX. 312

PLANT COMPOSITION and EVALUATION
(168)

Desirables				Less Desirables				Undesirables			
Sym	%	P.U.F.	F.V.F.	Sym	%	P.U.F.	F.V.F.	Sym	%	P.U.F.	F.V.F.
LOMU	24.0	.70	.168	HOLE	8.0	.30	.024	BRNI	0.5	.20	.001
MEHI	32.0	.80	.256	FES	7.5	.30	.023	SIGA	0.5	0	0
BRMO	25.0	.60	.150	BRRI	2.0	.30	.006				
AVE	0.5	.60	.003								
ERMO	1.0	.70	.007								
Total	81.5		.584	Total	17.5		.053	Total	1.0		.001

VIGOR OF KEY FORAGE SPECIES: Good X Fair ___ Poor ___ Species Rated: MEHI

LIVE PLANT COVER DENSITY: 95 % LITTER: Excessive X Adequate ___ Inadequate ___

SOIL EROSION: None X Slight ___ Moderate ___ Kind: ___

CONDITION CLASS - RANGE SITE - CAPACITY A/AUM

	Excellent	Good	Fair	Poor	Very Poor
% Desirables	80-100	60-79	40-59	20-39	19 -
% Less Desirables	0-15	10-30	20-45	25-60	60 +
% Undesirables	0-5	6-10	11-40	25-50	50 +
Serpentine lands FAR 0.58	2.0-3.0	3.0-4.5	4.5-6.5	6.5-10.0	0.0
Loamy Uplands FAR 0.26	0.25-0.5	0.5-1.0	1.0-2.0	2.0- 4.0	0.0

CONDITION CLASS LOW EXCELLENT EQUIVALENT CAPACITY = 0.5 A/AUM*

TOTAL F.V.F. .638 X DENSITY .95 = F.V.F. .606 $\frac{\text{F.A.R.}}{\text{F.V.F.}}$ = 0.43 A/AUM*

JVS/78

RECONNAISSANCE SURVEY SHEET - SAN LUIS OBISPO AREA RANGE SITES

RANCH PECHO GRAZING UNIT CROWBAR-MALPASO DATE JUNE 26, JULY 5

TECHNICIAN J. STECHMAN FIELD SHEET NUMBER 6

RANGE SITE/TYPE UPLAND SOIL SANTA LUCIA-ELDER VAR. MAPPING CODE AVE-BRRI

TOTAL ACREAGE 210 AVERAGE CAPACITY A/AUM* 1.35 TOTAL AUM 156

AV HM 311
MIN. 255
MAX. 353

PLANT COMPOSITION and EVALUATION
(546)

Desirables				Less Desirables				Undesirables *			
Sym	%	P.U.F.	F.V.F.	Sym	%	P.U.F.	F.V.F.	Sym	%	P.U.F.	F.V.F.
MEHI	5.0	.80	.040	BRRI	16.5	.30	.050	BRNI	2.0	.20	.004
AVE	24.0	.60	.144	MEIN	0.5	.20	.001	CEN	2.0	0	0
BRMO	9.5	.60	.057	BRDI	11.0	.40	.004	HASQ	1.5	0	0
LOMU	2.0	.70	.014	CON	0.5	.10	.001	LUNA	3.5	.10	.004
STPU	1.5	.60	.009	FES	3.0	.30	.009	SIGA	9.5	0	0
TRI	0.5	.70	.004	HOLE	3.5	.30	.011	ERSE	1.0	0	0
ELTR	0.5	.50	.003	AGO	1.5	.50	.008	OF	1.0	0	0
KOCR	T	--	--	BRRU	T	--		ARCA	T	-	0
SAL	T	--	--					SIMA	T	-	0
POSC	T	--	--					PLER	T	-	0
								HEM	T	-	0
								DIAU	T	-	0
								SAME	T	-	0
								ORTH	T	-	0
								ACMI	T	-	0
Total	43.0		.271	Total	36.5		.084	Total	20.5		.008

VIGOR OF KEY FORAGE SPECIES: Good X Fair ____ Poor ____ Species Rated: AVE

LIVE PLANT COVER DENSITY: 60% LITTER: Excessive ____ Adequate X Inadequate ____

SOIL EROSION: None X Slight ____ Moderate ____ Kind: (HIGH HAZARD)

CONDITION CLASS - RANGE SITE - CAPACITY A/AUM

	Excellent	Good	Fair	Poor	Very Poor
% Desirables	80-100	60-79	40-59	20-39	19 -
% Less Desirables	0-15	10-30	20-45	25-60	60 +
% Undesirables	0-5	6-10	11-40	25-50	50 +
Serpentine lands FAR 0.58	2.0-3.0	3.0-4.5	4.5-6.5	6.5-10.0	0.0
Loamy Uplands FAR 0.26	0.25-0.5	0.5-1.0	1.0-2.0	2.0- 4.0	0.0

CONDITION CLASS FAIR EQUIVALENT CAPACITY = 1.5 A/AUM*

TOTAL F.V.F. .363 X DENSITY .60 = F.V.F. .218 F.A.R./F.V.F. = 1.19 A/AUM*

*Other trace (T): ANCO, CECU, QUAG, COMA, CUC, RACA, ANAR, VER, ESCA, ERPA, CHPO, ADFA, RHDI, CHCA, PIMU

JVS/78

RECONNAISSANCE SURVEY SHEET - SAN LUIS OBISPO AREA RANGE SITES

RANCH PECHO GRAZING UNIT WINDY PT. DATE JUNE 26

TECHNICIAN J. STECHMAN FIELD SHEET NUMBER 7

RANGE SITE/TYPE UPLAND SOIL SANTA LUCIA ROCKY LOAM MAPPING CODE AVE-LUP

TOTAL ACREAGE 187 AVERAGE CAPACITY A/AUM* 1.82 TOTAL AUM 103

AV HM 205
MIN. 165
MAX. 228

PLANT COMPOSITION and EVALUATION
(213)

Desirables				Less Desirables				Undesirables			
Sym	%	P.U.F.	F.V.F.	Sym	%	P.U.F.	F.V.F.	Sym	%	P.U.F.	F.V.F.
BRMO	0.5	.60	.003	BRRI	15.5	.30	.047	SIGA	11.0	0	0
AVE	37.0	.60	.222	HOLE	0.5	.30	.002	LUP	17.5	0	0
ERMO	0.5	.70	.004	BRRU	1.0	.40	.004	RASA	2.5	0	0
MEHI	2.0	.80	.016	CON	1.0	.10	.001	ESCA	1.0	0	0
STPU	1.0	.60	.006	AGO	1.0	.50	.005	PHA	7.5	0	0
								HASQ	0.5	0	0
								ERPA	T	-	0
								COCA	T	-	0
								ERSE	T	-	0
								CEN	T	-	0
								HEM	T	-	0
								BRNI	T	-	0
								ARCA	T	-	0
								SAME	T	-	0
								QUAG	T	-	0
Total	41.0		.251	Total	19.0		0.59	Total	40.0		.008

VIGOR OF KEY FORAGE SPECIES: Good X Fair ____ Poor ____ Species Rated: AVE

LIVE PLANT COVER DENSITY: 50 % LITTER: Excessive ____ Adequate X Inadequate ____

SOIL EROSION: None X Slight ____ Moderate ____ Kind: (HIGH HAZARD)

CONDITION CLASS - RANGE SITE - CAPACITY A/AUM

	Excellent	Good	Fair	Poor	Very Poor
% Desirables	80-100	60-79	40-59	20-39	19 -
% Less Desirables	0-15	10-30	20-45	25-60	60 +
% Undesirables	0-5	6-10	11-40	25-50	50 +
Serpentine lands FAR 0.58	2.0-3.0	3.0-4.5	4.5-6.5	6.5-10.0	0.0
Loamy Uplands FAR 0.26	0.25-0.5	0.5-1.0	1.0-2.0	2.0- 4.0	0.0

CONDITION CLASS LOW FAIR EQUIVALENT CAPACITY = 2.0 A/AUM*

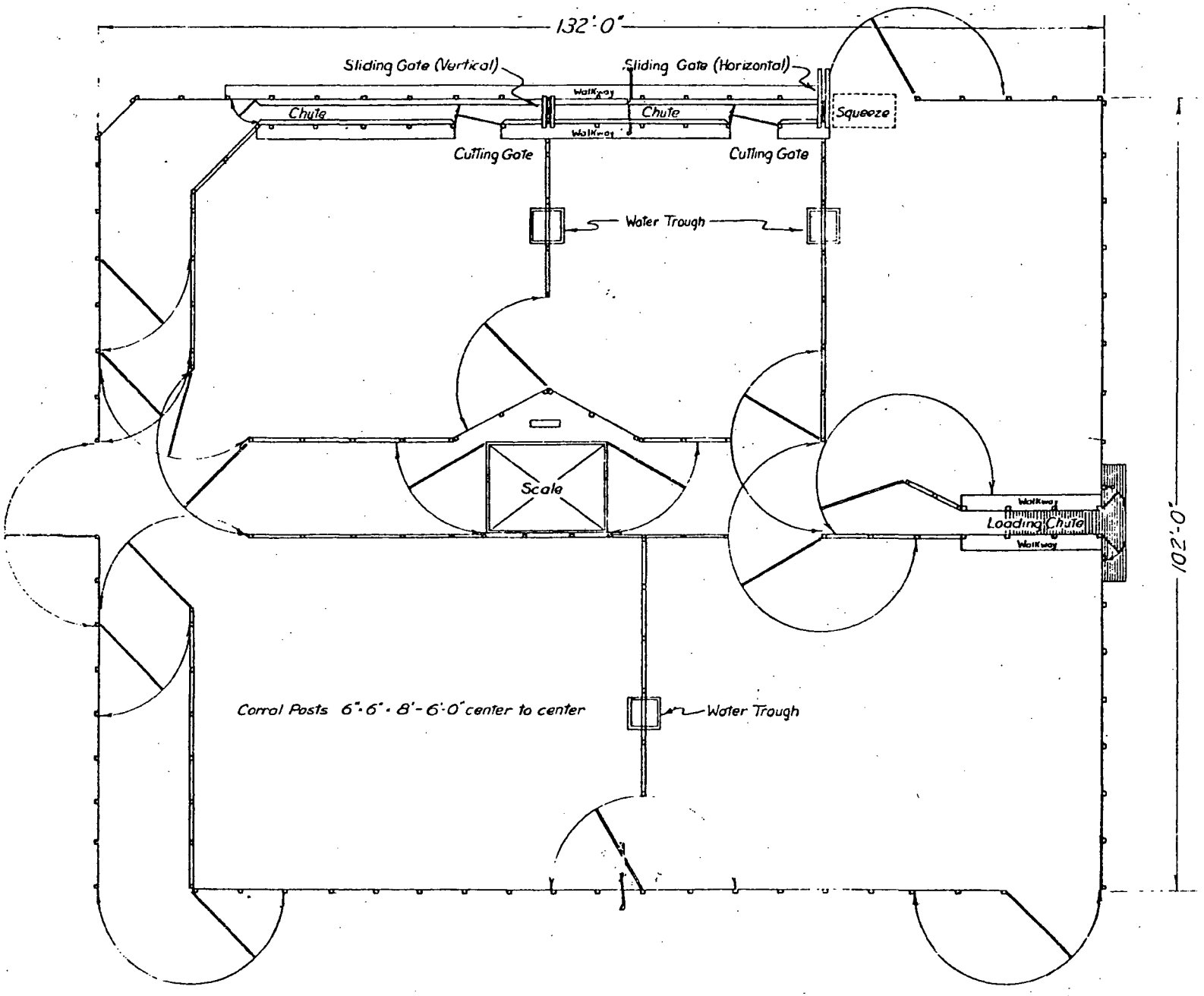
TOTAL F.V.F. .318 X DENSITY .50 = F.V.F. .159 $\frac{F.A.R.}{F.V.F.}$ = 1.64 A/AUM*

JVS/78

APPENDIX C

CORRAL INFORMATION AND DESIGN PLANS

SET OF CORRALS FOR HANDLING 200-300 CATTLE



CATTLE CORRALS

CAN SAVE LABOR

This material prepared by
W. N. King, Farm Advisor, Kern County
W. E. Emrick, Farm Advisor, Madera County

A GOOD SET OF CORRALS CAN SAVE A LIVESTOCK GROWER TIME AND INCREASE HIS PROFIT BY PROVIDING:

- A convenient strong place to hold cattle.
- A place where cattle can be quickly and easily sorted.
- A strong chute where cattle can be loaded without undue bruising and crippling.
- A place for a squeeze where cattle can be restrained for necessary treatment.

Shown in this leaflet is a practical set of corrals for handling about 200 to 300 cattle at a time. The original corral built on this plan is at the Tejon Ranch at Lebec in Kern County. There the corral has proven to be convenient and useful.

No one corral plan will be adaptable for all ranches; the plan shown suggests principles to follow. Certain general features that have been found practical in corral design will find application in many places.

GENERAL CONSIDERATION:

The corral should be located on well-drained land, at a point convenient to the ranges and also for cattle trucks.

The size of the corral will depend on the number of cattle necessary to hold either for working through the chute or for shipment.

When holding cattle for a number of hours, allow 20 to 30 square feet of area per head.

When holding a number of days, allow 30 to 80 square feet per head.

Holding pens within the corral should be so arranged that cattle can be moved from any one pen to the branding chute, scales, or loading chute without having to pass through any other holding pen on the way.

A common mistake is underestimating the power of the cattle and of the cattle trucks. Skimping on the material for corral structures may be costly. Fences and loading docks that are too light may be torn out.

Characteristics of Good Corral Fences

Fence Height

Fence height should be 4½ to 6 feet, 5 feet being the usual height.

For a 5-foot fence, use 8-foot posts, set 3 feet in the ground.

Posts

Posts should be 6" x 6" x 8' and should be set at least 2 feet 6 inches in the ground.

Posts should be treated with pentachlorophenol or creosote, particularly if they are not redwood or cedar. Used railroad ties make excellent posts.

Wooden posts should not be set in concrete. This tends to cause them to rot faster and snap off easily.

Posts to which large gates are hung should be anchored by nailing two pieces of treated lumber about 2" x 10" x 3' to the below ground portion of the post.

Gate posts of heavy steel pipe set into concrete are desirable for heavy gates.

Fence Rails

If fence posts are set 6 feet on center, the fence rails may be of 2" x 8" or 2" x 6" material. If 2" x 6" lumber is used, 5 rails are needed. If 2" x 8" lumber is used, 4 rails should be sufficient.

If fence posts are set 8 feet on center, 2" x 8" rails should be used.

It is desirable that inside fences have double construction, that is, rails on both sides of the posts.

No more than two fence rail joints should be made on any one post.

Care in spacing corral posts can reduce labor and material costs. For example, if 16-foot lumber is most readily obtainable for fence rails, then posts set 5'4" or 8'0" on center will save considerable sawing of the lumber.

Corral Gates

Gates should open out, that is, into the direction in which the cattle are usually moving.

Gates usually should be in a corner but should not swing from the corner post unless necessary.

Gates should swing back against the fence.

If possible, gates should be lined up so that cattle passing through a corral can go straight through without stopping.

By making the gates to fit the full width of the holding pen connecting alleys, hazardous corners can be avoided.

Gates usually should be about 12 feet wide so that trucks can be driven easily into the corral and cattle can be moved without crowding.

Gate lumber normally is the same material as that used for the corral rails.

Diagonal braces always should be used on the gate. A preferred plan is to hinge and brace the gate from a point much higher than the fence.

Bolts should be used to attach the hinges. They should also be used at gate corners and where the diagonal brace is attached to the gate.

Nails

Common steel 16d and 20d nails are the best sizes for corral work. Use three nails in 2" x 6" lumber and four in 2" x 8" lumber.

Coöperative Extension work in Agriculture and Home Economics, College of Agriculture, University of California, and United States Department of Agriculture coöperating. Distributed in furtherance of the Acts of Congress of May 8, and June 30, 1914. J. Earl Coke, Director, California Agricultural Extension Service

APPENDIX D

GROUND SQUIRREL CONTROL MEASURES

SAN LUIS OBISPO COUNTY
AGRICULTURAL COMMISSIONER'S OFFICE

THE PROPER USE OF ZINC PHOSPHIDE FOR THE CONTROL OF GROUND SQUIRRELS (CITELLUS BEECHEYI BEECHEYI)

LIFE HISTORY:

Ground squirrels are burrowing rodents whose feeding and burrowing habits conflict with man's agricultural interest. The burrows are used for safety retreats, for shelter during very hot or rainy weather, and rearing their young. Many of the adult squirrels hibernate during the winter and undergo periods of reduced activity during the heat of the summer. When this occurs, bait should not be exposed. Ground squirrel infestations are usually comprised of groups of families or colonies. If left unmolested and ample food is available, they increase rapidly, usually producing single annual litters of six to a dozen or more young.

They feed on green herbage, grass or weed seed. In fields they dig up sprouting grain, and later pull down the ripening heads. They climb trees and feed on fruit and nuts.

CONTROL:

Before poisoning operations are begun, the bait should be tested to insure its acceptance by ground squirrels. Select a few burrows which show recent squirrel activity; scatter a tablespoonful of bait (wear gloves or use a spoon) on bare ground on or near the cleared surface of the squirrel runway. It is less likely to be found and eaten if scattered in tall vegetation or on soft earth; do not put bait down the burrows as it will be trampled or thrown out not eaten. If 75% or more of the test baits are consumed in twenty-four hours proceed with the baiting over the entire

infested area, making certain that a bait is placed near each active burrow. If test baits are poorly accepted by the squirrels, wait one or two weeks then repeat the trials. To reduce hazard to other species and to avoid wasting material do not overbait. About fifty tablespoon-sized baits can be placed from each pound of grain bait. Probably less than 10% of the poisoned ground squirrels will die above ground, but these should be buried to minimize secondary poisoning hazards, particularly near ranch house and/or residential areas.

The following precautions should never be forgotten:

Keep poison baits locked up, out of the reach of children and irresponsible persons.

Wash hands carefully after handling baits even though gloves have been worn.

If accidental poisoning occurs, a physician should be called at once.

Bait should not be exposed where hogs or poultry are likely to pick it up.

Do not smoke while mixing or handling baits.

COOPERATIVE 1080
GROUND SQUIRREL CONTROL PROGRAM
San Luis Obispo County

San Luis Obispo County will be divided into two sections for alternate year applications. The natural boundary, Mt. Diablo Range, would be used as the dividing line.

No property will be treated more than once in two calendar years.

The County Department of Agriculture will determine the optimum time in accordance with the best control techniques and safety measures.

Ground squirrel control priorities are:

1. Public health protection under the authority of the County Health Officer.
2. Crop protection.
3. Area where landholders of contiguous properties have requested assistance and are willing to cooperate in area wide squirrel control programs.
4. Individual properties upon request from the landholders.

Ground squirrel control will be initiated only upon receipt of signed "Control Agreement" from the landholder.

The program will be carried out using either aerial or hand application, as agreed by the landholder and the Department of Agriculture.

The county will provide program supervision. The landholder will be responsible for application cost and bait cost. AIR METHOD - the 1080 bait cost and the cost of application by a county and state certified pilot. GROUND METHOD - the 1080 bait cost and the cost of County Rodent Control Foreman's time, mileage, (including travel time), and equipment.

General notification of the Agriculture Department's intent to begin application of bait will be through the local news media, but the individual landholders should notify their neighbors as to specific times and places.

Landholders of squirrel infested properties will be contacted by the Department of Agriculture upon receiving a signed complaint from one or more adjoining neighbors. Abatement proceedings will be instigated when deemed necessary by the Agricultural Commissioner.

The Agricultural Commissioner's Office will be governed in regard to wildlife by the State-County procedures and safety factors. When wildlife problems not covered in these policies occur, a solution will be sought working cooperatively with the California Department of Fish and Game.

SAN LUIS OBISPO COUNTY 1080
GROUND SQUIRREL CONTROL AGREEMENT

THIS AGREEMENT IS made and entered into between the County of San Luis Obispo acting through the Department of Agriculture of the County of San Luis Obispo, State of California, hereinafter called "Department", and the undersigned landowner(s), Lessee(s) or possessor(s) of the herein described property, hereinafter called "Owners".

The parties mutually agree to the following:

(1) The undersigned owner(s) request and authorize the Department to supervise the ground squirrel control on said property. The Owner(s) agree to pay upon billing for all 1080 poison bait used, and further agree to either: (A) Furnish aerial application by a County and State certified pilot; and/or (B) To pay upon billing for the Department's Roden Control Foreman's time, horse, equipment, and mileage (including travel time) and to furnish one (1) to five (5) men each and every day until poison operations on the property covered by this Agreement are completed.

(2) The undersigned certifies that they have been advised as to the hazards of 1080 (Sodium Monofluoroacetate) and the precautions to be taken. Owner shall be responsible for all pets and livestock which may come in contact with the treated premises.

(3) The owner(s) understand that possession of 1080 by an unauthorized person is a Violation of the Agricultural Code, punishable by six months in jail, or a $500 fine or both.

(4) Owner hereby warrents that he owns or has a possessory interest in the property to be treated, and that said interest includes the authority to contract for this treatment. Said property is described as follows:

_____

_____

(5) The owner(s) agree(s) to defend, indemnify and hold harmless, the State of California, the County of San Luis Obispo and its Department of Agriculture, and all of their respective officers, agents or employees against any cause of action, loss, claim, liability, or judgment in any way arising out of, or connected with the poison operations covered by this Agreement.

NAME: Last (please print) First Middle Initial

ADDRESS:

CITY OR TOWN: STATE: ZIP: PHONE NUMBER:

SIGNATURE: TITLE: DATE:

****

FOR COUNTY USE ONLY

Men Supplied_____ Aerial_____ District_____ Date of Request_____

Acres_____ Hand_____ Individual_____ Person taking Request_____

May 1978