

CHAPTER VII

AGRICULTURE

A. INTRODUCTION - PURPOSE

The Agricultural Chapter is an effort by the County of Merced to revise the General Plan to reflect the importance of agriculture in the County. It was undertaken to analyze the present status of agriculture and to propose solutions to the problems that exist. The purpose of this Chapter is to define policies that will improve the viability of agricultural operations and promote the conservation of agricultural land.

The Chapter consists of a presentation of background information in Sections A-B, and the outlining of goals, objectives, and policies to achieve the purpose of the Chapter in Section C. Implementation measures are presented after each policy. One term used throughout this Chapter requires a definition: productive agricultural land or soils. This includes all good quality soils - Prime, Statewide Important, and Unique on the Important Farmland Map, and Capability Class I - IV on the Soil Survey of the USDA Soil Conservation Service - as well as poor soils that are presently or potentially producing agricultural commodities.

This Chapter was completed by the Planning Department with the assistance of the Technical Advisory Committee for Agricultural Land Conservation (TAC/ALC). The membership of TAC/ALC consists of representatives of various public agencies, the six cities in the County, and five farmers appointed by the Board of Supervisors. The Task Force on the Agricultural Chapter included additional farmers and representatives of various farm organizations. The cooperation of the TAC/ALC members and their unselfish volunteer commitment in drafting this document cannot be sufficiently acknowledged.

GEOGRAPHY - HISTORY

Merced County is located near the center of California in the San Joaquin Valley. It is bounded by the Sierra Nevada Mountains in the east and the Coastal Range to the west. The soil consists of a large fertile alluvial fan in the east side of the County resulting from centuries of erosion in the Sierras. In the west side, a limited alluvial fan from the Coastal Range was formed resulting in more shallow soil depth.

The first settlements in the County were the very large Spanish land grants in the west side as early as 1834. During the gold rush, this area became a major feeding stop for sheep and cattle being herded over the Pacheco Pass to San Francisco.

The raising of wheat was introduced in the 1850's relying on natural rainfall for irrigation. By 1880, 1,500 to 2,000 acres near the Merced River were irrigated through man-made channels. And in 1888, with completion of Lake Yosemite, irrigation water was finally available to lands far from the Merced River.

The current agricultural landscape in the County reflects these early development forces: large cattle ranches and farms are found in the west, while smaller farms are located in the east because of the water supply, superior soil quality, and early introduction of the railroads as a transportation link. Today, Merced County ranks in the top ten agricultural counties in the State for overall production and in the top five for some crops.

B. AGRICULTURAL CHAPTER ISSUES

1. Economics of Agriculture

a. Role of Agriculture in Local Economy

CROP VALUES/CONTRIBUTION: The contribution agricultural production makes to the economy of Merced County cannot be overemphasized. More than 90 different crops are grown commercially in the County, making it one of the most diverse agricultural areas in the nation and the world. Agricultural crops and products gross value in 1988 was over \$973 million, a 3% increase from the 1987 value. Price increases for certain commodities and larger production of others contributed to the growth in value. Milk production is the leading contributor of income at \$218 million, followed by chicken at \$144.7 million.

ACREAGE DEVOTED TO CROPS: According to the 1987 Agricultural Commissioner's Report, 1,050,000 acres were in crops, with 61% in dry and irrigated pasture. Land devoted to livestock production is generally located in the foothills and valley pastures. Field crops accounted for 25% of harvested acres in 1987, orchards 10%, and vegetable crops 3% of the total.

FARM SIZES: Data from the 1982 Census of Agriculture, Merced County, provides some insights on the characteristics of persons engaged in agriculture. In that year, the average farm size was 393 acres, compared to the statewide average of 390 acres. (Farm size is defined as the amount of land owned and rented by the farm operator minus the amount of land rented to others.) As shown in Table VII-1, 40% of all County farms are between 10 and 49 acres in size. While no data was available from 1982, the 1978 Census reported that farms between 10 and 49 acres in size accounted for only 6% of the harvested cropland for the year. On the other hand, farms of more than 2,000 acres, represented just 4% of the farms yet harvested 30% of the cropland.

Using data from the 1982 Census, it is possible to formulate a basic picture of farming in the County. Table VII-2 indicates that over one quarter of all farms had yearly sales of less than \$5,000 in 1982. Of the 2,951 farms in the County, 2,772 or 94% were owned by individuals, families, or partnerships. The 164 corporate farms

(including 148 family held corporations) totaled over 229,000 acres, 20% of the County farmland. Thirty-seven percent of the farm operators reported a principal occupation other than farming, and 39% reported working 100 days or more off the farm. Table VII-3 presents data on the tenure and organization of Merced County farms.

A final point in the economic picture of farming in Merced County concerns the intensity of use of the land. In other words, getting more production and, therefore, more value out of each acre farmed. Advances in the use of pesticides, chemicals, irrigation, strains of plants and other technologies have helped increase per acre yields. The climate of the San Joaquin Valley also allows double cropping in some areas.

EMPLOYMENT: Agriculture is the source of employment for 25% of the County's civilian labor force. In 1987, annual average farm employment fell to a level of 9,725 as low as it has been since 1973. Employment in agricultural services, however, has almost doubled over the same period. In the past the Federal Payment in Kind Program had acted to reduce agricultural services employment, as less services were in demand from farmers who chose not to grow selected commodities; this program has since been eliminated. The recent trend in agricultural employment will continue to decline according to the Employment Development Department (EDD). Although agricultural production and total acreage under cultivation is expected to increase, rising operating costs will force many growers to turn toward the increased usage of mechanization, thereby reducing labor needs. This will result in a change in acreage allocations of various crops. Less land will be used for labor-intensive crops, while more will be devoted to crops and commodities that require less labor and yield higher prices. As of 1987, there were 6,350 workers in the food processing sector and steady employment growth is expected into the near future.

Employment growth in the agricultural industry will likely come about more from the expansion of existing firms rather than from new firms locating in the County. Industrial development and expansions are due to the comparative advantage of firms to locate in Merced County rather than elsewhere. One advantage the County could offer is the issuance of Industrial Revenue Bonds (IRB) for attracting new firms and expansions with low cost financing.

TABLE VII-1

FARMS BY SIZE

<u>Farms by Size</u>	<u>1982</u>		<u>1987</u>	
	<u>Number</u>	<u>%</u>	<u>Number</u>	<u>%</u>
Less than 10 Acres	452	15	324	11
10 to 49 Acres	1185	40	1201	41
50 to 179 Acres	695	24	703	24
180 to 499 Acres	307	10	356	12
500 to 999 Acres	130	4	143	5
1,000 to 1,999 Acres	80	3	85	3
2,000 Acres or More	104	4	102	4
 TOTAL	 2951	 100	 2914	 100

SOURCE: 1982 Census of Agriculture, Merced County

TABLE VII-2

FARMS BY VALUE OF SALE

<u>Farms by Value of Sales</u>	<u>1982</u>		<u>1978</u>	
	<u>Number</u>	<u>%</u>	<u>Number</u>	<u>%</u>
Sales of \$ 20,000 or More	1477	50	1399	48
\$250,000 or More	478	16	342	12
\$100,000 to \$249,999	313	10	337	11
\$ 40,000 to \$ 99,999	343	12	423	15
\$ 20,000 to \$ 39,999	343	12	297	10
Sales of Less than \$20,000	1474	50	1515	52
\$ 10,000 to \$ 19,999	320	11	310	11
\$ 5,000 to \$ 9,999	297	10	336	12
\$ 2,500 to \$ 4,999	857	29	869	30

SOURCE: 1982 Census of Agriculture, Merced County

TABLE VII-3

FARMS BY TENURE AND ORGANIZATION

<u>Type of Tenure</u>	1982		1987	
	<u>Number</u>	<u>%</u>	<u>Number</u>	<u>%</u>
Full Owner	1988	67	1960	67
Part Owner	598	20	585	20
Tenant	365	13	369	13
<u>Type of Organization</u>				
Individual or Family	2343	79	2322	80
Partnership	429	15	463	16
Corporation	164	6	120	4
Other	15	---	9	---

SOURCE: 1982 Census of Agriculture, Merced County

PROCESSING VALUE: Agriculture's contribution to the local economy includes not only the value of all crops grown in the County, but includes as well, the "value-added" of processing both locally grown and imported commodities. Imported commodities are crops and products grown outside the County and then shipped into Merced for processing. Merced County agricultural industries are involved in several different aspects of crop production and processing. Local firms aid farmers by: shipping, packing, processing, and storing various crops and commodities.

The method of measuring agriculture's total contribution and flow of dollars through the local economy is with an Input-Output Model. An Input-Output Analysis of the economy of a specific geographic area results in an Input- Output Model which depicts the economy as a system of interacting economic sectors and shows the magnitude of these relationships. Once established, dollar changes in one sector can be traced to determine their impacts on or resulting changes in another sector.

Input-Output Models have been developed for several counties and regions in the state by the University of California Cooperative Extension, Berkeley. A model for the San Joaquin Basin was completed in 1976 by the U.C. Cooperative Extension, and could be a source of technical data for such a study of Merced County. It would be useful to prepare a detailed Agricultural Impact Study for the County. Utilizing services of the local U.C. Extension Office, the Agricultural Commissioner, and other County departments, an Input-Output Model could be constructed for the local economy. Such a study would accurately measure agriculture's total contribution to the economy through crop production, processing, transportation, and other related services.

An agricultural impact study was prepared for Stanislaus County in 1981, and in 1983 for San Joaquin County. Findings of the Stanislaus County study concluded that the value of agricultural production and processing was nearly five times the amount attributed to the value of crops in the annual Agricultural Commissioner's Reports. The difference was the result of an "economic multiplier" effect of basic jobs (such as agriculture) creating nonbasic industry jobs (wholesale and retail trade). For every dollar earned by the basic sector, "X" number of dollars are generated in the local economy by the service industries. For example, in San Joaquin County, fruit sector sales of \$65.17 million resulted in sales of \$0.31 million in the dairy sector, \$6.11 million in the agricultural services sector, \$1.19 million in the transportation sector, etc. And for the State as a whole, the California Crop and Livestock Reporting Service estimates that for every dollar of farm receipts, three additional dollars are generated in the State's economy.

b. Factors Influencing Agricultural Productivity

LAND: The value of California farm real estate doubled between 1977 and 1981. As shown on Table VII-4, San Joaquin Valley truck and vegetable cropland rose

from \$1,135 an acre in 1972 to \$4,570 an acre in 1982. However, in the mid-1980's farm values decreased dramatically--by as much as 50% in some instances. More recently, prices have stabilized and farms may again be increasing in value.

Urbanization, and its effect on agricultural land values and production costs is a major concern of the farm sector. Farmland taken out of production probably will never be recovered, thus forcing cultivation of marginally productive land at higher costs to farmers and ultimately the consumer. County development policies, through zoning and general plan designations, also affect farm real estate values. Land zoned for Agricultural-Residential uses in the Merced-Atwater area commands prices up to \$35,000 to \$45,000 per one-acre lot. Whereas a single acre of productive almond orchard land may be valued at only \$6,000. The acre value of a certain crop depends upon the productivity of the land and the dollar value per unit of output.

WATER: Irrigation water costs to Merced County and other San Joaquin Valley farmers varies greatly. Water is available to farms through an extensive canal system and by groundwater pumping. Both the federal Central Valley Project, and the State Water Project provide water to local farms. Merced County is presently served by no less than 25 water and irrigation districts, irrigating 456,484 acres according to the 1978 Census of Agriculture. Surface water delivery costs also vary between the different districts. In 1979, the cost per acre foot of water ranged from \$0.96 per acre foot for the Turlock Irrigation District serving the Hilmar-Delhi area, to \$20.80 per acre foot for the San Luis Water District in the Los Banos area. As a comparison, pumping costs for five wells monitored in Merced County during 1978, by the Department of Water Resources, varied from \$12.62 to \$418.06 per acre foot.

Water demand by the various crops grown in the County, and the cost per acre foot of water, may influence the profitability of certain farming operations. Data collected by the Merced Irrigation District (MID) shows the varying water demand of different crops. The cost per acre foot of irrigation water and the water demand of crops could influence where those crops would be grown. As an example, you would expect crops that require a lot of water to be grown in areas that have lower water rates than in areas where water is significantly more expensive. In the San Luis District, you would not expect to find large acreage devoted to growing crops with high water demand such as: rice, onions, peaches, or irrigated pasture. However, you might find such crops as cotton or grain grown which require less water than most other field or vegetable crops. In areas where the water costs are comparable, the influence would not be as great in determining which crops would not be profitable.

TABLE VII-4

Average Value of Land Per Acre

	<u>San Joaquin Valley</u> * (1)		
	<u>1972</u>	<u>1981</u>	<u>1982</u>
Irrigated:			
Truck & Vegetables	\$1,135	\$4,190	\$4,570
Intensive Field Crops* (2)	980	3,590	3,920
Extensive Field Crops* (3)	815	3,180	3,640
Pasture	650	2,140	2,420
Nonirrigated:			
Cropland	420	1,480	1,710
Pasture	375	1,050	1,310
Rangeland	250	620	770

* (1) Includes San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and Kern Counties.

* (2) Includes such field crops as: alfalfa, cotton, sugar beets.

* (3) Includes such field crops as: grains, dry beans, rice, wheat (U.S. Department of Agriculture definitions).

SOURCE: Security Pacific Bank, California Agriculture, 1983, page 35.

DEBT: California farm debt tripled between 1973 and 1983. The survival of the farm in the future will greatly depend on its financial condition. There are two kinds of farm debt: real estate and non-real estate. Non-real estate debt has been growing faster than real estate debt since 1977. Non-real estate debt consists primarily of 1) short-term loans for crop production or operating expenses, and 2) machinery and equipment loans.

Farm income has remained soft over the last few years while inflation, credit, and production costs have continued to rise. Conversation with the Federal Loan Bank office in Merced indicates that farm loans have been made for operating expenses and not for financing cropland expansions. It is difficult to compute the average debt load for the typical farm in Merced County. Farms, as with other businesses have different capabilities for carrying debts. Operations that are capital intensive (dairies, orchards, vineyards, etc.) can more easily carry a larger debt load than a farm devoted to pasture or field crops. The same is true for a farmer that has inherited his land with no outstanding long-term debt. He would be more able to increase his debt load for expanding operations than a farmer who had to borrow heavily to purchase his land.

ENERGY COSTS: Merced County agriculture is highly mechanized, with diesel or gasoline powered equipment being used in most phases of farm operations. Energy costs account for a much larger proportion of the total production expenses for most crops than they did only a few years ago. Agriculture is dependent on fossil fuels and electricity in three areas: first, its production techniques demand energy inputs; fertilizer, pesticides, and fuel for mechanized planting and harvesting. Second, its demand for irrigation water requires large amounts of electric power for pumping. Third, its distance from markets and processor necessitates relying on a transportation system that is dominated by liquid fossil fuels (diesel, gasoline). Agriculture appears to be particularly vulnerable to rising energy prices, especially as they are reflected in the costs of water pumping, direct fuel use, and fertilizers.

LABOR COSTS: Rising labor costs in recent years have helped to push farm prices higher. Unionization among farm workers in the 1970's made possible significant strides for higher wages and other benefits. As a result, the cost of labor for California farm workers has been higher than the rest of the nation. As of July, 1982, the average wage rate was \$4.89 per hour for California workers, compared with \$3.96 per hour nationwide.

Efforts to increase mechanization on the farm has been met with some resistance from farm labor groups. Pro-labor groups contend that there have been many adverse impacts resulting from mechanization including displacement of workers and small family farmers, increased food prices to consumers, a deterioration of the quality of rural life, and a disruption of farm worker collective bargaining. However, pro-mechanization interests contend that mechanization has many positive benefits: reducing the toil of farm labor; increasing the productivity of farm

workers and farm enterprises; evening out the peaks and valleys in farm labor employment; reducing the amount of crop loss during harvest; and increasing the quality of produce by harvesting on a more timely and effective basis.

c. Tax Relief Measures

THE WILLIAMSON ACT: The California Land Conservation Act of 1965, better known as the Williamson Act, is the most widely used farm property tax relief program. It is a voluntary program where farmland owners enter restrictive use contracts with local governments. The subsidy is provided through a reduced property tax assessment resulting from valuing contracted land on the income it is capable of producing from agriculture rather than its fair market value for other purposes.

Prior to offering Williamson Act contracts, the Board of Supervisors sets the boundary of the preserve, the minimum farm size which can enter a contract and the minimum time the contract runs for (usually 10 years). The County Assessor determines the new assessment level by dividing the net income of the land, generally its rental value, by a special capitalization rate based on the rate of interest on long-term U.S. Government bonds (presently about 13%). For example, an acre of farmland that sold for \$5,000 would be taxed at approximately \$50 per year (1% of market value). If this land rents for \$200 per year, the land valuation for Williamson Act purposes would be about \$1,500, or a tax of only \$15 a year. Cities have several options regarding the Williamson Act; they can offer contracts independent of the County, they can honor the County's contracts when the land is annexed to the city, or they can protest any contract the County enters into within one mile of the city, giving them the right to cancel the contract immediately upon annexation.

There are two ways to terminate a contract: through cancellation or by filing a notice of non-renewal. To cancel a contract, the landowner must submit a request with the local government. A public hearing is held where the governmental body must find that the cancellation is in the public interest. A cancellation fee equal to 12.5% of the fair market value (cancellation valuation) must also be paid, unless such fee is waived or reduced. If approved, the cancellation is effective immediately upon recording a notice of cancellation. The second method to terminate a contract is for the landowner to file a "notice of non-renewal". While there is no cancellation fee under this approach, the contract takes nine years to expire with an additional one-ninth of the full market tax rate added each year so that by the tenth year the full rate applies. The County or City can also file a notice of non-renewal resulting in a somewhat modified cancellation process.

The tax relief and agricultural land preservation effects of this Act have been widely debated. However, a recent study of the Act's tax consequences was conducted by

the State Department of Conservation focusing on the effects of Proposition 13. The Department of Conservation reported that the average tax savings under the Act are 62% compared to the Proposition 13 (1975) valuation, and 83% compared to the 1981 fair market value. Substantial differences in tax savings were found depending on the crop, the county, and the proximity to urban developments. The greatest savings was on grazing land in San Luis Obispo County, and the lowest was zero on several crops in Tehama County (a special added tax relief can be applied in such instances ranging between 10% and 30% savings).

In a separate study conducted by the Stanislaus County Assessor's Office, contracted land was found to pay about 25% of the normal tax level. After the State subvention payments were received, the County lost approximately \$.36 million in revenue in 1981. Similar studies by the Merced County Assessor could be undertaken to estimate the potential savings to farmers, and potential revenue loss to the County.

In the final analysis, if the goal is to improve the financial viability of farms, the Williamson Act offers a substantial reduction in property taxes in most cases. The cost of this program, however, could be substantial and may require the County to reduce services.

OPEN SPACE AND CONSERVATION EASEMENTS: Other programs which use tax incentives to keep farmland in production include open space and conservation easements. Under the terms of the Open Space Easement Act of 1974, a conservation easement can be granted by the government or by a private land trust (usually a nonprofit community based organization formed to preserve farmland and open space) whereby the subject property becomes "enforceably restricted" to agricultural and related uses. The easement runs for a minimum of 10 years (with automatic renewal), or may be granted permanently. It can only be abandoned by application of the landowner (or by government through purchase of the property).

The easement must be consistent with the Open Space Element of the local general plan and be approved by the Planning Commission and Board of Supervisors after public hearings. The tax basis is the same as under the Williamson Act. Where the easement was granted permanently, an income tax savings may also be realized by the landowner for the development value of the land. In California, the Conservation Easement Act of 1979, was enacted to allow the granting of conservation easements without requiring public hearings. Under this Act, landowners who donate their development rights permanently may be eligible for charitable deductions on their Federal and State income taxes, concessions on estate

taxes where the property value has been reduced, and lower property tax assessments. Conservation easements have been used by the State Coastal Commission, and in limited coastal areas by local and trusts.*

2. Soils Analysis

Perhaps the most important factor affecting agricultural productivity in the County is soil quality. This section looks at how the soils are evaluated and classified and describes the quality of soils around the existing SUDP urban areas. A study of the potential growth that could be accommodated in these urban areas is also presented.

a. Mapping Procedure

Soils in Merced County have been analyzed and categorized by the U.S. Soil Conservation Service. The soils in the County east of the San Joaquin River were recently reclassified under the California Department of Conservation's Farmland Mapping and Monitoring Program. For the County lands west of the river, the soil survey was completed in early 1983, and is presently being reviewed for accuracy. With the exception of "prime farmlands" which have been identified, it will be a year or more before these soils are classified under the Farmland Mapping and Monitoring Program.

Because of the difference in the State's mapping program for the eastern and western County, the Planning Department developed an alternative method of classifying the less than prime soils in the west County. In order to better appreciate what the soil classifications represent, a brief description of the Important Farmland Map Soils Classification follows.

"Prime" farmland requires good soil quality and climate conditions, it must be irrigated, permeable to water, have acceptable acidity or alkalinity levels, and acceptable salt and sodium content, with few or no rocks, and can economically produce sustained high yields when treated and managed according to modern farming methods. Soils identified as "Farmland of Statewide Importance" are based on the same criteria though with slightly lower capability standards for measurement. "Unique Farmland" and "Farmland of Local Importance" are based on a soils present use to produce specific high value crops which are important to the state and local economy, respectively.

A modified version of this classification system has been applied to the west County. For a two mile radius around the SUDP's, a detailed breakdown of

*The Conservation Easement in California was used as a reference for this subject. Written by Thomas S. Barnett and Putnam Livermore for the Trust for Public Land 1983 (Island Press: Covelo, CA).

the soils has been completed categorizing the non-SUDP land as "Prime",

"Statewide Important/Unique", or "Other." The "Prime" soils are based on the same tests as for the east County. The "Statewide Important/Unique" classification was created by combining the non-prime Capability Class III and IV soils, both of which are suitable for cultivation. The "Other" soils category includes the Capability Class VI through VIII soils which have many limitations for cultivation and, except for rare cases, are not used for crop production.

The remainder of the west County has been separated into those areas primarily under cultivation and those areas not cultivated. This provides a rough indication of soil quality as most areas with cultivatable soils are under active crop production. Although grazing lands have not been mapped, much of the hills west of Interstate 5 and in the east County area are used for this purpose. The information for mapping cultivated areas was compiled by the State Department of Water Resources "Land Use Inventory" in January 1981.

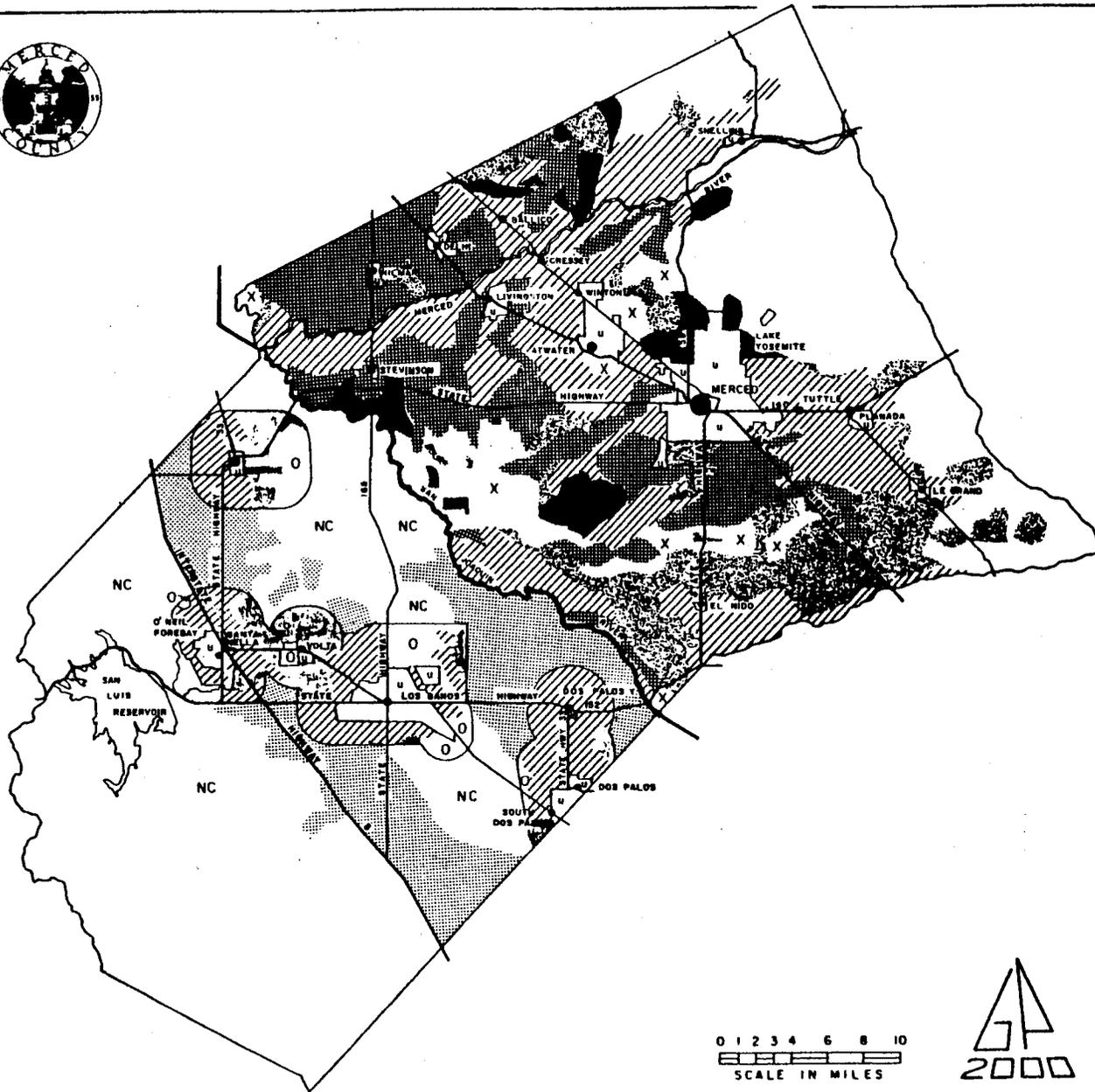
b. Analysis of Soil Quality and Urban Growth as Identified on the Important Farmland Map

Merced County is blessed with a large amount of prime soils, reflected directly in the high economic value of agricultural production in the County. This high quality soil, however, poses a problem for urban growth. Unfortunately, the best soils for crop production are also the easiest to develop and build upon because of superior slope and drainage qualities.

Within the County, all the major and most of the minor SUDP's are located on Prime or Statewide Important soils. Winton, Le Grand and Planada are entirely surrounded by prime soils. Most other SUDP's contain a mixture of soil classes, but with Prime and Statewide Important dominant. (Refer to Map 29).

Areas around SUDP's where lesser quality soils exist include: northern and portions of southern Merced City; eastern Los Banos; scattered areas of Local Highway 99; poor soils to the west and north of Volta; Local Important soil south and west of Stevinson; and all areas around Snelling except to the northwest. What this soil survey reveals is that, except for limited locations, the soils around all SUDP's in Merced County are of a very good agricultural quality. The use of these soils for urban development represents a loss of some of the most productive land in the County.

To analyze the demand for urban development on these soils, a study was conducted to estimate the amount of growth which could be accommodated with the existing SUDP's. (See Table VII-5.) Utilizing aerial photographs from 1979, rough calculations were applied to the vacant land within the



General Soil Quality

LEGEND:

LEGEND FOR LANDS LYING WEST OF THE SAN JOAQUIN RIVER
SOILS WITHIN A 2 MILE RADIUS OF SUDP'S

- PRIME FARMLANDS
- STATEWIDE IMPORTANT / UNIQUE FARMLAND
- OTHER LESSER QUALITY SOILS
- SPECIFIC URBAN DEVELOPMENT PLAN (SUDP)

CULTIVATED AND NON-CULTIVATED LANDS OUTSIDE
OF A 2 MILE RADIUS OF SUDP'S.

- CULTIVATED LANDS
- NON-CULTIVATED

LEGEND FOR LAND LYING EAST OF THE SAN JOAQUIN
RIVER

- PRIME FARMLANDS
- FARMLANDS OF STATEWIDE IMPORTANCE
- UNIQUE FARMLANDS
- FARMLANDS OF LOCAL IMPORTANCE
- GRAZING LANDS
- SUDP.
- OTHER

SOURCE: California Dept. of Conservation

MAP 29

MERCED COUNTY
YEAR 2000 GENERAL PLAN

0 1 2 3 4 6 8 10
SCALE IN MILES



TABLE VII-5

VACANT SUDP LAND*
(ALL SUDP'S WITH SEWERS)

<u>SUDP</u>	<u>1980 POPULATION</u>	<u>VACANT AREA (ACRES)</u>	<u>POTENTIAL DWELLINGS</u>	<u>POTENTIAL POPULATION INCREASE</u>	<u>POTENTIAL INCREASE IN PERCENT</u>
Atwater	17,530	2,050	10,240	30,750	175 %
Delhi	2,832	195	975	2,925	103
Dos Palos	3,123	908	4,540	13,620	436
Franklin/ Beachwood	2,426	186	930	2,790	115
Gustine	3,142	626	3,130	9,390	387
Hilmar (4)	1,706	160	800	2,400	140
Le Grand	904	135	675	2,025	224
Livingston	5,326	677	3,385	10,155	190
Los Banos	10,341	6,770	33,850	101,550	982
Merced (5)	36,499	7,070	35,350	106,050	290
Midway	699	586	2,930	8,790	1,257
Planada	2,406	487	2,435	7,305	303
Santa Nella	488	2,340	11,700	35,100	7,192
Snelling	314	220	1,100	3,300	1,050
S. Dos Palos	765	133	665	11,995	260
Winton	<u>4,995</u>	<u>627</u>	<u>3,135</u>	<u>9,405</u>	<u>188</u>
TOTAL	93,496	23,170	115,850	347,550	371

* Based on aerial photographs of 1979

- 1) Calculated at 5 dwellings per vacant acre (this average compensates for roads, vacant nonresidential land, and vacant multi-family residential land).
- 2) At 3 persons per dwelling.
- 3) Source: Franklin/Beachwood Community Specific Plan 1983 (does not include residential land).
- 4) Vacant SUDP residential land calculated in 1983.
- 5) Vacant city land (1,800 acres) estimated by City Planning Dept., 1983.

SUDP's with sewer service. This figure was then multiplied by a density of five dwelling units per acre which averages the area for roads and vacant land in all zoning general plan classifications. Population estimates are based on the most recent trend of three persons per dwelling.

This analysis reveals that the existing SUDP's with public sewer service could accommodate about 347,550 additional people, 3.7 times the 1980 population. The present SUDP size for the rapidly growing cities could accommodate the following increases: Atwater - 30,750 additional people, not including the Rural Residential Centers; Dos Palos - 13,620 additional people; Livingston - over 10,000 additional residents; and Merced - 106,050 additional people, also not including the rural Residential Centers.

Unincorporated SUDP's with high growth between 1970-1980 could accommodate the following population increases: Delhi - 2,925; Hilmar - 2,400; Planada - 7,305; and Winton - 9,405. Two additional SUDP's with large amounts of vacant land, but which have experienced minimal population growth in the last 13 years include Los Banos, providing enough vacant acreage to accommodate over 100,000 people, and Santa Nella with a present population of only 500, but containing enough land for 35,100 additional people.

The conclusion drawn from this analysis is that more than enough land is provided within the existing SUDP boundaries to accommodate projected growth well past the year 2000. From this, it appears that expansion of urban use on the productive soils outside the SUDP's represents a premature conversion of agricultural land. In addition, because of their large size, growth within the larger SUDP's should be directed toward areas of poor soils wherever possible.

3. Conversion of Agricultural Land

The conversion of agricultural land to other uses and from one agricultural use to another reflects the land use trends in the county's agricultural sector. As discussed previously in the Economics of Agriculture section, farmers are always seeking to maximize profits and reduce costs by converting their lands to produce the commodity offering the best return. This section looks at the location and rate of conversion of agricultural land to other uses, changes in agricultural production, and conflicts between farm and urban land uses.

a. Location and Rate of Conversion

The conversion from agricultural to urban uses for land up to one mile from the major SUDPs and incorporated cities was estimated by comparing aerial photographs from 1967 to 1979. The conversion figures for each SUDP are displayed in Table VII-6. Lands were considered converted if the 1967 photo contained cropped or vacant native vegetation, and the 1979 photo

TABLE VII-6

CONVERSION OF AGRICULTURAL LAND BETWEEN
1967-1979 BY MAJOR SUDP

<u>SUDP</u>	<u>ACRES CONVERTED</u>	<u>POPULATION CHANGE 1970-1980</u>	<u>AVERAGE INCREASE IN POPULATION PER ACRE</u>
Atwater*	792	5,890	8.9
Delhi	47	769	19.7
Dos Palo	56	627	13.4
Franklin/Beachwood	99	347	4.2
Gustine	39	349	10.7
Hilmar	90	596	7.8
Le Grand	0	N.A.	N.A.
Livingston	87	2,738	37.8
Los Banos	94	1,153	14.8
Merced*	2,160	13,829	7.7
Midway	17	N.A.	N.A.
Planada	0	350	N.A.
Santa Nella	60	306	6.0
Snelling	0	96	N.A.
South Dos Palos	0	123	N.A.
Winton	109	1,602	17.8
TOTAL	3,650	28,653	9.4

* Merced and Atwater totals include unincorporated Rural Residential Center lands developed at a density of one dwelling unit per acre.

showed structures or alteration for development such as grading and new roads.

A total of 3,650 acres was found to have been converted over these 12 years. An additional loss of 420 acres resulted from completion of Interstate 5 from Highway 152 to the southern County line. To estimate the magnitude of this conversion, two calculations were completed.

As an indication of the relationship between population growth and agricultural land conversion, an average yearly conversion rate between 1967-1979 was calculated and compared to the average yearly growth in population between 1970-1980, for selected SUDPs. This provides a ratio for the average increase in population per acre of conversion. On the higher end was Winton which averaged 17.8 people per acre, roughly equivalent to the six dwelling units per acre permitted in an R-1 single family zone. The Merced area averaged 7.7 people per acre, Atwater averaged 8.9 people per acre and Hilmar was comparable at 7.8 people per acre. And Franklin/Beachwood averaged only 4.2 people per acre reflecting the large lot type of development that has taken place. An average of 9.4 people per acre converted was the mean increase in the large SUDPs. It should be noted that these figures are only approximations because various amounts of each SUDP's growth was accommodated through infill development rather than agricultural land conversions.

Another method of estimating the magnitude of the 3,650 acre farmland loss is through a comparison with the 1979 total nonpasture agricultural land of the County. (Nonpasture agricultural land was used because nearly all SUDP conversion was from harvested cropland.) This urban conversion represents only 0.7 percent of the total harvested acreage of 496,300. However, most conversion took place on the best quality soils.

Additional farmland has been converted as a result of rock and gravel removal operations in the northeastern County area near Snelling. While little land has been removed from agriculture to date, the potential for surface mining hundreds of acres in this region exists. In one example, previously productive agricultural land was excavated 10-15 feet to remove subsurface rocks for gravel. As part of the reclamation effort some of the topsoil was replaced on the land. But an attempt to return the land to agriculture by planting oats failed because insufficient drainage resulted from the excavation. Surface mining of the earth down to the clay hardpan layer, and replacement of two feet of topsoil was not adequate to provide proper drainage for crop growth.

The main problem in converting productive agricultural land into a nonfarmable area below surrounding grade is that it is unnecessary. There are many acres of rock tailings piled upon the surface in this area which is presently being used for gravel pits. Dredging out streams and the Merced River would also provide a source of gravel without the resultant loss in agricultural productivity, and could aid in drainage flow capacity.

b. Lands Transferred from One Agricultural Use to Another

Another aspect of conversion involves lands which were transferred from less to more intensive crop production. The foothills on the east and west side of the County have all been used as native pasture for cattle at one time or another. The trend of late, however, has been to convert these areas, as well as the native pasture lands in the southcentral County area to more intensive field, orchard, or vine crops. This trend is the result of two main factors. Where good soils are located in the western foothills, the recent availability of water has allowed a wider variety of crops to be grown with a higher economic return to the farmer. Where poor soils are located, new technologies such as chemicals to reduce acidity levels and heavy fertilizer use to improve the nutrients have upgraded the soil quality.

While this may be interpreted as a positive trend, there is a negative side in that most of the increase in intensive crop production has been made at the expense of grazing land. One result has been the increase in the use of feed lots for cattle raising.

c. Conflicts Between Agricultural and Urban Uses

While the direct conversion of agricultural land to urban uses does not represent a large reduction in the total agricultural activity of the County, land parceled into small rural holdings which are too small for efficient farming may represent a larger actual loss. This includes the formation of rural "ranchettes" for residential use where 5 to 20 acres or more are taken out of agricultural production for a single home. These large estate homes are designed to take advantage of the peace and quiet of a rural setting; not for use as a ranch house to operate a farm.

Not only do small parcels remove previously productive farmland, but they also create incompatible uses that have a restrictive impact on the surrounding cropland. This involves complaints by nonfarm residents about dust and noise from farm equipment, odors from livestock and fertilizer use, and disease-carrying insects.

Specific urban-related impacts on individual farms include: trespassing, vandalism, and theft of farm equipment and crops, harassing of livestock by children and dogs, cut fences, and even fires.(1)

Another result from conversion of farmland to other uses is the impact on agricultural support businesses which go bankrupt from the loss of customers. This increases the hardship on the remaining farmers who must rely on services further from their operation.(2)

One of the largest problems resulting from the impact of urban development in agricultural areas is the restriction placed on farms over the use of pesticides. The County Agricultural Commissioner must issue permits for designated restricted pesticide use to some 2,000 farmers a year. A main constraint in pesticide use is the impact on surrounding land uses such as streams, livestock, other crops, and game refuges. But residents of non-farm housing developments are the primary source of complaints about farm pesticide use.

The Agricultural Commissioner places one or more of the following restrictions on the farmers use of pesticides: 1) spraying limited by wind conditions; 2) no spraying within a given distance from neighboring uses (as listed above); 3) require that a different type of pesticide be used; 4) alter the type of application method (such as banning the use of cropdusting planes); and 5) limiting the number of days or hours when spraying is allowed.

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- (1) William Toner, Saving Farms and Farmlands: A Community Guide, (Chicago: American Society of Planning Officials, 1978) pg. 1-2.
 - (2) Disappearing Farmlands: A Citizen's Guide to Agricultural Land Preservation, (Counties Research Foundation, 1980) Second Ed., pg. 7. Additional source information on this subject can be found in:
Daniel A. Mazmanian, "Agricultural Land Preservation in California: An Overview." California Farmlands Project Working Paper #1. (Claremont, CA: California Institute for Public Affairs, 1982).

A problem results when a farmer is so restricted in pest control because of neighbors' complaints, that crops are lost and eventually the farm may be completely taken out of production. The farmer then divides up his property to sell for more nonfarm housing, thus impacting the next farm.

As with large rural ranchettes, the long range effect of restrictions on urban adjacent farmland may result in the loss of more agricultural land than from actual urban conversion.

d. Antiquated Subdivision Issues

One of the greatest threats to Merced County's agricultural community is the creation of hundreds of ranchette homes on existing antiquated or "paper" subdivisions which are located on some of the richest soils. The term "antiquated subdivision" refers to subdivisions created prior to enactment of the State Subdivision Map Act and local subdivision ordinances. The only formal review of these early subdivisions concerned the adequacy of mapping information and documentation. Consequently, thousands of lots were subdivided throughout Merced County in the early part of the century with no regard to the agricultural or environmental consequences of the division.

These antiquated subdivisions involve lots ranging in size from one-twelfth of an acre to 40 acres or more. Fortunately, few of the smallest subdivisions involving lots of one acre or less have been sold off as individual lots. Most of them are still held in large ownerships with the underlying "paper" lots only showing up on the Assessor's parcel maps; but, as development activity increases in the 1990's there will be more pressure on farmers to implement these old lots. As with any rural non-farm housing, development of these subdivisions would directly convert agricultural land and result in various conflicts with adjacent farming operations as outlined above in subsection "C". These antiquated subdivisions also pose a variety of environmental problems: potential groundwater impacts from the concentration of on-site septic systems and individual wells; the generation of dust and auto emissions from vehicle trips on unimproved access roads from residents commuting to outlying employment and shopping areas; and, the impact on emergency services (fire, sheriff and ambulance) from increased development activity in remote areas.

SUMMARY

The low farmland conversion rate is a positive indication of the strength of agriculture in the County. Farmland loss in some of the other counties in the Central Valley has been much greater. For example, in San Joaquin County, 3,636 acres were converted between 1976 and 1979 (Merced's total for 12 years), and in Tulare County, an estimated 66,000 acres were converted between 1964 and 1969, although recent planning efforts have reduced this rate.

This does not mean that agricultural policies in Merced should be taken lightly. The severe economic hardships facing many of the county's farms requires as much public support and assistance as possible. And the introduction of more ranchette-type development increases the number of conflicts with agriculture and raises the speculative value of farmland beyond its potential agricultural income. It can be anticipated that there will be increased pressures for conversion in the future because of the area's relatively low housing prices. The County should use the Merger Ordinance process to combine the small lot, antiquated subdivisions, which result in both conversion of and direct conflict with agricultural lands.

4. Parcel Size Analysis

The analysis of parcel sizes throughout the nonurban areas of the County reveals how farmland is divided between large and small farms and rural subdivisions. Understanding the extent to which an area is committed to agriculture is vital in the development of agricultural policies.

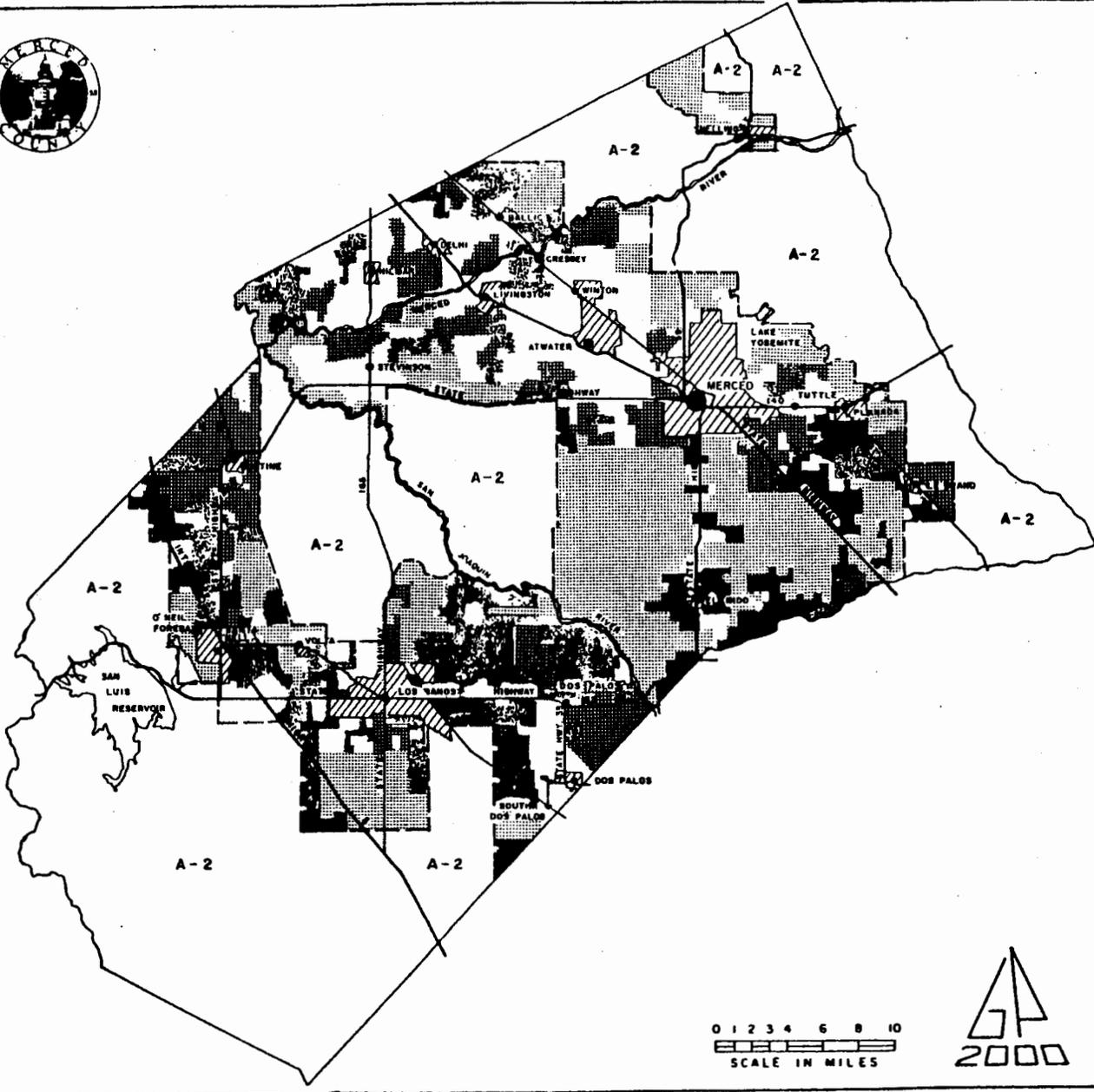
Given the same physical characteristics, areas with parcels 40 acres or larger are most likely to remain in active agricultural use than areas with parcels less than 20 acres. As pointed out in the preceding section, these smaller parcels are often purchased as rural estates or "ranchettes" and taken out of production. Present A-1 (20 acre minimum lot size) zoning reduces the threat of creating 10-15 acre ranchettes, but 20 acres is not large enough to discourage conversion to rural residential uses where land is inexpensive. In some counties, ranchettes of 100 acres have been created.

This section analyzes the distribution of parcel sizes within the County and discusses the implications for agricultural policy making.

a. Existing Parcel Size Summary Map

The mapping of this portion of the Agricultural Chapter surveys those areas zoned A-1 with a given parcel size range. Parcels were measured on a quarter section basis (1/4 mile square) except in cases where more than three parcels were present. These were mapped by eighth section (1/8 mile square).

The original categories used were: 0-10, 10-20, 20-40, 40-80, 80-160, and 160+ acres. Three of these categories were plotted on the "Existing Parcel Sizes in the A-1 Zone" map (See Map 30) showing the geographic distribution of various parcel sizes 40 acres and above. An additional category was added for areas where no one parcel size was dominant, but where the minimum was at least 40 acres. (A few scattered parcels within each category may be smaller or larger than the range.)



Existing Parcel Sizes in the A-1 Zone

LEGEND:

-  AT LEAST 40 ACRES BUT NO DOMINANT PARCEL SIZE (AT LEAST 3/4 SECTION)
-  40 - 80 ACRES (AT LEAST 3/4 SECTION)
-  80 - 160 ACRES (AT LEAST 1 1/2 SECTIONS)
-  160 ACRES (AT LEAST 3 SECTIONS)
-  A-1 / A-2 BOUNDARY
-  SLIDP.

0 1 2 3 4 6 8 10
SCALE IN MILES



MAP 30
MERCED COUNTY
YEAR 2000 GENERAL PLAN

Four of the most significant patterns found on the map can be summarized as follows:

1. About 245 square miles of land with 160 acre and greater sized parcels is located south and southwest of Merced extending to the County line. Most of the smaller parcels in this area are at least 80 acres in size. To the north and northeast of Merced parcels of 160+ acres are also dominant.
2. Except for a few areas containing 40 to 80 acre parcels, most land around the SUDPs along Highway 99 north of Merced consists of an assortment of parcel sizes generally less than 40 acres. Along Highway 140 and north of Ballico and Cressey large areas with parcels of 80-160 and 160+ acres exist.
3. On the west side of the County, most non-SUDP land contains a minimum of 40 acre parcels with 80-160 and 160+ acre parcels more dominant to the south - especially south of Los Banos and along the San Joaquin River.
4. Immediately to the west of the Snelling SUDP are 8-160 acre parcels and most of the remaining surrounding area consists of 160 and larger acre parcels including over 8 square miles to the northwest up to the Stanislaus County Line.

b. Analysis of 20 Acre Parcels

Parcel sizes are a major factor in the efficiency and profitability of farming, as significant as water availability and soil quality. The combination of parcel size and soil quality determines, to a major degree, a farms potential productivity.

As a means to determine the viability of a small farm, a study was completed of the nine top crops grown in the County in 1982. A comparison of production costs and revenues per acre was completed. (See Table VII-7) All production costs, except land cost which varies widely, were considered. This comparison assumes farmland that is fully paid for, not rented or mortgaged, and includes the cost of labor and management owed to the farmer for his efforts.

The table reveals that with the most profitable crop, sweet potatoes, an average \$26,780 return would be realized on a 20 acre farm - although it would probably be much lower because the average costs are based on a large farm where certain efficiencies of scale are realized. Wide yearly fluctuations in yield and sales price will further modify this figure for any given harvest. The next most profitable crop, peaches, would only provide a return on investment of \$7,840 for a 20 acre farm. While a farmer could make a living on a small 20 acre farm growing a specific high

TABLE VII-7 FARM INCOME ANALYSIS

CROP ^{*1}	1982 AVERAGE REVENUE/ACRE	1978-82 AVERAGE REVENUE/ACRE	1982-83 PRODUCTION ^{*2} COST/ACRE	AVERAGE PROFIT/ACRE
Alfalfa	\$ 686	\$ 602	\$ 433	\$ 169
Almonds ^{*1}	950	1,318	1,178	140
Cotton	748	700	591	109
Sweet Potatoes	3,867	3,350	2,089	1,261
Tomatoes (Market) ^{*5}	3,113	2,921	3,885	0
Tomatoes (Canning)	1,690	1,433	1,315	118
Sugar Beets	929	940	666	274
Corn (Grain)	433	416	421	0
Corn (Silage)	448	369	294	75
Grapes (Wine) ^{*4}	1,470	1,594	1,533	61
Peaches (Clingstone) ^{*4}	2,856	2,909	2,255	654

CROP ^{*1}	1973-77 AVERAGE REVENUE/ACRE	1975 PRODUCTION ^{*2} COST/ACRE	AVERAGE PROFIT/ACRE	1973-82 AVERAGE ^{*3} PROFIT/ACRE
Alfalfa	\$ 420	\$ 265	\$ 155	\$ 162
Almonds ^{*4}	877	489	388	264
Cotton	559	338	221	165
Sweet Potatoes	2,556	1,140	1,416	1,339
Tomatoes (Market) ^{*5}	2,566	2,238	328	0
Tomatoes (Canning)	1,188	778	410	264
Sugar Beets	774	363	411	343
Corn (Grain)	325	214	111	53
Corn (Silage)	217	150	67	71
Grapes (Wine) ^{*4}	896	847	49	55
Peaches (Clingstone) ^{*4}	1,750	1,620	130	392

SOURCE: Revenue per acre figures - Merced County Agricultural Commissioner. Production cost estimates - compiled by the Agricultural Extension, University of California, Merced County. Costs are based on an average productive farm size, 40-80 acres for most crops (120 acres for grapes).

*1 - Crops are based on mature fields or orchards - not costs to establish crop.

*2 - Used five year average yield per acre to calculate costs. All costs include preharvest, harvest, and depreciation, except land costs.

*3 - Ten year profit per acre figures based on average yields and income per acre and sample production costs. Actual costs vary widely between farms because of differences in soil quality, efficiency, etc. In addition, large yearly fluctuations in yield and crop prices (most notably with almonds and tomatoes) provide big profits one year and losses the next.

*4 - Varying portions of most farms expenses are annual payments to repay costs of establishing the orchard or vineyard (especially the cost of trees or vines). The following interest costs were not included in the above figures although they are real costs to many farmers: Almonds - '82 = \$446, '75 = \$71.30, Grapes - '82 = \$324, '75 = \$115; and Peaches - '82 = \$298, '75 = \$80.

*5 - Includes market tomatoes used for canning.

value crop, the great majority of farms this size are part-time operations that provide only a supplemental source of income. The average return on investment on a farm is around 4 to 4 1/2%, much lower than most commercial ventures.

Further analysis was conducted to determine the viability of small farms like those permitted in the A-1 (20 acres minimum parcel size) zone. A representative of the Production Credit Association (PCA) was interviewed concerning lending policies for these smaller farms. Loans are usually 7- year "term" loans for capital improvements. The small farms do not require many one year "operating" loans for crop production, which according to the PCA representative, is because operating expenses are usually covered by the borrower's nonfarm income sources. While the small farms are operated by the land owner in most cases, it is a secondary activity and source of income. As stated previously in the Economics of Agriculture Section, in 1982, 37% of Merced County farmers reported a principal occupation other than farming.

To determine the amount of land presently in 20-39 acre farms, a study was completed using the Existing Parcel Size Summary Map Analysis.

72,700 acres were found within this range in the non-SUDP A-1 (20 acres) zoned land areas. If all this land was in 20 acre ownerships, there could be 3,635 parcels; or if they were 39 acre parcels, there could be 1,864 parcels. As a means of comparison, the 1982 Census of Agriculture states that there were only 2,951 farms in Merced County of all sizes.

The 72,700 acres in the 20-39 acre parcel size range represents 17.8% of the total harvested cropland in 1982. (As supplied in the 1982 Agricultural Commissioner's Report: 408,000 acres were intensively cropped - not including pasture land.) The existing amount of small farms appears to provide enough opportunity for new and part time farmers to purchase land within the County.

Another concern involves the impact of increasing minimum parcel sizes on farmers who need to sell off portions (say 20 acres) of their farm in order to meet loan obligations in bad years. In most every area mapped showing groupings of 40, 80, and 160 acre parcels, all parcels are within the given range about the minimum parcel size (e.g., for 40 acre minimum, parcels are 40 to 79 acres in size, and for 80 acre minimums, parcels are 80 to 160 acres). There are presently no 20 acre parcels in these areas, which may suggest that even in bad economic years, none of the farmers had to sell off 20 acres to pay off debts. In addition, present Zoning Ordinance policy permits the splitting off of less than 20 acres if it is merged with a neighboring parcel, thus providing a source of financing.

SUMMARY

Many considerations must be made when determining minimum required parcel sizes for agricultural land. Whether or not new farms should be large enough to support full-time farming operations is of major concern. Where large areas of 40-80 or 80-160 acre parcels are identified, adjusting the minimum parcel size can be an effective means of encouraging conservation of agricultural land. By making it more difficult to create rural ranchettes, a primary cause of farmland conversion can be reduced.

5. Agricultural Support Services

This portion of the Background Section focuses on the location and types of services which process and distribute farm products and supply the rural farm community with goods. While much of the processing of agricultural products is conducted in SUDPs - especially in incorporated cities - this section evaluates what services are provided outside of the large SUDPs, where they are located, and what role the smaller SUDPs without public sewer and water systems play.

a. Agricultural Services Map

Map 31 displays the distribution of four main types of operations serving the agricultural community which are located outside SUDPs and Highway Interchange Centers (HICs): Agricultural support services (suppliers, shippers, processors, etc.), convenience commercial operations, agricultural vehicle repair shops, and crop dusting operations.

The primary areas where agricultural support services are located include: northwest of Merced on both sides of Highway 99; south of Merced on the east side of Highway 99; between Highway 152 and the San Joaquin River; and south of Los Banos to the west of Mercey Springs Road.

Retail commercial operations are almost exclusively within SUDPs; those that are not can be found along the Highway 99 corridor or along other main highways including 152, 140, and 59. Most of these are markets with gas pumps; only a few are service stations alone or restaurants and bars.

Agricultural equipment repair operations are also primarily within SUDPs. The few found outside the SUDP area, however, are usually located very close by.

b. Small SUDP and Agricultural Service Centers

The list of commercial and agriculture-related services in each of the smaller SUDPs without public sewer and water service indicates their role as an urban center or as a service and convenience center for the rural agricultural community.

The list below outlines the main uses in the 8 small SUDPs and their 1987 population:

- * Ballico - Market with gas pumps, farm supply store, almond hullers, a school, fire station, and post office. Population - 184.
- * Cressey - Market with gas pumps, auto repair business, elementary school, and fire station. Population - 214.
- Celeste - Market, two service stations. Population - 249. (serves as residential suburb of Merced)
- Dos Palos Y - Two markets, three gas stations, a restaurant, an agricultural chemical service company, and several related agricultural businesses. Population - 310.
- * El Nido - Market, service station, used car lot, fire station, and school. Population - 147.
- * Stevinson - Market, gas station, two restaurants, auto repair shop, agricultural hauling business, school, and fire station. Population - 163.
- * Tuttle - Market with gas pumps, tomato packing plant, agricultural vehicle repair and storage operation, and used car lot. Population - 103.
- * Volta - Grocery store/tavern with gas pumps. Population - 144.

The County General Plan does not have different policies for small SUDPs and larger SUDPs with public sewers, even though they often serve different purposes. Where the population level and historical growth pattern is low or even declining, allowing a small SUDP to develop into a urban center with the introduction of sewer and water service could be harmful to the existing farming operations in the area.

- * Indicates population level, location and uses which suggest role as an Agricultural Services Center (ADSC) rather than an urban growth center (SUDP).

The smaller SUDPs, especially those marked with an asterisk on the preceding list, presently provide agricultural and convenience commercial services to meet the needs of the rural population around the SUDP. The Land Use Chapter of the General Plan directs growth to areas where intensive land use exists or is taking place. SUDPs are created to provide for growth in an orderly and logical manner where proper public services are available. The smaller SUDPs without public services and which are not experiencing growth may be better designated as Agricultural Services Centers (ASCs).

Rather than providing a full range of urban services for a local population base, an ASC would serve in a capacity much like these small SUDPs do at present. An ASC would provide a location for agricultural services, farm support operations, and convenience commercial services for the rural population. A limited amount of housing for those supplying these services would be allowed, not to exceed a density of one dwelling unit per acre. The following list of uses was determined as appropriate by the Technical Advisory Committee for Agricultural Land Conservation (TAC/ALC):

A. Permitted Uses:

1. Housing

B. Conditional Uses (must obtain permit before operating):

1. Veterinary services
2. Farm equipment and machinery sales, storage, rental, and repair
3. Welding in conjunction with Item 2
4. Agricultural employment services
5. Feed and farm supply stores
6. Fertilizer and agricultural chemical sales
7. Farm labor housing
8. Grocery stores
9. Gas stations and garages (excluding body shops)
10. General stores serving weekly needs of surrounding farm community
11. Liquefied petroleum gas distribution
12. Cafes and cafeterias (may serve beer and wine only)
13. Beauty and barber shops
14. Trucking operations involved in agriculture
15. Churches
16. Schools permitted as an existing use; no creation of new school allowed.

Housing density will be one unit per acre. The zoning policy for the ASC will state that residential subdivisions will be provided primarily for those employed or owning land within the ASC and its surroundings. It shall not serve as a rural residential center for people who work in other communities. An ASC will also not serve as a floating zone to allow further development near scattered agricultural or commercial services like those in Map 31.

Along with the concept that some SUDPs may better serve as ASCs is the potential need for additional agricultural support areas to serve portions of the County presently outside a convenient travel distance. Map 32 displays those areas outside a seven mile radius from existing SUDPs. Also shown is the distribution of population in these areas as a means to determine the level of demand for new services. In all areas mapped, the population level is insufficient to support new commercial centers. Except for the conversion of existing smaller SUDPs into ASCs, there does not appear to be a need for creating a new ASC in other County areas. The great majority of the county's farms can be served from the existing commercial centers and SUDPs. Scattered new ASCs should not be created that would lead to conversion of agricultural land.

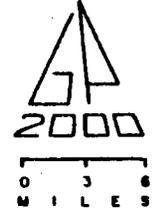
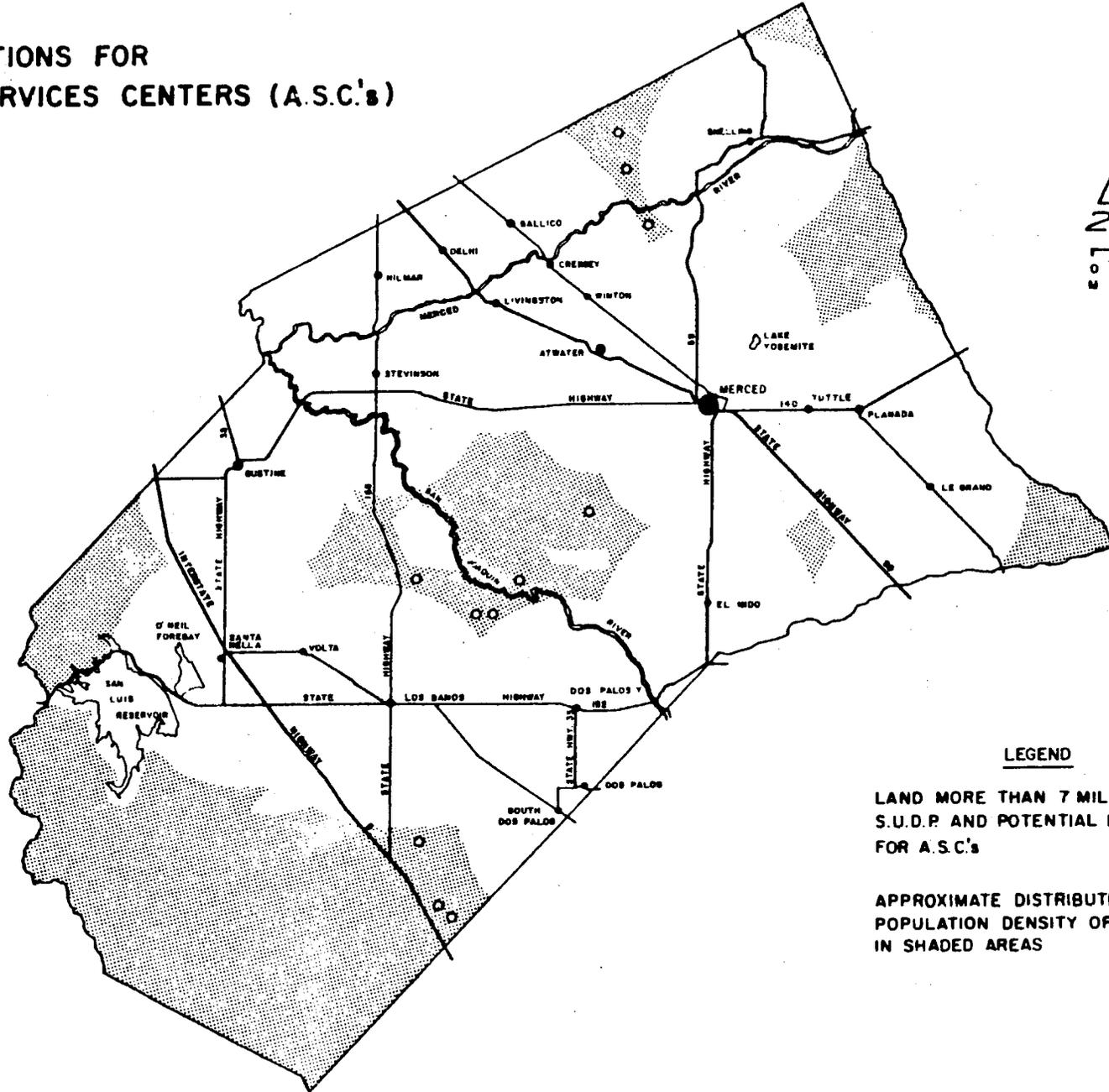
A somewhat different type of center for the location of agricultural industries in the County are PAID zones (Planned Agricultural Industrial Developments). The concept behind this zone is to provide a location (minimum area of 160 acres) for agriculture-related industrial and support operations which create negative impacts on neighboring properties. These types of operations (animal sales yards and meat packing for example) often produce large amounts of solid waste, wastewater, odors and dust which make them inappropriate uses for SUDPs. Map 33 shows possible locations where PAID zone can be created.

A PAID is distinct from an ASC in several respects. A PAID zone must be located on poor quality soils at least two miles, but not more than seven miles, from a major SUDP. In addition, while an ASC should provide convenience commercial services to the rural population in the region, a PAID zone would only allow such services as an accessory use for the local employees (for example, a cafeteria).

c. Transport of Agricultural Products

The shipment of agricultural products within the County relies on five State Highways, many secondary collectors, and Interstate 5 to a limited extent. The major east-west links are Highway 140 and 152, and the primary north-south routes are Highway 59, 165, and 99. During the summer harvest months these roads are very heavily traveled by agricultural trucks and are inefficient routes for much of the agricultural sector - especially between Livingston and Atwater in the north and the Dos Palos area to the south. The present collector road network between these areas is indirect and eventually feeds onto either Highway 59 or 165, adding to congestion.

POTENTIAL LOCATIONS FOR
AGRICULTURAL SERVICES CENTERS (A.S.C.'s)

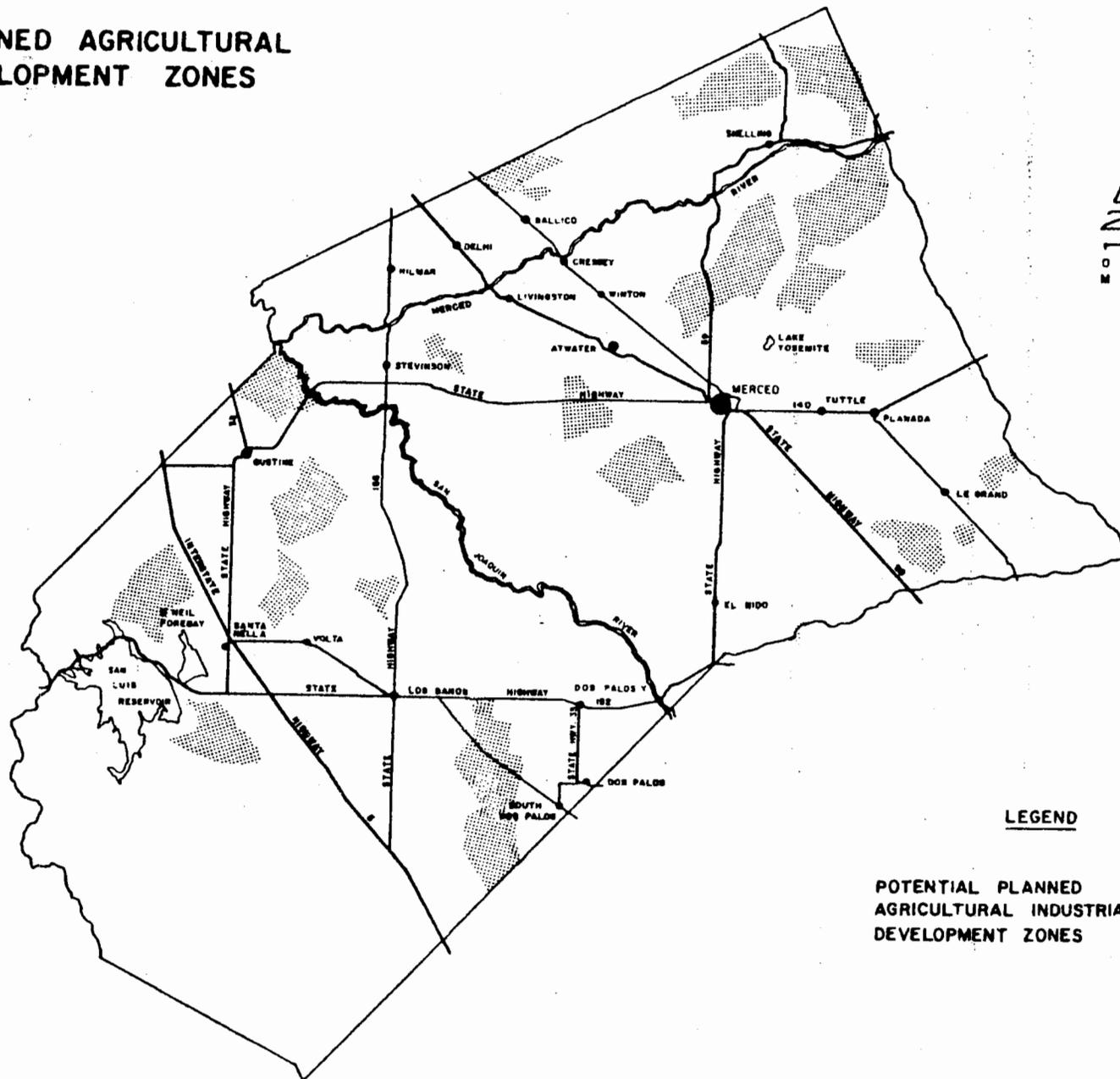


LEGEND

LAND MORE THAN 7 MILES FROM AN
S.U.D.P. AND POTENTIAL LOCATIONS
FOR A.S.C.'s

APPROXIMATE DISTRIBUTION OF
POPULATION DENSITY OF 50 PEOPLE
IN SHADED AREAS

POTENTIAL PLANNED AGRICULTURAL
INDUSTRIAL DEVELOPMENT ZONES



LEGEND

POTENTIAL PLANNED
AGRICULTURAL INDUSTRIAL
DEVELOPMENT ZONES



There is a need for a new north-south link located between Highway 59 and 165 connecting the communities northwest of Merced to the Dos Palos area. Or an alternative could be improvement of Turner Island - Dan McNamara - Bert Crane Roads. At the very least, State Highways 165, 140, and 59 need to be improved or widened to support more traffic and improve safety.

Although no studies have been completed as part of this chapter, it is the feeling of the TAC/ALC that the County should research the possibility of a new road location and identify possible sources of funding. The County should also encourage the State to improve or widen existing State Highways 59, 140 and 165. These projects would be a substantial benefit to the movement of agricultural products in the County.

CONCLUSION

By redesignating some smaller SUDPs as Agricultural Services Centers and through creation of new PAID zones, the agricultural community of Merced County can be enhanced. Necessary services for the rural farm population would be provided and the industries necessary to process and distribute agricultural products will have central locations where the impacts can be minimized avoiding potential urban/agricultural impact problems. These efforts will reduce the threat of farmland conversion posed by urbanization of agriculture-related centers.

6. Irrigation, Flooding, and Drainage
 - a. Water Availability

The San Joaquin Valley is the southern half of California's Great Central Valley. Its 8.5 million acres lie between the Sierra Nevada, the Coast Range, the Tehachapi Mountains, and the Delta of the Sacramento-San Joaquin Rivers. About 4.5 million acres (7,030 square miles) of this land is devoted to irrigated agriculture. According to the 1982 Census of Agriculture, there were 450,559 acres of irrigated farmland in Merced County.

GROUNDWATER: In the San Joaquin Valley, irrigated agriculture is heavily dependent upon groundwater. According to the Department of Water Resources, about 55% of the agricultural applied water demand is met from groundwater withdrawals. Nearly two-thirds of all groundwater withdrawals for the State of California occur in the Central Valley.

The San Joaquin Valley is separated into two hydrologic basins by an indistinct divide which interrupts the lengthwise slope of the Valley. The San Joaquin Subbasin to the north (including Merced County), which drains to the Pacific Ocean; and the Tulare Subbasin to the south, which has an outlet only when rare floodflows carry its water across the divide and into the San Joaquin Subbasin.

Groundwater has become an ever important water supply in the San Joaquin Valley Basin. The heavy reliance of agriculture on groundwater is evidenced by the annual overdraft in both subbasins of 1.56 million acre feet, 84% of which occurs in the southerly Tulare Subbasin. The groundwater withdrawals in the Valley are mostly by individuals, withdrawals by water agencies represent less than 10% of total withdrawals.

In response to the Valley's increasing demand for water, the Federal Government's Central Valley Project (CVP) began delivering water to the Valley in the 1940's, and California's State Water Project (SWP) followed with additional imports in the late 1960's. With this additional water, groundwater level declines slowed or even reversed in areas receiving imported water.

Groundwater overdraft in the Valley has decreased from 2.5 million acre feet per year in 1957, to 1.5 million acre feet per year in 1979, largely because of deliveries of imported water from the SWP and the CVP.

Most water districts in Merced County rely on groundwater for only a limited portion of their supplies. Only the areas around El Nido and Le Grand have overdraft problems at present. Groundwater recharge efforts near El Nido consists of diverting winter runoff water into sand fields and pastures. Recharge in most other areas of the County takes place through percolation of surface water in streambeds and unlined canals.

SURFACE WATER IRRIGATION: Water companies and districts have been providing Merced County farms with irrigation water for over 100 years. Today the County is served by 25 water and irrigation districts, (and several small private systems), irrigating more than 456,000 acres. The districts vary in size from the Merced Irrigation District (MID) with more than 154,000 acres serving most of the east side; to the Eagle Field Water District serving just 1,400 acres in the Dos Palos area. Water sources of the districts include the CVP and the SWP, the Merced River, groundwater pumping, recirculation of drainage water, and for some of the smaller districts, water purchases from MID and the other larger districts.

Excepting the foothills and areas of the San Joaquin River floodplain, nearly all of Merced County is within the boundaries of an irrigation or water district. The County's extensive canal system has done much to promote and contribute to Merced's abundant and highly diverse agricultural industry. Map 34 illustrates the County's major irrigation systems. The present canal system can be divided into three major geographic areas: 1) West side: the area west of the San Joaquin River has the California Aqueduct, Delta-Mendota Canal, and the San Luis Canal, forming the basis of the west side canal system. These major canals have several smaller laterals diverting water to the large west side farms. 2) Merced River area: the MID diverts water from the Merced River as it flows through the northern area

of the County. Some water is also supplied by the Turlock Irrigation District from the Tuolumne River which serves the Delhi, Ballico, and Hilmar areas. Parcel sizes are generally smaller than other areas of the County and there are more canals to serve these farms. 3) The southeastern area: the Planada, LeGrand, and El Nido areas of the County are supplied by connections to the MID and through groundwater pumping. There are several streams flowing through the area which drain into the San Joaquin River. This area is experiencing a shortage of water in the summer irrigation period because of the limit in canal and pipe capacity from the MID. Any improvement to the system or installation of another water source would be expensive for the local farmer.

IRRIGATION PROBLEMS: Three of the most pressing irrigation problems facing San Joaquin Valley farmers are: saline-sodic soils, groundwater quality and on-farm irrigation efficiency.

- 1) Soluble salts and soil boron concentrations are the result of natural saline-sodic soils and irrigation water high in salts. Map 35 shows areas with saline-sodic soils totaling 393,860 acres in the County. Where there is a high water table, high salt concentrations adversely affect crop production. Leaching with excess water is an effective improvement measure, but only where the subsurface layers allow percolation. Tiling to remove subsurface water can also improve the soil.
- 2) Low quality groundwater is found throughout much of the San Joaquin Valley Basin. The quality of groundwater is determined primarily by salt concentrations, but also includes problems from concentrations of nutrients, pesticides (like DBCP), and other contaminants. High levels of soil boron (a naturally occurring salt) and total dissolved solids are concentrated west of the San Joaquin River. Groundwater quality is similar to surface water quality in Merced - it is good in the higher valley areas and decreases in quality toward the valley trough.

Groundwater quality is an important factor in crop selection and production as many crops are sensitive to high concentrations of salt. Map 23 in the Open Space/Conservation Chapter illustrates areas within the County experiencing water quality problems. Additional groundwater quality problems especially found in shallow wells northwest of Atwater are concentrations of nitrates and DBCP. Poor ground-water quality affects 299,995 acres in Merced County.

Where high groundwater salt concentrations exist, the mixing of surface and groundwater supplies, the use of calcium amendments, and the choice of crops adapted to these conditions can relieve most of the problem.

- 3) Low on-farm irrigation efficiencies mean more water is being applied than plant growth requires. In cases where salt concentrations are high, more water must be applied than the plant uses to allow for leaching. Significant areas have low on-farm efficiencies (below 60%), totaling about 209,450 acres in Merced County as shown in Map 36. However, overall San Joaquin Valley irrigation efficiency is higher, amounting to about 73% for the San Joaquin Subbasin because of the reuse of return flows downstream.

b. Flooding

EXISTING CONDITIONS: Flooding is a natural occurrence in the Central Valley. The Valley is a natural drainage basin for thousands of acres of foothill and mountain land of the Sierras. Approximately 750,000 acres in the San Joaquin Subbasin are prone to flooding. In Merced County, the Flood Plains of the San Joaquin and Merced Rivers, and their tributaries encompass nearly one half of the Valley floor. Map 15 illustrates the areas of Merced County subject to 100 year frequency floods, including roughly 380,010 acres of land.

Early floods were mainly interruptions to travel. In the San Joaquin Valley, land routes of travel were established near the eastern foothills, in part, to keep above the overflow lands in the Valley trough. As the Valley developed and cities and towns grew, flooding impacts became more of an urban problem not merely impacting agricultural uses.

Merced County and the Central Valley experience two types of floods:

- 1) General rainfall floods occur in the late fall and winter in the foothills and on the valley floor, and 2) Snowmelt floods occur in the late spring and early summer. Most floods in Merced County are produced by extended periods of rainfall during the winter months.

Many of the flood problems are due to poor flood plain use, resulting in costly damages to public and private property. Conversions of agricultural land to more intensive uses such as rangeland to cropland where land leveling or irrigation facilities may be required promote drainage problems. Agricultural activities such as land leveling, irrigation facilities, removal of natural ground cover, and alternation of natural contours all have drainage impacts that may aggravate downstream flooding.

HIGH WATER TABLE: Additional floor problems, as well as agricultural production problems, are caused by high water tables. This is a condition where dense layers of heavy clay soils block downward percolation of applied water into the substrata. Map 37 displays areas with a water table within 5, 10 and 20 feet of the ground surface. In the "Grasslands" area west of the San Joaquin River, these areas are primarily duck clubs and wetlands. To the south and east of Merced, the

lands are used for irrigated pasture, or for more intensive crop production where drainage practices are utilized to lower the water table.

FLOOD DAMAGES: Historical damages have primarily been to agriculture and have occurred during periods of relatively low flooding. The flood of spring and summer of 1969 was responsible for damages totaling (in 1975 prices) \$36.6 million for the San Joaquin Subbasin; of which nearly \$26.6 million were damages to agriculture. Agricultural damages from flooding average \$1.1 million annually in the San Joaquin Subbasin.

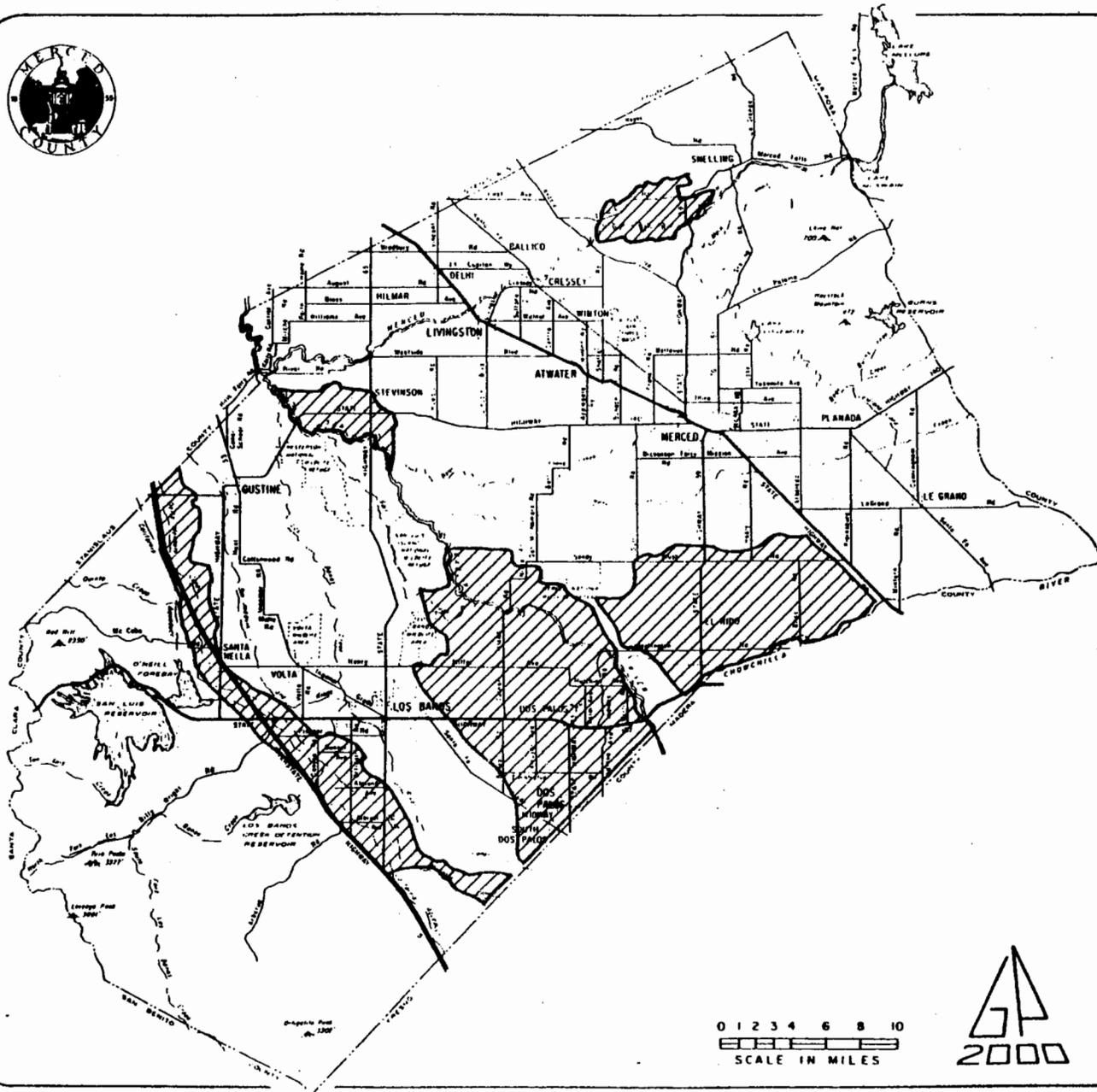
The City of Merced has had a long history of flooding. Newspaper articles, accounts from local residents, and recent official records indicate that flooding occurred in 1935, 1936, 1937, 1938, 1955, 1968, 1969, and 1973. The largest floods of recent record occurred in December 1955, February 1958, January-February 1969, and in the winter of 1982-83 (which caused about \$3.75 million in damage to agriculture). Earlier flood damages to the County by major classification have been updated for 1979 price levels and are shown in the following table:

HISTORIC FLOOD DAMAGES
(1979 Prices)

<u>Damage Classification</u>	<u>1955</u>	<u>1958</u>	<u>1969</u>
Residential	224,000	0	1,000
Commercial	52,000	143,000	0
Industrial	73,000	4,000	3,000
Public Facilities	527,000	9,000	134,000
Agricultural	604,000	841,000	1,717,000
Total Damage	\$1,480,000	\$997,000	\$1,855,000
Total Acres Flooded	15,300	19,800	24,030

WILDLIFE IMPACTS: Extensive flood control improvements have been undertaken in Merced County and adjacent counties, that have greatly reduced the flood prone areas, and in doing so, reduced natural open space utilized as wildlife habitat and passive recreational space.

The San Joaquin Valley Basin is a major waterfowl wintering area. Between 1965 and 1975, one-fourth of the waterfowl in the State was found in the Basin. In the San Joaquin Subbasin, there are five major wetland management areas. The "Grasslands" area on the west side of Merced County, provides 92,320 acres of waterfowl habitat during part or all of the year.



Water Conservation

LEGEND:

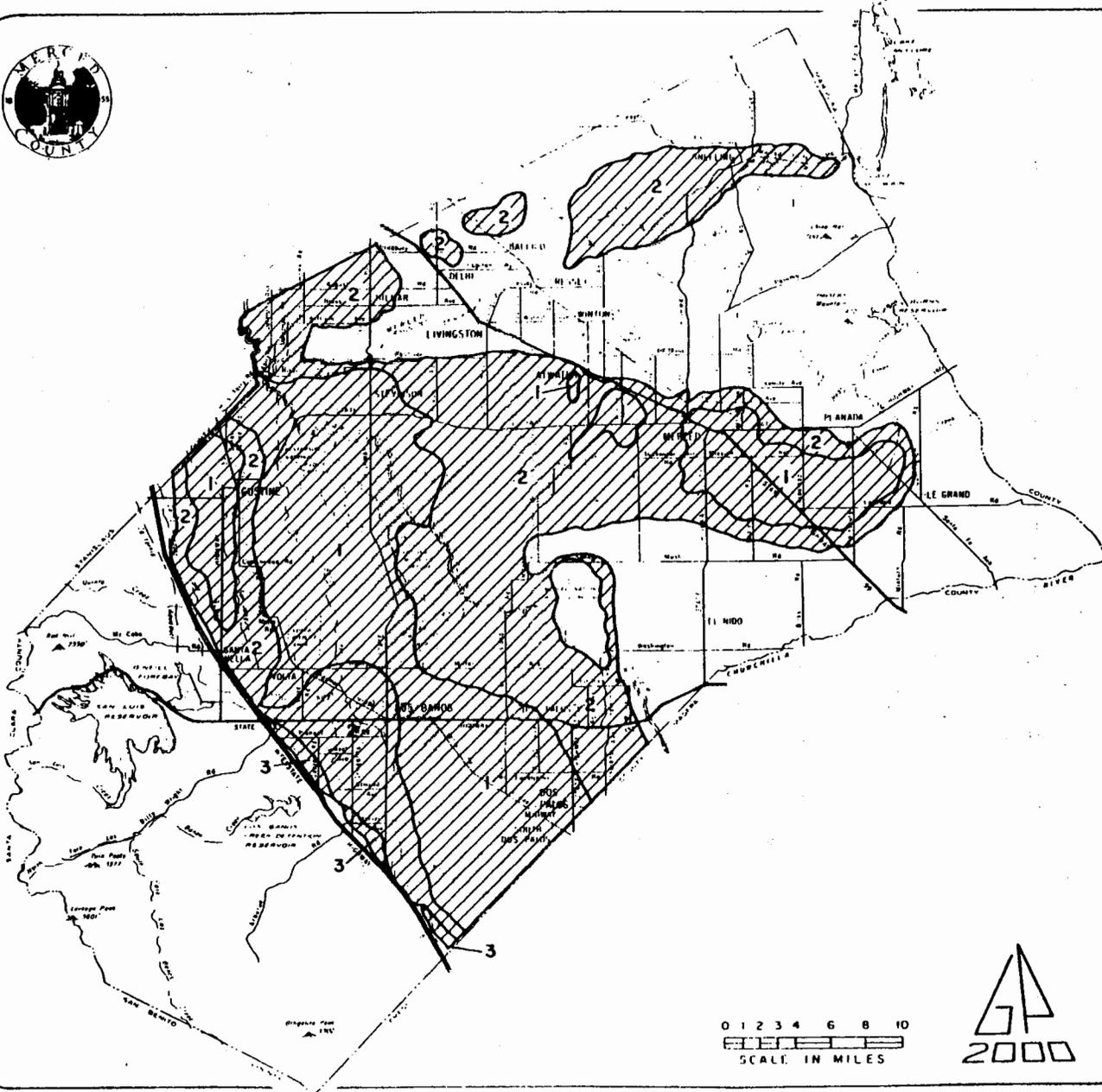
 IRRIGATION EFFICIENCY < 60%

SOURCE: U.S. Soil Conservation Service 1982

MAP 36

MERCED COUNTY
YEAR 2000 GENERAL PLAN





High Water Tables

LEGEND:

- 1 0 - 5 FEET
- 2 5 - 10 FEET
- 3 10 - 20 FEET

0 1 2 3 4 6 8 10
SCALE IN MILES



SOURCE: U.S. Soil Conservation Service 1982

MERCED COUNTY **MAP 37**
YEAR 2000 GENERAL PLAN

Much of the upland game habitat has been modified by intensive agricultural cultivation and double cropping, limiting the value of agricultural land as habitat. For further discussion on wildlife habitat refer to the Open Space/Conservation Chapter (VI).

EROSION: This problem occurs on irrigated sloping lands, grasslands on the coastal range, and along streambanks. Tolerable erosion levels are between four and five tons per acre per year. The areas displayed in Map 38 are more severe. Sedimentation carried downstream impacts additional acres of farmland where crops are often buried after heavy rains.

Erosion caused by farming on sloping land can be reduced by many techniques, including: drip irrigation systems, planting a cover crop, contour farming practices, minimum tillage, and catch basins. The Soil Conservation Service (SCS), Agricultural Stabilization and Conservation Service (ASCS) and local Resource Conservation Districts (RCDs) all encourage farmers to utilize erosion measures, but are often resisted because of the high cost of many measures. Several attempts are being made to require erosion mitigation measures for farms participating in federal programs. The ASCS is attempting to link federal water distribution to erosion practices on individual farms. And a federal bill approved by the Senate in November, 1983, would deny commodity price supports for a specific commodity grown on highly erodable land.

WATER POLICIES: Irrigation and flood control projects are governed by many agencies of the Federal, State, and local governments. Water and irrigation districts serving the Merced County farms are also controlled through one or more of the various governmental agencies. The CVP is a federal project that made farming possible for many thousands of acres in the Central Valley by supplying low cost irrigation water. The SWP has also acted to promote highly intensive farming in the Valley where climatic conditions previously prohibited such development.

The Army Corps of Engineers has studied water systems throughout the country, and in particular in the West, has built extensive flood control and hydroelectric projects. Further flood control efforts are planned in the "Merced County Streams Group Project" for the east side of the County which consists of: two new detention dams (Castle on Canal Creek and Haystack Mountain on Black Rascal Creek); enlargement and modification of the Bear Creek detention dam; construction and modification of 32 miles of levees and channels on the Bear Creek Stream Group (Fahrens, Black Rascal, Cottonwood and Bear Creeks; Black Rascal Slough and El Capitan Canal); a protective easement on 2,800 acres of marsh and grasslands; and a few environmental and recreation projects. The plan would provide standard project flood protection to most of urban Merced, and about 25-year flood protection to agricultural areas downstream of the city. The project cost estimate is \$111 million dollars. The Federal Government is presently debating cost-sharing

requirements: Administration's proposal is for the nonfederal share to be 35 percent of total project costs. The project has been authorized by Congress, but funding has not been allocated.

This plan has been scaled back from earlier Army Corps of Engineer proposals which also included flood protection projects on Deadman, Duck, Owens, and Mariposa Creeks and modification to Burns Creek Dam. These projects were left out because they did not provide an adequate economic benefit ratio.

In an effort to implement flood control projects on a coordinated local level, the "Merced County Critical Area Flooding and Drainage Plan" was prepared in 1983. This plan describes design of collection systems to serve present and projected urban land uses, providing detention basins to control drainage flows, and a drainage network using MID irrigation canals and natural channels. Flooding in rural agricultural areas were not a part of the study. The plan calls for creation of a Merced County Flood Control District which will maintain natural channels and improve their drainage capacity so that no increase in potential flooding would occur downstream.

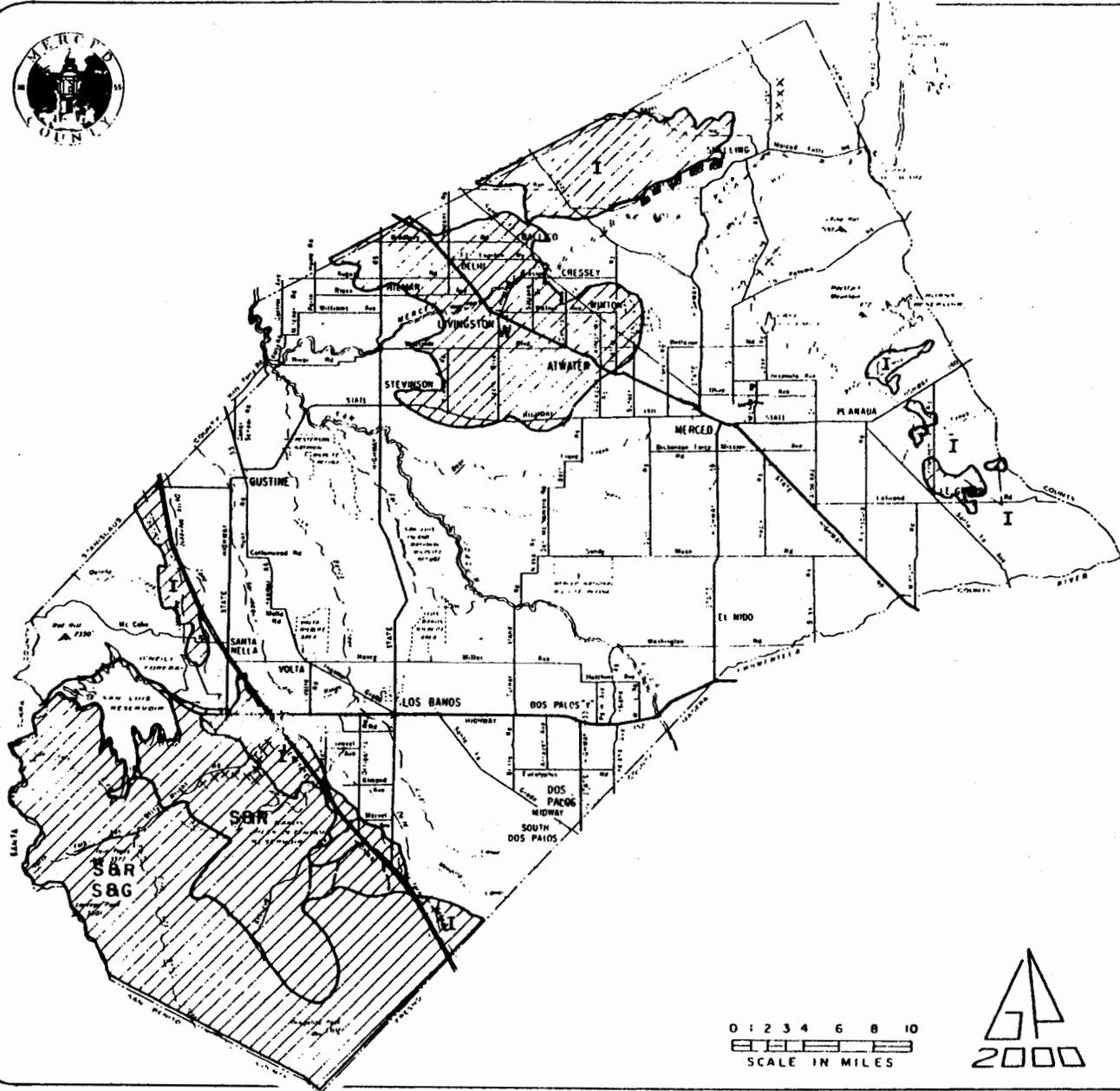
Existing County flood plain policies include Chapter 18.128 of the County Zoning Code, the "Flood Damage Protection Ordinance." This ordinance provides for the control and regulation of land use and structures within the various water sheds and their flood plain areas. In Merced County, only agricultural and open space uses are permitted in the Primary Flood Plain Area as designated on the Federal Flood Insurance Rate Maps. The County is presently working with the Federal Government to resolve several inaccuracies in this map.

The Safety and Open Space/Conservation Chapters to the County General Plan address the various issues of flood control, drainage, wildlife habitat, and land use in the flood prone areas. Descriptions of the various water resources and associated habitats are described and policies and recommendations are established. These elements form the basis for County land use policies in these sensitive environments for public safety and resource protection.

c. Drainage

EXISTING CONDITIONS: The lack of sufficient drainage on agricultural land severely limits the productivity of thousands of acres in Merced County. In areas with high water tables, salt-laden water accumulates in the soil and steadily rises as irrigation and leaching continue. Improper drainage will usually have the following characteristics:

1) leaching is relatively ineffective because the salts cannot percolate into the substrata, 2) capillary action draws salty water upward from the high "perched"



Soil Erosion

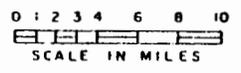
LEGEND

- S&F SHEET AND FILL
- I IRRIGATION INDUCED
- W WIND EROSION
- S&G STREAMBANK & GULLY
- URBAN / ROADSIDE / CONSTRUCTION
- STREAMBANK
- GULLY

SOURCE: U.S. Soil Conservation Service 1982

MAP 38

MERCED COUNTY
YEAR 2000 GENERAL PLAN



water table where the soil becomes further saline when the water evaporates, and 3) high ground water deprives crop roots of oxygen. An illustration of drainage problems in the County is presented in Map 24 in the Open Space/Conservation Chapter.

This problem is evident on a more regional level. The final report of the San Joaquin Valley Interagency Drainage Program (1979) points out that high, brackish water tables underlay about 400,000 acres in the San Joaquin Valley at present, and could eventually affect up to one million acres as areas with saline water tables spread and seep into adjacent water sheds.

In the west side of the County near Gustine, drainage is currently recirculated for irrigation or discharged into the San Joaquin River. In the west side areas to the south, drainage is also recirculated for irrigation, or it is discharged through drainage ditches to marsh lands of the Grasslands Water District. After the duck hunting season, the waters are drained into the Salt and Mud Sloughs which are tributaries of the San Joaquin River. In the east side of the County, drainage waters are placed in natural streams and waterways, and into irrigation canals. Water not later used for irrigation ends up in the San Joaquin River.

Agricultural drainage programs are presently implemented on a local level. The RCDs and irrigation and water districts all assist in developing master drainage plans for their districts. The main objective is transporting drainage and flood water out of their area of jurisdiction to improve the productivity and safety of the local farms. Regional problems often stretch the administrative capabilities of these agencies.

An example of problems resulting from the lack of regional, State, or Federal coordination is the increasing salinity of the San Joaquin River. Several irrigation districts have purchased supplemental water from the CVP to mix with and improve the quality of the river water. And the lack of proper regional drainage affects areas where highly saline water enters the water table resulting in reduced farm yields or productivity.

DRAINAGE POLICIES: Two positive steps have been undertaken to help improve drainage problems. An experimental desalinization plant near Los Banos was operated as part of the State Water Project. Initial research involved reducing the salt content of water entering major drainage systems to improve irrigation water quality. However, funding for this program has been discontinued.

A second effort involved dredging out more than 200 miles of the silt-laden San Joaquin River. This was a combined effort of the U.S. Army Corps of engineers and the San Joaquin River Flood Control Association, made up of local farm water groups. This project should both improve drainage capacity and help reduce flooding like that which occurred in the winter of 1982-83 around Stevinson. Local

government is responsible for coordination of flows into the river from various reservoirs, and local districts will be responsible to maintain their portion of the river once dredging is complete.

Perhaps the most comprehensive proposal to improve Merced County drainage and water quality problems is the completion of the San Luis Drain. The initial test phase of the Drain involved an 82 mile concrete lined channel collecting drainage from 5-8,000 acres in western Fresno County, and depositing it into evaporation ponds at the Kesterson Reservoir near Gustine. The planned project at completion calls for a 188 mile system starting in Kings County and draining into the Delta at Chipps Island in Contra Costa County.

A serious problem has developed at Kesterson as a result of the westlands drainage water. High concentrations of various trace elements including selenium - a naturally occurring element in the soil which is harmless in small quantities, but can be lethal at higher doses - were leached out of the westlands soil. Selenium has been blamed for causing severe deformities in waterfowl and loss of other wildlife at the Reservoir. All drainage flows into Kesterson have been stopped and a massive clean-up effort is underway coordinated between the State and Federal governments.

A long-term solution to the drainage problem must be found or tens of thousands of acres of farmland in western Merced County with poor drainage may be lost to agriculture.

C. AGRICULTURAL CHAPTER GOALS, OBJECTIVES, POLICIES, AND IMPLEMENTATION

GOAL 1:

The financial viability of the agricultural sector is improved.

Objective 1. A.:

Agricultural operations and businesses that provide a competitive edge to Merced County farmers are promoted.

Policies:

1. Support the introduction of new agricultural processors in the County SUDPs and PAID zones through consideration of suitable financial mechanisms such as Industrial Revenue Bonds.

Implementation:

The County will coordinate efforts to attract new agricultural industries through the Office of Economic and Strategic Development.

2. Seek programs and measures to encourage new agricultural industries in Merced County.

Implementation:

The Board will encourage the County Chamber of Commerce to promote Merced as a profitable location of agricultural processing and related industry.

Objective 1. B.:

State and Federal legislation which impacts Merced County agriculture is reviewed and commented on by the County.

3. Communicate the County's interests to State and Federal legislative bodies when major legislation is proposed which impacts Merced's agricultural sector.

Implementation:

The Board requests the Farm Bureau and other agricultural interest groups to keep it apprised of pending major legislation which would significantly impact farming in Merced County so that the Board may take a position on such legislation.

Objective 1. C.:

Programs are considered which reduce the tax burden on farmland and aid in the conservation of agricultural lands if investigation indicates such programs benefit the general welfare of the County.

Policies:

4. Undertake a study to determine the economic feasibility of offering Williamson Act contracts in the County.

Implementation:

The County Administrator will conduct a study of the economic

feasibility of the Williamson Act through coordination with the County Counsel, Agricultural Commissioner, Assessor, Auditor, Planning Department, the Merced County Farm Bureau, the County Chamber of Commerce, and California Women for Agriculture.

5. Support appropriate efforts by private conservation organizations to utilize conservation easements as a tool for agricultural conservation.

Implementation:

An evaluation of conservation easements will be conducted as part of the Williamson Act study mentioned above in the implementation of Policy 4.

GOAL 2:

Productive agricultural lands are conserved.

Objective 2. A.:

Agricultural areas are protected from conversion to nonagricultural uses.

Policies:

1. Conversion of agricultural land into urban uses shall be allowed only where a clear and immediate need can be demonstrated, based on population projections and lack of land availability for nonagricultural uses.

Implementation:

Utilize the criteria and procedures identified in implementation of Policy 2, under GOAL 7 of the Land Use Chapter (I).

2. Direct development to less valuable farmland when conversion is justified.

Implementation:

Utilize the criteria and procedures identified in implementation of Policy 2 of GOAL 1 in the Land Use Chapter (I).

3. Infilling of development in urban areas shall be encouraged.

Implementation:

The Planning Department will investigate and recommend Zoning Ordinance and General Plan revisions that will promote infill development.

Objective 2. B.:

The parcelization of large holdings is discouraged.

Policies:

4. Investigate methods and incentives for increasing the minimum parcel sizes for agriculturally zoned land where appropriate using existing parcel sizes, soil quality and other relevant factors as may be determined.

Implementation:

The Technical Advisory Committee for Agricultural Land Conservation (TAC/ALC) will undertake a study to devise options and incentives for increasing minimum parcel sizes in the agricultural zones.

Objective 2. C.:

Pre-existing or "antiquated" subdivisions which pose the greatest threat to the agricultural community are merged into larger functional agricultural holdings by the year 2000.

5. Merge or revert to acreage those antiquated subdivisions which would negatively impact agriculture through conflicts between rural residential homesites and adjacent farming operations and which could cause various environmental impacts related to development in agricultural and open space areas including traffic generation, groundwater contamination, stormwater drainage disposal and air quality deterioration.

Implementation:

The County will amend the Merger Ordinance (Ordinance No. 972) to comply with the State Subdivision Map Act and initiate a program to implement the Ordinance on an individual subdivision

basis concentrating on subdivisions which meet the following conditions:

- 1) The subdivision involves more than five (5) lots;
 - 2) The property is under one ownership;
 - 3) The property consists of productive agricultural land involving "Unique" or higher quality soil as identified on the Important Farmland Map of the State Mapping and Monitoring Program;
 - 4) The lot sizes of the antiquated subdivision are small enough to pose a threat to the groundwater in the area based on determination of the Environmental Health Division of the County Health Department, and
 - 5) Implementation of the subdivision would be clearly inconsistent with the rural lands goals and policies of the Land Use, Open Space/Conservation and Agricultural Chapters of the Merced County General Plan.
6. Encourage owners of antiquated subdivisions to utilize the County's Voluntary Merger process to protect the agricultural and open space values of their property.

Implementation:

When appropriate, the Planning Department will notify property owners about use of the "Voluntary Merger" provision of the County Code and encourage its use when reviewing projects involving antiquated subdivisions.

Objective 2. D.:

Conflicts are reduced through an understanding of the agricultural industry by urban dwellers.

Policies:

7. Implement measures to protect farmers from nuisance claims by urban dwellers.

Implementation:

Require application of the County "Right to Farm" ordinance on all subdivision applications for residential development at the fringe of an urban community.

8. Encourage educational programs to inform children and adults of the importance of protecting farmland.

Implementation:

The County Agricultural Commissioner and the University of California, Cooperative Extension should cooperate with organizations, such as the California Women for Agriculture, which educate the public on agriculture, and will assist in informing residents of the "Right to Farm" ordinance.

9. Encourage land improvement programs that increase soil productivity.

Implementation:

The County shall encourage and cooperate with efforts of the U.C. Cooperative Extension and the various Resource Conservation Districts to improve soils in the County.

GOAL 3:

Land uses which are potentially disruptive to the agricultural economy are properly located and operated.

Objective 3. A.:

Clear boundaries between urban and agricultural areas are identified and land use buffers are provided.

Policies:

1. Provide land use transitions and buffers between urban and agricultural areas which reduce interference and protect agricultural land from conversion to nonagricultural uses.

Implementation:

Continue to utilize transitional land uses around urban areas as

buffers between towns and farmland, including Rural Residential Centers, industrial zones, public recreation areas and natural features such as streams. Implementation of "Right to Farm" ordinance under Policy 7 of GOAL 2 will also serve this policy.

Objective 3. B.:

Agricultural service and convenience centers that serve the daily needs of the farm community are identified and located.

Policies:

2. Provide centers for agricultural support services and convenience commercial operations, known as Agricultural Services Centers (ASCs).
3. The County will encourage new agricultural service operations to locate in an ASC.

Implementation:

Amend the Zoning Ordinance by creating an ASC zoning classification. This classification will be applied to the existing small SUDPs without public sewer or water service, and which presently act as agricultural centers. Permitted uses, densities and ASC boundaries will be determined with the assistance of the Technical Advisory Committee for Agricultural Land Conservation (TAC/ALC) following the form described in Section 5, "Agricultural Support Services" of this Chapter.

Objective 3. C.:

Activities which support agricultural operations are permitted in agriculturally zoned areas.

Policies:

4. Permit on-farm product handling and selling operations as prescribed in the Zoning Code.

Implementation:

Continue to enforce agricultural zoning regulations which accommodate compatible uses and ban conflicting activities.

Objective 3. D.:

Nonurban land uses that conflict with agriculture are properly located.

Policies:

5. Weigh the economic benefits of surface mining with the preservation of agriculture when considering mineral excavation proposals on land classified for agricultural uses.

Implementation:

In the review of Conditional Use applications to establish or expand surface mining operations, consideration will be given to the agricultural value of the site (including soil quality) and effects on existing agricultural operations.

Objective 3. E.:

The transport of agricultural products within the County is improved.

Policies:

6. The County favors the investigation of establishment of an additional all weather north-south road between Highways 165 and 59 and improvement of State Highways 165, 140 and 59.

Implementation:

The Public Works Department should investigate ways to finance a new north-south road or improve existing roads such as Dan McNamara. The County will encourage the State to upgrade or widen Highways 165, 140 and 59.

GOAL 4:

The management of water resources to benefit the agricultural community is improved.

Objective 4. A.:

Measures to protect and improve water quality are supported.

Policies:

1. The County favors efforts to ensure adequate surface water supplies to deficient areas.

Implementation:

The Board will encourage programs by Federal, State, or regional bodies to supply additional surface water to deficient areas within the County. The Board will also encourage efforts by local districts to obtain grants or other funding for irrigation projects.

2. The County will encourage farmers to use irrigation methods which conserve water.

Implementation:

The Agricultural Commissioner will continue to provide information on water conservation measures to farmers, and will coordinate with conservation efforts of the University of California, Cooperative Extension, local Resource Conservation Districts, the Soil Conservation Service and irrigation districts.

3. The County will work with other responsible agencies to ensure that sources of water contamination (including boron, salt, selenium and other trace element concentrations) do not enter agricultural or domestic water supplies, and will be reduced where water quality is already affected.

Implementation:

The Board will encourage research into water quality improvement techniques like desalinization plants and detention basins for urban runoff. The Board will also encourage improvements to the drainage systems in the County, including the efforts of the San Joaquin River flood Control Association, and completion of the San Luis Drain Project, or if it is determined that the San Luis Drain can not be completed as designed, the removal and elimination of the drain in Merced County. Existing Health Department programs to review wastewater systems and monitor groundwater quality will help reduce the threat of groundwater contamination from urban and agricultural uses. The Board will continue to support the County Health Department in monitoring groundwater quality in the agricultural community.

Objective 4. B.:

Agricultural and related activities are protected from flooding.

Policies:

4. Protect rural development from flooding hazards.

Implementation:

The Planning Department will continue to ensure that development in watersheds and flood plains conforms to County requirements including the Flood Damage Prevention Chapter of the Zoning Ordinance.

5. The County will encourage implementation of programs for improved flood protection.

Implementation:

The County will continue to assist efforts of local districts and communities in obtaining funding for local flood control projects. The Board will continue efforts to implement the Merced County Critical Area Flooding and Drainage Plan, the Merced County Streams Group Project, and the creation of the Merced County Flood Control District to maintain drainage capacity in natural channels.

D. AGRICULTURAL CHAPTER APPENDIX

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