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**HOW MUCH IS ENOUGH?**

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**FEDERAL WATER SUBSIDIES  
AND AGRICULTURE IN  
CALIFORNIA'S CENTRAL VALLEY**

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**Don Villarejo  
California Institute for Rural Studies, Inc.  
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## ABSTRACT

The emergence of California as the nation's leading farm state has largely resulted from a major expansion of the state's irrigated acreage. Roughly three and one-quarter million acres, about 88% of the increase, has been added in California's Central Valley since 1944. Nearly all of this expanded acreage has been the direct result of government financed irrigation projects, primarily the Central Valley Project.

The Reclamation Reform Act of 1982 (RRA) sets limits on the amount of Federally subsidized water that a single landholder may receive. This limit is expressed as a limitation on the amount of landholdings that will be eligible for subsidized water. In most cases the upper limit on such holdings will be 960 acres, equivalent to about \$6,000,000 of subsidized water over the forty year life of Federal contracts.

This report documents the size distribution of farm operators and, separately, of land ownership in ten Central Valley water districts eligible to receive Federal water. Of the 1,791 farms operating in the ten districts, just 229 (13%) have holdings of 961 acres or more. However, these 229 hold at least 62% of the combined 1,020,000 acres eligible to receive Federal water in the ten districts. Farm operators eligible for Federal water deliveries in the districts have substantial holdings in other parts of the state, amounting to an additional 857,000 acres. Farms receiving the Federal water subsidy in California have an average holding of 1,048 irrigable acres. This holding is 7.2 times larger than the average holding of a California irrigated farm. Thus, the Federal water subsidy has preferentially benefited the state's largest farm businesses.

Land ownership in the ten districts is less concentrated. Ownership units holding more than 960 acres have 36% of the land of the ten districts. The number of landowner units greatly exceeds the number of farm operators. Hence, most landowners lease their land to another party who actually conducts the farming business. For this reason, Sec. 203 (b) of RRA, the "hammer clause," requiring full cost payment for water used to irrigate more than 160 acres of leased land is expected to be especially significant.

A number of presumably independent farm operators in the ten districts are found to be closely inter-related. In some cases this is evidently based on intentions to circumvent the RRA provisions designed to require full-cost water payments.

A separate examination of landownership in all of Kern, Kings and Tulare Counties shows a high degree of concentration. The largest 4% of landowner holdings have 52% of all irrigated land in the three counties. The 26 largest owners have 646,785 acres of irrigated land, or 1,000 square miles. This region is also found to suffer from a substantially greater degree of poverty than other regions of the U.S.

A comparison of landownership data for Kern and Tulare counties in 1940 with current data shows that the ownership of irrigated land has become significantly more concentrated. Today there are fewer owners holding more irrigated land. Average holdings of irrigated land have increased by at least 50%.

## ACKNOWLEDGEMENTS

This work would not have been possible without the contributions of many helpful people. Among the most significant has been the computer programming talents of Gretchen Bradfield, whose patience was often tested while she developed our programs. The author has greatly benefited from discussions with George Ballis, Hal Candee, Laura King and Phil LeVeen.

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Most of the tedious work that generated the data base described in Chapter 4 was provided by a dedicated crew of University of California, Davis, students working through the Work-Learn and Work-Study programs. In alphabetical order they are Cindy Baldwin, Richard Benjamin, Jude Crisfield, Heidi Enrado, Lisa Erdmann, Kevin Flynn, Marco Garcia, Cheri Kistler, George Mayorga, Andrew Munn, Jamie Rothschild, Cindy White, Phyllis White and Sandra Williams. Jennifer Johnston and Amy Villarejo assisted in computer entry of data.

Staff of County Agricultural Commissioner offices in Colusa, Glenn, Sutter and Yolo Counties graciously provided access to data on farm operators in those counties. I am especially grateful to Frank Carl, Assistant Agricultural Commissioner for Pesticide Enforcement in Yolo County, for taking the time to show me how to use and properly interpret data contained in applications for restricted use materials permits.

The encouragement and advice of Elizabeth Martin and Miriam Wells was helpful from the very inception of this project. Finally, my wife, Merna Villarejo, probably deserves a medal for her patience and understanding in having a husband who, for months on end, seemed to be permanently attached to a computer.

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## CHAPTER 1

### EXPANSION OF CALIFORNIA AGRICULTURE

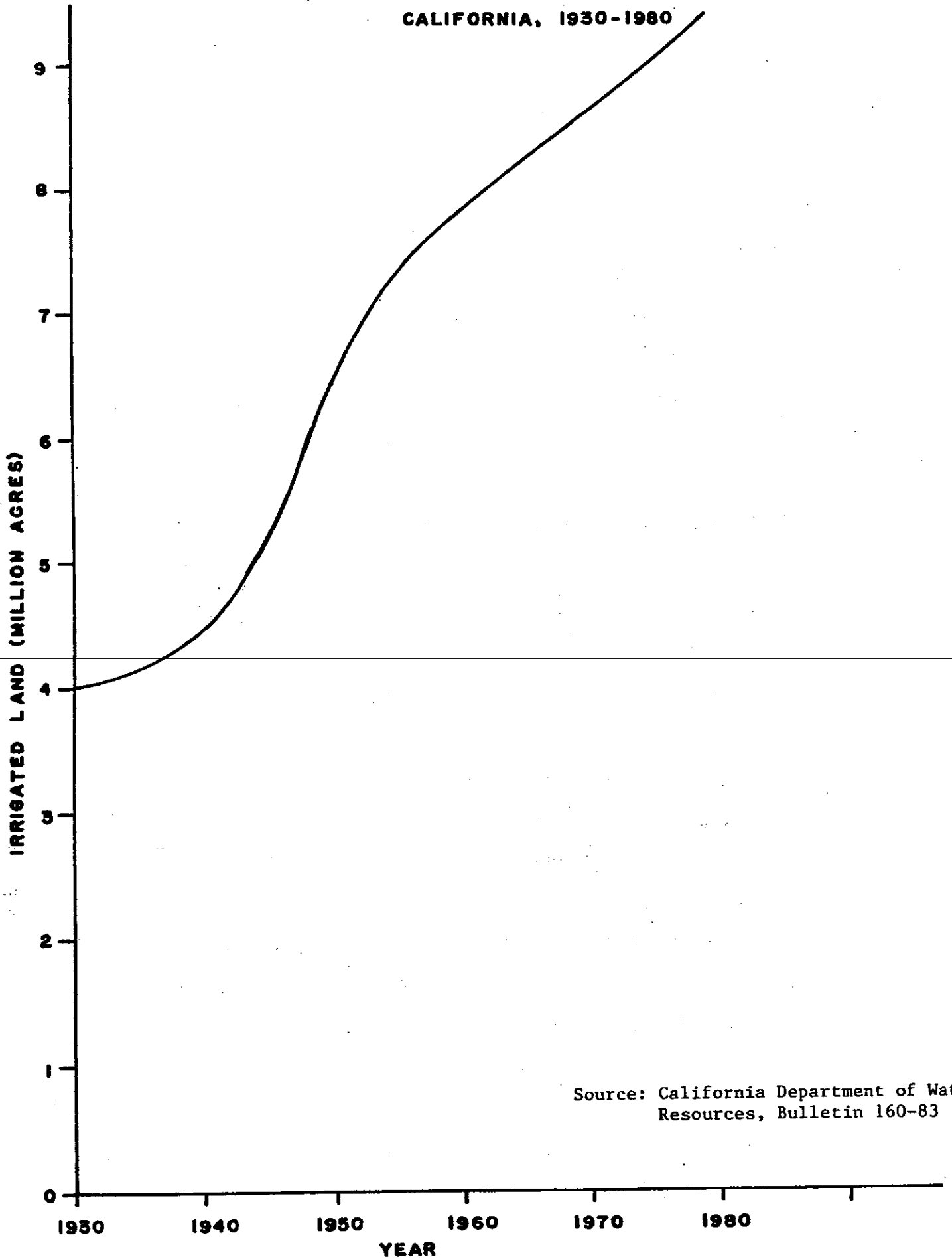
Thirty-eight years ago California's agricultural production surpassed that of Iowa and, for the first time, the Golden State became the nation's farm leader. Since that time California's share of national crop and livestock production has steadily increased. Today California's annual commodity receipts lead<sup>1</sup> second-ranked Iowa by more than 45%.

Examination of this remarkable record of agricultural expansion shows that no factor was more important than the development of newly irrigated areas. From 1944 to 1982 the state's irrigated land expanded from 4,952,819 acres to a total of 8,460,508 acres, a 71% increase.<sup>2</sup> Figure 1 illustrates this major increase of the state's irrigated cropland. When one realizes that during this same period more than 140,000 acres of irrigated land was converted to urban use in Southern California it is clear that the actual additions of new lands to irrigated production were<sup>3</sup> greater than the above figures suggest.

California's Central Valley was the center of this great expansion of irrigated cropland. Comprised of the San Joaquin Valley (SJV) and the Sacramento Valley (SV), this 450 mile-long region is the most productive agricultural valley in the world.

As shown in Table 1-1, some 3,240,946 net irrigated acres were added to the Valley's total in this period. This represents 87.9% of the net additions statewide. Moreover, just three SJV counties (Fresno, Tulare and Kern Counties) alone accounted for a net addition of 1,377,810 irrigated acres (37% of the state total). It is not just a coincidence that these three counties

**FIGURE I - IRRIGATED LAND  
CALIFORNIA, 1930-1980**



Source: California Department of Water Resources, Bulletin 160-83

are, at present, the top three counties in the entire nation in terms of annual cash receipts from crop and livestock marketings.

Table 1-1

Expansion of Irrigated Agriculture, 1944-1982

San Joaquin Valley

Irrigated land, Acres

<u>County</u>	<u>1944</u>	<u>1982</u>	<u>Net change</u>
Fresno	628,139	1,184,637	+556,498
Kern	307,613	864,465	+556,852
Kings	241,206	554,114	+312,908
Madera	126,298	262,035	+135,737
Merced	257,876	449,897	+192,021
San Joaquin	245,598	483,618	+238,020
Stanislaus	299,386	343,628	+44,242
Tulare	374,205	638,665	+264,460
SJV Subtotal	2,480,321	4,781,059	+2,300,738

Sacramento Valley

Irrigated land, Acres

<u>County</u>	<u>1944</u>	<u>1982</u>	<u>Net change</u>
Butte	91,186	215,908	+124,722
Colusa	79,794	236,752	+156,958
Glenn	86,013	193,336	+107,323
Sacramento	69,813	146,857	+77,044
Solano	32,519	116,704	+84,185
Sutter	124,333	233,746	+109,413
Tehama	29,850	99,437	+69,587
Yolo	102,771	253,532	+150,761
Yuba	22,423	82,638	+60,215
SV Subtotal	638,702	1,578,910	+940,208

Central Valley 3,119,023 6,359,969 +3,240,946

California 4,952,819 8,640,508 +3,687,689

Source: U.S. Department of Commerce, Bureau of the Census, Census of Agriculture, State and County Data, 1950 and 1982.

The period from 1944 through 1982 may also be characterized as the time when water supply agencies saw their mission defined primarily in terms of construction of new facilities.

The State Water Project and the Central Valley Project (CVP) added more new water supply capacity to the state's resources than were added at any other time in the state's history. Since the total of irrigable land in the state has been determined to be about 19,000,000 acres, the roughly 9,000,000 acres irrigated at present represents only one-half of the state's land that may be suitable for irrigated farming.<sup>4</sup>

Just as striking as the data on irrigated land are the data pertaining to land use changes within agriculture during this same period. Table 1-2 shows changes in land use, 1949-1982.

Table 1-2  
Agricultural Land Use, California, 1949-1982

Type of Land Use	Total Amount of Land, Acres			Change
	1949	1954	1982	
Cropland	13,765,110	13,229,708	11,257,374	-2,507,736
-for Pasture	3,530,589	3,018,010	1,344,619	-2,185,970
Irrigated land	6,438,328	7,048,049	8,460,508	+2,022,180
Harvested acres				
Fruits & nuts	n.a.	1,353,476	2,153,205	+799,729
Vegetables	n.a.	494,338	1,077,875	+583,537

Source: U.S. Department of Commerce, Bureau of the Census, Census of Agriculture, California, State and County Data, 1949, 1954 and 1982

The total amount of cropland (dryland plus irrigated) in the state decreased significantly from 13.8 to 11.3 million acres in the period from 1949 to 1982. However, as can be seen in the data of Table 1-2, some 2.2 million acres of the 2.5 million acre decrease resulted from reductions of cropland used for pasture. While some of this loss of pastureland occurred as the result of the conversion of agricultural land to urban uses, as in the San Francisco Bay area, significant amounts of west side pasture

of the Central Valley have been converted to irrigated agriculture. This "upgrading" of agricultural land has also occurred where dryland cropping has been replaced by irrigated farming.

Overall, the effect has been a reduction of cropland used for dry farming and for pasture (whether dry or irrigated). At the same time the amount of California irrigated farmland has increased sharply resulting in a substantial rise in the fraction of cropland that is irrigated. As can be easily derived from the figures shown in Table 1-2, the share of the state total of cropland that is irrigated has increased from 46.8% in 1949 to 75.2% in 1982.

Nowhere is the data more clear about this process of "upgrading" than in the figures for harvested acreage of fruit, nut and vegetable crops. From 1954 to 1982 the total amount of harvested acreage of fruit and nuts increased by roughly 800,000 acres (+59%) and harvested vegetable acreage expanded by 583,537 acres (+118%). Nearly all of this cropland is irrigated.

The San Joaquin Valley has been the leading beneficiary of shifts in agricultural land use. In 1954 the SJV had some 3,601,701 acres of harvested cropland of the statewide total of 8,326,331 acres. This represented 43% of the state total.<sup>5</sup> By 1982 the Valley had 4,760,708 acres of harvested cropland equivalent to 54% of the state total of 8,764,808 acres.<sup>6</sup> The SJV share of fruit and nut acreage is 65% (1,398,904 orchard acres of a state total of 2,158,404 acres) and its share of harvested vegetable acreage is 32% (289,080 acres of a total of 894,573 acres statewide).<sup>7</sup>

Much of the Sacramento Valley's addition of irrigated land

described in Table 1-1 represents a shift from one type of field crop to another. For example, expanded rice production has displaced dryland grain production. In contrast with the San Joaquin Valley there is a very small production of fresh market vegetables or of grapes in the SV. About 40% of SV farm products are field crops as compared to a 26% share for the SJV.

The most significant aspect of irrigated farming as compared with dry land farming is the very much greater yield obtained. In cotton, for example, California farmers regularly average more than 1,000 pounds per acre (lint) while Texas farmers average only 322 pounds per acre. Thus, California regularly challenges Texas to become the leading cotton state despite the fact that it has 70% less acreage planted to cotton than Texas.

#### Water Pricing

The most important factor in the post-World War II growth of Central Valley agriculture has been the development of additional water supplies to irrigate more land. Controversy concerning the failure of the U.S. Department of Interior to carry out Congressional intentions to limit the amount of Federally subsidized water that a single recipient could receive led to an upsurge of litigation in the 1970's.

The 1902 Reclamation Law limited the amount of Federal water that any one person could receive to the quantity needed to irrigate 160 acres of land. In addition, the law contemplated that resident farmers would be the sole beneficiaries of Federal Reclamation Projects and prohibited water deliveries to land held by absentee landlords. The acreage limitation provision required owners of excess Federally irrigated land to sell the amount

above 160 acres at pre-irrigation prices.

As a result of Federal Court decisions upholding the intent of Congress regarding these matters the Department began, in the years of the Carter Administration, to develop regulations to implement the law. The ensuing storm of controversy led to the passage of the Reclamation Reform Act of 1982 (RRA).

The new law is in the process of implementation with the most controversial feature, known as the "hammer clause," becoming effective than April 13, 1987. This clause, Sec 203 (b) of the RRA, provides that landholders who lease landholdings in excess of 160 acres must pay full costs on Federal water supplies used to irrigate the excess acreage. Substantial water price increases would result.

The actual amount of the Federal subsidy is a matter of some controversy and varies from one water district to another within the state. In the Sacramento Valley, where water rates amount to about \$12 to \$15 per acre, full cost rate amounts to roughly \$170 per acre.

The RRA has raised to 960 acres the maximum holding that an ownership unit (up to 25 persons as tenants in common) can have and still qualify for Federally subsidized water. In addition, instead of requiring sale of excess land, owners can irrigate more land if the water user agrees to pay full cost prices.

Based on the estimated difference between full cost and current subsidized rates, the 960 acre holding receives an annual subsidy of roughly \$150,000. Over the 40 year life of contracts for Federally subsidized water this amounts to a subsidy of about \$6,000,000.



There are several difficult questions concerning the proper implementation of the RRA. First, how much acreage will be affected and in which districts is such land located? Second, can the intent of Congress in requiring districts to amend long-term water contracts with the Department, under certain well-defined conditions, be carried out? Third, if carried out, will RRA-forced water price increases lead to changes in the pattern of cropping?

The intent of Congress in limiting water subsidies to small scale family farmers in the 1902 Reclamation Law has never been seriously questioned. The 1982 amendments reflected an effort to reach a compromise that, on the one hand, changed the law to conform with practices that were patently in violation of the 160 acre limitation and, on the other, set into motion an orderly process to require water users to begin to pay full water costs on excess acreage. And the requirement for the sale of excess land has been dropped except for landowners already under contract with the U.S. Department of Interior to do so.

It has been well-established that more than 90% of the land affected by full cost pricing is located within California.<sup>10</sup> It is also known that of the 415 farms in the 17 Western states affected by RRA some 399 are in California.<sup>11</sup> Finally, of the estimated westwide total of 685,000 acres expected to be required to pay full cost, if the current farm size patterns persist, about 663,000 acres are in the mid-Pacific region (California).<sup>12</sup>

Major districts in California affected by full-cost pricing include Westlands Water District and Glenn-Colusa Irrigation District, the largest districts in the SJV and SV, respectively.

The latter district has already initiated litigation that seeks to block implementation of the intent of Congress as expressed in the RRA.

It is difficult to imagine that an Administration and Congress committed to reducing Federal deficits and trimming budgets will seriously entertain further legislation to weaken the RRA, especially if only a small number of very large farm businesses are the beneficiaries. Therefore, the most likely outcome of the 85 year controversy over acreage limitation will be the promulgation of regulations to implement the RRA and a series of legal actions by water user groups to block the law.

As has been pointed out elsewhere the main consequence of implementation of the RRA will be to encourage affected producers to shift cropping patterns in a manner designed to generate additional revenue to cover the increased water costs.<sup>13</sup> Some

farm businesses may choose to retire a significant portion of their land pending favorable commodity market developments.

### The Cost-Price Squeeze

The process of implementation of the RRA comes at a time when many farm businesses are under severe financial stress. For more than thirty years agriculture has been faced with increasing production costs and, with a few notable exceptions, crop revenues have not kept up with overall inflation. Real net farm income in California has fallen by 33% in the past five years.<sup>14</sup> This decline has put a severe strain on farm businesses with a large debt service. Farm operators will seek to maintain net income by cutting unit costs - and this can, in many cases, be most effectively accomplished by increasing production volume.

Individual farm businesses can, in general, increase their volume by expanding their productive acreage. If land prices fall those with capital will increasingly look for opportunity. Medium size units will give way to larger units. Evidence that this process has been under way for some time in California is shown in Table 1-3, where we show the distribution of state farm commodity receipts by size of farm (measured by annual sales).

Table 1-3

Size Distribution of Farm Sales, California, 1974 & 1982

Farm size (Annual sales)	1974	1982
Less than \$100,000	13%	8%
\$100,000 - \$499,999	26	19
\$500,000 or more	61	73

Source: U.S. Department of Commerce, Bureau of the Census, Census of Agriculture, California, State and County Data, 1974 and 1982

The most striking features of these changes in shares of state farm receipts is that very large farms (annual sales of \$550,000+) have increased their share by 20% in just 8 years. And medium to large farms (annual sales between \$100,000 and \$499,999) have seen their share of state agricultural output fall by 27% in the same short time. Small to medium farms (annual sales less than \$100,000) have seen their share of state farm output fall by a whopping 38%.

The current shake-out in agriculture will not only force a number of producers out of business it will also re-shape the structure of the state's farm sector. Lenders have already made clear their intention to provide support only to those producers with a demonstrated ability to show a positive cash flow. In a time of low commodity prices this means that those able to

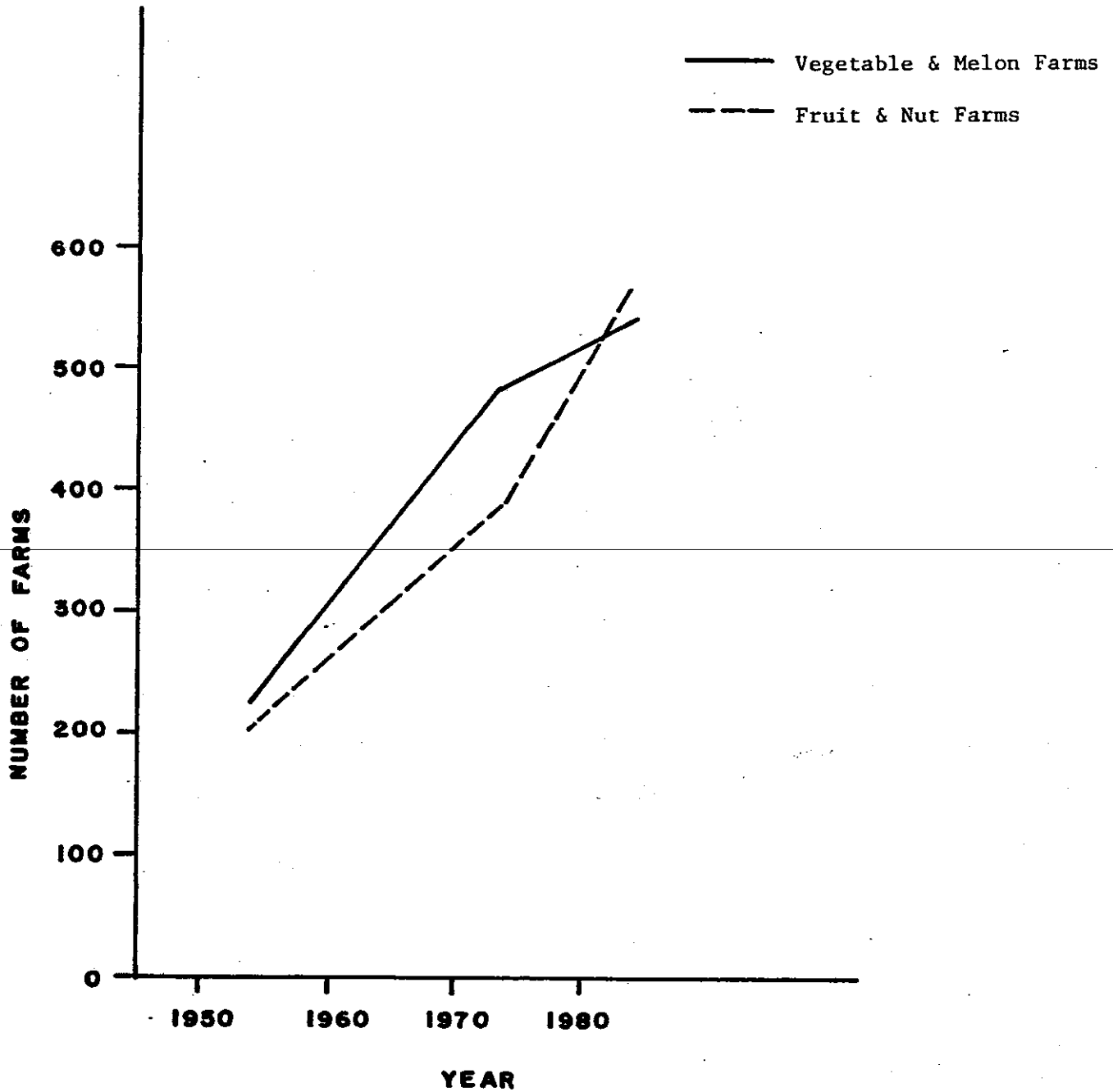
generate the highest rate of return on invested capital will have a relative competitive advantage. It has been shown that the very largest California farm businesses have an average rate of return on invested capital comparable to that of the industrial sector leaders.

15

There are other possible measures of this important trend in California farm structure. Figure 2 shows the recent trend in the actual numbers of fruit and nut and, separately, vegetable and melon farms with harvested cropland in excess of 500 acres. Fruit and nut farms in this size range increased from 203 in the state in 1954 to 389 in 1974, an increase of 186 (+9.3 per year). By 1982 the number of such farms had grown to 570, a net increase of 181 over 1974 (+22.6 per year). Similar figures describe the changes in the number of vegetable and melon farms with more than 500 acres of harvested cropland.

What is remarkable about these figures is that the rate of increase of the number of such "large" farms is evidently independent of the type of commodity produced. Both types of farms have been traditionally the stronghold of small scale family operators. This evidence suggests that their dominance may well be ending.

**FIGURE 2 - NUMBER OF FARMS WITH 500 ACRES OR MORE OF HARVESTED CROPLAND CALIFORNIA, 1954-1982**



Source: U.S. Department of Commerce, Bureau of the Census, Census of Agriculture, California, State and County Data, 1954, 1974, 1982.

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15. D. Villarejo, Getting Bigger, California Institute for Rural Studies, P. O. Box 530, Davis, CA 95617, p. 20.

## CHAPTER 2

### AGRICULTURAL LAND OWNERSHIP AND OPERATION IN TEN CALIFORNIA WATER DISTRICTS

In order to more carefully examine the potential impact of enforcement of the Reclamation Reform Act (RRA) we have analyzed both landowner and farm operator patterns in a major share of California's irrigated land. RRA limits delivery of subsidized water to 960 acres of owned land westwide (combined holdings in 17 western states) and requires full cost payments for water to irrigate owned land in excess of this figure.

Full price must be paid to irrigate more than 160 acres of leased land. However, a tenant may elect to become subject to the discretionary provisions of RRA. In such a case full cost must be paid for Federal water that is used to irrigate any land holdings exceeding 960 acres. The farm operator must also pay O & M costs (charges for the current operating and maintainance expenses). Thus, it is necessary to examine both landowner and farm operator patterns in detail.

It is well-known that California has about 49% of its farm land (cropland plus pasture) operated by tenants. <sup>1</sup> This is a very high figure as compared with national averages. For this reason the hammer clause is expected to be an especially important concern within the state.

#### Ten District Study Area

Ten water or irrigation districts were chosen for intensive study. They were selected to represent a wide range of sizes, crop patterns and geographic locations within the Central Valley. A complete list is shown in Table 2-1 and illustrated in Figure 3.

Table 2-1

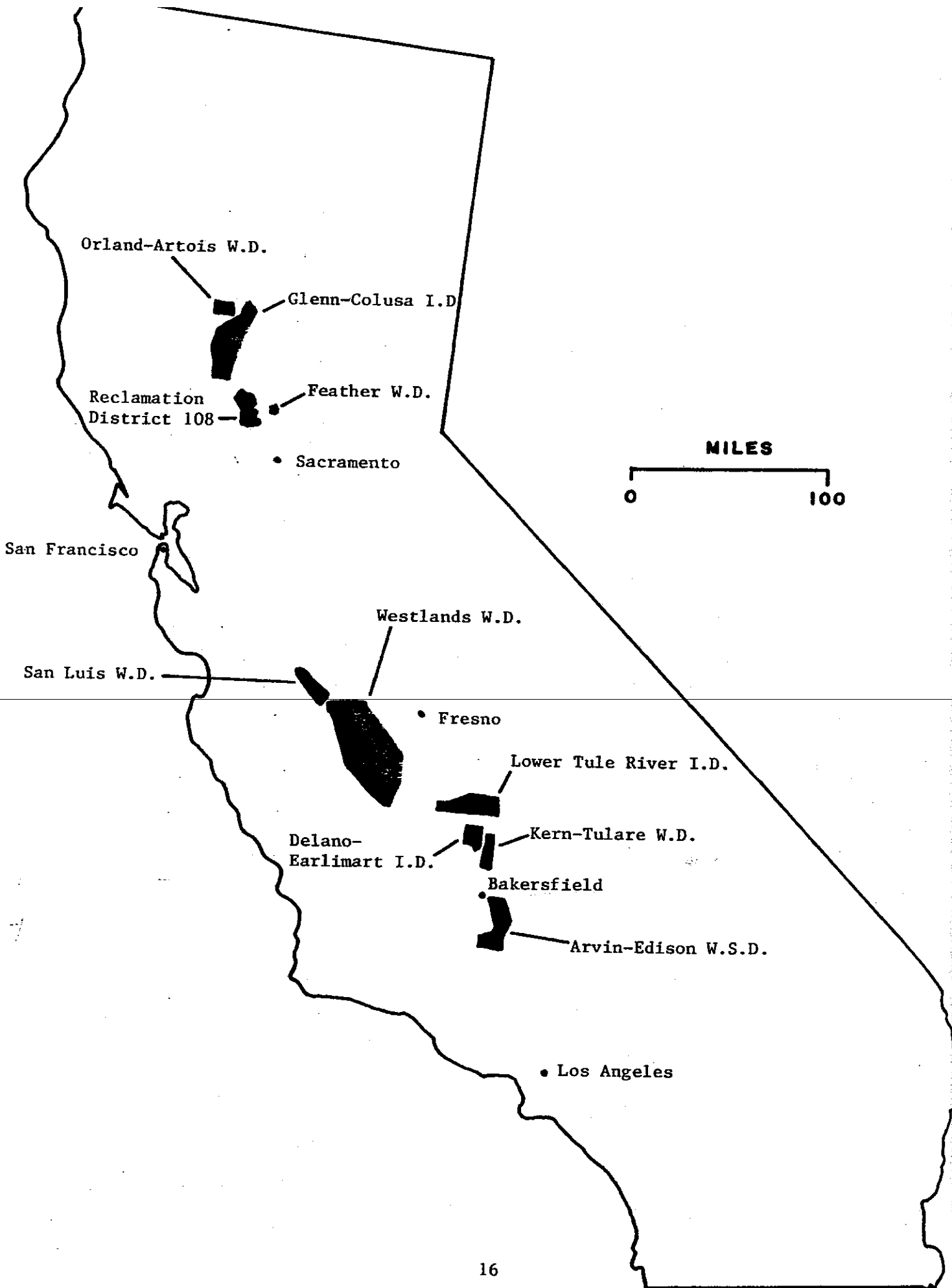
Water Districts Examined  
Amount of Land Eligible to Receive Federal Water

Name of District	Area(acres)	Counties
Arvin-Edison Water Storage District	53,532	Kern
Delano-Earlimart Irrigation District	54,716	Kern, Tulare
Feather Water District	7,644	Sutter
Glenn-Colusa Irrigation District	157,984	Glenn, Colusa
Kern-Tulare Water District	26,303	Kern, Tulare
Lower Tule River Irrigation District	99,775	Tulare
Orland-Artois Water District	31,269	Glenn
Reclamation District No. 108	57,460	Colusa, Yolo
San Luis Water District	59,697	Fresno, Merced
Westlands Water District	527,917	Fresno, Kings
Total	1,076,297	

The ten districts comprise roughly 17% of the Central Valley's irrigated land and include the largest in the San Joaquin Valley (Westlands W.D.) as well as the largest in the Sacramento Valley (Glenn-Colusa I.D.). It is worth noting that California has hundreds of such water districts, most of which are quite small. Each such district must be created by action of the California legislature and boundaries often reflect delicate compromises among conflicting private interests.

Annual water deliveries to these ten districts amount to roughly 2.1 million acre-feet, or about 48% of all Federal Project water delivered to the Central Valley by the Central Valley Project (CVP).<sup>2</sup> Thus, despite the fact that the ten districts only cover about one-sixth of the Central Valley's irrigated acreage, they account for roughly one-half of all CVP water deliveries. Irrigation water is also provided to the Central Valley by projects of the U.S. Army Corps of Engineers, by the California State Water Project (a state funded facility) and by various other suppliers. Finally, a very substantial





fraction of Central Valley irrigation water is pumped from underground aquifers.

#### Determination of Farm Operators

Accurate and detailed maps of the exact areas included within each of the ten districts were obtained. In all cases the maps displayed section/township/range descriptions of district lands eligible to receive Federal water.

Information concerning 1985 farm operators on lands within the ten districts was compiled from a variety of sources. The pertinent county offices of the U. S. Department of Agriculture were asked to supply complete records of all farms registered with the agency. Known as the Agricultural Stabilization and Conservation Service (ASCS), this USDA body maintains farm records for all farms in a given county who elect to sign up for Federal crop programs. A farm operator must register all acreage whether or not the land is used to grow USDA program commodities. Thus, a farm which produces cotton, rice, wheat or feed grains and which participates in the Federal price support program for that commodity will have a rather accurate record in the appropriate county ASCS office of all land it operates. This record shows gross acreage, net irrigable cropland acreage, name of landowner for each parcel farmed and other similar information. Acreage figures provided by the farmer are verified against aerial photographic maps and are believed to be accurate to within 0.1 acre.

Since many California farm operators do not grow crops that are supported by USDA (vegetable, fruit and nut farmers tend to specialize in those crops) other sources of data are needed to

identify their operations. There are two main sources of data for determining information about farm businesses that do not participate in ASCS programs.

First, detailed property descriptions of land being farmed by a particular farm business is normally disclosed in the public record portion of documents concerning farm crop loans. Lenders are concerned that their priority as creditors be established in an orderly manner. Crop loans are perfected by recording a Financing Statement with the County Recorder in the county where the growing crop serves as collateral for the loan. The document must include a legal description of the location of all property on which the crops are being grown as well as the name of the owner of the property.

Second, all farm operators applying restricted use pesticides must obtain a permit from the County Agricultural Commissioner in the county where the material will be applied. Applications for restricted use material permits filed by farmers must include detailed farm maps, property descriptions including section/township/range and acreage data. These documents are maintained in County Agricultural Commissioner offices. Unlike ASCS records and Financing Statements, applications for restricted use material permits need only describe fields where pesticides will be used, not all land being farmed.

We have obtained complete ASCS records for all counties in which the ten districts are located. In total, some 32,000 farms are represented in the data set. District maps were directly compared against ASCS Farm Tract legal descriptions (section/township/range) enabling accurate determinations to be made of

farms operating in the ten districts as well as such important details as the farm's irrigable land in the district and the total of irrigable land farmed (including land being farmed outside the ten district study area).

Searches of Financing Statement records in San Joaquin Valley counties yielded substantial additional data, especially regarding orchard and vineyard farming operations. Finally, a systematic search of Sacramento Valley Ag Commissioner records and Financing Statements provided important data, especially for growers of tree fruit or processing tomatoes.

Size Distribution of Farm Operators

Summary data on the size distribution of farm operations on land eligible for project water in the ten districts is shown in Table 2-2. It is important to note that only those portions of a given farm operation's holdings in the ten districts are included here. As is further described later many farm operators have substantial holdings outside of these ten districts. Conclusions regarding actual farm size must refer to both types of holdings.

Table 2-2

Farm Size Distribution, Land Eligible for Project Water  
Ten California Districts, 1985

<u>Size Class</u>	<u>Number</u>	<u>Irrigable Land</u>
80 acres or less	534	20,632 acres
81-160 acres	284	37,042
161-320	317	77,924
321-640	282	133,047
641-960	145	117,207
961-1,280	64	70,611
1,281-2,560	94	167,971
2,561-5,120	44	153,539
5,121 acres or more	27	241,900
Total	1,791	1,019,873

Average = 569.44 acres/farm

Those farms with more than 960 acres of land eligible for Federal water comprise just 229 of the total of 1,791 farms in the ten district study area. However, they farm 634,021 acres of the total of 1,019,873 acres of such land in the ten districts. That is, at least 62.17% of the land eligible for Federal water in these districts is in farms exceeding 960 acres. There is substantial evidence, described further below, that not all of these 1,791 farms are truly independent farm operators. If these inter-relationships are properly taken into account, the number of distinct farm entities is smaller and the amount of land in farms exceeding 960 acres is greater than the figures quoted above. For this reason these figures must be regarded as lower limits to the true degree of farm concentration.

Consideration of land farmed by these same farmers outside of the ten districts leads to a determination that their actual current statewide farming operations total some 1,877,286 acres of irrigable cropland. On this basis it can be concluded that their holding of irrigable land is 1,048 acres per farm. This figure can be compared to the average holding of 145 acres of irrigated land per irrigated farm in the state. Farms receiving the Federal water subsidy are, on average, 7.2 times larger than the average California irrigated farm. Clearly, the Federal water subsidy, whether by design or otherwise, has preferentially benefited the state's largest farm businesses.

The fact that the statewide total of irrigated land farmed by these 1,791 entities is 84% larger than their holdings in the ten district study area suggests that the westwide provision of RRA may be more important than has been previously realized.

That is, the combined holdings eligible for Federal water in the seventeen western states are subject to acreage limitation rather than holdings in individual districts. We find that 40 of the 1,791 farm entities we have identified are farming in at least two of the ten districts we have studied. While this is a small fraction of the total number of farm entities in the ten districts it is of great significance that half of the 40 farm more than 960 acres of land eligible for project water. Among those 27 farms with at least 5,121 acres of such eligible land, 6 farm in at least two of the ten districts.

In other words, the correct identification of those farm operations with more than 960 acres of eligible land is critically dependent upon consideration of all such lands, including multi-district holdings, that a particular operator may happen to farm. Since California has a large number of water districts an accurate determination of all 960+ acre farms and their total land holdings requires substantial effort.

Comparison of Tables 2-1 and 2-2 regarding total land in the ten districts reveals an apparent discrepancy requiring additional comment. The ten district total of land eligible to receive Federal water is 1,076,297 acres whereas our finding of total irrigable acreage in the ten districts is just 1,019,873 acres. The difference of 56,424 acres is substantial and has its origin in the fact that both ASCS and County Ag Commisioner data refer to irrigable cropland only - excluding land used for homesteads, roads, ditches, feed lots, equipment yards and other non-crop purposes - while total land areas within a given district is a gross acreage figure including both crop and

non-crop land.

To illustrate the size of the difference at the individual farm level consider the ASCS Report for La Jolla Ranch, one of the larger farms in the Westlands Water District. This is Fresno County ASCS Farm #70 and is reported to include a gross area of 2,719 acres. However, only 2,645 acres are reported to be irrigable cropland. The difference of 74 acres, 2.7% of the farm area in this case, is not available for use as irrigated cropland under current farming practices.

#### Comparison with Other Authors

In its Draft Environmental Impact Statement. Acreage Limitation, the U.S. Department of Interior reports that in districts eligible for project water in the western United States, farms with more than 960 irrigable acres comprise just 31% of the land farmed as contrasted with our figure of 62%. A detailed report on eighteen districts, including five in California, has also been published.<sup>4</sup> Re-examination of the data of that report shows that the five California districts account for 87.2% of the acreage in farms exceeding 960 acres throughout the eighteen district study area. Moreover, by this same analysis we find the fraction of land in farms exceeding 960 acres among those five California districts to be 73.8%. While strict comparison with our data is not possible since different sets of districts were studied at different times, it is evident that the fraction of land in farms of 961 acres or more eligible for Federal water in California is quite high.

This same work considered two of the districts we have chosen to study - Glenn-Colusa I.D. and Westlands W.D. Detailed

comparisons of data at the district level with our results is presented in Chapter 3.

Previous authors have not considered either the possibility of multi-district farm operations or cropland farmed by sample district farm operators that happens to lie outside of district boundaries.

#### Determination of Land Owners

The primary source for information regarding land ownership in the present work has been County Assessor's Roll of Secured Property. District maps were compared with Assessor's Maps to identify parcels of interest. Both parcel number and acreage were compiled directly from Assessor's Maps to be certain that all parcels of interest and their correct acreage were noted. A total of 10,169 parcels were identified in this fashion.

Current data for the parcels of interest was obtained from a commercial real estate data source. This data was available in electronic form. However, it was necessary to obtain data for some 15,000 parcels in order to efficiently retrieve data for the parcels of interest. This is because the data source could readily transfer information for entire pages of Assessor Map Books with relative ease but could not efficiently transfer data for a select number of parcels on a given page. The data transfer was effected by a modem operating at 2400 baud. Using tape backup methods two copies of the data were generated and one copy was stored in a secure location.

The raw data was examined using the computer screen display and minor editing was accomplished. This process consisted of removing data transfer commands and occasional extraneous symbols



comprising data transmission noise.

Edited data was entered into a File Manager program operating within the MUMPS system (adapted for microcomputer use). Two files were created - Land File and Owner File. Land File has fields for Parcel Number, Name of Owner, Date Retrieved, County, County's Land Use Code, CIRS Land Use Code, DWR Land Use Code, Deed Reference, Date of Deed Recording, Acres, and Water District. Owner File has fields for Name of Owner, C/O Record, Street Address, City, State, Zip, Fictitious Business Name and the ability to store multiple addresses and multiple fictitious business names. The two files are cross-referenced using Name of Owner.

Actual entry of the edited data into the file system was accomplished electronically using a custom program for this single purpose. The program scans each parcel record and assigns data to the appropriate fields. Since there are a large number of multi-parcel owners the assignment of owner address to a separate file eliminated the need to store address information in each Land File record. Owner addresses for a particular parcel can be easily retrieved using the file cross-references. Use of the File Manager program resulted in a reduction of data file size by a factor of two, in large part due to the elimination of owner address records in the Land File.

Further editing of the Land File and Owner File was necessary to eliminate inconsistencies and to assign each parcel to the water district in which it is located. The latter was rapidly accomplished using File Manager editing routines while the former required extensive printouts and checks of spelling of names for multi-parcel owners. The most commonly encountered

inconsistency was the discovery that multi-parcel owners might use initials instead of first and/or middle names. This was an especially vexing problem for the relatively small number of individual owners holding property in more than one county. One county might use initials and another full names. Even use of "Bill" and "William" required this kind of verification.

The final set of edited data permitted electronic analysis of the full number of parcels or any desired sub-set. For ease of use a complete printout of owners, in alpha order, was created on a district by district basis. Programs available enabled construction of tables summarizing results in any one of many user-designed arrays, including three-dimensional arrays.

#### Definition of Ownership Unit

We follow standard real estate industry practice in our use of "ownership unit" as contrasted with identification of single owners. An ownership unit is the single name, or unique set of names, appearing on a grant deed (or equivalent instrument).

This definition of ownership unit is of special importance in the treatment of tenancy in common. Consider, for example, ownership of 320 acres by a wife and husband as joint tenants. In our analysis of the data this joint tenancy is regarded as a single ownership unit with 320 acres. Alternatively, one might view this situation as reflecting two individual owners each with 160 acres. Quite apart from the difficulty of properly dividing ownership shares in more complex cases of tenancy in common, for example, among some twenty or more partners holding property in a partnership, there is a critical fact about joint tenancy that is lost in making such divisions. That is, all rights to the use

of the property must be granted by unanimous action of all of the joint owners. Whether lease, easement or sale, all owners must act in unison. Standard real estate reference manuals support the use of a single "ownership unit" for a tenancy in common.

"There is a unity of possession in tenancy in common, meaning each owner has a right to possession and none can exclude the other nor claim any specific portion for himself or herself alone." (6)

It is this "unity of possession" that is reflected in the term "ownership unit." The term itself was introduced in the early work of E. Wilson and M. Clawson on land ownership in the southern San Joaquin Valley.<sup>7</sup>

Recent proposed regulations to enforce the hammer clause have correctly recognized the inappropriateness of making an artificial division of property held in tenancy in common. In determining the threshold acreage that will trigger full-cost water pricing, all cases of tenancy in common (up to twenty-five persons) will be treated as single units and no claim to rights for Federal water can be based on division of property rights among the tenants in common.<sup>8</sup>

There are a number of consequences of this use of "ownership unit" in studies of land ownership. An individual, her/his spouse, and these two persons as tenants in common are counted as three owner units in our data if they hold property in each of these three ways.

Cases of divided interest in property required special treatment. In cases of divided interest in a single parcel the exact shares are specified by two or more deeds, where each deed specifies the fractional share of the parcel acreage held by

that owner unit. We have identified parcels held in this manner and, consistent with the notion that an owner unit comprises a unique set of names appearing on a deed, have assigned shares of the relevant parcel acreage to the owners of the divided interests. Some counties, such as Kern, assign separate parcel numbers to each owner unit holding a divided interest. While the number of cases of divided interest parcels is small the accurate determination of ownership consistent with the use of "ownership unit" requires this treatment.

Careful examination of our data set shows several additional ambiguities. An individual may hold property in her/his own name and may also hold property as trustee of a personal or business trust. Because the beneficiaries of a trust are not necessarily disclosed in such cases we have uniformly treated cases of an individual as a trustee as a separate owner unit from the same individual acting on their own behalf. The most difficult cases of this type are banks acting as trustees on behalf of other persons. Clearly, it is improper to aggregate all property held by a single bank acting as trustee as though it were a single owner unit. On the other hand, without full disclosure of trust beneficiaries it is not possible to correctly assign owner unit shares. It was found that, in many cases, the bank will use a unique trust department reference number in the address portion appearing in the document on which the deed is printed. Such an address is used as a reference for the County Recorder who returns the original document to the bank after the deed has been recorded. Obviously, this enables the bank to properly route the original document to the person responsible for the

administration of that particular trust. While the address is not an official part of the document it does help to serve the purpose of identifying different sets of beneficiaries of various trusts that happen to be administered by a particular bank. To illustrate the potential importance of this careful analysis, consider the 23 parcels held by Bank of America, as trustee, in the ten districts. In aggregate, the total holdings amount to 2,658.69 acres. By examining additional information of the type summarized above we have been able to group these 23 parcels in 7 owner units with holdings varying between 79.8 acres, in the case of the smallest holding, to 1,082.72 acres, in the case of the largest holding. While this does not prove that the owner units are correctly assigned it is highly suggestive and, at minimum, probably does not improperly aggregate holdings that, in all likelihood, are distinct.

Size Distribution of Land Ownership

The size distribution of ownership of land eligible for Federal water in the combined ten districts is shown in Table 2-3.

Table 2-3

-Size Distribution of Land Ownership, Land Eligible for Project Water, Ten California Districts, 1985

<u>Size of Owner Unit</u>	<u>Number</u>	<u>Total Land</u>
80 acres or less	2,238	72,745 acres
81-160 acres	1,059	145,158
161-320	742	184,812
321-640	385	177,400
641-960	113	88,981
961-1,280	42	46,900
1,281-2,560	62	107,716
2,561-5,120	14	45,992
5,121 acres or more	10	176,769
Total	4,665	1,046,473

Average = 224.32 acres/owner unit

Nearly half of the owner units hold a total of 80 acres or less in the combined ten district study area. However, their aggregate holdings amount to only 7% of the total land area eligible to receive Federal water. On the other hand, there are 128 owner units with at least 961 acres each (2.7% of the owner units) and their combined holdings represent 36.1% of the land.

Those owner units holding 641 acres or more comprise 5.2% of the owner units and they own 44.6% of the land. This is a high degree of concentration of land ownership, particularly in light of a government policy that intends that the benefits of Federal reclamation projects be widely distributed.

Comparison with our data on farm operators shows that the number of owner units greatly exceeds the number of farm operators. The ratio of owner units to farm operators is 2.71. This means that the overwhelming majority of owners lease their land to one or more farm operators. Since the hammer clause contemplates charging full-cost for Federal water used on a lease holding of a size exceeding 160 acres, potentially 1,368 owner units are affected (those with land owned in excess of 160 acres). The total acreage potentially affected is 828,570 acres, 79.2% of the combined acreage of the ten district study area.

The ten largest land ownerships are identified in Table 2-4. We show only those lands eligible to receive Federal water in one or more of the ten districts.

The largest owner, Southern Pacific Land Co., has holdings in two of the ten districts and leases all of the property to a number of local farm businesses, reportedly for cash rent. On the other hand, J. G. Boswell Co. farms all of the land it owns

in the two districts. Both of these largest landowners report business addresses outside of the counties in which the districts included for study are located.

Table 2-4

Landowners with More Than 5,120 Acres  
Ten California Districts, 1985

<u>Name of Owner</u>	<u>Total Land</u>
Southern Pacific Land Co.	82,845 acres
J. G. Boswell Co.	28,795
Westhaven Farming Co.	10,899
Zumwalt Farms, Inc.	9,499
Gerald K. Hoyt et al	8,502
South Lake Farms, A Corp.	8,416
Reclamation District No. 108	8,101
River Garden Farms Co.	7,432
Arnold Andreotti et al	6,587
Britz, Inc.	5,693

Sixty-seven of the owner units have land in two or more of the ten districts. While this is a very small fraction of the total number of owner units it is of some interest that their average holding is 2,380 acres, ten times the average holding of all owner units. And three of the ten largest owner units have multi-district holdings, including both Southern Pacific and J.G. Boswell Co.

While it is not unexpected to find that the largest owner units have such multi-district holdings it was surprising to find several with widely separated holdings. One has holdings in both the Glenn-Colusa I.D. and the Arvin-Edison W.S.D., at the extreme ends of the Central Valley.

The fact that RRA applies pricing thresholds on a westwide basis means that analysis of multi-district holdings is essential. It is likely that both the number of such multi-district holdings identified and their relative importance would

be greater if contiguous districts were examined.

It is known that roughly 90% of the land affected by full cost pricing is located within the state of California. Hence, rather complete coverage of the westwide aspect of the new pricing policies can be realized by simply including those California districts eligible for Federal water deliveries.



## NOTES-CHAPTER 2

1. 1982 Census of Agriculture, op. cit., Table 5.
2. Turning Off the Tap, op. cit., derived from Table B1, Appendix B.
3. Draft Environmental Impact Statement. Acreage Limitation, op. cit., Table 3.4, p. 3-14.
4. U.S. Department of Interior, Water and Power Resources Service, Interim Report. Acreage Limitation, March 1980. Appendix II, Table 4.
5. Data was obtained from the REDI-NET service of Real Estate Data, Inc., 2398 N.W. 119th Street, Miami, FL 33167. The on-line service was discontinued effective October 1985.
6. California Department of Real Estate, Reference Book, 1979-80 Edition, Sacramento, CA 95814, pp. 85-86.
7. Edwin E. Wilson and Marion Clawson, U.S. Department of Agriculture, Bureau of Agricultural Economics, Agricultural Land Ownership and Operation in the Southern San Joaquin Valley, Berkeley CA, June 1945, p. 97.
8. Federal Register, November 7, 1986, Sec. 426.4 (bb), definition of "qualified recipient," p. 40751.

## CHAPTER 3

### AGRICULTURAL LAND OWNERSHIP AND OPERATION DISTRICT BY DISTRICT ANALYSIS

#### Arvin-Edison Water Storage District

Located at the extreme Southern end of the San Joaquin Valley this district is conveniently located close to the booming Southern California metropolitan area centered in Los Angeles. Since average annual rainfall in the area is less than 6 inches, the desert conditions require irrigation for all crop farming. Of the district's roughly 119,000 irrigated acres only 51,401 acres are irrigated with Federal water. The balance is irrigated with pumped groundwater or surface water provided by the State Water Project.

Crops produced on land irrigated with Federal water include oranges, grapes, potatoes, vegetables, nuts, cotton, alfalfa and grain. That such a broad range of crops can be produced is quite unusual, even for California. In part this crop pattern reflects the high quality of soils within the district, the extraordinary number of days of clear sun and a somewhat higher elevation than the Valley floor (tending to hinder frost damage in winter and early spring).

Analysis of land ownership and farming operation in the Arvin-Edison district is somewhat more difficult than for other districts in that only about 51,400 acres of its 119,000 acre area have elected Federal irrigation water service. It was essential to determine which individual parcels are eligible for Federal water and which are not. In a few cases it was found that only a portion of a particular parcel received Federal water.

while the balance did not. District personnel generously made current water delivery records available enabling an accurate determination to be made. <sup>1</sup> These records were checked against current Kern County Assessor's maps and Roll of Secured Property as well as against USDA records. This made it possible to make an accurate determination of landowner holdings as well as farm operator holdings.

Table 3-1 shows the size distribution of farm operators on just those lands eligible for Federal project water. As is discussed further later, many of these businesses farm land in addition to that described in the table, in other districts or within the Arvin-Edison district but irrigated with either private or State Water Project irrigation water.

Table 3-1

Farm Size Distribution, Land Eligible for Project Water, Arvin-Edison W.S.D., 1985

<u>Size Class</u>	<u>Number</u>	<u>Irrigable Land</u>
80 acres or less	57	1,827 acres
81-160 acres	38	5,348
161-320	25	6,499
321-640	30	14,255
641-960	9	7,181
961-1,280	6	6,658
1,281-2,560	3	5,219
2,561-5,120	1	4,069
5,121 acres or more	0	-
<b>Total</b>	<b>169</b>	<b>51,056</b>

Average = 302.11 acres/farm

An important result derived from Table 2-2 is the fact that 10 farms exceed the 960 acre size limit for Federally subsidized water and their combined holdings comprise 31.23% of the district land eligible for Federal water. We have also determined that the 169 farms actually operate a statewide total of 143,020 crop-

land acres. Hence, average farm size is 846 acres of which 302 acres are irrigated with project water in the Arvin-Edison W.S.D.

Table 3-2 identifies those ten farm businesses with more than 960 acres of land eligible for Federal water in the Arvin-Edison W.S.D.

Table 3-2

Farms With More Than 960 Acres, Land Eligible for Project Water, Arvin-Edison W.S.D.

<u>Name of Business</u>	<u>Irrigable Land</u>
Giumarra Farms Inc	4,069 acres
Joe G Fanucchi and Son	2,334
Opal Fry and Son	1,447
Western Agro Marketing Inc	1,438
H P Metzler and Sons Inc	1,274
John J Kovacevich	1,107
Caliente Farms Corp	1,094
Kenmar Farm	1,064
Eugene Nalbandian	1,062
King Pak Farms Inc	1,057

An analysis of land ownership data for this district shows a very different pattern. Table 3-3 shows our results for the size distribution of land ownership in the Arvin-Edison W.S.D.

Table 3-3

Size Distribution of Land Ownership, Land Eligible for Project Water, Arvin-Edison W.S.D.  
1985

<u>Size of Owner Unit</u>	<u>Number</u>	<u>Total Land</u>
80 acres or less	198	5,809 acres
81-160 acres	92	13,014
161-320	67	16,513
321-640	17	7,605
641-960	7	5,296
961-1,280	1	1,079
1,281-2,560	3	4,216
2,561-5,120	0	-
5,121 acres or more	0	-
<b>Total</b>	<b>385</b>	<b>53,532</b>

Average = 139.04 acres/owner unit

The average owner unit has just 139 acres, substantially less

than for the combined ten district area. There are more than twice as many ownership units than farms, implying that a large fraction of land owners are non-farmers. This conclusion is further supported by the listing of landowners whose holdings exceed 960 acres, shown in Table 3-4.

Table 3-4

Landowners With More Than 960 Acres, Land Eligible for Project Water, Arvin-Edison W.S.D.

<u>Name of Owner Unit</u>	<u>Irrigable Land</u>
Southland Produce Co.	1,438 acres
Southern Pacific Land Co.	1,414
Giumarra Bros. Fruit Co.	1,363
Giumarra Vineyards Corp.	1,079

Neither Southland Produce Co. nor Southern Pacific Land Co. farm the land they own. Instead, this land is leased to a number of farm operators.

A significant aspect of the Arvin-Edison farming operations is that 18 of the 169 "farms" are actually operated by 7 farm management groups. That is, a Limited or General Partnership is the "farmer" of record but all of the actual farm operations are performed by the management company. The 7 management companies, the number of "farms" under management in the portion of the Arvin-Edison district served with Federal Project water, and the total such acreage managed is shown in Table 3-5.

Table 3-5

Farm Management Companies, Arvin-Edison W.S.D.

<u>Name of Company</u>	<u>No. of Farms</u>	<u>Total Land</u>
Agricultural Services Inc	2	881 acres
Agro Farming Corp	5	854
Allied Farming Co	1	246
California Farm Management	1	111
Robert Fortune Farming	4	614
Hein Ranch Company	1	164
National Pacific Real Estate	4	534

Obviously, if these 18 "farms" are instead regarded as just 7 farm business operations the degree of concentration of farming in the Arvin-Edison district would be greater than reported in our Table 3-1.

A point of interest regarding implementation of RRA is the fact that several landholders in the Arvin-Edison district have extensive holdings on a statewide basis. Several of these, such as Superior Farming Company, have chosen to voluntarily comply with the RRA and are paying full prices for the Federal water they are using in the Arvin-Edison district. In the case of Superior Farming, their holding receiving Federal water in the Arvin-Edison district is just 80 acres. Nevertheless, they are paying full cost for their water while continuing to farm.

### Delano-Earlimart Irrigation District

This district straddles the county line dividing Kern and Tulare counties. Principal commodities produced include grapes, nuts, deciduous tree fruit, cotton and field crops. Vineyards occupy roughly half the area of the district and orchards occupy another one-eighth. The area is widely known as California's principal table grape region and its grape ranches became the main focus of union organizing activity among farm workers during the early 1960's.

Our results concerning the size distribution of farms in the district are summarized in Table 3-6. As before the data refer only to portions of farming operations located within the district boundaries that are eligible to receive Federal water.

Table 3-6

Farm Size Distribution, Delano-Earlimart I.D.  
1985

<u>Size Class</u>	<u>Number</u>	<u>Irrigable Land</u>
80 acres or less	64	2,990 acres
81-160 acres	31	4,063
161-320	26	6,517
321-640	21	9,746
641-960	11	8,158
961-1,280	4	4,199
1,281-2,560	6	11,114
2,561-5,120	2	5,720
5,121 acres or more	0	-
Total	165	52,507

Average = 318.22 acres/farm

Just 12 farms have more than 960 acres of irrigated land within this district's boundaries. However, their aggregate holdings amount to 40.1% of the irrigated cropland. Like the Arvin-Edison district discussed previously average unit size, based only on district land, is relatively small.

Table 3-7 identifies those farms with more than 960 acres of irrigated cropland in the Delano-Earlimart I.D.

Table 3-7

Farms With More Than 960 Acres, Delano-Earlimart I.D.

<u>Name of Farm Unit</u>	<u>Irrigable Land</u>
Tex-Cal Land Inc.	3,093 acres
Tenneco West Inc.	2,627
M. Caratan Inc.	2,286
A. Caratan & Son	1,865
Vignolo Farms	1,828
M. Zaninovich Inc.	1,706
Mid-State Horticultural Co.	1,649
Lamanuzzi & Pantaleo	1,080
Baker Bros.	1,074
A & M Farms Inc	1,067
M. D. Bradley & Son	978

Data on land ownership in this district shows a different pattern. As in the case of the Arvin-Edison W.S.D. there are more than twice as many landowner units as farm units. This is shown in Table 3-8.

Table 3-8

Size Distribution of Land Ownership  
Delano-Earlimart I.D., 1985

<u>Size of Owner Unit</u>	<u>Number</u>	<u>Total Land</u>
80 acres or less	188	8,357
81-160 acres	97	13,031
161-320	64	15,728
321-640	17	7,227
641-960	6	4,352
961-1,280	2	2,070
1,281-2,560	1	1,323
2,561-5,120	1	2,628
5,121 acres or more	0	-
Total	376	54,716

Average = 145.52 acres/owner unit

The average land owner holding of 146 acres is substantially smaller than that found for the ten district area as a whole.

Owners holding more than 960 acres number just 4 and their aggre-



gate holdings amount to only 11% of the district's land. This is sharp contrast with the pattern of farm operators where 40% of the land is in farms exceeding 960 acres. This implies that leasing is especially important in this district. Table 3-9 identifies those owners whose lands exceed 960 acres.

Table 3-9

Land Owners With More Than 960 Acres  
Delano-Earlimart I.D.

<u>Name of Owner Unit</u>	<u>Total Land</u>
Tenneco West Inc.	2,628 acres
C.J. & J.K. Vignolo	1,323
M. Caratan Inc.	1,078
Mark A. Avedian	993

In contrast with the situation in the Arvin-Edison and a few other districts, farm management companies are not important in the Delano-Earlimart I.D. at this writing. Rather, with just one exception, the largest farms predominately operate owned land or land leased from family members who own the farm operation. The exception is a farm business that, for reasons un-related to reclamation considerations, has been a normal farm operating company, then became a farm management company, and then, once again became a farm operator. This company, Tex-Cal Land Co., Inc., has been embroiled in a long-standing labor dispute with the United Farm Workers of America, AFL-CIO (UFW).

Tex-Cal operates extensive vineyards and, until the labor dispute erupted, simply leased land from 16 different owner units as well as farming the 140 acres it owns in the district. After the UFW won the right to represent workers in a secret ballot election, the company simply re-formed as the Tex-Cal Land Management Co., Inc. The union alleges that the company unlawfully

dismissed unionized work crews and tried to evade responsibility  
to bargain in good faith by forming the new management firm.<sup>3</sup> The  
new firm borrowed roughly \$58 million from the Farmers Home  
Administration, becoming the largest borrower in that agency's  
history.<sup>4</sup> Upon defaulting on loan payments the Tex-Cal Land  
Management Co. went out of business. The operation of the land  
has evidently returned to the original firm. The land management  
phase of this farm business' life appears to be unrelated to  
reclamation law issues.

### Feather Water District

This very small district is located on the east side of the Sacramento Valley. Principal land use in the district is orchards with peaches, prunes and nuts predominating. The major annual crop is melons. Data on farm operators shows a predominance of small scale businesses. The size distribution of Feather Water District farms is shown in Table 3-10.

Table 3-10

Farm Size Distribution, Feather W.D., 1985

<u>Size Class</u>	<u>Number</u>	<u>Irrigable Land</u>
80 acres or less	47	1,963 acres
81-160 acres	14	1,470
161-320	8	1,917
321-640	1	326
641-960	1	762
961-1,280	1	1,048
1,281-2,560	0	-
2,561-5,120	0	-
5,121 acres or more	0	-
Total	72	7,486

Average = 103.97 acres/farm

Despite this district's very small size, the single farm with more than 960 acres has 14% of the irrigable cropland. The company, Valley View Packing Co., is one of the more important producers of deciduous tree fruit in the Sacramento Valley. This firm also has extensive holdings in adjacent Yuba County and other holdings in Solano County, at the far west edge of the Sacramento Valley.

Despite the single large farm operating in the district, the average farm size is slightly in excess of 100 acres. This is only one-third as large as the average for the Arvin-Edison and Delano-Earlimart districts, and about one-sixth as large as the

value for the entire ten district study area.

The distribution of land ownership reflects the same type of pattern as for farm operators. This is shown in Table 3-11.

Table 3-11

Size Distribution of Land Ownership  
Feather W.D., 1985

<u>Size of Owner Unit</u>	<u>Number</u>	<u>Total Land</u>
80 acres or less	126	3,219
81-160 acres	15	1,767
161-320	8	1,983
321-640	0	-
641-960	1	675
961-1,280	0	-
1,281-2,560	0	-
2,561-5,120	0	-
5,121 acres or more	0	-
Total	150	7,644

Average = 50.96 acres/owner unit

The very small size of the average holding in this district suggests that land ownership is widely dispersed. The ratio of the number of owner units to farm operators is quite low (2.08) as compared with other districts indicating that leasing may be less important as compared with other districts.

## Glenn Colusa Irrigation District

The Glenn-Colusa Irrigation District is the largest in the Sacramento Valley. Encompassing major portions of both Colusa and Glenn Counties the district diverts Sacramento River water. The most important crop produced in this area is rice. Other important crops include wheat, feed grains, sugar beets and nuts.

Farmers in the Sacramento Valley were diverting river water for irrigation purposes well before the Central Valley Project was planned and built. For this reason the Glenn-Colusa district, like other districts obtaining irrigation water in this manner, has a long-standing agreement with the U.S. Department of Interior specifying the portion of the diversions that can be attributed to the CVP. That is, water supplies that were accessible prior to project construction are termed "base supply" water while those available exclusively because of the project are described as "project water." Critics argue that this is an arbitrary division and that it was especially generous to the Glenn-Colusa district. In particular, the amount of the "base supply" to which the district is entitled is calculated using<sup>5</sup> assumed river flows that greatly exceed historical averages. If this is true, then the amount of diversions attributable to the project, and for which the U.S. receives payment under contract with the district, are understated.

Critics also argue that, prior to project construction, flows in the river would be reduced to a mere trickle, or entirely disappear, in the portion of the river upstream from the city of Colusa during late summer.<sup>6</sup> Thus, project construction was the determining factor in the ability of farm operators to be

able to continue their operations during that period.

Independent evidence shows that, just prior to CVP expansion, the total amount of irrigated land in the two counties was 199,904 acres.<sup>7</sup> Today, by contrast, 430,088 acres<sup>8</sup> are irrigated, an increase of more than a factor of two. Thus, if "non-project" water supplies were so abundant, the ability of water users to greatly expand their irrigated lands subsequent to CVP construction must be due to factors other than the project supplies. It is difficult to identify such factors. Indeed, the augmentation of the Sacramento Valley project facilities with both vastly expanded distribution systems as well as with such major new core elements as the Tehama-Colusa Canal are more likely the principal factors in this expansion of irrigated lands.

The distribution of farm size on lands within the Glenn-Colusa Irrigation District, irrespective of the mix of "non-project" water actually used on each parcel, is shown in Table 3-12.

Table 3-12

Farm Size Distribution, Glenn-Colusa I.D., 1985

<u>Size Class</u>	<u>Number</u>	<u>Irrigable Land</u>
80 acres or less	125	4,873 acres
81-160 acres	71	8,911
161-320	99	23,021
321-640	90	41,025
641-960	27	21,515
961-1,280	11	11,807
1,281-2,560	13	22,133
2,561-5,120	2	6,730
5,121 acres or more	1	5,574

Total 439 145,589

Average = 331.64 acres/farm

A technical difficulty in the process of the determination of farm size in the Glenn-Colusa district came up that may have influenced our final result. That is, ASCS data for both Colusa and Glenn counties appeared to us to be somewhat out of date and/or incomplete. For example, one farm listed in the Colusa ASCS reports 9,613 acres of irrigated cropland in the Glenn-Colusa I.D. However, our analysis and comparison with other sources disclosed that this farm operator is actually currently leasing all of this land to more than twenty tenants. Obviously, our data for this district reflects the current leasing practice and not the ASCS report.

In analyzing Colusa and Glenn ASCS data we relied heavily on reports regarding pesticide use and Financing Statements concerning crop production loans. Both of these latter sources do not include irrigable cropland set-aside (not planted) to comply with USDA price support programs. Since participation in the USDA rice program is very high, and the set-aside requirement totals 30% of each farmer's rice base acreage it is likely that our results include some farms for which the actual farm size is greater than the figure we have used. This underreporting of land shifts our size distribution result toward smaller farms and reduces the reported average holding.

From the data presented in Table 3-12 it is easily shown that 31.76% of the land is in farms exceeding 960 acres. This is somewhat less than for the full ten district area.

Our data may be compared with that compiled by the Bureau of Reclamation itself in its 1979 Westwide Land Tenure Survey. One of the 18 districts studied in detail was the Glenn-Colusa I.D. The

LTS found 22 farms with at least 960 acres of cropland in this district and they held a combined total of 35,276 acres, which amounts to 25% of the total. This compares with our finding (some six years later) of 27 farms of this size holding 46,244 acres of irrigated cropland, or 32% of the total.

Those farms holding at least 960 acres of irrigated cropland in the district are shown in Table 3-13.

Table 3-13

Farms With More Than 960 Acres, Glenn-Colusa I.D.

<u>Name</u>	<u>Irrigable Land</u>
H & A Andreotti	5,574 acres
L C Dennis Co	3,484
R & D Farms	3,245
Manning & Kemp	2,536
Johnson Farms	2,387
Etchepare Ranches Corp	2,010
Knight Ranches Inc	1,776
La Grande Farms	1,759
E & M Growers Inc	1,684
Clark Knowles	1,662
Vann Bros	1,574
Pearson Farms	1,483
B N D Farms, A Ptp	1,389
James Ehorn	1,295
Scott Arens	1,294
Klan Farms	1,284
Parisio Bros	1,265
Lovelace Enterprises	1,188
Chrisman Estate Co	1,168
Osullivan Ranch	1,072
Roy W Otterson Ranch	1,072
Chester Spooner	1,064
Art & Larry Thurmon	1,048
Sutton Bros	1,000
George Corbin	995
Lloyd Wells	968
Ornbaum Farms Inc	967

Detailed comparison of our data with the 1979 Land Tenure Survey also shows reasonable agreement for the number of farms and aggregate acreage in all other size categories except the two smallest. We find only 196 farms in the two size classes of



farms smaller than 160 acres. The 1979 Land Tenure Survey reports a total of 240 in their single size class "1-160 acres." The difference of 44 farms may be too great to attribute solely to land tenure changes in the period from 1979 to 1985. A more likely explanation is that our data sources did not include all farms in this size category, and may have omitted as many as 20% of them. We noted previously the inadequacy of ASCS data for both Colusa and Glenn County farms. When questioned about these matters County Agricultural Commissioner staff pointed to several possible explanations. First, a number of farms, particularly small, absentee owned almond orchards have been left unattended in the most recent period. Second, a number of smaller farm operators have chosen to not plant crops in light of the poor prices for such commodities as wheat and rice. Both factors could result in underreporting to the sources we have consulted and would contribute to a reduced number of farms.

Data on land ownership in the Glenn-Colusa I.D. is shown in Table 3-14.

Table 3-14

Size Distribution of Land Ownership  
Glenn-Colusa I.D., 1985

<u>Size of Owner Unit</u>	<u>Number</u>	<u>Total Land</u>
80 acres or less	496	13,811 acres
81-160 acres	167	20,414
161-320	138	33,578
321-640	69	31,042
641-960	16	11,775
961-1,280	6	6,783
1,281-2,560	11	17,774
2,561-5,120	2	8,138
5,121 acres or more	2	14,669
Total	907	157,984

Average = 174.18 acres/owner unit

As in other districts we report on herein, the number of land owner units greatly exceeds the number of farm operations. In the Glenn-Colusa I.D. the ratio of land owner units to farm operator units is 2.46, a value rather close to that found in other districts.

The fraction of land held in owner units exceeding 960 acres is 30%. This reflects the influence of several large holdings, one of which comprises 6% of district land.

Our results may be compared with the 1979 Land Tenure Survey findings. As in the case of the farm operator data our findings regarding the smaller owner units disagree sharply with the data from the earlier survey. In the smallest two size categories we find 663 owner units whereas the LTS finds 1,044 owners in the size class "1-160 acres."

The average size of land holdings reported by LTS in the Glenn-Colusa I.D. is just 118.90 acres per owner whereas we report 174.18 acres per owner unit. In the larger owner unit size range we find 4 units with holdings exceeding 1,920 acres. The aggregate holdings of these four is 22,807 acres. The LTS reports 5 owners of this size, but they hold only 17,034 acres. Similarly, in the size class "1,281-1,920 acres" LTS finds 6 owners with 10,350 acres. We find 11 owner units with 17,774 acres. Finally, in the size class "961-1,280 acres" LTS reports no holdings while we find 6 owner units with 6,783 acres.

These differences likely stem from differences in treatment of the data. LTS divides property held in joint tenancy or in partnerships among the holders. Thus, a husband and wife who are joint tenants in holding an aggregate of 320 acres would be a

single owner unit holding 320 acres in our data but would appear as two owners each holding 160 acres in the LTS study. However, the initial set of Federal Regulations concerning this matter use our definition of owner unit and farm unit. That is, the size of holdings of jointly held property is based on the total amount of land owned irrespective of the number of persons sharing in the holding (up to 25 individuals). Thus, the definition of ownership unit we have used is in perfect accord with Federal regulations concerning this matter whereas the division of owner shares in tenancies in common, while of academic interest, bears no relationship to the RRA.

Those land owner units holding more than 960 acres each are identified in Table 3-15.

Table 3-15

Landowners With More Than 960 Acres  
Glenn-Colusa I.D.

<u>Name of Owner Unit</u>	<u>Land Owned</u>
Zumwalt Farms Inc.	9,499 acres
Arnold Andreotti et al	5,170
Eleanor Welch et al	4,735
Rancho Segunda Estrella	3,403
Wells Fargo Bank, as trustee	1,902
Newhall Land & Farming Co.	1,827
Knight Ranches Inc.	1,822
Calvert L. Cecil, Jr., et al	1,800
Margaret A. W. Cole	1,798
A A D Company, A Partnership	1,553
Barbican Farms Inc.	1,509
Douglas G. Lynn	1,502
Jerald & Edith S. Holzapfel	1,463
Virgil O'Sullivan et al Trust	1,313
Chrisman Estate Co.	1,285
George R. & Ivy G. Zumwalt Trust	1,277
Donald & David Cecil	1,263
Culp & Ratliff, A Partnership	1,115
Arlie Hill et al	1,069
Helen P. Maltby et al	1,065
L.C. Dennis Co. Inc.	995

Of the twenty-two large landowners listed eight report busi-

ness addresses located outside of the two counties in which the district is located. Thus, one-third are absentee owners and two-thirds are local resident owners.

### Kern-Tulare Water District

This district is located at the eastern edge of the southern San Joaquin Valley, just to the east of the Delano-Earlimart I.D. discussed previously. Comprising 26,000 acres the district is an important producer of citrus. Grapes and nuts are also produced. About 17,365 acres are planted either to vines or trees. This is a full two-thirds of the district's land area. In contrast with other districts with such a large proportion of high-value crops Kern-Tulare W.D. has a substantial fraction of land not yet in irrigated production. Amounting to 6,000 acres (23%) this land is suitable for citrus production.

The size distribution of farm operations in the district is shown in Table 3-16. Though nearly one-quarter of district land is not presently in irrigated production we include such irrigable land in our totals.

Table 3-16

#### Farm Size Distribution, Kern-Tulare W.D., 1985

<u>Size Class</u>	<u>Number</u>	<u>Irrigable Land</u>
80 acres or less	32	1,183 acres
81-160 acres	11	1,496
161-320	11	2,789
321-640	9	4,372
641-960	4	3,500
961-1,280	3	3,243
1,281-2,560	2	3,111
2,561-5,120	0	-
5,121 acres or more	1	5,835
Total	73	25,529

Average = 349.71 acres/farm

Examination of the data shows that those farm operators with at least 960 acres or irrigable cropland comprise 47.75% of the total of such land. Though the district has a relatively small

area and is planted to intensive crops the farm size distribution is relatively highly concentrated as compared with other districts.

Table 3-17 identifies those farms with at least 960 acres in the district.

Table 3-17

Farms With More Than 960 Acres, Kern-Tulare W.D.

<u>Name of Farm Operator</u>	<u>Irrigable Land</u>
W.A. Burum & Sons	5,835 acres
Prudential Insurance Co.	1,618
Cameo Ranches	1,493
Paramount Growers Inc.	1,151
Kern Farming Co.	1,047
Burum Ranch	1,045

Burum Ranch is a partnership composed of members of the same family that operates W.A. Burum & Sons.<sup>11</sup> However, despite the overlap, we treat the two legal entities as two distinct farms. Prudential Insurance Co. reportedly employs Pandol & Sons, a major San Joaquin Valley farm operator, to manage its farm.<sup>12</sup>

The pattern of land ownership is shown in Table 3-18.

Table 3-18

Size Distribution of Land Ownership  
Kern-Tulare W.D., 1985

<u>Size of Owner Unit</u>	<u>Number</u>	<u>Total Land</u>
80 acres or less	91	3,094 acres
81-160 acres	28	3,945
161-320	22	5,353
321-640	11	4,821
641-960	3	2,525
961-1,280	1	1,240
1,281-2,560	3	5,325
2,561-5,120	0	-
5,121 acres or more	0	-
<b>Total</b>	<b>159</b>	<b>26,303</b>

Average = 165.43 acres/owner unit

The average holding is substantially smaller than for most

of the other ten districts. This diffusion of land ownership is also reflected in the fact that only four owner units have holdings in excess of 960 acres. The latter holdings total 6,565 acres, 25% of the district total. Finally, the ratio of the number of owner units to the number of farm operators is close to the value found in other districts. Despite the relative diffusion of ownership, leasing is just as important for this district as for other districts of our sample.

Table 3-19 identifies those owner units holding more than 960 acres in the Kern-Tulare W.D.

Table 3-19

Landowners With More Than 960 Acres  
Kern-Tulare W.D.

<u>Name of Owner Unit</u>	<u>Irrigable Land</u>
Getty Oil Co.	2,220 acres
Prudential Insurance Co. of America	1,612
Cameo Ranches, A Ptp	1,493
William A. Burum et al	1,240

Getty Oil Co. is a major owner of agricultural land in California with substantial holdings of land planted to trees or vines. <sup>13</sup> While the company does farm a portion of its owned land the holdings in the Kern-Tulare W.D. are leased to an independent farm operator. As indicated previously, Prudential's holdings are reportedly managed by Pandol & Sons. Therefore, the two largest landowners are absentee corporate owners who either lease or arrange for management of their property by local farm businesses.

### Lower Tule River Irrigation District

Located in the heart of the San Joaquin Valley this district is entirely within Tulare County. Principal commodities are field crops such as alfalfa, cotton and feed grains. Fifty-one dairies and three feed lots are in the district so that dairy and livestock products rank at the top of its major commodities. The eastern portion of the district has about 8,000 acres planted to vines or trees. Perennial crops include plums, nuts and grapes.

Data regarding farm size are shown in Table 3-20.

Table 3-20

Farm Size Distribution, Lower Tule River I.D.  
1985

<u>Size Class</u>	<u>Number</u>	<u>Irrigable Land</u>
80 acres or less	123	4,955 acres
81-160 acres	54	7,079
161-320	67	17,126
321-640	44	20,914
641-960	23	17,655
961-1,280	11	12,068
1,281-2,560	7	11,976
2,561-5,120	1	4,228
5,121 acres or more	0	-
Total	330	96,001

Average = 290.91 acres/farm

The relatively small average farm size and large proportion of farms smaller than 960 acres indicates that this is a district predominately farmed by small-scale, family farmers. The reported farm business addresses are also overwhelmingly local, with Pixley, Tipton and Tulare addresses in the numerical majority.

At the other size extreme we find just 19 farm operations with 961 acres or more of irrigated cropland. Taken together they farm 29.45% of the district's acreage. This is a smaller



share than the average for of the ten districts included in this study. Thus, by all measures, this is a district in which the benefits of the Federal water subsidy are rather widely shared. Table 3-21 identifies those farms with more than 960 acres of irrigated cropland in the district.

Table 3-21

Farms With More Than 960 Acres, Lower Tule River I.D.

<u>Name of Farm Operator</u>	<u>Irrigable Land</u>
J.G. Boswell Co.	4,228 acres
Salyer Land Co.	2,150
Manuel Faria	2,002
Los Feliz Co.	1,887
John E. Sola	1,652
Joseph F. Schott	1,583
Clyde Quillin, Jr.	1,366
Hanni Bros.	1,336
DeCampos Bros.	1,209
Rising Farms	1,184
F.C. Ribeiro & Sons	1,179
M & K Farms	1,149
Belezzuoli & Cardoza	1,111
H.A. Vossler & Sons	1,094
David R. Silveira	1,089
Ribeiro Bros. & Sons	1,030
Manuel I. Rocha & Co.	1,015
Stadden Farms Inc.	1,004
Barcellos Farms	1,004

All but J.G. Boswell Co. and Los Feliz Co. report local addresses as their principal place of business. Thus, among the largest farms in the Lower Tule River I.D. local farming operations predominate. Only J.G. Boswell Co. and Salyer Land Co. have sizeable operations in other parts of the state.

While the bulk of the land farmed by the largest businesses in the district is in the hands of local operations the sheer size of many, especially the dairies, is quite substantial. The average dairy herd size in Tulare County was reported to be 424 milk cows in 1982 as compared with a state average of 204.

The county's total of milk cows increased by 28% in the period from 1978 to 1982 while the number of dairies actually declined.

Data on the size distribution of land ownership is presented in Table 3-22.

Table 3-22

Size Distribution of Land Ownership  
Lower Tule River I.D., 1985

<u>Size of Owner Unit</u>	<u>Number</u>	<u>Total Land</u>
80 acres or less	261	11,089 acres
81-160 acres	110	15,295
161-320	102	25,878
321-640	59	26,165
641-960	7	5,038
961-1,280	4	4,879
1,281-2,560	2	3,739
2,561-5,120	2	7,692
5,121 acres or more	0	-
Total	547	99,775

Average = 182.40 acres/owner unit

The average owner unit size is well below the average for the ten district study area. The 8 owners who each have more than 960 acres in the district hold just 16.35% of the land. The result reflect the relatively wide diffusion of ownership in the district. The ratio of the number of owner units to the number of farm operations is 1.66, indicating that leasing is relatively less important than in other districts. This is corroborated by the fact that a majority of farm operators are also land owners. Farmers in this district are predominately local owner-operators.

Table 3-23 shows the landowners holding at least 961 acres of land eligible for Federal water deliveries in the Lower Tule River Irrigation District. The three largest owners report their business addresses to be in the Southern California coastal area. But the remaining five have their principal place of business in

Tulare County, or in the immediately adjacent area.

Table 3-23

Land Owners With More Than 960 Acres  
Lower Tule River I.D.

<u>Name of Owner</u>	<u>Total Land</u>
J.G. Boswell Co.	4,819 acres
Los Feliz Investment Co.	2,873
Meadow Lake Ranch 1, A Ptp	1,914
Salyer Land Company	1,826
Manuel Faria, Jr & Dollie Faria	1,270
Mary C. Rocha	1,254
Donald C. & Dorothy B. McCarthy	1,236
Julia E. De Campos	1,120

### Orland-Artois Water District

This district is located at the far north end of the Sacramento Valley, and is entirely within Glenn County. Major crops include almonds, walnuts, prunes, feed grains and rice. There are five dairies within the district.

Data on the size distribution of farm operations in the Orland-Artois W.D. are presented in Table 3-24.

Table 3-24

Farm Size Distribution, Land Eligible for  
Project Water, Orland-Artois W.D., 1985

<u>Size Class</u>	<u>Number</u>	<u>Irrigable Land</u>
80 acres or less	50	1,365 acres
81-160 acres	18	2,184
161-320	20	4,530
321-640	11	5,052
641-960	7	5,628
961-1,280	1	1,166
1,281-2,560	2	3,528
2,561-5,120	0	-
5,121 acres or more	0	-
Total	109	23,453

Average = 215.17 acres/farm

This district's average farm size is close to the value for the ten district study area as a whole. The three farm operators with more than 960 acres of irrigable land have a total of 20.01% of the district area. Both measures indicate a district dominated by smaller scale farms.

Table 3-25 identifies those farms with more than 960 acres.

Table 3-25

Farms With More Than 960 Acres, Orland-Artois W.D.

<u>Name of Farm Operator</u>	<u>Total Land</u>
O.G. Rosalia	1,798 acres
John Vereschagin & Sons	1,730
T A G Farms	1,166

All three of these farm operators report business addresses located within the district itself. Thus, even the largest farm businesses are locally based.

Table 3-26 shows our findings regarding the size distribution of land ownership in the Orland-Artois W.D.

Table 3-26

Size Distribution of Land Ownership, Land Eligible for Project Water, Orland-Artois W.D., 1985

<u>Size of Owner Unit</u>	<u>Number</u>	<u>Total Land</u>
80 acres or less	173	3,588 acres
81-160 acres	43	5,332
161-320	34	8,610
321-640	19	9,420
641-960	1	760
961-1,280	2	2,226
1,281-2,560	1	1,333
2,581-5,120	0	-
5,121 acres or more	0	-
Total	273	31,269

Average = 114.54 acres/owner unit

The average amount of land owned is about half that for the ten district study area as a whole. Owner units with more than 960 acres number just three and their combined holdings amount to only 11.38% of the district's land. As in the case of the farm operator data for this district these data suggest a predominance of small scale owner-operators.

Table 3-27 identifies owners having more than 960 acres.

Table 3-27

Landowners With More Than 960 Acres, Land Eligible for Project Water, Orland-Artois W.D.

<u>Name of Owner</u>	<u>Total Land</u>
Orazio G. & Yvonne M. Rosalia	1,333 acres
Robert R. & Pamela R. Bignami et al	1,160
Frank Enos & Sons Inc	1,066

All three owners report business addresses in either Artois

or Orland, the two main towns in the district. Thus, absentee land owners are relatively unimportant in this district.

Consideration of our data on farm size and regarding land ownership indicates that this district is predominately owned and farmed by small-scale resident farmers. Examination of owner addresses shows less than 18% outside of Glenn County or contiguous counties. And these owner units hold less than 15% of the district area.

Reclamation District No. 108

This district is located in the middle of the Sacramento Valley, with the major portion in Colusa County and the balance in Yolo County. Principal commodities include rice, wheat, feed grains, processing tomatoes, safflower and alfalfa. A small portion of the district is planted to orchards.

As in the case of the Glenn-Colusa I.D., R.D. 108 diverts Sacramento River water. The water supply agreement with the U.S. Department of Interior recognizes that prior to construction of Shasta Dam and other facilities, district landholders had been supplying their own irrigation water by their own self-financed efforts. Their contract with the Bureau of Reclamation provides for continued access to this "base supply" water to be supplemented, when needed, with project water. Figures supplied by the district indicate that roughly 80% of current water needs are met from the base supply and the balance of 20% is provided  
15  
by project water.

Critics argue that project facilities make irrigation water available in the late summer at a time when the pre-project supply was much reduced or not available. In fact, during the critical month of August, project water furnished to the district  
16  
far exceeds the base supply. That the availability of project water is critical to both the type of crops being grown as well as the ability to farm in drought years was amply demonstrated in 1978. In that drought year residents of urban areas such as San Francisco were forced to ration water while Sacramento River diverters such as Reclamation District No. 108 reported surplus  
17  
supplies, a source of some embarrassment.

Table 3-28 shows the size distribution of farming operations in Reclamation District No. 108.

Table 3-28

Farm Size Distribution, Reclamation District No. 108  
1985

<u>Size Class</u>	<u>Number</u>	<u>Irrigable Land</u>
80 acres or less	6	150 acres
81-160 acres	3	399
161-320	16	3,391
321-640	16	7,199
641-960	4	2,913
961-1,280	5	5,627
1,281-2,560	6	10,079
2,561-5,120	5	18,066
5,121 acres or more	1	5,942
Total	62	53,766

Average = 867.19 acres/farm

The average farm size in this district is nearly four times as large as the average for the ten district study area. As can be readily seen in the table itself there are very few small farms and their aggregate holdings are insignificant. The 17 farms with acreage exceeding 960 acres have, in total, 73.86% of the district's irrigable land. Only the Westlands Water District, among the ten we have examined, has both a larger average farm size and a larger proportion of its land farmed by entities with holdings exceeding 960 acres.

The 17 farm entities with more than 960 acres are listed in Table 3-29. By far, the most important of these farms is the River Garden Farms Company. It's total farming operation includes 11,985 acres of cropland of which roughly half is located within R.D. 108. In addition to its own holdings the company leases small portions of its owned land to local farm operators for processing tomato and rice production. As large as



it now is the company at one time held 31,000 acres.

Table 3-29

Farm Operators With More Than 960 Acres  
Reclamation District No. 108

<u>Name of Farm Operator</u>	<u>Irrigable Land</u>
River Garden Farms Company	5,942 acres
E. L. Wallace and Sons	4,432
James Erdman	3,804
Poundstone Bros. Inc.	3,800
Saunders Grain Farm	3,173
Landing Farms Inc.	2,857
Balsdon Ranch	2,126
Keller & Keller Ranch Inc.	1,821
Strain Ranches Inc.	1,673
M. V. Doherty	1,667
Gary Driver	1,506
H & A Andreotti	1,286
Paul High	1,189
Miramontes Farms Inc.	1,174
Durst Farms Inc.	1,148
Harlan & Dumars Inc.	1,112
F. D. Monckton	1,004

With the exception of River Garden Farms Company all of these farms are locally based businesses. In some cases the farming operations can be traced back through the same family for several generations.

The pattern of land ownership is shown in Table 3-30.

Table 3-30

Size Distribution of Land Ownership  
Reclamation District No. 108, 1985

<u>Size of Owner Unit</u>	<u>Number</u>	<u>Total Land</u>
80 acres or less	26	703 acres
81-160 acres	15	1,802
161-320	21	5,099
321-640	15	6,319
641-960	6	4,861
961-1,280	6	6,670
1,281-2,560	8	13,257
2,561-5,120	1	3,216
5,121 acres or more	2	15,533
Total	100	57,460

Average = 574.60 acres/owner unit

The size of the average owner unit's holding is more than 2.5 times larger than the average for the ten district study area. It is also the largest value for any of the ten districts. Like the data on farm size this suggests a district completely dominated by large scale agricultural businesses. The 17 owner units who each have more than 960 acres of land hold 67.31% of the district area. This is roughly twice the per centage found for the ten districts as a whole and is the largest value found for any district.

Table 3-31 identifies the largest land owner units in this district, each with more than 960 acres.

Table 3-31

Landowners With More Than 960 Acres  
Reclamation District No. 108

<u>Name of Owner Unit</u>	<u>Total Land</u>
Reclamation District No. 108	8,101 acres
River Garden Farms Company	7,432
James H. Balsdon et al	3,216
Jack Wallace et al	2,390
Layton Knaggs	2,015
Poundstone Bros. Inc.	1,866
James & Carolyn F. Balsdon et al	1,611
Arthur Andreotti et al	1,417
Aileen B. Armstrong Trust	1,376
George E. Lodi et al, Trustees	1,292
E.N. Owens et al	1,290
Frederick J. Strain	1,159
Strain Ranches Inc.	1,141
Elna Armstrong et al	1,128
Kathryn Schohr	1,102
Bank of America, as trustee	1,083
Frank D. Monckton	1,060

The largest landowner is the district itself. This land, of which some 7,300 acres are farmable, was acquired by the district during the farm depression of the 1930's. River Garden Farms Co. was unable to meet its District Tax Assessment No. 5 (owing to farm losses as a result of low commodity prices). In lieu of its

payment the company deeded some land to Ms. California Gibson,  
then Treasurer of Colusa County and Trustee of the Bond Fund of  
Reclamation District No. 108.<sup>19</sup> Other landowners did likewise.  
In this fashion the landowners met their obligations without the  
threat of bankruptcy. A total of 7,946 acres were deeded by the  
River Garden Farms Co.

Reclamation District No. 108 then leased all of the lands  
acquired in this fashion to R.H. Geer, then Manager of the River  
Garden Farms Co., and to J. W. Saunders.<sup>20</sup> The lands are farmed  
today by Saunders Grain Farm and by Landing Farms Inc.<sup>21</sup> William  
W. Geer, son of R.H. Geer, is President of Landing Farms Inc.<sup>22</sup>  
According to David Granicher, Manager of Reclamation District  
No. 108 the land is leased by action of the Trustees of the  
district.<sup>23</sup> Normally, the lease is simply renewed unless there is  
an objection among the Trustees. Despite the fact that this is  
a district enjoying tax-exempt status for its bond issues it's  
"quasi-public" status does not require public bids in the  
issuance of leases.

There is another respect in which the district benefits  
from its quasi-public status. As a "public agency" it is not  
subject to the \$50,000 per producer limitation on USDA price  
support payments.

### San Luis Water District

Located on the western edge of the San Joaquin Valley this district is part of the San Luis Unit of the Central Valley Project. Principal commodities include cotton, cantaloupes and processing tomatoes. A major portion of the district is within Merced County and the southern part is in Fresno County where it nestles up to the Westlands Water District northern boundary.

The size distribution of farm operators is shown in Table 3-32.

Table 3-32

#### Farm Size Distribution, San Luis W.D., 1985

<u>Size Class</u>	<u>Number</u>	<u>Irrigable Land</u>
80 acres or less	28	1,301 acres
81-160 acres	19	2,424
161-320	22	5,456
321-640	25	12,324
641-960	10	7,741
961-1,280	3	3,335
1,281-2,560	6	10,333
2,561-5,120	2	7,549
5,121 acres or more	0	-
Total	115	50,463

Average = 438.81 acres/farm

The relatively large average farm size ranks third largest among the ten districts included for study. Those farms with at least 961 acres of irrigated cropland account for 42.04% of the district total. Eleven of the farms (10%) also have operations in the adjacent Westlands Water District. This is not surprising in view of the fact that the two districts fit together like the pieces of a jigsaw puzzle. However, this means that measures of farm size based only on San Luis W.D. holdings understate the amount of land served with Federal water for these farms.

Those farms with more than 960 acres of Federally irrigated land are identified in Table 3-33.

Table 3-33

Farms With More Than 960 Acres  
San Luis W.D.

<u>Name of Farm Operator</u>	<u>Irrigable Land</u>
Lindemann Farms Inc.	4,624 acres
Marion Sanchez Farms Inc.	2,925
Tri Farms Inc.	2,420
Sniffin Ranches, A Ptp	2,037
Gerald Stoltenberg	1,585
D C Farms Inc.	1,551
San Luis Ranch	1,377
Edward Azhderian	1,363
Three Star Farms	1,132
Circle G Farms	1,127
Sagouspe Bros. Inc.	1,076

All but one of these farms report business addresses located in Fresno or Merced counties and are locally based.

The size distribution of land ownership for the San Luis Water District is described in Table 3-34.

Table 3-34

Size Distribution of Land Ownership  
San Luis Water District, 1985

<u>Size of Owner Unit</u>	<u>Number</u>	<u>Total Land</u>
80 acres or less	135	5,033 acres
81-160 acres	63	8,071
161-320	43	10,153
321-640	35	16,217
641-960	13	10,333
961-1,280	2	1,966
1,280-2,560	3	5,343
2,560-5,120	1	2,581
5,121 acres or more	0	-
Total	295	59,697

Average = 202.36 acres/owner unit

The average owner unit size is slightly below the average for all ten districts as a whole. Those owner units with more than 960

acres account for 16.57% of the district area. This is about half the value found for the complete ten district study area. On the other hand 17 of the owner units also have own land in the adjacent Westlands Water District. Thus, just as in the case of measures of San Luis W.D. farm size, conclusions regarding total land receiving Federal water are understated if they are based only on holdings in the district.

Table 3-35 identifies those owner units with land in the San Luis W.D. exceeding 960 acres.

Table 3-35

Landowners With More Than 960 Acres  
San Luis W.D.

<u>Name of Owner Unit</u>	<u>Total Land</u>
James W. & Diane Telles et al	2,581 acres
Marion & Mary Ann Sanchez et al	2,342
Elena Talbott	1,668
Albert Etcheverry	1,333
John & Joanne Etcheverry	999
Sam Hamburg Farms	967

All of the landowners listed in Table 3-35 report their business address in either Merced or Fresno County, site of the district.

## Westlands Water District

Since its formation on September 8, 1952, the Westlands Water District (WWD) has been a focus of controversy. <sup>24</sup> As the largest water district in the United States, whether measured by irrigated acreage or total water use, the WWD enjoys a unique prominence. Located along the western edge of the mid-San Joaquin Valley the district produces more than forty crops. The leading commodities are cotton, processing tomatoes, cantaloupes, lettuce, wheat, alfalfa and onions.

A significant portion of WWD (75,000 acres) does not receive Federal water and is irrigated by groundwater pumping. Analysis of farm operator and land ownership data required precise identification of lands eligible to receive Federal water and exclusion of lands not irrigated with project water. In a number of cases individual Assessor's parcels had to be divided to meet this requirement. Current water user maps in the WWD offices were the only reliable indicator of these distinctions and formed the basis for this classification. As is described in more detail at a later point in this report those lands choosing not to receive Federal water form a rather complex pattern. A majority of farms in WWD are affected by this type of distinction. We find four types of circumstances:

- 1.) farms whose only land is in WWD receiving Project water;
- 2.) farms whose land is only in WWD but who irrigate a part of their farm with privately supplied water;
- 3.) farms with land both in WWD and outside of WWD but who irrigate their WWD land exclusively with Project water;
- 4.) farms with land both in WWD and outside of WWD and who irrigate their WWD land using both water sources.

We did not find any farms whose land in WWD is irrigated only with privately supplied water.

Table 3-36 shows the distribution of Federally irrigated land in the WWD by size of farm holding of such land.

Table 3-36

Farm Size Distribution, Land Eligible for  
Project Water, Westlands W.D., 1985

Size Class	Number	Irrigable Land
80 acres or less	9	375 acres
81-160 acres	33	4,734
161-320	39	10,337
321-640	43	22,072
641-960	50	42,079
961-1,280	20	22,458
1,281-2,560	50	91,397
2,561-5,120	30	104,934
5,121 acres or more	24	215,637
Total	298	514,023

Average = 1,724.91 acres/farm

The average farm size is nearly three times larger than for the ten district study area as a whole. The 124 farms with more than 960 acres of cropland irrigated with Federal water account for 84.51% of the Westlands land eligible for project water. This is the largest fraction found for any of the ten districts we have examined.

As is discussed at a later point in this report we treat all distinct legal entities as "farm operators" but have evidence that these 298 entities are not all separate. Rather, some of them are actually a smaller number of farming groups. Thus, the true number of independent farm operations is smaller than 298 and both the average farm size and fraction of land in farms that exceed 960 acres is greater than the figures we quote above.

We have made a significant effort to exclude from our figures



land farmed by Westlands operators that is either in WWD and which is irrigated with private water or land operated by them outside of WWD. Thus, the actual size of WWD farm operators is greater than our figures of Table 3-36 suggest.

Table 3-37 shows the size distribution of the 298 Westlands farm operators based on their California-wide holdings. No effort has been made to include holdings in other states, even though several operators are known to have holdings in Arizona.

Table 3-37

Farm Operators, Westlands W.D., 1985  
By Size of California-Wide Cropland

Size of Cropland	Number	Irrigable Land
80 acres or less	7	226 acres
81-160 acres	26	3,696
161-320	25	6,510
321-640	34	17,544
641-960	48	40,374
961-1,280	20	22,326
1,281-2,560	67	123,513
2,561-5,120	33	116,216
5,121 acres or more	38	714,880
Total	298	1,045,285

Average = 3,507.67 acres/farm

The California-wide holdings of the 298 WWD legal entities amount to 1,045,285 acres of irrigable cropland, twice the amount of their holdings of Westlands land irrigated with Federal water. This result also demonstrates that the average size of Westlands farm operators is 3,508 acres, or twice as large as the figure based only on their holdings of WWD land irrigated with project water. Previous studies of WWD farm operators have not considered these important factors.

From Table 3-37 it is straightforward to show that those WWD farms with more than 960 acres on a statewide basis have 93.5% of

the total land farmed by all 298 farms.

Clearly, the size of WWD farms as well as the magnitude of the Federal water subsidy which they enjoy are significantly understated by only examining their WWD lands. The determination of the fraction of their non-WWD lands irrigated with Federal water is beyond the scope of the present study.

Table 3-38 shows a comparison of the statewide total of irrigated cropland holdings of WWD farm operators with those for all California irrigated farms.

Table 3-38

Comparison of Westlands Farm Operators  
With All California Irrigated Farms

<u>California</u>	
Farms with Irrigated Land	58,389
Irrigated Land (acres)	8,460,508
Irrigated Land per Farm	145 acres
<u>WWD Farm Operators</u>	
Farms	298
Irrigated Land (acres)	1,045,285
Irrigated Land per Farm	3,508 acres

- Sources: i. U.S. Department of Commerce, Bureau of the Census, 1982 Census of Agriculture, Vol. 1, Part 5, California. State and County Data, June 1984, p. 2, Table 2.  
ii. See Table 3-36 herein for WWD Data.

The average Westlands farm operator has an amount of irrigated cropland that is 24.2 times larger than does the average California irrigated farm.

Strict comparison of our data with previous studies of WWD farm operators is not possible because previous authors have not excluded WWD lands irrigated with private water. On the other hand the amount of this latter type of land is only about 15% of

the district total. Hence, approximate comparisons should be possible even though precise ones are not.

The 1979 Land Tenure Survey (LTS) reports 301 farms in the WWD farming a total of 549,917 acres.<sup>25</sup> This suggests an average farm size of 1,827 acres. Since we have excluded all WWD land irrigated with private water from our figures pertaining to Westlands land the difference of 6% is not unreasonable. Had we included the lands irrigated with private water (approximately 54,000 acres of irrigated cropland) our average farm size figure would have been 1,906 acres for WWD. Finally, WWD reports some 19,353 additional acres farmed in 1984-85 as compared with 1979. If this is taken into account, our adjusted average farm size for WWD based on comparable cropland would have been 1,841 acres, a value differing from the LTS finding by less than 1%. This is excellent agreement.

The LTS found that farms with more than 960 acres of cropland numbered 133 and their holdings totalled 475,111 acres. This compares well with our finding of 124 farms of this size who have a total 434,426 acres. The small differences are entirely understandable based on our exclusion of land served with private water.

The only differences between the LTS data on WWD and our results that can not be explained by our exclusion of lands served by private water pertain to those farms with less than 160 acres of irrigated cropland. We find a total of 42 having 5,109 acres whereas LTS finds 58 farming 7,170 acres. Since we find no farms with land only irrigated by private supplies and since adding privately irrigated lands to the holdings of the 42 that

we have found can not increase the number of such farms we must conclude that the number of farms in this smallest size category must have actually decreased in the six years that have elapsed subsequent to the LTS study.

The finding that the actual number of farms in the smallest size category has actually decreased in recent years is supported as well by our results for the number of farms of larger sizes. We find 39 farms with irrigated cropland in the size range 161-320 acres versus the LTS finding of just 13 of that size. Thus, it is evident that there has been a shift of farms out of the smallest size category into the larger size groups. Further support for this conclusions can be found from the fact that we find a combined total of 81 farms in the three smallest size groups (those farms with 320 acres or less) whereas LTS finds 71. If we had included lands irrigated with privately supplied water we would expect our total of such farms to be smaller than 81 due to the fact that the addition of lands to the total holdings of some among them would likely result in their size being larger than the 320 acre cutoff for this size range.

Another significant finding concerning WWD farm operators is that 18 of their number also have operations in one or more of the 9 additional districts we have examined. Had we considered more districts it is likely that this figure would be larger.

Table 3-39 identifies WWD farms exceeding 960 acres in WWD. Though the number of such farms is large it is important to recall that this listing is based only on those holdings in WWD that are eligible for project water. Had statewide holdings been included the list would show both larger cropland and more farms.

Table 3-39

**Farm Operators With More Than 960 Acres, Land Eligible  
for Project Water, Westlands W.D.**

<u>Name of Farm Operator</u>	<u>Irrigated Cropland</u>
J.G. Boswell Co.	22,803 acres
Harris Farms, Inc.	15,830
South Lake Farms	12,847
Britz Inc.	11,550
Telles Ranch, Inc.	11,393
Double O Ranch, A Ptp	11,111
Westfarmers	10,814
TIMCO	9,668
Airway Farms, Inc.	9,564
Woolf Farming Co. of California, Inc.	8,741
Vasto Valle Farms, Inc.	8,026
Perez Ranches, Inc.	7,528
D & H Farms, Inc.	7,304
Cinco Farms, Inc.	7,022
Price Giffen Associates	6,999
Victor Gragnani & Sons	6,893
J.G. Stone Land Co.	6,813
Ag-Qua Farming, Inc.	6,493
O'Neill Farming Enterprises	6,097
Salyer Land Company	5,996
Sumner Peck Ranch, Inc.	5,623
Don Gragnani Farms	5,579
Leyton Woolf	5,497
Linda Vista Farms	5,446
Cardella Ranch, Inc.	4,949
Rabb Bros. Ranch, Inc.	4,765
Jim Lowe, Inc.	4,647
Five Star Ranch	4,558
Pappas Enterprises, Inc.	4,447
Five Points Ranch, Inc.	4,410
Brooks Farms	4,387
P & D Farms, A Ptp	4,374
Reecelands West, Inc.	4,072
Chaney Ranch	3,950
Valle Verde Farms, Inc.	3,905
San Andreas Farms	3,548
Thomsen Brothers, A Ltd Ptp	3,419
Valle Verde Farms, A Ptp	3,548
Pilibos Bros.	3,215
C. Gowens Farms, Inc.	3,190
Borba Farms, Inc.	3,156
J & J Ranch, A Ptp	3,038
S K Ranch	3,029
Rio Farms, Inc.	2,987
Vista Verde Farms, Inc.	2,952
Cantua Farms	2,923
Ben Lara & Sons	2,916
Richard Guenther	2,913
John & Vicky Seasholtz	2,867

Table 3-39 (continued)

La Jolla Ranch	2,645
Taylor Farms	2,635
North Wind Ranch	2,627
Barlow Bros., Inc.	2,598
The Allen Ranch	2,582
Sherman Thomas Ranches	2,551
Fortune Farming	2,504
George German & Sons	2,417
Pacific Metzler Farms	2,351
South Boston Co.	2,328
Gowens Ranch	2,182
S & S Ranch, Inc.	2,150
Round Rock Ranch	2,142
Couture Farms, A Ptp	2,073
Schwartz Farms	2,048
Clark Bros. Farming, Inc.	2,036
Mike & Richard Silveira	2,035
K & M Farms	2,022
Triple N Ranch	2,018
La Cuesta Verde Ginning Co., Inc.	1,978
Yraceburu Farms, Inc.	1,971
Jones Farms, Inc.	1,956
Paul Wood Ranch	1,950
Gramis Bros. Farms, Inc.	1,935
R & S Farms	1,906
B.E. Giovannetti & Sons	1,850
Brughelli Farms, Inc.	1,798
A & M Farms, Inc.	1,794
R & N Farms	1,767
King Ranch	1,753
A.E. Allen Ranch	1,752
Willson Farms, Inc.	1,744
Rancho Monte Vista	1,740
Ron Gowens Farms, Inc.	1,732
Lara Farms, Inc.	1,716
Demera Farm Trust	1,658
M S T Farms	1,674
Simonich Farm Trust	1,673
Ryan Farm Trust	1,672
Hillside Farms, A Ptp	1,671
Larry C. Turnquist	1,650
Francis A. Orff	1,636
Coit Ranch, A Ptp	1,618
Marv Coit, Inc.	1,590
E.C. Farms, Inc.	1,587
Harnish Five Points Ranch, Inc.	1,587
R.A. Sano Farms, Inc.	1,554
B. & H. Jue & Sons	1,536
Sarale Farms, Inc.	1,505
Mills Farms	1,485
M & M Farms	1,468
Sierra Dawn Farms, Inc.	1,439
Houlding Farms II	1,419

Table 3-39 (continued)

Green Valley Farms	1,041
Kettleman Hills Farming Co., Inc.	1,348
Brannon & Pitts	1,280
Coelho Farms, Inc.	1,275
John & Jim Diedrich, Inc.	1,268
K G Farms	1,264
Beene Farms, Inc.	1,260
N.F. Davis Drier & Elevator, Inc.	1,255
S. Stamoules, Inc.	1,160
Darrell Silveira	1,158
Michael Gragnani	1,114
Gray Farms	1,108
B-T-V Farms, Inc.	1,080
J & S Farms	1,069
Frank Pereira	1,061
L. Kenneth Seibert	1,052
S.E. Lowrance Ranch, A Ptp	1,038
Edward F. Diener Farm Trust	1,037
Hughes & Johnson, Inc.	1,012
Tony & Ann Costa	1,006
William R. Souza	995
Stacy Pruett Trust	966

The number of WWD farms exceeding 960 acres of cropland irrigated with Federal water in Westlands is 128. If California-wide land holdings are considered then the number of WWD farms with total irrigated cropland exceeding 960 acres is 158, or 30 more than is found based on WWD land eligible for project water. Moreover, the total holdings of these 158 farms amount to 976,935 acres of irrigated cropland, which greatly exceeds the figure of 434,426 acres determined by considering only WWD holdings. Obviously, it would be of great interest to examine all districts receiving Federal project water and to consider the overall holdings of all farms in such districts, irrespective of location.

The determination of the pattern of land ownership in the WWD presents the same problems as the correct identification of farms irrigating land with project water. Only those parcels, or portions of parcels, eligible for project water can be included.

In this respect the situation is similar to that found for the Arvin-Edison WSD. Table 3-40 shows the size distribution of land ownership in the WWD for land eligible to receive project water.

Table 3-40

Size Distribution of Land Ownership, Land Eligible for Project Water, Westlands Water District, 1985

<u>Size of Owner Unit</u>	<u>Number</u>	<u>Total Land</u>
80 acres or less	590	19,781 acres
81-160 acres	450	65,643
161-320	249	63,658
321-640	138	65,976
641-960	58	47,078
961-1,280	20	22,334
1,281-2,560	27	48,636
2,561-5,120	8	26,072
5,121 acres or more	6	138,916
Total	1,546	498,094

Average = 322.18 acres/owner unit

While the average unit size is somewhat larger than for the ten district area as a whole, it is substantially less than the size of the average farm. Nonetheless, those holdings greater than 960 acres account for 47.37% of the privately owned district land eligible to receive project water. This is quite a bit larger than the corresponding figure of 36% for the combined ten district area.

One of the most striking facts concerning the data of Table 3-40 is the very large ratio of land owner units to farm operators. The ratio is 5.19, nearly twice as large as that found in any of the other nine districts. This figure measures the relative importance of leasing so that we can conclude that the leasing of land is of greater importance in this district than in any of the others we have examined.

Table 3-41 identifies owner units with more than 960 acres.



Table 3-41

Landowners With More Than 960 Acres, Land Eligible for  
Project Water, Westlands Water District

<u>Name of Owner Unit</u>	<u>Total Land</u>
Southern Pacific Land Co.	81,430 acres
Boston Ranch Co.(J.G. Boswell Co.)	23,976
Westhaven Farming Co.	10,899
Gerald K. Hoyt et al	8,502
South Lake Farms, A Corporation	8,416
Britz Inc.	5,693
Mona Jo Telles, et al, Trust	3,911
J.G. Stone Land Co.	3,486
Harris Farms, Inc.	3,444
Valle Verde Farms, A Ptp	3,360
M.J. & R.S. Allen	3,193
Sumner Peck Ranch, Inc.	3,079
Telles Ranch, Inc.	2,903
Coelho Ranch, A Ptp	2,696
Y. Stephen Pilibos	2,532
South Boston Co.	2,481
Kriesant Operating Co., Inc.	2,348
Walter H. Dreyer, et al	2,168
H.C. & Irene Reece	2,153
Teresa E. Harris	2,136
S. Stamoules Co.	2,033
Don, Thelma & Irene Gragnani	1,970
Sherman Thomas	1,913
A. Paul & Karen L. Mello, as trustees	1,885
Willson Farms, Inc.	1,785
George Raymond, et al	1,723
Price & Joann Giffen, et al	1,691
Edward F. Diener Trust	1,684
Lawrence E. Ryan Trust	1,680
Pappas Land Co. & Mendota Land Co.	1,667
Philip & Joy Erro	1,657
Frederick E. Helmick, et al	1,598
Harry A. Cahalan, Jr., Trust	1,590
James V. Demera, Jr., Trustee	1,583
John L. & Bernice M. Woolf	1,553
Thomas E. Kaljian, et al	1,543
Ann P. Costa, Trustee	1,528
Gilbert C. Mastrofina Trust	1,509
Myron Bayless, et al	1,478
Dudley J. & Charlotte J. Silveira et al	1,454
Victoria Bidegaray	1,294
Rinks A. Sano, et al	1,271
Edwin R. O'Neill	1,264
Ernst & Anneliese Gschwender, et al	1,259
Thomas & Eva Perez, et al	1,249
Redfern Ranches	1,226
Chevron USA, Inc.	1,214
Kendall L. Manock, Trustee	1,210
Kings County Development Co., A Corp.	1,122

Table 3-41 (continued)

B. Marion Den Hartog Trust	1,119
Robert T. Houlding, et al	1,113
Joe O. & T.O. Souza	1,113
John C., Georgia L. & Roy K. Rabb	1,099
Mike & Jessie Sagardia	1,090
Wells Fargo Bank, as trustee	1,090
Robert Hansen & Marshall Baker Trust	1,048
Barranca del Gazapo, A Ptp	978
Joe E. Yraceburu	973
Marvin L. Smith, as trustee	971
Joe N. & Diane M. Flores Trust	964
Claudine Gray	961

Source: Fresno and Kings Counties' Assessment Roll of Secured Property, 1985.

In comparing the data on land ownership in the WWD with our data on farm operators (Tables 3-36 and 3-40) one is struck by the fact that the reported total land area is less than the total reported irrigated acreage. This, of course, is not possible. The appearance of this numerical difference has its basis in the fact that land owned by the U.S. government, or any agency of the U.S. government, has been omitted from data on land ownership. In fact, the Lemoore Naval Air Station is located entirely within the WWD and all but a small portion of its 29,823 acres are used for agriculture. Thus, if this additional land is added to our total in Table 3-40 we obtain 527,917 acres as the total area of land eligible to obtain project water. Of that amount there are some 514,023 acres, reported in Table 3-36, of irrigable cropland.

Despite the high degree of concentration of land ownership apparent in the data of Table 3-38 the RRA will not have a very great impact on land ownership patterns. This is because most landowners with owned acreage in excess of 960 acres are already under contract to sell excess acreage as defined by the original

1902 Reclamation Act. In fact, all of the 14 landowners with an amount owned that exceeds 2,560 acres are under contract with the U.S. Secretary of the Interior to sell all holdings that exceed 160 acres (the "160 acre limit" of the law, prior to enactment of the RRA). The expiration dates on these contracts, which are the actual deadlines for the sale of excess lands, vary among those landowners subject to the contracts. Some of the dates were in 1986, others fall in the period from 1987 through 1994. According to data furnished by the WWD itself there were 253,742 acres remaining to be sold under "prior law" contracts in 1985.

We can construct a table showing the status of various land categories under RRA and prior law. This is shown in Table 3-42.

Table 3-42

Status of Westlands Water District Land, 1985

Total land area	603,093
Land owned by U.S. government	29,823
Land not eligible for project water	75,176
Private acreage eligible for project water	<u>498,094</u>
Excess land under prior law	253,742
Landholdings less than 161 acres	84,824
Land voluntarily subject to RRA	58,747
Subtotal	397,313
Balance - Land which may be subject to RRA	100,781

By the middle of 1986 an additional 34,126 acres were voluntarily placed under the requirements of the RRA bringing that total to 92,873 acres. Correspondingly, the amount of land which may yet become subject to RRA has been reduced. Of course, if owned land which is excess and to be sold under the terms of existing contracts remains excess under RRA after sale then the total

lands which may become subject to the conditions of RRA would be increased.

Land which is leased may become subject to the full-pricing provision of the RRA if the amount leased to a single farm operator exceeds certain thresholds. The threshold may be as small as 160 acres or as large as 960 acres (if the leasee elects to become subject to the discretionary provisions of the RRA). In the simplest case an owner-operator of 800 acres could lease as much as 160 additional acres without triggering full cost prices for irrigation water. Obviously, lessees could own any amount of land less than 800 acres and lease the difference between that figure and 960 acres and irrigate the total at subsidized rates. Thus, there is no single figure of leased acreage which will be the "threshold" to trigger full cost pricing.

Complicating the matter even further is the exemption from full cost pricing granted to owners of land subject to prior law if the land is not leased. For example, J.G. Boswell Co. farms all of its owned land and has entered into recordable contract with the U.S. Secretary of the Interior to sell all but 160 acres. Until that sale occurs all of the owned property remains exempt from full cost pricing so long as Boswell continues to farm it. Of those owner units having at least 2,560 acres of WWD land a majority enjoy the benefits of this exemption.

The largest landowner not able to benefit from this exemption will be Southern Pacific Land Co. This is because S.P. leases all of its owned land to tenant farmers. S.P. has handled its WWD holdings in one of several different ways.

First, the company has an additional 25,075 acres owned in

WWD that are not irrigated with project water. The company chose to have this land farmed with private water in order that it not be subject to the excess land provisions of prior law requiring its sale. This land could become subject to RRA if the company chooses to irrigate this land with project water. However, this land would not necessarily be subject to "forced" sale. S.P. options depend upon how it wishes to deal with the issue of payment of full-cost pricing.

Second, the company has 81,430 acres (listed in Table 3-41) that has received Federal water. All but 160 acres of this land is under recordable contract requiring its sale at a price subject to approval by the U.S. Secretary of Interior. The sale of this land is expected to occur over the period ending in 1994. This land is farmed by tenants and is subject to the full-cost pricing provisions of RRA as outlined previously. The exact amount subject to full cost will depend on the landholding of the tenant. That is, as much as 960 acres of the tenant's total landholding could be eligible for subsidized water including all of that leased from Southern Pacific.

Southern Pacific Land Co. clearly has a range of options available but is also constrained regarding about 3/4 of its WWD land. The company's annual reports have indicated its desire to proceed with the disposition of excess WWD land subject to the sale requirement. On the other hand, the company has not made any public statement regarding its privately irrigated WWD land.

As a result of the fact that owned land subject to sale as a requirement of prior law (160 acre limit on owned land) is not to charged full price for Federal water if the land is farmed by the

owner we estimate the total amount of land potentially subject to full-cost pricing in WWD to be 308,108 acres. This amounts to 60% of the irrigable cropland eligible for project water in the WWD. However, as of mid-1986, some 93,873 acres had been voluntarily placed under the pricing provisions of RRA. Of the latter amount only 8,902 acres are subject to full-cost pricing. Hence, of the total of 308,108 acres which, at maximum, will be subject to full cost pricing, less than 223,137 acres will actually be charged the non-subsidized rate. If we assume that some tenants with at least 960 acres of owned and leased land elect to become subject to the discretionary provisions of the RRA then that last figure will be reduced by the amount of land equal to the product of the number of such electors and 960 acres. For example, if 100 farm operators with a combination of owned and leased land in excess of 960 acres were to so elect the final total of land that will be obligated to pay full cost rates would be 223,137 acres less  $100 \times 960$  acres, or 127,137 acres. This amounts to just 25% of the WWD land currently being farmed.

Comparison with previous studies of land ownership in WWD is difficult in that other authors have not, in general, chosen to make a distinction between land eligible for project water and excess land being irrigated only with private supplies. In the case of Southern Pacific Land Co. this second category of land amounts to 25,075 acres. Obviously the inclusion of this land for that single owner would materially affect the measured size distribution. Since 211 owners, each holding more than 160 acres of privately irrigated land are involved the impact of including such holdings will be substantial.

A second, and more difficult to evaluate, aspect of previous work has been the practice of dividing holdings of tenancies in common according to the proportionate share held by each person. Thus, a 1,280 acre holding owned by three persons in equal shares will appear as three 427 acre holdings in such an analysis. As discussed previously such an arbitrary division is both improper and contrary to the intent of Congress as expressed in the RRA.

The Land Tenure Study (LTS) conducted by the U.S. Department of Interior errs on both counts, including WWD land not eligible for project water and dividing land held in joint tenancies among the various owners for statistical purposes. As a consequence LTS finds 3,318 owners with an aggregate total of 580,512 acres. This would suggest that the average holding is 174.96 acres per owner. As we have seen, when properly counted from the point of view of reclamation law the actual average holding is roughly twice as large - 332 acres per owner unit. Similarly, LTS finds 45 owners with holdings exceeding 960 acres and their aggregate holding is 239,084 acres (or 41% of the total of privately owned land in the WWD). We find 61 owner units with holdings greater than 960 acres and their aggregate owned acreage-eligible to get project water is 235,958 acres (or 47% of the land eligible for project water). While these difference are not large they are quite significant and reflect a fundamental difference in the understanding of both joint tenancies and reclamation law.

## Inter-relations Among Farm Operators

In all of the preceding we have treated each distinct legal entity conducting farming operations as completely independent from the others we have identified. We now discuss evidence that they are not all independent. We shall show that a number of them form a smaller group of multi-entity units.

The simplest case of this type involves two or more entities that are under common ownership, as in the case of subsidiaries of the same corporation. For example, Caliente Citrus Farms, in the Arvin-Edison W.S.D., is owned by the same firm as Paramount Growers, Inc., operating in the Kern-Tulare W.D. Thus, instead of comprising two farms with 306 acres and 1,151 acres, respectively, in the two districts, we should regard this to be a single farm with 1,457 acres.

A case of slightly greater complexity involves two farms with nearly identical individual owners and operating together. This is the situation for Burum Ranch and W.A. Burum & Sons. The former entity has a few additional family members as partners in addition to those who are partners in W.A. Burum & Sons. Both report the same business address and clearly share certain key resources. Their combined holdings amount to 7,747 acres in the Delano-Earlimart and Kern-Tulare districts.

Much greater complexity arises in the case of several farm operators who appear to have begun to take steps to respond to the intent of the RRA. We shall present data for two such cases in some detail.

The first case involves seven distinct legal entities farming in the Westlands W.D. Table 3-43 shows the Fresno USDA



summary data for these entities.

Table 3-43

Vaquero Farms Legal Entities

<u>Name</u>	<u>ASCS Farm No.</u>	<u>Cropland</u>
Tony & Ann Costa	Fresno 81 & 338	1,006 acres
Larry J. Enos	Fresno 79	589
Cindy Pruett Trust	Fresno 78	945
Gregory Pruett Trust	Fresno 80	902
Kelley Pruett Trust	Fresno 82	956
Stacy Pruett Trust	Fresno 84	966
Louis B. Souza	Fresno 83	915

Source: Fresno Co. ASCS Office of USDA; Farm Number shown is the "new" farm number as maintained by that office's computer file.

Each of these separate "farms" reports the identical address to USDA. Six of them have made an irrevocable election, as a land-<sup>30</sup>holder, to be subject to the pricing provisions of the RRA.

The grouping of their respective sizes at or below 960 acres can not be an accident. In fact, of the 6,279 acres being farmed

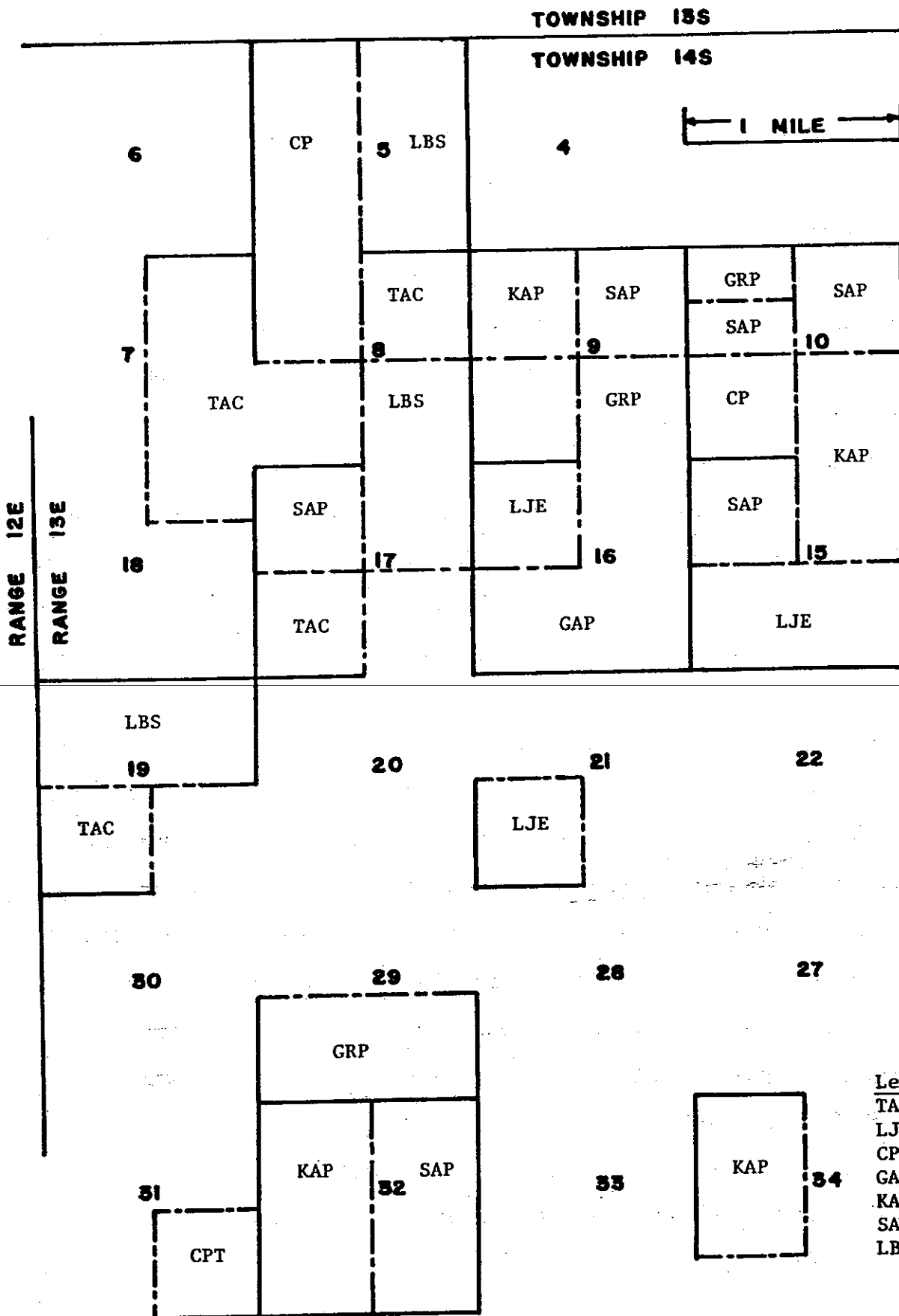
only 63 acres are subject to full-cost pricing. The balance of the land is subject to O & M charges as well as the base rate.

The land being farmed by these entities is all located in Township 14 South, Range 13 East (Mt. Diablo Base & Meridian) in western Fresno County. As shown in Figure 4, the land farmed by these entities fits together like pieces of a jig-saw puzzle.

A search of records at the Westands W.D. shows that each of the seven entities is a "separate" water user but all report the same address, telephone number and name of contact person.<sup>31</sup>

A telephone call placed to that number resulted in the greeting "Hello, Vaquero Farms."<sup>32</sup> What is of special interest in this context is that Vaquero Farms, Inc., a California corporation, reports farming land, all of which is included in the land being

**FIGURE 4 - VAQUERO FARMS**



farmed by these seven entities, just prior to the passage of the  
33  
RRA.

Corporate records reveal that Ann Costa and Louis Souza are  
sister and brother, and that they, various family trusts, and  
Larry Enos are the sole stockholders of Vaquero Farms, Inc.  
34  
Further examination shows that Souza or Costa are each sole  
35  
trustee of one or more of the trusts identified in Table 3-41.  
It can hardly be an accident that all of these farms were formed  
at one and the same time just subsequent to the passage of the  
RRA and that, with two exceptions, each has a landholding that  
is less than 960 acres.

Further evidence regarding the nature of the relationship  
among them is provided by documents filed in connection with  
their bank operating loan.  
36  
A copy of a Financing Statement  
filed by one of these entities under the Uniform Commercial Code  
of the State of California is presented as Figure 5. A typical  
one lists "Debtor - Vaquero Farms, Inc." together with the other  
"Additional Debtor - Gregory Robert Pruett Trust." The fact that  
Vaquero Farms, probably as farm manager, actually conducts the  
farming operations is in no way hidden from their bankers.

Finally, the directors and officers of Vaquero Farms, Inc.,  
are Louis B. Souza, President; Larry J. Enos, Vice-President;  
Tony L. Costa, Vice-President; Ann P. Costa, Chief Financial  
Officer; and James W. Hannum (who serves as trustee another of  
37  
the family's stockholding trusts).

While each of the entities is a "qualified recipient" of  
Federal water they form, instead of seven independent farms, a  
single farming unit.

FIGURE 5 - VAQUERO FARMS FINANCING STATEMENT

85009868

FRESNO COUNTY RECORDERS OFFICE

This FINANCING STATEMENT is presented for filing pursuant to the California Uniform Commercial Code.

1. DEBTOR (LAST NAME FIRST-IF AN INDIVIDUAL) <b>VAQUERO FARMS, INC.</b>		1A SOCIAL SECURITY OR FEDERAL TAX ID NO <b>94-1661546</b>
1B MAILING ADDRESS <b>121 E. 11th Street</b>	1C CITY STATE <b>Tracy, CA</b>	1D ZIP CODE <b>95376</b>
2. ADDITIONAL DEBTOR (IF ANY) (LAST NAME FIRST-IF AN INDIVIDUAL) <b>GREGORY ROBERT PRUETT TRUST</b>		2A SOCIAL SECURITY OR FEDERAL TAX ID NO <b>94-6514162</b>
2B MAILING ADDRESS <b>121 E. 11th Street</b>	2C CITY STATE <b>Tracy, CA</b>	2D ZIP CODE <b>95376</b>
3. DEBTOR'S TRADE NAMES OR STYLES (IF ANY)		3A FEDERAL TAX NUMBER
4. SECURED PARTY NAME <b>Wells Fargo Bank, N.A.</b> MAILING ADDRESS <b>P. O. Box 949</b> CITY <b>Modesto</b> STATE <b>CA</b> ZIP CODE <b>95353</b>		4A SOCIAL SECURITY OR FEDERAL TAX ID NO OR BANK TRANSIT AND A. A. NO <b>WFB 250</b>
5. ASSIGNEE OF SECURED PARTY (IF ANY) NAME MAILING ADDRESS CITY STATE ZIP CODE		5A SOCIAL SECURITY OR FEDERAL TAX ID NO OR BANK TRANSIT AND A. A. NO

6. This FINANCING STATEMENT covers the following types or items of property (include description of real property on which located and owner of record when required by instruction 4).  
All farm supplies, farm products, crops, and all natural increase thereof now owned or hereafter acquired by the Debtor, now or at any time hereafter located or growing or to be grown on the real property described as follows:...SEE ATTACHED... or wherever any of the same may be located and all such crops after they have been severed and removed from said real property, and the proceeds thereof, including without limitation, all rights to payment with respect to any insurance, including returned premiums, or any cause of action relating to any of the foregoing.

7. CHECK IF APPLICABLE  7A PRODUCTS OF COLLATERAL ARE ALSO COVERED  7B DEBTOR(S) SIGNATURE NOT REQUIRED IN ACCORDANCE WITH INSTRUCTION 9(C) ITEM  (1)  (2)  (3)  (4)

8. CHECK IF APPLICABLE  DEBTOR IS A "TRANSMITTING UTILITY" IN ACCORDANCE WITH UCC § 9108 (1)(1)

*[Signatures]*  
 x *[Signature]* President  
 x *[Signature]* Ann P. Costa, Trustee

VAQUERO FARMS, INC. GREGORY ROBERT PRUETT TRUST  
 TYPE OR PRINT NAME(S) OF DEBTOR(S)

*[Signature]* Larry Schaidt, VP  
 TYPE OR PRINT NAME(S) OF SECURED PARTY(IES)

WELLS FARGO BANK, N.A.  
 TYPE OR PRINT NAME(S) OF SECURED PARTY(IES)

11. Return copy to:  
 NAME  
 ADDRESS  
 CITY  
 STATE  
 ZIP CODE

Wells Fargo Bank, N.A.  
 P. O. Box 949  
 Modesto, CA 95353

10 THIS SPACE FOR USE OF FILING OFFICER (DATE, TIME, FILE NUMBER AND FILING OFFICER)

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RECORDED AT REQUEST OF

AT 16 MIN PAST 37

JAN 31 1985

FRESNO COUNTY CALIFORNIA  
 GALEN LARSON, County Recorder

*[Signature]* BY DEPUTY RECORDER

FEE 7

(1) FILING OFFICER COPY FORM UCC-1—FILING FEE \$3.00 Approved by the Secretary of State

JAN 3

It is worthy of note that each of these seven farms received the maximum permitted payment, namely \$50,000, under the 1985 Deficiency and Diversion Crop program of USDA. <sup>38</sup> Thus, the seven entities created in response to the RRA also qualified for a total cash payment of \$350,000 under the 1985 farm program.

A second example of this type is worthy of some attention. This concerns land farmed for a number of years by a partnership known as El Dorado Farms. Comprising 6,308 irrigable acres, the land is now reported as farmed by the seven entities shown in Table 3-44. This situation is even more complex in that only a portion of the land is served by Federal water. The balance is irrigated with private water.

Table 3-44

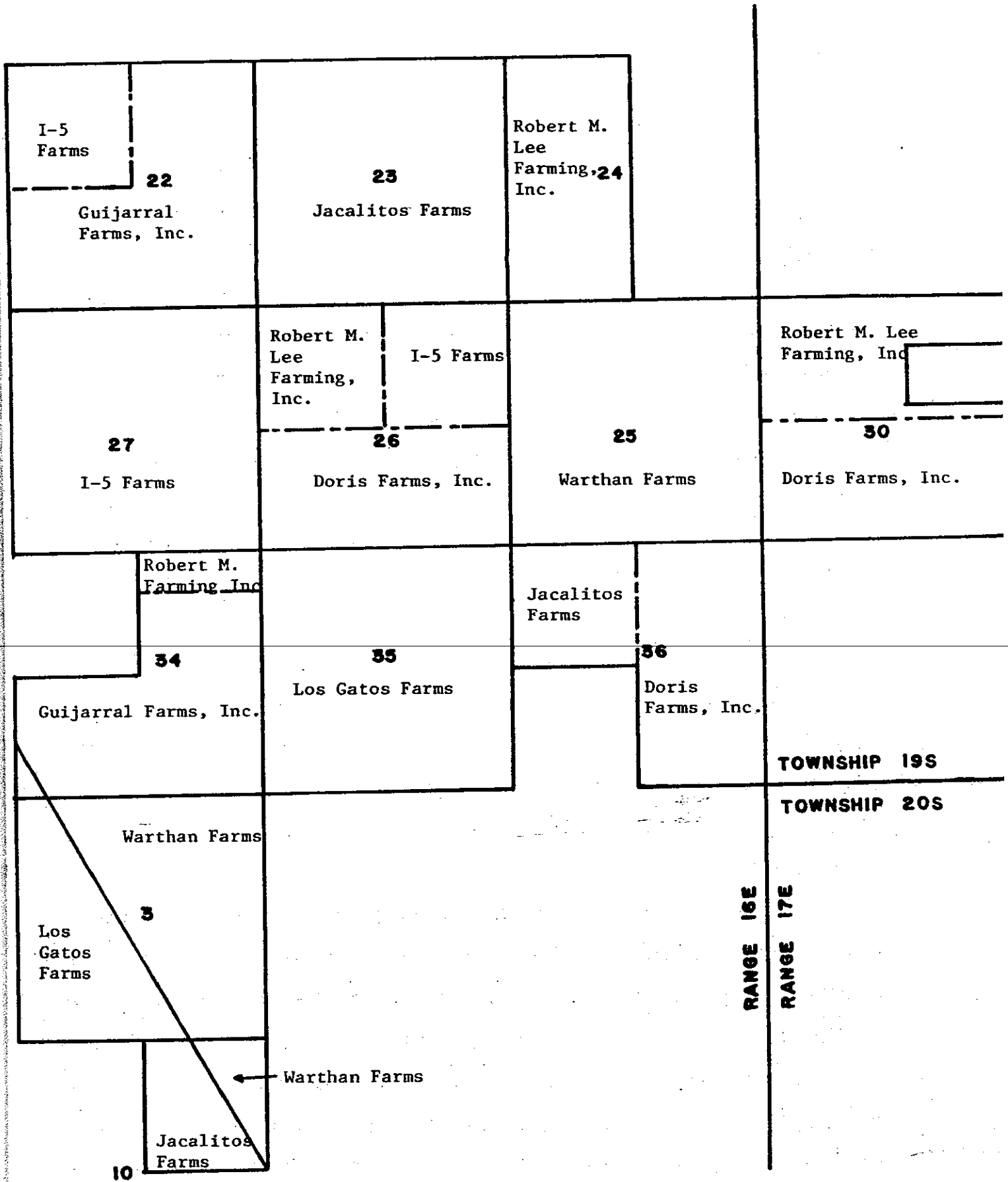
El Dorado Farms Group		Land Served by
Name of Entity	Total Holding	Federal Water
Doris Farms, Inc.	960 acres	897 acres
Guijarral Farms, Inc.	959	931
I-5 Farms, A Ptp	960	320
Jacalitos Farms, A Ptp	900	898
Robert M. Lee Farming, Inc.	862	795
Los Gatos Farms, A Ptp	863	572
Warthan Farms, A Ptp	967	612

Source: Fresno County USDA records and Westlands W.D. records.

As shown in Figure 6, these "separate farms" fit together like pieces of a jigsaw puzzle to form the original El Dorado Farms Company. All seven have made irrevocable elections to be subject to the pricing provisions of the RRA. In this case none of the land is paying full-cost even though the total receiving project water is 5,025 acres.

A call placed to the common business telephone number that is reported by each produced the response "Hello, Mouren & Lee."

FIGURE 6 - EL DORADO FARMS



Mouren & Lee Farming is a fictitious business name used by L C V Gin, Inc., a longtime farm operator in the Central Valley that is under common ownership with the principals of La Cuesta Verde Ginning Co. and William J. Mouren Farming, Inc. Both of the latter entities have made irrevocable elections to be subject to pricing provisions of RRA. And they did so on precisely the same day as each of the seven entities listed in Table 3-44. All nine entities reported no acreage subject to full-cost pricing.

Another category of farm groups is the traditional farm management relationship. An entity is formed to farm a piece of land but, while providing the risk capital, hires a professional management firm to actually conduct the business. Farm managers are becoming quite important in the national farming picture.

This situation has been briefly discussed in the context of the farming practices in the Arvin-Edison W.S.D. As described there, one such farm manager, Agricultural Services, Inc., is the business actually farming two of the farms with a total of 881 acres. We find this type of arrangement to occur with significant frequency only in the grape and citrus industries. It appears to be relatively rare in the field crop and vegetable industries.

We find that the number of "farming groups" is 19 and the number of legal entities involved is 72. <sup>39</sup> The aggregate irrigated cropland farmed by them is 59,313 acres so that the average size of the each group is 3,122 acres, five times larger than the case of the average farm in the ten district study area. If we take account of these groups, then the average farm size we compute will increase as will the share of land in farms above 960 acres.

NOTES-CHAPTER 3

1. I am grateful to Cliff Trotter, Manager, Arvin-Edison W.S.D., for making these records available.
2. Tulare County Official Records, Vol.4013, p. 400 and Kern County Official Records, Vol. 5501, p. 1806.
3. Bob Cox and Ronald Campbell, Bakersfield Californian, "Tex-Cal: The Government's Steele Web," May 5, 1985.
4. *ibid.*
5. Paul S. Taylor, "Excess Land Law: Calculated Circumventors," California Law Review, 52:976 (1964).
6. *ibid.*
7. 1950 Census of Agriculture, op. cit., see 1944 data on irrigated land.
8. 1982 Census of Agriculture, op. cit.
9. Interim Report, Acreage Limitation, op. cit., Appendix II, Table 4.
10. See our discussion, p. 25 et seq.
11. The following family members are partners of both W.A. Burum & Sons and Burum Ranch: William Absolom Burum, William Anthony Burum, Elizabeth L. Burum and Elizabeth Ann Underhill. See Kern County Clerk, Statements of Fictitious Business Names, 81-03560-9 and 81-03561-8.
12. Western Grower and Shipper, October 1982, p. 26.
13. Getty Oil Company, Form 10-K, Annual Report to the U.S. Securities and Exchange Commission, December 31, 1978.
14. 1982 Census of Agriculture, op. cit.
15. U.S. Department of Interior, Bureau of Reclamation, Central Valley Project, California, Contract No. 14-06-200-876A, Appendix A.
16. *ibid.*
17. Sacramento Valley Water Contractors Association, 1978 Board of Directors Meeting, West Sacramento, CA.
18. Walker's Manual of Western Corporations, 1928 edition, River Farms Company of California, p. 730. Reports that 31,000 acres are owned, of which 22,000 are in R.D. 108.
19. Yolo County Official Records, Vol. 31, p. 254, January 14, 1932.



20. Yolo County Official Records, Vol. 45, p. 11, November 16, 1932.
21. See Applications for Restricted Use Materials Permits, Yolo County Agricultural Commissioner, Woodland, CA on file by these companies.
22. Yolo County Superior Court, Probate No. 10231.
23. Letter to Ms. Susan Blachman, May 2, 1978.
24. See, for example, U.S. Department of Interior, Bureau of Reclamation, Special Task Force Report on San Luis Unit, Central Valley Project, California, Washington, DC, 1978.
25. Interim Report, Acreage Limitation, op. cit., Appendix II, Table 4.
26. Southern Pacific Company, Annual Report, 1978, pp. 17-18.
27. Interim Report, Acreage Limitation, op. cit., Appendix II, Table 2.
28. Both companies are subsidiaries of American Protection Industries.
29. Both firms share the same business address as well as having in common the active farm business operators of the Burum family. See also Note 11.
30. U.S. Department of Interior, Bureau of Reclamation, Letter from Forrest D. Coleman to Hamilton Candee, September 10, 1985. See enclosure titled "Landholders Subject to Discretionary Provisions of RRA."
31. Westlands Water District, Water User Directory, 1985.
32. Telephone call placed to (209) 659-2421, the number listed in the WWD Water User Directory as the contact phone for all seven entities listed in Table 3-41.
33. Financing Statement filed by Vaquero Farms, Inc., with the Fresno County Recorder, Fresno County Official Records, Vol. 6897, p. 202. All of the land listed in this document is farmed by one or another of the seven entities listed in Table 3-41.
34. California Department of Corporations, File No. 700-5671, Vaquero Farms, Inc.
35. *ibid.*
36. Financing Statements filed by Vaquero Farms, Inc. Fresno County Official Records, No. 85009867, 85009868, 85009869, 85009874, 85009875, 85009876, 85009877.

37. California Secretary of State, Statement of Officers and Directors, Vaquero Farms, Inc., Corporation Number 538118.
38. U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service, Letter from Earle J. Bedenbaugh to Hon. George Miller, Chair, Sub-Committee on Water and Power Resources, U.S. House of Representatives, September 5, 1986. See enclosure "Deficiency and Diversion Payments for Program Year 1985 for Selected California Counties."
39. See Appendix I.

## CHAPTER 4

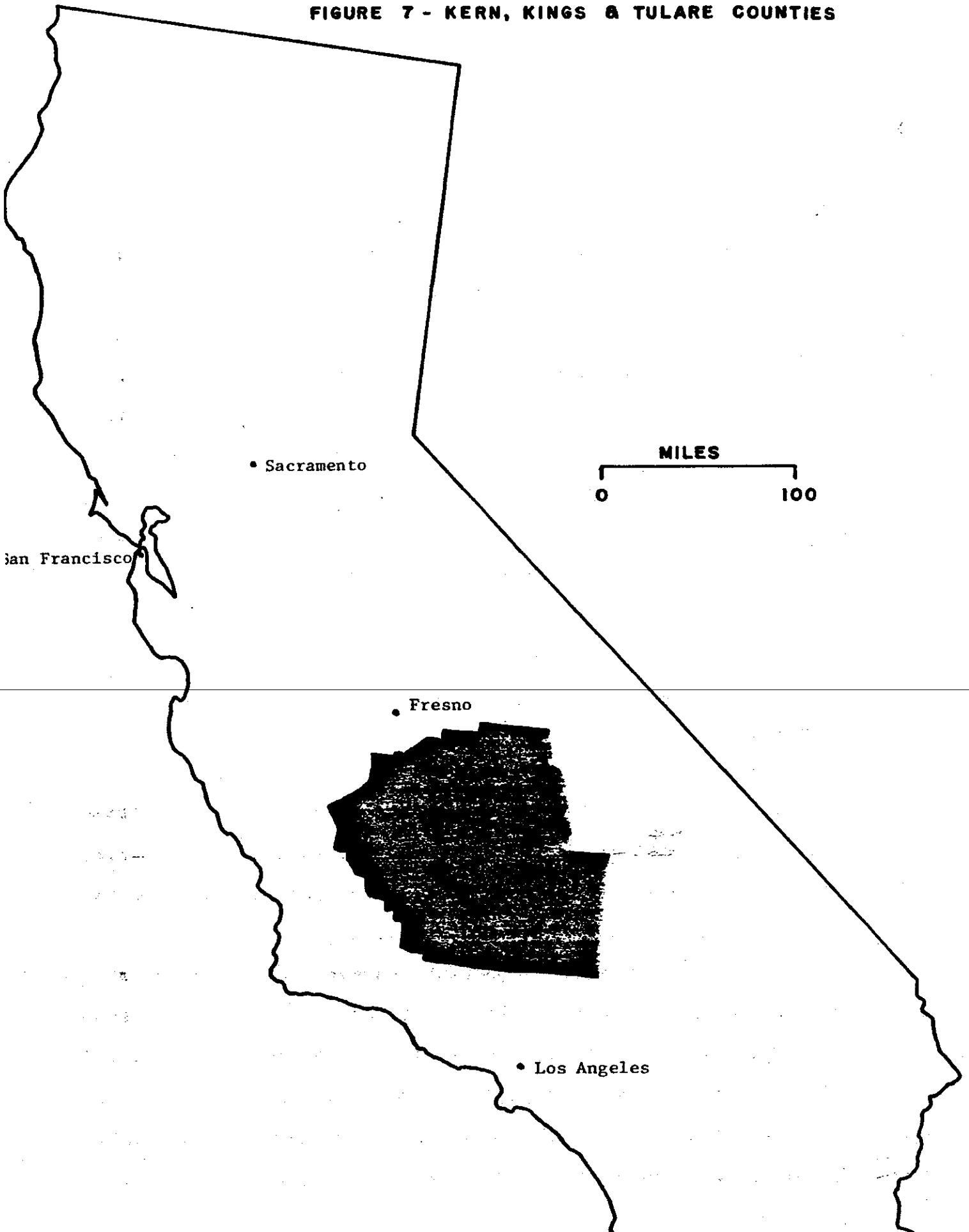
### LAND OWNERSHIP IN THE UPPER SAN JOAQUIN VALLEY

It is of considerable interest to examine the pattern of agricultural land ownership in an area that is not so fragmented as distinct water districts widely separated from one another. By selecting a large enough region one can gain a clearer understanding of land tenure patterns throughout the area and not just for the portion of farm or land holdings that happen to lie within one or another of a handful of water districts. As we have shown, even the farms operating within the ten district study area have substantial additional holdings outside of the districts. Thus, measures of the size of these farms based solely on those holdings that happen to be in the selected districts will be too small (on average, 45% too small).

We have examined land ownership in the three county region of Kern, Kings and Tulare Counties. Together, the three counties account for 2,057,244 acres of irrigated land, nearly one-quarter of the state's irrigated acreage. They also account for 1,134,220 acres of the total added to irrigated production in the period 1944-1982, roughly one-third of the net additions.

The counties also form a reasonably well-defined geographic region of the state - the upper San Joaquin Valley. The region is shown in Figure 7. Bounded by mountains to the East, South and West, the area is not connected by natural drainage to the lower San Joaquin Valley that stretches to the North at lower elevation. A natural rise in the valley floor along the northern edge of Kings and Tulare Counties prevents runoff from reaching the path that one would expect to be the natural drain. Instead,

**FIGURE 7 - KERN, KINGS & TULARE COUNTIES**



trapped runoff formed Tulare Lake, Buena Vista Lake and other smaller ponds. Construction of modern irrigation facilities, including resevoirs and drainage systems has overcome some of the limitations of the topography. The Upper San Joaquin Valley, also known as the Tulare Lake Basin, remains a well-defined region today.

The procedure followed in collecting data on land ownership for the Upper San Joaquin Valley differed in important respects from that followed in examining the pattern of land ownership in the ten water district study area. First, all Assessor's Parcels exceeding 19.49 acres in size (20 acres when rounded) were identified using County Assessor's maps. In all, some 55,000 individual parcels were identified representing 5,285,690 acres of privately owned land. There are about 500,000 parcels of all sizes and land use categories, including non-agricultural land use, in the three county area. By limiting our investigation to parcel sizes of 20 acres or more the number of parcels to consider was reduced by a factor of nine.

Second, the owner name, county land use code, Assessor's Parcel Number, acreage and county were recorded from the 1981-82 Assessor's Roll. Finally, sub-totals for each ownership unit, county and land use code were entered into the Land File data base to permit electronic data processing.

The single most important aspect in which this land ownership analysis differs from that for the ten district study area described before is that Assessor's Parcels smaller than the 19.5 acre cutoff are excluded from consideration. The effect of this exclusion of "small" parcels can not be precisely measured. However, in a separate pilot study of Kern and Tulare County

grape parcels, 166,768 acres of grapes were found when all parcel sizes are included and 154,125 acres are identified if the 20 acre cutoff is used. This is 92.4% of the true acreage. Since small parcel sizes are disproportionately important for grapes as compared with parcels used for growing cotton or field crops, it is likely that we have included more than 92.4% of all land under irrigation in the three counties.

The main result of this work is shown in Table 4-1 where we show the size distribution of land ownership in the three county area.

Table 4-1

Size Distribution of Land Ownership, Irrigated Land  
Kern, Kings & Tulare Counties  
1981-82

<u>Size of Owner Unit</u>	<u>Number</u>	<u>Total Land</u>
80 acres or less	5,766	243,622 acres
81-160 acres	1,782	228,058
161-320	1,024	265,859
321-480	397	157,289
481-640	226	128,678
641-1,280	247	216,617
1,281-2,560	93	166,012
2,561-5,120	29	100,724
5,121 acres or more	26	646,785
<b>Total</b>	<b>8,590</b>	<b>2,153,644</b>
<b>Census of Agriculture</b>		<b>2,057,244</b>

Source: 1981-82 Assessor's Rolls for Kern, Kings and Tulare Counties;  
U.S. Department of Commerce, Bureau of the Census, 1982 Census of Agriculture, Vol. 1, Part 5. California. State and County Data. June 1984, Washington, D.C.

The most significant finding is that the owner units with at least 5,121 acres of irrigated land in the combined three county area have a combined total of at least 646,785 acres, 30% of all of the irrigated land in those counties. These 26 owner units

account for just 0.27% of the owner units and yet they own among them roughly 1,000 square miles of irrigated land. Because we have excluded Assessor's Parcels smaller than 20 acres it is very likely the case that the holdings of these 26 owner units is greater than the figure we indicate.

Our result also indicates that the largest 4.1% of the owner units have 52.5% of the irrigated land of the three counties. This is a very high degree of concentration of land ownership and is unexpectedly large in that it pertains to irrigated land holdings. Large land holdings, especially in the West, are normally associated with ranching in which large areas of pasture land are essential.

Table 4-2 identifies the 26 largest owners of irrigated land in the three county area.

Table 4-2

Owners of More Than 5,121 Acres, Irrigated Land  
Kern, Kings & Tulare Counties, 1981-82

<u>Name of Owner Unit</u>	<u>Irrigated Land</u>
J.G. Boswell Co.	125,645 acres
Tenneco West, Inc.	94,819
Getty Oil Co.	40,761
Chevron USA, Inc.	40,406
Southern Pacific Land Co.	38,057
South Lake Farms, A Corp.	36,968
Salyer Land Co., A Corp.	36,898
Superior Farming Co., A Corp.	33,547
Westlake Farms, Inc.	27,510
Prudential Insurance Co. of America	24,834
Kernridge Oil Co.	22,877
Tejon Ranch Company, A Corp.	17,959
Howe Land Co., A Corp.	16,168
Blackwell Land Co., A Corp.	14,713
Westhaven Farming Co.	10,922
Joe & Jeanne Mendiburu	7,317
Kings County Development Co.	6,867
Tracy Ranch, Inc.	6,166
J.G. Stone Land Co.	5,948
Basin Farms, Inc.	5,782
Bidart Bros., A Corp	5,744

Table 4-2 (continued)

Sumner Peck Ranch, Inc.	5,639
Shannon-Gibraltar Enterprises	5,478
R.A. Rowan Co.	5,359
J B 2 H, A Ptp.	5,264
Boyett Farms	5,137

Several of the landowner units identified in Table 4-2 have major holdings of irrigated land in other counties of the state. For example, Southern Pacific Land Co., Chevron USA, Inc., and Getty Oil Co. have, in aggregate, more land in other counties than is listed in Table 4-2.<sup>1</sup>

Comparison of our data with current data reported by other authors is difficult owing to a lack of identification of land according to its actual current use. Other authors have not been able to distinguish cropland from dry land pasture. The significance of this distinction is best illustrated by Kern Co. farm lands. Kern County has 3,142,057 acres of "Land in Farms." But only 864,465 acres are irrigated. Of the balance of 2,277,592 acres just 10,000 acres are dry cropped. All of the remainder consists of dry land pasture. Therefore, analysis of pattern of land ownership of "Land in Farms" will be skewed by the size distribution of holdings of dry land pasture.

Liebman has obtained recent data on the size distribution of land ownership of "agricultural land."<sup>2</sup> All but four of the holdings reported in Table 4-2 were included in her identification of owners with more than 5,000 acres of agricultural land. However, her work does not distinguish land according to its current use preventing a more careful comparison.

Fellmeth reports identification of owners of agricultural



land in the state as a whole as of 1970.<sup>3</sup> Unfortunately, there are no citations of data sources in the work. Among the top 25 private landowners identified by Fellmeth, at least one, Miller & Lux, Inc., had long since sold all but a very small part of its holdings. And the figure which Fellmeth attributes to this firm is identical the figure issued in the 1930's by a Congressional Committee.<sup>4</sup> Additionally, Fellmeth attributes 2,411,000 acres of Southern Pacific Land Co. holdings to agricultural use. In fact, the majority of this land is desert, a large share of the balance is forest and only 160,000 acres are irrigated cropland. By not analyzing the landholdings reported according to actual current use, Fellmeth has made so many errors of classification of land as "agricultural" as to render the report useless.

Finally, Lewis has reported on the results of a 1978 national survey of landownership.<sup>5</sup> While this valuable report does correctly distinguish agricultural land use from other uses, there is no distinction of type of agricultural land use. Thus, cropland vs. dry land pasture classifications are absent. It is not possible to compare our data with this work.

#### Longitudinal Comparison of Land Ownership, 1940-1982

Wilson and Clawson studied 1940 agricultural land ownership and farm operations in a major part of the area we have studied.<sup>6</sup> In fact, our choice of this region was, in part, based on awareness of the possibility of directly comparing current data with data for the period immediately preceding development of CVP facilities.

Longitudinal comparisons are difficult in that changes in definitions or classifications can affect the result quite apart

from real changes that may have occurred. For that reason we have selected data reported by Wilson and Clawson on irrigable land in the full two county area of Kern and Tulare Counties. In 1944 there were a total of 681,818 acres of irrigated land in the two counties. However, Wilson and Clawson found that 1,177,400 acres were irrigable implying that an additional 495,600 acres could be irrigated. It was realized that CVP water deliveries would bring much of this land into irrigated production. But the service area had not been designated so Wilson and Clawson included land thought at that time to be irrigable. In 1982 there were 1,503,130 acres of irrigated land in the two counties. The main area put into irrigated production that Wilson and Clawson did not include is the western-most portion of the two counties. That area is irrigated by the State Water Project. Thus, an additional 325,700 acres beyond what they anticipated has been placed in irrigated production.

Wilson and Clawson's data on irrigable land ownership is presented in Table 4-3.<sup>7</sup>

Table 4-3

Size Distribution of Land Ownership, Irrigable Land  
Kern & Tulare Counties, 1940

<u>Size of Owner Unit</u>	<u>Number</u>	<u>Total Land</u>
80 acres or less	8,386	254,600 acres
81-160 acres	1,353	162,000
161-320	741	164,000
321-480	189	72,100
481-640	93	51,400
641-1,280	132	107,500
1,281-2,560	39	67,100
2,561-5,120	9	22,600
5,121 acres or more	14	276,100
<b>Total</b>	<b>10,956</b>	<b>1,177,400 acres</b>

Average = 107.5 acres/owner unit

The data show a large number of owners with 80 acres or less; in sum they represent 76.5% of the owner units. But they own just 21.6% of the land. Very large owners, those with more than 5,121 acres, account for only 0.14% of the owner units. Yet their combined holdings exceed those of the 8,386 owner units with 80 acres or less. The largest 4.34% of the owner units have 50.68% of the irrigable land.

The important feature of the data developed by Wilson and Clawson is that it follows the same definitions we have used in our work. That is, joint tenancies are treated as single owner units and property is not divided among joint tenants in proportion to their share. Similarly, by distinguishing actual land use (or potential land use), irrigable land can be analyzed separately from land used for other purposes.

Table 4-4 presents current data on the size distribution of irrigated land ownership in Kern and Tulare Counties.

Table 4-4

Size Distribution of Land Ownership, Irrigated Land  
Kern and Tulare Counties, 1981-82

Size of Owner Unit	Number	Total Land
80 acres or less	4,943	206,167
81-160 acres	1,484	189,413
161-320	847	224,238
321-480	333	131,830
481-640	188	106,841
641-1,280	200	174,387
1,281-2,560	73	129,850
2,561-5,120	23	80,509
5,121 acres or more	15	309,975
Total	8,106	1,553,210

Average = 191.6 acres/owner unit

Source: Kern and Tulare Counties Assessor's Roll, 1981-82

The two differences between the Wilson and Clawson data and

the data we have analyzed are, first, our exclusion of Assessor's Parcels smaller than 20 acres and, second, our data refers to an area that is about 32% larger. These factors are discussed later (Appendix II considers the effect of the omitted parcels).

The most striking feature of this data is the general similarity to the 1940 data. That is, a relatively few large owners hold more land than do all of the small owners combined. Moreover, the average size holding has nearly doubled to 191.6 acres.

That the concentration of land ownership has significantly increased (as reflected in the larger average holding) is quite surprising. The rapid population increases and large numbers of land subdivisions, particularly in the areas around the cities of Bakersfield and Visalia, would suggest a diffusion of land ownership. Wilson and Clawson point out that, as land changed from a pattern of dry pasture to irrigated farming, one would expect changes of land tenure toward smaller size holdings. In their words,

"As the use of land becomes more intensive, there would undoubtedly be some tendency to subdivide present large holdings into smaller landownership units and to operate the land in smaller farm operating units." (8)

Our data demonstrates that this suggestion is incorrect. In fact, the opposite has clearly occurred in the case of land ownership. Regarding farm operators, comparison of 1982 Census of Agriculture data with the Wilson and Clawson data shows that their suggestion is also incorrect regarding the size of farm operating units. There were 8,560 farms in the two counties in 1940 but just 7,701 in 1982. Considering the fact that irrigated land in the two counties has more than doubled one must conclude

that the quantity of land in irrigated farming bears no necessary relation to farm size.

With regard to the fact that our 1982 data refers to an area 32% larger than the area Wilson and Clawson considered to be irrigable, careful consideration suggests that changes of land tenure patterns are likely to be greater than the raw data might indicate. If Wilson and Clawson had included the substantially greater amount of land that, by 1982, had become irrigated in the two counties then surely their reported number of landowner units would have been much larger, though perhaps not by the same factor. Therefore, the decline in the number of owners is likely to have been greater than the data above indicates.

Even with adjustment of our data to take account of omitted parcels (see Appendix II), the number of owners of irrigated land in the two county area was smaller in 1982 than was the case for irrigable land in 1940. Equally significant, the average holding per owner unit was at least 50% larger in 1982 than was the case in 1940. The conclusion that land ownership has become more concentrated as more land has been placed in irrigated farms can not be avoided.

Independent evidence regarding the increased concentration of land ownership accompanying the development of irrigated land in the western portion of the Upper San Joaquin Valley has been reported by economists with the California Department of Water Resources. In evaluating the impact of the State Water Project facilities that brought surface water to the area for the first time these economists found the following situation.

"Lending institutions have recently shown greater

caution and selectivity in loaning funds to west side agriculturalists, unless the growers possess substantial resources, according to representatives of a major bank active in the region.

"A number of smaller-scale ranchers and those with inadequate resources have already had to leave, liquidating and disposing of their properties. In the opinion of the banker, this was usually because the rancher had underestimated the capital requirements to develop land, procure necessary irrigation farming equipment, and retain adequate reserves to finance operations for several years before sufficient income was received from sales of crops."(9)

Whether by accident or design, the huge, publicly financed water projects have tipped the economic scale to the advantage of large-scale, capital-intensive, farming operations. Together with the failure to enforce the acreage limitation provisions of early Reclamation Law these factors have tended to force small scale family farmers out of the region of the Upper San Joaquin Valley.

#### Poverty in the Central Valley

Recent evidence suggests that poverty remains a persistent problem in California's Central Valley. For example, the 1980 Census of Population shows that, of the ten metropolitan areas in the entire United States with the highest proportion of persons supported by General Assistance (welfare), no less than six areas are in California and all six are in the Central Valley.<sup>10</sup> The six areas (and the proportion of persons on welfare) are Visalia(15.9%), Stockton(14.4%), Yuba City(12.4%), Fresno(12.3%), Modesto(11.8%) and Redding(11.6%). The remaining four areas of the top ten are Jersey City, Atlantic City and Vineland in New Jersey and New York City. But none of these are close in the proportion of people supported by General Assistance as in the case of Visalia, in the heart of our three county

study area.

Other measures of poverty show the same high incidence in the three county study area. The 1980 Census of Population found that 11.4% of Californians lived in poverty.<sup>11</sup> But 16.5% of Tulare County residents were poor, and the figures for Kings and Kern Counties were 14.6% and 12.6%, respectively.

The California Department of Housing and Community Development found that 13.3% of the state's housing units are sub-standard.<sup>12</sup> The figures for our three county study area are much worse: 36.9% in Kings, 30.4% in Tulare, and 21.5% in Kern.

Recently, MacConnell and Dolber-Smith have published data showing a remarkable correlation between large farm size and high levels of poverty in 98 counties throughout the Sun Belt states of Arizona, California, Florida and Texas.<sup>13</sup> They also found that "...irrigation policy and practice is the single most important factor in maintaining both current levels of agricultural production, and the current disarticulation of community vs. agribusiness interests."<sup>14</sup>

While the multi-billion dollar public investment in irrigation projects in California has succeeded in developing an agriculture that is now the national and world leader there is no evidence that broad sectors of the people of the Central Valley have shared in the benefits. To the contrary, just as the Central Valley leads the nation in agricultural production so too it has become a national leader in the share of its people who suffer from the burden of poverty.

NOTES-CHAPTER 4

1. Southern Pacific Company holdings of irrigated land total 160,380 acres in California. See Santa Fe Southern Pacific Corporation, 1984 Fact Book, p. 21.
2. Ellen Liebman, California Farmland. A History of Large Agricultural Holdings, Rowman & Allanheld, Totowa, New Jersey, 1983.
3. Robert C. Fellmeth, Politics of Land, Grossman Publishers, New York, New York, 1973.
4. U.S. House of Representatives, Violations of Free Speech and the Rights of Labor, 1939 Hearings, Exhibit 9589, "Land holdings in California." The Miller & Lux holding is reported as 93,058 acres, identical to the figure used, but not attributed, in Fellmeth's 1973 study.
5. James A. Lewis, Landownership in the United States, 1978, Agricultural Information Bulletin 435, Economics, Statistics and Cooperatives Service, U.S. Department of Agriculture, Washington, DC 20250, April 1980.
6. Agricultural Land Ownership and Operation in the Southern San Joaquin Valley, op. cit.
7. *ibid*, Appendix Table 27. Separate data for Kern and Tulare Counties have been combined by simple addition.
8. *ibid*, p. 75.
9. California Department of Water Resources, Post-Project Economic Impact Study: San Joaquin Valley Service Area, 1968-70, Memorandum Report.
10. U.S. Department of Commerce, Bureau of the Census, Metropolitan Area Fact Book, Washington, DC, 1984.
11. U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, Volume 1, Characteristics of the Population, Chapter C, General Social and Economic Characteristics, Part 6, California. PC80-1-C6. July 1983.
12. California State Office of Economic Opportunity, The Status of Poverty in California, 1983-84, Sacramento, CA, 1984.
13. Dean MacCannell and Edward Dolber-Smith, "Report on the Structure of Agriculture and Impacts of New Technologies on Rural Communities in Arizona, California, Florida and Texas," Department of Applied Behavioral Sciences, University of California, Davis, to be published.
14. *ibid*. p. 9.



APPENDIX I

Inter-relationships Among Farm Operators

Presented herein are detailed identification of farm operators determined by us to have a great likelihood of being inter-related. In each case we cite the farm name, district and name of parent or farm management group.

Agricultural Services Inc.

Agricultural Services Inc.	Arvin-Edison	472.60 ac
Walter Dreyer	Arvin-Edison	408.85
Herman L. Dreyer	Delano-Earlimart	40.00
Total		921.45 ac

Agro Farming Corp.

C-16 Vineyards	Arvin-Edison	151.84 ac
Genji Kawamura	Arvin-Edison	315.28
L & H Properties	Arvin-Edison	157.44
N J L Ranch	Arvin-Edison	69.92
Vineacre Properties	Arvin-Edison	159.92
Total		854.40 ac

Allied Farming Co.

Edison Ranch Co.	Arvin-Edison	245.88 ac
Bruce Kelsey et al	Kern-Tulare	80.00
Robert C. & Nancy Behunin	Kern-Tulare	194.43
Minneola 240	Kern-Tulare	240.00
Total		760.31 ac

W.A. Burum & Sons

W.A. Burum & Sons	Delano-Earlimart	867.00 ac
W.A. Burum & Sons	Kern-Tulare	5,835.00
Burum Ranch	Kern-Tulare	1,045.00
Total		7,747.00 ac

California Ranch Management Association Inc

Associated Farm Management	Kern-Tulare	198.37 ac
Harvest Glen Citrus Co.	Kern-Tulare	160.00
McFarland 80 Citrus Co.	Kern-Tulare	80.00
Oakmore Management Group	Kern-Tulare	80.00
Royal View 140 Fruit Co.	Kern-Tulare	99.51
Lester M. & Carole Saslow	Kern-Tulare	98.64
Lester Saslow et al	Kern-Tulare	146.47
Sun Valley 260 Orchard & Vine	Kern-Tulare	102.21
Sunrise Citrus Co.	Kern-Tulare	240.00
Tipton 262 Fruit Co.	Lower Tule River	254.12
Total		1,459.29 ac

APPENDIX I (continued)

<u>M. Caratan Inc.</u>		
Caliente Farms	Arvin-Edison	1,094.04 ac
M. Caratan Inc.	Delano-Earlimart	2,286.00
	Total	3,380.04 ac
<u>Robert Fortune Farming</u>		
Ranjit Grewal Farms	Arvin-Edison	317.28 ac
H & J Farms	Arvin-Edison	160.35
Sierra Victor Ranch Co.	Arvin-Edison	136.72
	Total	614.35 ac
<u>Giovannetti Family</u>		
B.E. Giovannetti & Sons	Feather	170.00 ac
B.E. Giovannetti & Sons	Westlands	1,850.00
Half Moon Fruit & Produce Co.	Westlands	472.00
	Total	2,492.00 ac
<u>Houlding Farms Inc.</u>		
Houlding Farms I	Westlands	313.00 ac
Houlding Farms II	Westlands	1,419.00
Houlding Farms III	Westlands	408.00
Houlding Farms IV	Westlands	159.00
	Total	2,299.00 ac
<u>King Ranch</u>		
California Produce Inc.	Westlands	100.00 ac
King Ranch	Westlands	1,753.00
	Total	1,853.00 ac
<u>Lee &amp; Mouren Farming</u>		
Doris Farms Inc.	Westlands	897.00 ac
Guijarral Farms Inc.	Westlands	931.00
I-5 Farms	Westlands	320.00
Jacalitos Farms	Westlands	898.00
La Cuesta Verde Ginning Co. Inc.	Westlands	1,978.00
Robert M. Lee Farming Inc.	Westlands	795.00
Los Gatos Farms	Westlands	572.00
Warthan Farms	Westlands	612.00
	Total	7,003.00 ac
<u>National Pacific Real Estate</u>		
Bear Mountain Farms	Arvin-Edison	20.00 ac
Citech Corp.	Arvin-Edison	120.00
J & M Farms	Arvin-Edison	79.79
M & L Partnership	Arvin-Edison	314.54
	Total	534.33 ac

APPENDIX I (continued)

Nunn Farms

La Jolla Ranch	Westlands	2,645.00 ac
San Andreas Farms	Westlands	3,548.00
Total		6,193.00 ac

Paramount Citrus - American Protection Industries

Caliente Citrus Farms	Arvin-Edison	343.05 ac
Paramount Growers Inc.	Kern-Tulare	1,151.00
Total		1,494.05 ac

Sarale Farms

Sarale Farms Inc.	Westlands	1,505.00 ac
Silver Creek Farms II	Westlands	161.00
Total		1,666.00 ac

Shining D Farms

Demera Farm Trust	Westlands	1,685.00 ac
Edward F. Diener Farm Trust	Westlands	1,037.00
Frank C. & Mary Diener	Westlands	312.00
Ryan Farm Trust	Westlands	1,672.00
Simonich Farm Trust	Westlands	1,673.00
Total		6,379.00 ac

Superior Farming Co.

Superior Farming Co.	Arvin-Edison	80.00 ac
Macfarlane Land & Farm Co.	Kern-Tulare	637.63
Total		717.63 ac

Tri Farms Inc.

Silver Creek Farms	Westlands	883.00 ac
Tri Farms Inc.	San Luis	2,420.00
Tri Farms Inc.	Westlands	133.00
Valle Verde Farms	Westlands	3,230.00
Total		6,666.00 ac

Vaquero Farms Inc.

Tony & Ann Costa	Westlands	1,006.00 ac
Larry J. Enos	Westlands	589.00
Cindy Pruett Trust	Westlands	945.00
Gregory Pruett Trust	Westlands	902.00
Kelley Pruett Trust	Westlands	956.00
Stacy Pruett Trust	Westlands	966.00
Louis B. Souza	Westlands	915.00
Total		6,279.00 ac

Grand Total		59,312.85 ac
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## APPENDIX II

### Effect of Excluding Small Parcels in the Three County Area

It is of some interest to consider the possible effect of our exclusion of Assessor's Parcels smaller than 20 acres on our results, especially as they affect conclusions about the overall size distribution of land holdings. We have examined all parcels, irrespective of parcel size, for the "vineyard" category. It was expected that, especially in Tulare County, a relatively large number of parcels smaller than 20 acres would be located. While this was found to be the case it was also found that 92.4% of all vineyard land area was included when the 20 acre parcel size cutoff was used (154,125 out of 166,768 acres). Since field crop parcel sizes tend to be much larger, on average, than vineyard parcel sizes we expect that eliminating the smaller parcels has resulted in inclusion of at least 92.4% of all of the irrigated land of the two counties in our final data set.

On the other hand, the number of owners is clearly understated by our methods. Again referring to our analysis of all vineyard parcels, we estimate that the number of owners not identified by eliminating parcels of a size less than 20 acres is 1,529 for all types of irrigated land use. We arrive at this figure by simply extrapolating our findings regarding the number of vineyard owner units omitted when the 20 acre size cutoff is used. We assume that 92.4% of the true irrigated acreage has been identified using the 20 acre cutoff. This procedure probably gives an overly large estimate of the number of omitted owner units. This estimate of the omitted owners would raise the total number of owners for the 1982 data from 8,106 to 9,635, an increase of 19%. Correspondingly, our calculated average holding per owner unit would be reduced from 191.6 acres to 161.2 acres.

There is one other consideration regarding the intentional omission of parcels with acreage less than 20 acres. Examination of the vineyard parcels showed that a number of the largest owners of vineyard land also held a large number of small acreage parcels. For example, inclusion all vineyard parcels leads to a finding that, in Kern County alone, there were 23 owners with at least 640 acres of vineyard land and that these owners had a total of 44,557 vineyard acres but exclusion of parcels smaller than 20 acres leads to identification of just 21 owners in this size range with an aggregate of 39,709 acres. Thus, inclusion of all parcels sizes would also have the effect of increasing the aggregate holdings of the larger owners. This effect, not taken into account in our data adjustments, would raise the average holding we report by an unknown amount. We expect this increase would be somewhat smaller than the adjustment we report in taking account of owners whose holdings consist entirely of parcels that are smaller than 20 acres. Therefore, we regard the adjusted average size holding of 161.2 acres per owner unit to be smaller than the true value.