

Water - ~~uncertainty~~

Return to ~~market~~

93640 at Risk:

**Farmers, Workers and Townspeople in an Era of
Water Uncertainty**

by

Don Villarejo

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EXECUTIVE SUMMARY

For nearly seventy-five years, irrigated agriculture in the arid West was the dominant concern of federal water policy. ~~Today, water policy is driven by a new environmental ethic.~~ Both increased population and concern for environmental restoration as well as long-term sustainability ~~have begun to shift water allocations away from agriculture to urban and environmental uses.~~

~~Some policy analysts have suggested that both through reallocation of existing supplies and water marketing, agriculturalists will find that limited water availability will encourage increased attention to conservation.~~ Higher market prices for water will force farmers to reconsider traditional cropping patterns, reducing plantings of low-value, water-intensive crops, such as field grain and forage commodities, and increasing their fruit, vegetable and ornamental horticultural crop production.

~~There has been relatively little attention to the impact of irrigation water reductions on farm communities, especially on individual farmers, farm workers and townspeople.~~ California is the nation's most important agricultural state, and some 750,000 persons are employed on its farms in the course of a single year. Most of California crop production is on irrigated land and the Central Valley Project Improvement Act mandated changes in how the state's developed water supply will be allocated.

~~The present study seeks to determine the actual direct impacts of irrigation water reduction on a community that is nearly entirely dependent on farming; the Fresno County city of Mendota (93640).~~ Its geographic isolation on the Westside of the San Joaquin Valley and its strong dependence on surface water deliveries from the federal Central Valley Project make it an ideal setting for examining these impacts. The six-year (1987-92) drought and the very large reductions in Westside deliveries created an opportunity for this research.

The main findings of this research are that ~~during the six-year drought in the Mendota Area:~~

- * ~~irrigated cropland decreased~~ by 14% as a result of cutbacks in water deliveries;
- * ~~farmers substituted pumped groundwater~~ for the lost surface deliveries ~~wherever possible;~~
- * the ~~poor quality of pumped groundwater~~ led to reduced yields in crops that are especially sensitive to salts;
- * the largest decreases in crop production were in vegetables, especially melons (-37%), and only small decreases occurred in field crop plantings (-5%);

- * ~~labor demand decreased by amount that was proportionately larger than the decrease in cropland acreage;~~
- * packing, shipping and hauling labor demand also decreased by a large factor, reflecting the decrease in fresh produce crop production;
- * farm and packing wage and salary income in the Mendota area declined by an estimated \$4.8 million (-14%);
- * ~~3 of 7 Mendota Area wholesale produce firms went out of business or left the area during the drought;~~
- * there was a net decrease of 18 farms (-26%);
- * ~~70% of small farms active at the beginning of the drought either quit farming or left the area;~~
- * Mendota is a very poor community, overwhelmingly Hispanic/Latina(o), with low levels of educational attainment;
- * retail sales experienced an 11% decrease as compared to a 4% increase of county-wide retail sales;
- * ~~agricultural land values declined by 30%, comparing poorly to increases of land values in many other Fresno County farm towns;~~
- * ~~Mendota city tax revenues declined both as a result of depressed business conditions and declining property values.~~

The ~~failure of environmental policy to address the community impacts of irrigation water reductions is identified as a major short-coming of the new water ethic.~~ As in the case of worker dislocations resulting from new forest or fishery management practices, programs need to be developed to address the effects of water reallocation.

The people and community of Mendota will require the assistance of knowledgeable and culturally-sensitive rural economic development specialists. On-the-ground demonstration strategies will be needed. Securing available grants, designation as a rural enterprise zone or other similar strategies require the development of human capital at the community level. The Cooperative Extension Service is poorly equipped to address this challenge.

A new rural development initiative is needed to address the predominately Hispanic/Latina(o) communities such as Mendota. The city could be made into a model community demonstrating how the transition to reduced irrigation water supplies can be made without causing undue hardship on farmers, farm workers and townspeople.

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The patience and wit of Merna Villarejo continues to keep the author in touch with the everyday world, especially when retreat into data analysis seems to be the most sensible course.

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93640 at Risk: Farmers, Workers and Townspeople in an Era of Water Uncertainty

DON VILLAREJO

INTRODUCTION

Competition for water supplies has markedly intensified in California over the past decade. Natural phenomena, such as periods of sparse rainfall, have contributed to this process. However, federal and state policy, such as the water supply reallocation features of the Central Valley Project Improvement Act (CVPIA), are now recognized to signal a historic shift of water policy in the West. No longer will farm interests play the dominant role that they had in the past. A new force, environmental concerns, is present in every discussion.

That this heightened competition for water now drives policy was well summarized in the National Academy of Sciences report, *Water Transfers in the West*.¹ In its preface, the authors acknowledge the central importance of water in the arid West, "Water is a resource in great demand: beyond the needs of irrigated agriculture - long the biggest water user in the West - we now must ensure water supplies to support urban growth and development, traditional minority cultures, environmental needs, and recreation."²

The present report summarizes research conducted in the San Joaquin Valley community of Mendota (93640). It is frankly motivated by an interest in examining current reclamation policy that seeks to promote reallocation of irrigation water supplies away from agricultural use. The CVPIA not only reduced surface water deliveries to farms but it also opened the door to

¹ *Water Transfers in the West. Efficiency, Equity, and the Environment*, Committee on Western Water Management, Water Science and Technology Board, National Research Council, National Academy Press, Washington, DC, 1992.

² *Ibid*, p. ix.

water marketing, the notion that individual farmers or landowners should have the opportunity to sell federally supplied water to the highest bidder.

Much of the literature discussing water marketing focusses on the potential benefits of selling this limited resource to the highest bidder.³ Apart from fundamental ethical questions concerning whether water developed by the public, through taxpayer investment, should be marketed for private gain, there is another major issue that is as yet largely unexamined. That is, what is the impact of water reallocation on communities that lose irrigation supplies, especially the many towns whose economies depend on irrigated agriculture? The National Academy of Sciences report highlighted the seriousness of possible third party impacts that might be a result of transfers of irrigation water from a local area in the following way: "No issue gave the committee more trouble than the question of how to characterize and evaluate the effects of water transfers on small communities."⁴

The six-year California drought (1987-92) provided an unusual opportunity to examine the effect of irrigation water reductions on farmers, agricultural employees and townspeople in communities that are largely dependent on farming. In a sense, their experience models what might happen if water supplies were deliberately reduced by policy decisions.

Irrigation water reductions are seen by some as an opportunity to cut back on the production of low-value, but water-intensive agricultural commodities, such as alfalfa, barley, oats, rice and wheat. In this context, low-value crops are those which have a low gross value per acre. Indeed, recent water policy discussions focus on an agricultural future in which production of crops with a high value per acre, such as fruits, vegetables and ornamental horticultural crops, increasingly replaces low-value crops.⁵ But markets for fresh produce are notoriously volatile. What appears to be a high price at planting time may be a low price at harvest.

Central to the discussion of low-value vs. high-value crops is the less well understood fact that high-value-per-acre crops also tend to require a substantial labor input. As the nation's leading producer of high-value crops, California farms rely primarily on hired workers, who today

³ Ibid, see especially Chapters 10 and 11 with reference to California.

⁴ Ibid, p. 45.

⁵ See California Water 2020: A Sustainable Vision, Peter Gleick, et al, Pacific Institute, Oakland, CA 1995.

provide at least 85% of all of their labor requirement; farmers and family members perform the balance of the work. The figure is even higher during the peak season. San Joaquin Valley farm operators have over 250,000 hired workers on their operations during the peak of the harvest season. The remarkable growth of labor-intensive agriculture and growing utilization of hired workers in recent years in California has been discussed elsewhere.⁶

Mendota was selected for detailed examination because it is, in many respects, an ideal setting in which to examine the consequences of irrigation water cutbacks: geographically isolated, an agricultural center, high rates of labor force participation, and representative of San Joaquin Valley farm communities. It is also a community that retains much of its small town origins: no major supermarket chains or discount stores have outlets in Mendota. Nearly every retail store or service firm is locally owned. Even the bank is branch of a Fresno county-based company.

The main impact of the recent six-year drought on Central Valley agriculture was cutbacks in surface water deliveries by the Central Valley Project (CVP). In the final three years of the drought (1990-92) surface water deliveries to the CVP service area were 56% lower than in the pre-drought period.⁷ Harvested crop acres also fell but not by as great a percentage because farmers substituted pumped groundwater to replace lost surface deliveries. Most decreases of harvested acres were in field and seed crops; smaller declines were found in orchard and vegetable crops. Decreases of harvested acres reduced labor needs by an estimated 4.7 million hours.⁸

This report attempts to determine how Westside farmers adjusted to seriously limited water supplies, how cropping decisions affected employment patterns, and how townspeople were impacted by these changes. An important component of the present study is that cropping patterns were tracked in detail, on a field-by-field basis, throughout the drought and into the post-drought period. This provided an opportunity to directly examine farm operator choices. Since the impact

⁶ D. Villarejo and D. Runsten, California's Agricultural Dilemma, California Institute for Rural Studies, Davis, CA, December 1993.

⁷ D. Villarejo, Impact of Reduced Water Supplies on Central Valley Agriculture, California Institute for Rural Studies, Davis, CA, February 1995, p. 2.

⁸ Ibid, p. 10.

of water supply reductions was delayed for several years by deliberate decision of officials operating the huge reservoirs of the CVP, effects of the drought were not fully felt at the farm level until 1990. The five-year economic censuses provided measures of early-drought (1987) and late-drought business activity (1992) for wholesale and retail trade, service industries, and agriculture. Similarly, the Census of Population (1990) captured mid-drought conditions.

According to a knowledgeable local water official, the Westside of the San Joaquin Valley will likely be limited by enforcement of new regulations to about 75% of contracted deliveries from the CVP in average years.⁹ Unusually wet years, such as 1995, will result in greater amounts, and very dry years will result in less. Farmers must now adjust to a permanent loss of about one-fourth of the water they had received in the past. These reductions are a direct result of the environmental reallocations dictated by CVPIA and the expected Bay-Delta agreements. CVPIA alone requires that 800,000 acre-feet of water formerly used for irrigation be re-directed to environmental use. However, at present, no one is certain of exactly how much water is being reallocated.¹⁰

~~The prospect of an uncertain water supply affects economic conditions. In agriculture, uncertain economic conditions are reflected in slipping land values.~~ For this reason valuations of agricultural land throughout the past ten years is of special interest.

Finally, the perceptions of community residents were incorporated through a series of interviews. Farmers, townspeople, labor contractors and city officials all were able to contribute their perspectives on their community. The author found their dedication to their community to be moving and inspirational.

⁹ David Cone, Manager, Broadview Water District, private communication, November 8, 1995.

¹⁰ Gary Sawyers, Remarks to Panel on Water Marketing, Farm Conference 1996, Visalia, CA, February 19, 1996.

93640 and the Communities of the San Joaquin Valley

The diversity of ~~communities of the San Joaquin Valley~~ presents an extraordinary challenge to demographers. ~~Some~~, like the isolated city of Huron in far southwestern Fresno County, are virtually Mexican towns ~~composed nearly entirely of recent immigrants~~ or the children of immigrants. But its sleepy small-town appearance is deceptive. For four weeks of each Spring and Fall, lettuce harvested on land surrounding Huron is marketed throughout the U.S. Other San Joaquin Valley ~~communities, such as Bakersfield, are modern cities~~ with aggressively growing businesses which are ~~well-integrated in the emerging global economy~~.

Despite its unchallenged ~~position as the nation's most important~~ and productive ~~agricultural region~~, the ~~San Joaquin Valley is considered "urban" by government demographers~~. Seven of the eight counties of the valley were classified as Urban Counties in the 1990 Census of Population because each contains a Metropolitan Statistical Area (MSA), a place with at least 50,000 residents.¹¹

The ~~City of Fresno is among the largest cities in California, which, demographically speaking, leads sociologists to the interesting paradox that our nation's most important agricultural county is "urban."~~ But outside of the ~~urbanized MSA's~~ of the San Joaquin Valley are dozens of ~~small communities~~ whose major economic activities are centered around agricultural production. By any measure ~~these are "farm towns" because such a large fraction of the population, in many cases a majority of the labor force, work on farms.~~ Huron, Orange Cove, Parlier, Firebaugh, Tranquillity and Mendota, among these ~~smaller Fresno County communities, all share the fact that agriculture completely dominates their towns.~~

Only a very ~~few of these smaller~~ San Joaquin Valley ~~communities have a significant number of resident farmers.~~ Most of those who work on each community's farms are hired workers. In fact, in every Fresno County city and town, including the city of Fresno, the Census reports that the number of farmer households is smaller than the number of hired farm

¹¹ California Statistical Abstract, 1995, Department of Finance, State of California, Sacramento, CA, November 1995.

workers.¹² Rochin and Palerm have written extensively about recent demographic trends in these towns: rising numbers of immigrants, rapidly increasing Hispanic/Latina(o) population, and increasing levels of poverty.¹³

Mendota (93640) has a history that parallels Westside agriculture. Its growth and development have entirely followed the fortunes of farming on the Westside. Irrigated farming reportedly began when cattle baron Henry Miller constructed an earthen dam, or weir, just outside of town to divert the San Joaquin River for irrigation purposes in the 1860s.¹⁴

Physically distant from other communities, Mendota is adjacent to the San Joaquin River, the low point of the Valley. Located thirty-five miles due west of downtown Fresno via State Highway 180, it is sixteen miles from its eastern neighboring city of Kerman. From Mendota, Highway 180 reaches another sixteen miles straight west through vast plantings of crops, before it intersects Interstate Highway 5, the major north-south freeway of the western San Joaquin Valley. State Highway 33 enters town from the north connecting the city of Firebaugh, eight miles away, and then heads south another twenty-five miles, where it too intersects Interstate Highway 5. There is no named place along this southern portion of Highway 33, although several labor camps are interspersed with crop fields on both sides of the road.

Like many towns of rural America, Mendota is isolated from metropolitan areas, both by geography and public policy. Lacking either commuter bus or passenger train service, Mendota's public transit system is supplied by Fresno County Rural Transit (FCRT) and consists of a single vehicle that leaves town for Fresno each weekday morning at eight, and then makes the return trip from Fresno in the mid-afternoon at three. The average round-trip FCRT fare is \$6.00. The nearest hospital is thirty-four miles from town.

The extent of Mendota's geographic isolation is perhaps best illustrated by its complete invisibility. No billboards near the Highway 99 and Highway 5 freeways beckon travellers to visit

¹² Census of Agriculture, 1992, Zip Code Tabulations, Bureau of the Census, U.S. Department of Commerce, CD-ROM; and Census of Population, 1990, Zip Code Tabulations, Bureau of the Census, U.S. Department of Commerce, CD-ROM, 1995.

¹³ See R.I. Rochin and M.D. Castillo, "Immigration and Colonia Formation in Rural California," Chapter 13 in Immigration Reform and U.S. Agriculture, Publication 3358, University of California, Division of Agriculture and Natural Resources, 1995; and J.V. Palerm, The Formation and Expansion of Chicano/Mexican Enclaves in Rural California, to be published, 1995.

¹⁴ M. Grossi and L. Galvan, "Mendota: Big Dreams, Broken Promises," Fresno Bee, August 20, 1995, p. A1.

Mendota. Yet southeast of the city is the Mendota Wildlife Management Area which abounds with wild game and waterfowl and attracts those few bird watchers, nature lovers and photographers who know it is there. Nevertheless, neither the town nor the Wildlife Management Area are mentioned in the Mobil Travel Guide or the California Automobile Association 700-page Tour Guide.

To the west of town a vast region of fertile farmland reaches toward the horizon where the Coastal Mountain range stands as the western boundary of the San Joaquin Valley. Though the soils are Class I or II, ranking among the most productive in the valley, rainfall is sparse. The Coastal range creates a rain shadow on the valley's Westside, diverting ocean moisture to higher altitudes in the atmosphere where it flows to the much higher Sierra Nevada range on the east side of the valley. As a result, so little rain falls in the Coast range that there is no named river flowing out of it's eastern slopes. Creeks and streams have only seasonal flows, depending entirely on occasional rains during the winter. For the remainder of the year the climate is warm or hot with a brilliant sun rarely shaded by clouds.

With good quality soils and little rainfall, early farmers in Mendota grazed livestock or grew field crops, such as grains or hay, using irrigation water pumped from deep wells. Diversions from San Joaquin River provided the first surface irrigation water. But it was the development of the vast Central Valley Project (CVP) of the Interior Department's Bureau of Reclamation that made today's irrigated farm production possible.

First, the Delta-Mendota canal brought surface water gathered in northern California watersheds to the region north of town. Much later, in the late 1960s and early 1970s, the CVP's San Luis Unit irrigated the vast farming areas to the south and west, in many cases for the very first time. Today, Mendota sits at the northwest corner of the one thousand square mile Westlands Water District, the largest irrigation district in the United States.

Population growth in the city of Mendota has been extraordinary in the years that reliable water supplies were available: nearly tripling between 1970 and 1995. Today, the city has an estimated 7,600 residents.¹⁵

Nearly everyone in the community depends upon agriculture for their livelihood; two out

¹⁵ California Statistical Abstract, 1995, op. cit., Table B-4, p. 14.

of three jobs in the community are on farms.¹⁶ Most of the rest of the town's jobs involve packing, shipping and hauling produce grown in the fields adjacent to town. Retail and service jobs, or employment in local schools make up the balance.

For purposes of analysis we identify the "Mendota Area" as the geographic area encompassing the Postal Zip Code 93640 (Mendota). Its boundaries form the shape of a large boot, with the town itself perched where a front buckle might be located. Most of the zip code area is directly south or southwest of town, bounded on the north by Panoche Road, on the east by Highway 33, on the far southwest by Highway 5 and on the southernmost edge by Adams or Dinuba Avenues. It is a region of about ninety-six square miles, or roughly sixty-one thousand acres. Every place within this area where mail is delivered or where a telephone is located is considered to be part of the community of Mendota.

Conveniently, data from both the Census of Population and Economic Census can be obtained in Zip Code tabulations. This made it possible to analyze the vast rural areas surrounding Mendota as well as the city itself.

Mendota Area Farms, Farmers and Community Demographics

In 1987, the first year of the recent six-year drought, CIRS identified sixty-eight distinct Mendota Area farm operators.¹⁷ By this we mean farms producing crops on at least one field within the Mendota Area, as defined above. In contrast, the 1987 Census of Agriculture reported just sixteen farms in the Mendota Zip Code, of which twelve reported harvested cropland. Many of the sixty-eight farm operations also produce crops in regions adjacent to the Mendota Area, and in a one case, on cropland in Contra Costa County, one hundred and forty miles to the north.

Altogether the sixty-eight Mendota Area farms produced crops on about one hundred and twenty thousand acres of irrigated cropland, of which just forty per cent was within the Mendota

¹⁶ Census of Population and Housing, 1990, Zip Code Tabulation, Bureau of the Census, U.S. Department of Commerce, Employment by Industry. Some 2,144 of 3,073 employed persons in the 93640 Zip Code reportedly are employed in Agriculture, Forestry, and Fisheries.

¹⁷ CIRS obtained electronic records of all pesticide permit records filed with the Fresno County Agricultural Commissioner. These records include Section, Township, and Range identification of all crop fields, as well as crops and acreage. Any farm business with at least one crop field within 93640 is a Mendota area farmer.

Area. Thus, farm size averaged about one thousand, seven hundred and sixty acres of irrigated cropland, with about seven hundred of those acres lying within the boundaries of the Mendota Area.

But just twelve of the sixty-eight farms had a Mendota mailing address. Twenty had Firebaugh addresses, seven each were in Fresno and Tranquillity, five were in Madera and the remaining seventeen were spread over fourteen other communities. The Census enumeration of twelve farms with harvested cropland, based on Mendota addresses, is in excellent agreement with the CIRS finding of twelve Mendota Area farms with Mendota addresses. This finding gives credence to the methods used by CIRS to identify farms by geographic area. Clearly, the Census assigns farms to zip code areas relying on either mailing or physical address, not on an actual enumeration of those who are farming within the defined area.

The 1990 Census of Population also provided useful demographic information tabulated by Postal Zip Code. For the Mendota Area, there were eighty-one households reporting self-employment income from farming, and the total farm population was one hundred and sixty-four.

In striking contrast, the Census also enumerated two thousand, one hundred and forty-four persons residing in the Mendota Area who were directly employed in agriculture. They accounted for seventy per cent of all employment in the community. Thus, there were at least thirty-one hired farm workers per farm living in the community at the time of the 1990 Census (April 1, 1990). For many, Mendota is a farm worker town, not much more than a dormitory for agricultural workers.

The city's population was reported to be six thousand, eight hundred and twenty-one in 1990. Surprisingly, an additional two thousand and twenty-six persons lived out of town, in the undeniably rural parts of the Mendota Area. Since the farm resident population accounted for less than one in ten of these rural residents, most were living in informal enclaves or farm labor camps.

The demographic profile of the Mendota Area is also striking. Nine of every ten persons is of Hispanic/Latina(o) origin, eight in ten speak Spanish at home, nearly half were born in Mexico or El Salvador, one in three lives below the poverty level and six in ten adults over the age of twenty-four had completed fewer than nine years of formal education. The entire student population of Mendota's schools qualifies for free or reduced lunch their family income is so low.

Most jobs in the Mendota Area are seasonal. Just four in ten male workers who usually work at least 35 hours per week had jobs for more than thirty-nine weeks of the year, and three in ten were able to find work for only half the year or less.¹⁸ Among female workers who usually work at least 35 hours per week, six in ten worked for only half the year or less.¹⁹

The seasonality of employment is reflected in the list of ten largest employers in Mendota shown in Table 1. The four largest employers are produce packing companies, primarily melon packing, which have peak season employment during the summer harvest. Spreckles Sugar has a higher level of year-round employment than the produce packing firms but its labor force is dwarfed by the produce companies during the melon harvest.

Table 1

Ten Largest Employers in Mendota

<u>Company</u>	<u>Employment</u>	<u>Industry</u>
Stamoules Produce	50-500	Produce Packing
Fordel, Inc.	50-500	Melon Packing
Pappas Enterprises	30-500	Melon Packing
Silver Creek Packing	10-500	Produce Packing
Spreckles Sugar	164-264	Sugarbeet Processor
Mendota Unified School District	170	Education
City of Mendota	35-40	Government
Star Super Market	20-30	Grocery
Mendota Food Center	20-25	Grocery
Community First Bank	5	Financial Institution

Source: Vision 2020, Region 5, New United Way, May 8, 1994, p. 92.

The next most important year-round employer is the local school district. Jobs in the school system provide stable year-round work with much higher rates of compensation than provided by nearly all of the seasonal farm and packing jobs. Since it is the largest employer subject to direct local control through the district's elected Board, control of the school board is

¹⁸ Census of Population and Housing, 1990, op. cit.

¹⁹ Ibid.

the most contentious local issue. Whoever controls the board can influence salaries, benefits and employment decisions. For more than a decade school board issues have dominated the town's public policy.

Despite the difficulty in finding employment for a large part of the year, most males over the age of sixteen are in the labor force. In fact, at 84.4%, the labor force participation rate among men ranks among the highest of all places in California.²⁰

Median household income in 1990 was just \$18,783, supporting an average of 4.25 persons. Not even one Mendota Area family had an income greater than \$100,000.

One in five households had no telephone, and one in five had no vehicle available, i.e., no one in the household owned or had access to a car or truck. For this latter reason more people reported travelling in carpools to go to work (45.9%) than reported driving alone (42.1%). California communities boasting a highly visible environmental ethic don't even approach this level of carpooling.

Aggregate farm self-employment income (farmers) in the community was \$956,590, or \$11,810 per household reporting this type of income. This is a low figure. Few households with farmers resident in the Mendota Area are getting rich from agriculture. Wage and salary income in the community was \$34,914,046, or \$14,764 per employed worker, ranking among the lowest in the state of California. Public assistance income was \$2,533,025, or \$5,412 per household receiving assistance; nearly one in four households reports receiving public assistance income.

From the above it is clear that farmers are only a very small portion of the community's population. Seasonal employment of hired laborers to work in agriculture is the norm, and is associated with high rates of poverty and a continuing need for public assistance despite the fact that nearly everyone is working. It is one of the policy paradoxes of rural areas of the San Joaquin Valley that public assistance is a necessity for working families. In this respect, rural poverty could not be more different than the impoverishment of inner city urban residents.

Comparison of the 1980 Census of Population (pre-drought) with the 1990 Census of Population (drought mid-point) reveals the following notable changes in the Mendota Area:

- the population increased by 45% in just ten years;

²⁰ Census of Population and Housing, 1990, op. cit.

- the percent foreign-born was up sharply, from 29.9% in 1980 to 46.5% in 1990;
- median family income (corrected for inflation) declined by about 15% from \$21,385 in 1980 to \$18,129 in 1990;
- the number of persons reporting employment in agriculture doubled, from 1,004 in 1980 to 2,144 in 1990;
- the number of households reporting public assistance income increased sharply, from 300 in 1980 to 468 in 1990;
- the proportion of adults over the age of 24 who were high school graduates declined, from 17.9% in 1980 to 13.6% in 1990.

This is a community where hired farm work is the primary career track, where nearly every male resident over the age of sixteen is working or looking for work, but also a community with serious impediments to escaping poverty. Low levels of education, lack of knowledge of English, limited resources (reflected in the high rate of poverty), and geographic isolation are major barriers to overcome.

Impact of Water Supply Reductions on Mendota Area Cropping

As reported previously, the ~~Westside of the valley was hard hit by reductions in irrigation water deliveries during the final three years of the six-year drought.~~²¹ At its worst, just one-quarter of contracted supplies were delivered. Unlike urban water supply reductions, drought in a region dependant on irrigation directly threatens the ability of its residents to earn a living.

~~Many farmers and landowners turned to groundwater pumping to attempt to offset losses of surface water deliveries, in many cases drilling new wells.~~ Unlike central or eastern parts of the San Joaquin Valley, on the Westside a thick layer of clay separates the subterranean water table from the soils closer to the surface. Like a ceramic bowl sitting on the ground and holding a bed of potting soil, the clay layer prevents penetration of water to the groundwater table below. ~~In the Mendota Area, the Corcoran clay is at a depth of about nine hundred feet, requiring very deep wells to reach groundwater supplies.~~ One Mendota Area farmer reported drilling three new wells at these depths, costing a total of three quarters of a million dollars.²²

~~Equally important, water quality from Westside wells is notoriously poor,~~ often highly saline, with total dissolved solids (TDS) as high as several thousand parts per million. Using poor quality water for irrigation is like pouring salt water on the ground, leaving behind a thick layer of salts when the liquid evaporates or migrates through the topsoil. Salt buildup contributes to the desertification of the valley's topsoil.

In contrast, surface water from the CVP has very much lower levels of TDS, making it ideal for irrigating crops that are salt intolerant. For melons producers the difference is critical: crop yields fall as TDS levels rise.

Thus, ~~Westside growers were faced with a difficult choice when water supplies were cut: either reduce acreage severely, or develop alternative sources of poor quality water that would cut yields and production.~~ Clearly, cropping plans for each grower would require adjustments depending on particular circumstances.

Figure 1 shows a comparison of Mendota Area farmers' total 1987 crop acreage, both

²¹ D. Villarejo, Impact of Reduced Water Supplies on Central Valley Agriculture, op. cit.

²² Brad Taylor, private communication, February 27, 1996.

inside the Mendota Area itself as well as their other acreage wherever located, in 1987 with that in the final three years of the drought. **Mendota Area** farmers reduced their overall crop production from 120,137 acres in 1987 to a low of 96,969 acres in 1991, a decline of 19%. The 1990-92 three-year average of the Mendota Area farmers' total crop acreage, wherever located, was 103,126, a decrease of 17,011 acres from the 1987 value, or 14%.

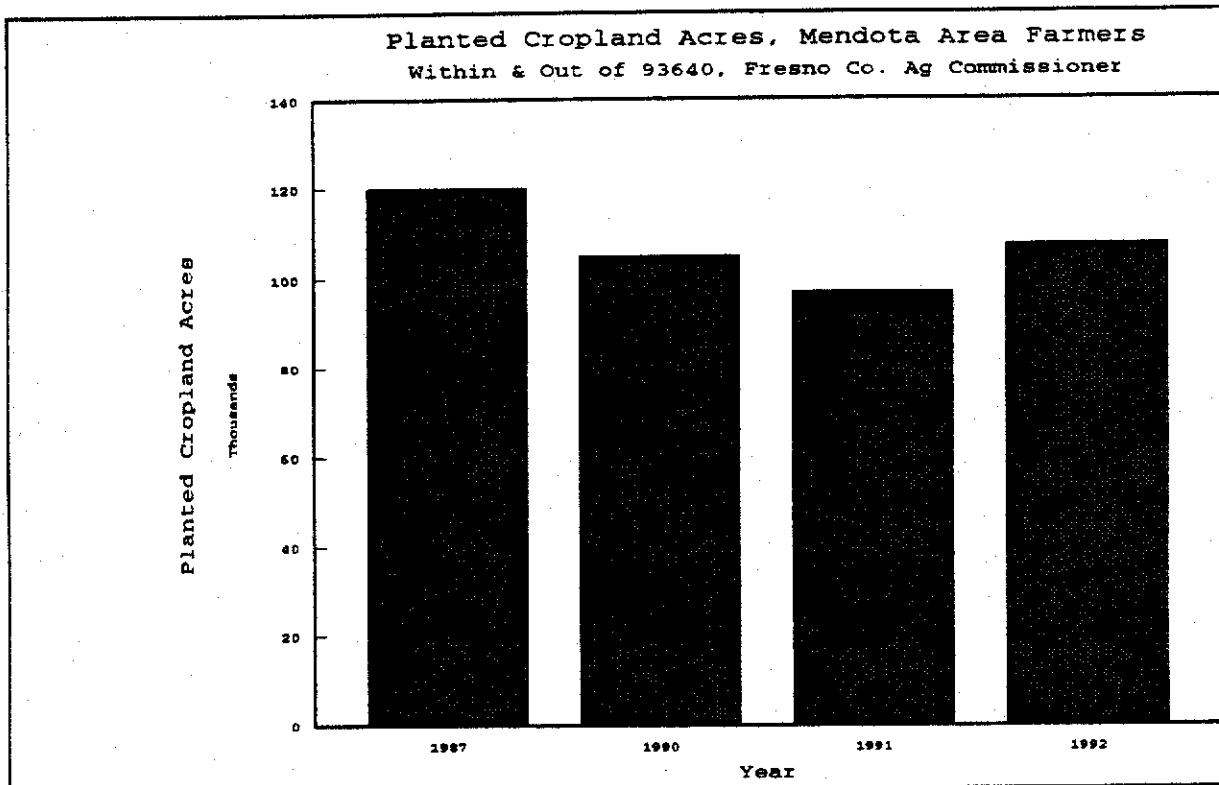


Figure 1 Total cropland acres, both inside and outside of 93640, Mendota Area Farm Operators.

The Mendota Area farm operators' cropland located within 93640 varied significantly from year to year, decreasing from the 1987 value by as much as 25% in 1991, by as little as zero in 1990, and an average of 10% over the three-year period 1990-92. Whether measuring their total planted cropland acreage or only their planted area within the Mendota Zip Code Area, these farmers had to significantly reduce their plantings in the latter half of the drought.

As discussed in the Introduction, policy analysts and economists agree that one consequence of reduced water supplies or higher prices for water will be decreases of low-value crop production such as field or forage crops and a relative increases of higher-value crops like vegetables and fruit. Overall, in the entire Central Valley Project Service Area, the data on total

crop acreage appears to support this notion. Figure 2 shows the annual harvested acreage of field and seed, vegetable and orchard crops in the CVP service area. The ~~sharp decline~~ in plantings of field and seed crops ~~contrasts with the relative stability of vegetable and orchard acreage.~~ ~~although there was a definite downward trend for vegetable crops in the last two years of the drought.~~

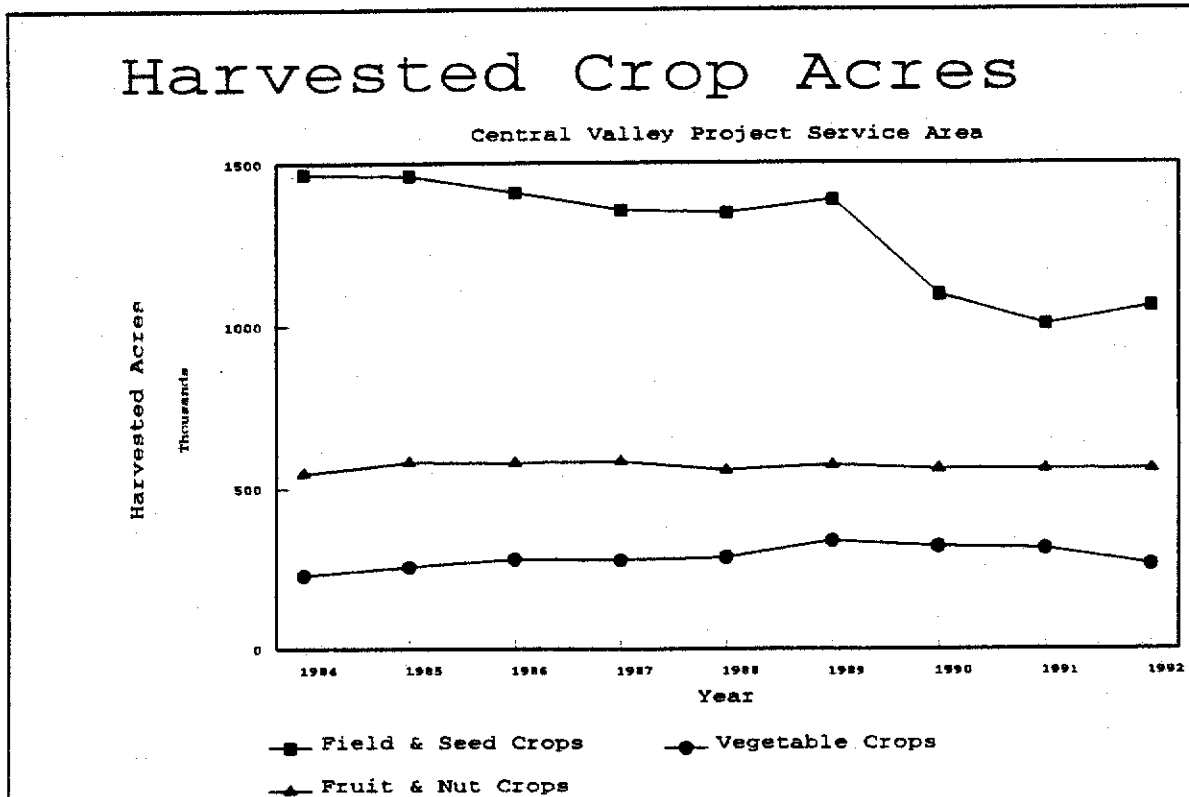


Figure 2 Harvested Acres, by Type of Crop and Year, Central Valley Project Service Area

Mendota Area ~~Farm Operators did not alter their fruit and nut crop acreage throughout the drought,~~ reflecting the fact that farmers seek to protect their perennial plantings. No trees or vines were pulled out of the Mendota area in the period of water shortage. It is likely that ~~both the very small acreage of these crops in the Mendota Area (about 4% of the cropland) as well as the potential loss of a substantial cumulative investment in these orchards made this an imperative.~~

As documented in Appendix I, the ~~changes in vegetable crop production in the Mendota Area were surprisingly large compared to the overall CVP service area and contradict the simple~~



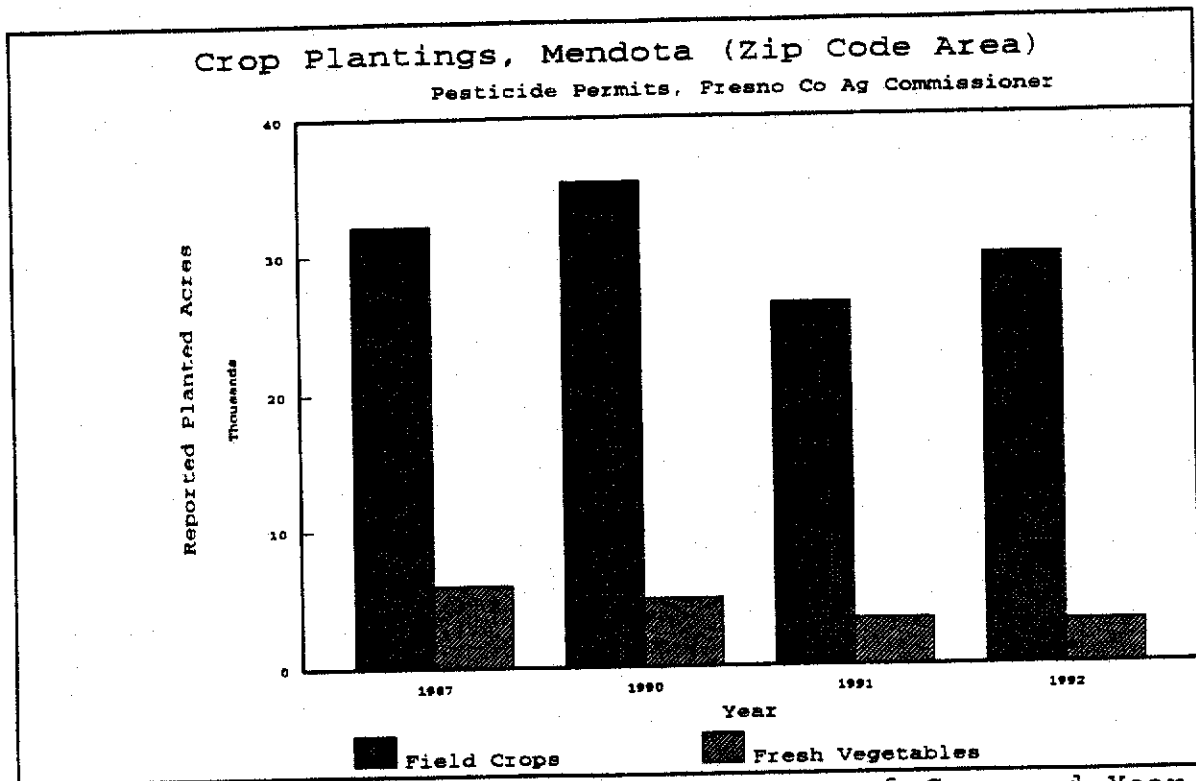


Figure 3 Planted Cropland Acres, by Type of Crop and Year, Mendota Zip Code Area.

argument that water shortages tend to encourage farmers to switch to producing higher-value crops.²³ Surprisingly, even field crop production in this area did not vary in the expected manner. Figure 3 presents crop acreage data for just the land within the Mendota Zip Code Area itself, comparing total acreage of field crops with fresh market vegetable crop acreage for each year. The 1990-92 three-year field crop acreage in the Mendota Zip Code Area was 5% lower than in 1987, an unexpectedly small decline, and in 1990 it was actually higher than in 1987.

On the other hand, vegetable crop plantings for the fresh market were reduced by an average of 37% in the period 1990-92 as compared with 1987. In the final year of the drought, the combined acreage of plantings of these crops was 48% lower than in 1987.

Figure 4 shows individual acreage totals for each fresh market or dual purpose vegetable crop that had a total of at least 500 acres for at least one year during the 1987-92 period. The steady decline of production of these vegetables during the latter half of the drought is striking,

²³ We refer here only to vegetables produced exclusively for the fresh market, including melons, as well as dual-use vegetable crops produced for either the fresh or processed markets. Vegetable crops produced exclusively for the processed market, such as canning tomatoes, are not included.



especially for cantaloupes. ~~By 1992, Mendota Area cantaloupe acreage was down by two-thirds from 1987.~~

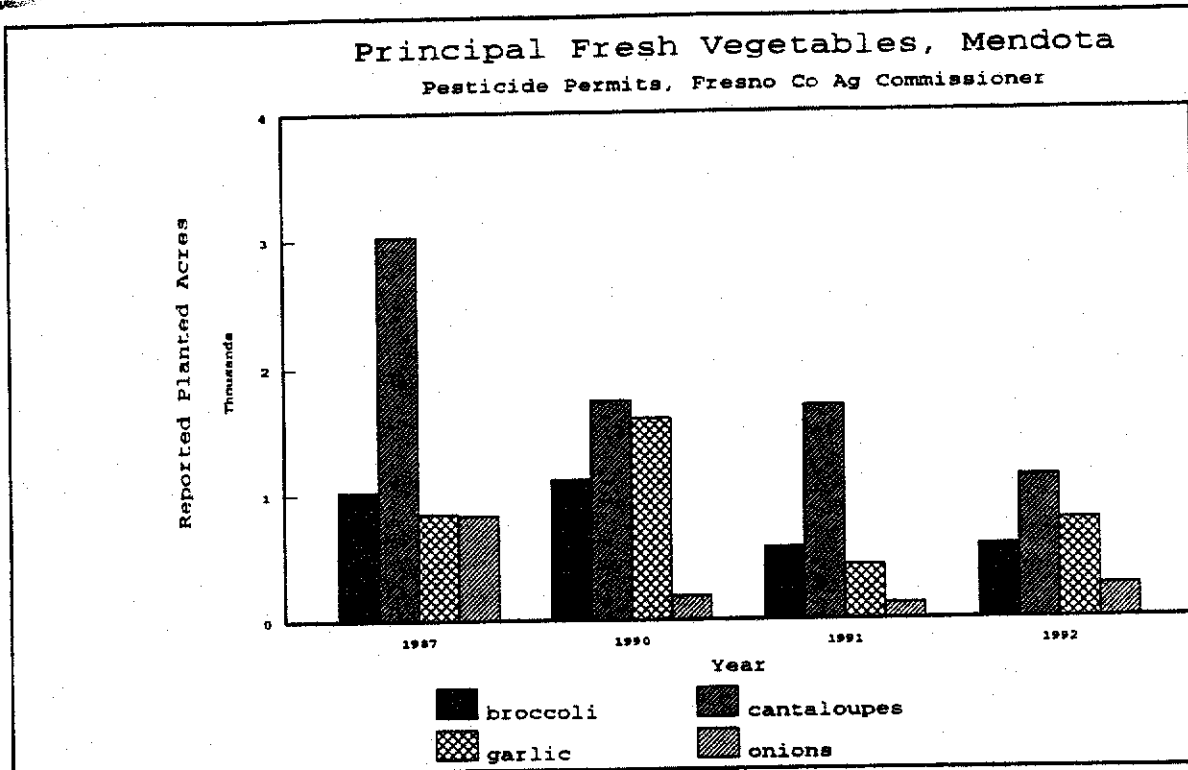


Figure 4 Major Fresh & Dual Purpose Vegetable, Planted Acreage by Year, Mendota Zip Code Area.

This shift away from the production of vegetable crops for the fresh market in the Mendota Area was an unexpected major finding of this research. It flatly contradicts the expectation that water shortages generally encourage higher-value crop production. Just the opposite occurred in the Mendota Area. Fresh and dual-use vegetable crop production decreased by a large factor.

However, we find that processing vegetable production, especially processing tomatoes, increased significantly in the same time frame, nearly tripling to an average of 5,700 acres in the Mendota Area. That processing tomato production increased while fresh or dual-purpose vegetable production sharply decreased may provide a clue to the overall trend in the Mendota Area during the drought. It is important to understand the dynamics of these shifts in cropping patterns, especially the sharp decrease of cantaloupe production vs. the rise in processing tomato acreage.

First, and probably most important, the lower quality water supply obtained by some



~~Quality from groundwater wells was a major factor in cropping decisions.~~ Melon production is sensitive to saline water which causes a substantial decline in yield. In fact, Fresno County cantaloupe yield fell to an average of 8.72 tons per acre in the last three years of the drought from the average of 10.17 tons per acre for the three pre-drought years.²⁴ Thus, if a farm operator does not have access to a water supply of acceptable quality, he may choose not to grow melons for that season. Since water quality is highly variable from well to well, there will be any number of farmers who may decide to cut back on salt sensitive crops while others who have water with lower TDS may be able to continue to produce those crops.

~~Second, costs of production rose sharply~~ in Fresno County during the course of the drought. Total production costs in the county were 30% higher in 1992 as compared with 1987. The cost item that showed the largest percentage increase was electricity, up 86%.²⁵ The increase in electrical energy costs paid by farmers reflects the sizable increase in groundwater pumping that growers relied upon to overcome the loss of surface water deliveries during the drought.

Receipts from the sales of crops in Fresno County also increased between 1987 and 1992, ^{Cost ↑ > Tr ↑} but only by 16%, or about half the percentage by which costs increased. This cost-price squeeze is a familiar story to farmers, but often forces difficult choices, particularly when compounded by the uncertainty that reduced water supplies brings to an area dependent on irrigated farming.

Third, and possibly decisive for some farmers, is the variability of market prices. For certain commodities, such as those crops which receive USDA price and income supports, the degree of price volatility was not particularly great. For example, weighted average (annual basis) of Fresno County prices for cotton, the largest acreage crop in the Mendota Area, varied relatively little over the full six years 1987-1992. Fresno County commodity prices in this period are documented in Appendix II. The ~~standard deviation of annual average cotton prices~~, which measures the degree of variability of price swings, was just 5% in this time frame.²⁶

On the other hand, price variations for fresh vegetables, again measured by the standard

²⁴ Annual Crop Report, Fresno County Department of Agriculture, 1984-92.

²⁵ Census of Agriculture, 1992, op. cit.

²⁶ Appendix II shows the annual average Fresno County price for each commodity discussed in the text as well as the calculated six-year averages and standard deviations.

deviation of annual average prices for the six years, ~~were very much higher~~ for broccoli (20%), cantaloupes (24%), garlic (19%) and fresh onions (18%). ~~Thus, the risk of poor prices was far greater for these crops than for cotton,~~ in the range of three and one-half to five times greater when measured in this way. Daily prices for fresh produce vary by even greater amounts than annual averages. Clearly, downside risk as represented by the possibility of low crop prices is a far greater concern for fresh market vegetable crops.

Interestingly, processing tomato prices during the six years varied relatively little, with a standard deviation of annual average prices of only 7%. The ~~existence of firm contracts with growers at pre-set prices that varied little in the period suggests that price risk would not have been an important factor in the decision to produce processing tomatoes.~~ *Didn't price rise in 91-92?*

Taken together, the possibility of lower crop yields with saline groundwater, higher overall costs of production during the drought and greater downside price risk probably accounts for decisions by growers to cut back on fresh vegetable production. For other growers, processing tomatoes was an attractive choice, despite the drought conditions.

Mendota Area farmers' experience in cutting back on fresh market vegetable production was obviously a difficult, if not painful, decision. Their experience can be generalized only to the degree that it is representative of larger geographic areas. The roughly one million acres of the Westside share the problems of Mendota area farmers: the Corcoran clay beneath the topsoil, poor quality groundwater at great depths, good soils and ideal microclimate for vegetable crop production, but highly dependent on surface deliveries of water with low TDS. Other areas of the CVP service area, such as the Sacramento Valley, or eastern portions of the San Joaquin Valley, faced qualitatively different sets of conditions during the drought, e.g., heavy clay soils, poor conditions for producing vegetable crops for the fresh market and much greater rainfall in the Sacramento Valley.

Impact of Water Supply Reductions on Mendota Area Farmers

In 1987 there were sixty-eight farm operations with at least one crop field in the Mendota Area. By 1992, there were just fifty. Of the original group, twenty-eight either quit farming or left the Mendota Area (41% discontinuance rate over six years), but an additional ten started to

farm there.

Of the forty who farmed in the area all six years, six re-structured their businesses, breaking them up into smaller units for purposes of complying with federal Reclamation Law and receiving taxpayer subsidized water. These paper farms continued to be "managed" by the original farm operator, but in a new legal arrangement.²⁷ These clusters of "new" farms are considered in this report to be continuations of the original businesses and are not counted as new farms.

Those farms who discontinued their Mendota Area farming had an average total crop acreage of one thousand, four hundred and eighty-nine acres. This is about two hundred and seventy acres smaller than the average for Mendota Area farmers. More significant, of the ten Mendota Area farmers with fewer than six hundred and forty acres of cropland in 1987, five had quit farming by 1992 and two others had left the area to farm in other parts of Fresno County.

This is an overall attrition rate of 70% among the small farmers. Clearly, the smaller farms had a very much higher likelihood of being unable to withstand the effects of six years of drought. No doubt this may be attributed to their more limited resources.

One of the Mendota Area farmers who lives on his place near town indicated in a private interview that he had been able to pump groundwater to get through the drought. But he also indicated that unless there was some security for the area's irrigation supply in the near future, that the area would not be able to sustain farming.

Impact of Decreased Crop Production on Farm Workers and Townspeople

Perhaps the most obvious impact of the drought was the reduction in labor demand occasioned by the cutbacks in crop production. This is difficult to quantify in a local area since the only labor demand information available is based on regional observations and each farmer's experience may be somewhat different. Nevertheless, computations based on published labor demand coefficients have been carried out. To accomplish this, the net change in crop acreage between 1987 and 1992 was computed for all crop parcels in the Mendota Area, and labor

²⁷ See D. Villarejo and J. Redmond, Missed Opportunities - Squandered Resources, California Institute for Rural Studies, Davis, CA, 1988, for additional discussion of re-structuring and the formation of farm clusters in the Westlands Water District.

~~demand coefficients were then multiplied with the corresponding crop acreage.~~²⁸ Of course, crops such as processing tomatoes showed an increase in labor demand because of the larger planted acres. However, all of the most important crops had a smaller acreage in 1992 as compared with 1987, and this was especially true of fresh vegetables, which have the largest labor demand coefficients.

Overall, taking account of all changes in individual crop labor demand, some positive and others negative, there was a net decrease of 362,000 hours of agricultural field labor demand for crop production in the Mendota Area between 1987 and 1992. This is an estimate based on average labor demand coefficients for regions of the state that include Fresno County. The actual change of labor demand may have been smaller or larger.

The most important component of the decline in agricultural labor demand in the Mendota Area was the precipitous decrease in harvested melon acreage. More than two-thirds of the reduction in labor demand was attributable to changes in plantings of cantaloupes. From the farmer's viewpoint the cost of field labor in the melon harvest has historically been one of the largest components of the cost of production. From the farm worker's viewpoint, the melon harvest has been a significant opportunity for earning an income.

At an estimated average pay rate of \$6.00 per hour, the net decrease of 362,000 hours of agricultural field labor translates into about \$2.2 million in lost wages. Measured in terms of jobs, or employment, approximately 360 to as many as 720 farm jobs were cut due to the drought-induced changes in crop plantings.²⁹ When compared to the reported level of farm employment by Mendota Area residents, this is equivalent to boosting the seasonal rate of unemployment by 1.7% and raising the annual rate of unemployment by 8.5%.

What is surprising in these findings is the relatively large local employment impact of a relatively small reduction in planted acreage. Essentially, the farm operators' forced choice of which crops to cut back, based on an assessment of costs, water quality and price risk, led them

²⁸ For labor demand coefficients, see J.W. Mamer and A. Wilkie, Seasonal Labor in California Agriculture: Labor Inputs for California Crops, California Agricultural Studies, Report No. 90-6, Employment Development Department, Labor Market Information Division, Sacramento, CA, December 1990.

²⁹ This computation is based on the estimated duration of significant labor demand of no more than six months, and three months in the melon harvest period.

~~It disproportionately reduce those which, while high-value, are also among the most labor-intensive in the region.~~

Another direct impact of the reduced plantings of these labor-intensive crops is on post-harvest packing and shipping labor. In 1987, according to the Census of Wholesale Trade, there were 7 merchant wholesale businesses in Mendota, handling produce packing and shipping. They had combined annual sales of some \$35 million, and an annual payroll of \$5.6 million.

By 1992 there were just 4 merchant wholesalers remaining, with combined annual sales of \$28.6 million and an annual payroll of \$3.0 million. The reduction in sales is proportionately smaller than the payroll reduction suggesting that worker productivity may have increased. In any case, the town lost \$2.6 million in produce packing and shipping payroll in the course of the six years of drought. This reduction in payroll corresponds well with the specific crops that experienced reductions, particularly melons. When the melon acreage is cut then so are the field labor and packing jobs that are key components of producing and marketing the crop.

The fact that 3 wholesalers left the area, or permanently quit the business, indicates that there are likely to be substantial long-term employment impacts on the community, lasting well beyond the drought itself. Economic recovery in Mendota will require attracting new businesses to replace the employers who left.

One important melon producer, who is both a grower and a packer-shipper, initiated major changes to the labor process during this period. The firm's goal was to reduce labor costs and improve both worker productivity and product quality. To understand the changes which were introduced it is useful to review the labor process in some detail.

In the pre-drought period, most cantaloupe harvesting involved workers who filled large sacks hooked to their shoulder and waist. The full sacks, weighing as much as one hundred pounds, could then be dragged or carried up a plank ramp to a large open truck. Each full sack emptied into the truck was rewarded with a token which was redeemed at the end of the pay period. Obviously, this is very heavy manual labor requiring considerable physical strength, but could be financially lucrative for a worker who was sufficiently quick and agile. For this reason the cantaloupe harvesters were invariably male, often both young and strong.

The innovative melon producer decided to introduce field packing of melons, modeled after the great success of field packing of major vegetables such as lettuce, broccoli, celery and

cauliflower. Machines were developed which brought packing workers into the field where a much smaller cadre of harvest workers place freshly harvested melons on a small conveyer belt. The belt carries the melons to the packing crew, who sort and pack according to the day's specifications. Packed boxes are then trucked to a cooler where they are kept at a low ambient temperature until shipment. This innovation made it possible to initiate a major change in the labor force: large numbers of women were hired to work in the field packing operation.

According to knowledgeable sources, the women who were hired to work on the field packing machines were paid an hourly wage of five dollars per hour. Seasonal workers do not enjoy paid benefits, such as employer-paid medical or dental insurance. Published descriptions of these melon field packing operations indicate that the labor savings is about one dollar per carton.³⁰ Since a forty-pound carton of melons is valued at between four dollars and six dollars per carton, depending upon time of the year and overall price levels, the reported savings of one dollar per carton is quite substantial.

The same melon producer reportedly had contemplated using the same cooler and shipping facilities for producing broccoli. However, because of the drought and ensuing water uncertainty those plans have been shelved. Clearly, the investment in facilities has already been made and a longer packing season, with the accompanying jobs, now depends on irrigation water availability and its quality.

Taken together, the Mendota Area lost \$2.2 million in field labor earnings and an additional \$2.6 million in merchant wholesaler payroll for a total of \$4.8 in wage losses between 1987 and 1992. The direct loss in drought-induced wages and salaries amounted to 14%.³¹

~~It is possible that some workers may have been able to secure other jobs in nearby towns.~~ However, the steep increase in unemployment insurance claims recorded in the Mendota Area in the last three years of the drought suggest otherwise. Figure 5 shows the trend in these filings. The steep rise in 1990-92 is apparent. In 1992, for example, summer-season UI claims numbered some six hundred and fifty-eight, more than two hundred and fifty higher than the level in 1987.

³⁰ See J. Mamer and A. Wilkie, op. cit.

³¹ This is based on the Census of Population and Housing, 1990 report of \$34.9 million in total wages and salaries paid to residents of the Mendota Zip Code. It does not take account of the fact that at least some of the wage and salary loss impacted persons who did not reside in the 93640 area.

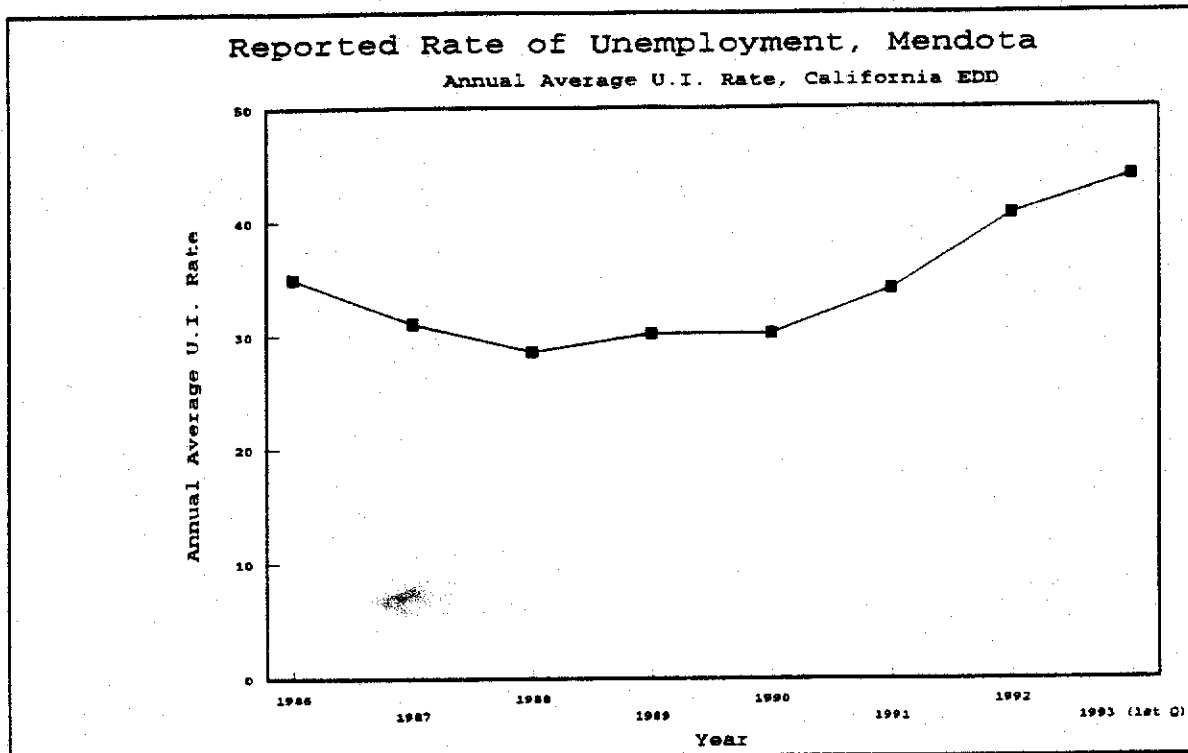


Figure 5 Annual Average rate of unemployment, based on claims for unemployment insurance, Mendota, California, by year.

Interestingly, when the wet 1993 year finally brought very much higher surface water deliveries to the Westside, melon production rose sharply and employment increased. Summer-season UI claims fell by 32% as compared with the 1992 drought year.³² While this fact does not by itself prove the relationship between irrigation supplies and employment that is the central thesis of this paper, it is strongly suggestive.

Impact of Decreased Crop Production on Local Business Activity

One of the more difficult issues faced by the people of Mendota is that the vagaries of irrigated agriculture in large measure determine the level of business activity in town. **When wages and salaries are negatively impacted, there is less money to spend in town.** These impacts can also be measured. Figure 6 shows the trend in total retail sales receipts in Mendota and in Fresno County, in both cases corrected for inflation. Recalling that a major recession began in

³² Vision 2020, Region 5, New United Way, May 8, 1994, p. 88.



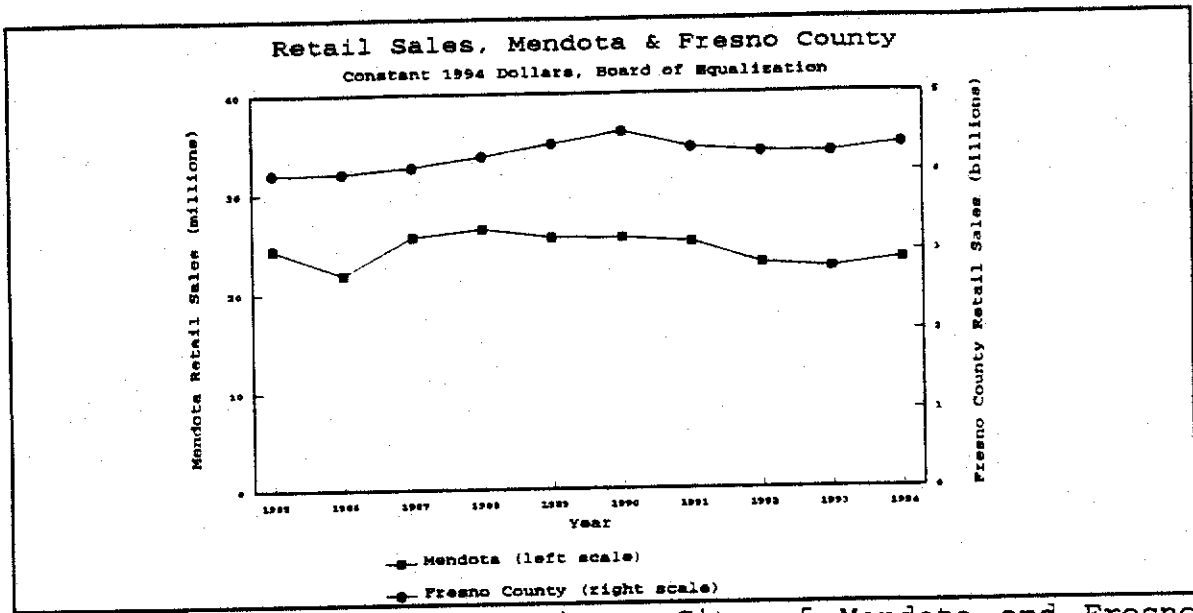


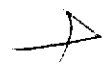
Figure 6 Retail sales receipts, City of Mendota and Fresno County, Board of Equalization, State of California.

California in 1990 and its effects have persisted until 1996, it is necessary to attempt to separate out the effect of the overall economic climate. With this in mind we find that ~~inflation-corrected~~ retail sales in Mendota fell by 11% between 1987 and 1992 whereas the comparable figures for Fresno County retail sales showed an increase of 4%.

The pattern of retail sales, however, is not a good measure of purely local effects. Fujimoto and Fry found that discount shopping malls in the central San Joaquin Valley were increasingly attracting outlying residents who were willing to travel thirty or forty miles to realize savings on their purchases.³³ In such a retail climate, it would be incorrect to seek to identify the weak performance of Mendota stores solely on reductions in disposable income.

Even the shift to field packing, with its significant reliance on women workers, has its effects. The owner of a local restaurant recalls that in the not too distant past, male workers would frequent her place, and even bring friends or family members for a nice dinner and music on a Saturday night. Single male workers, who often migrate without family members, were among her most reliable clients. But with the significant shift to women workers in the melon field packing operations she finds that fewer men patronize her restaurant, possibly because there

³³ I. Fujimoto and C. Fry, private communication, Summer 1989.



are fewer with earnings high enough to support dinners eaten out of their homes. And few female wage earners come to her restaurant as well because it is somewhat non-traditional for them to spend their earning on meals away from their own kitchens.

Impact of Decreased Crop Production on Local Land Values

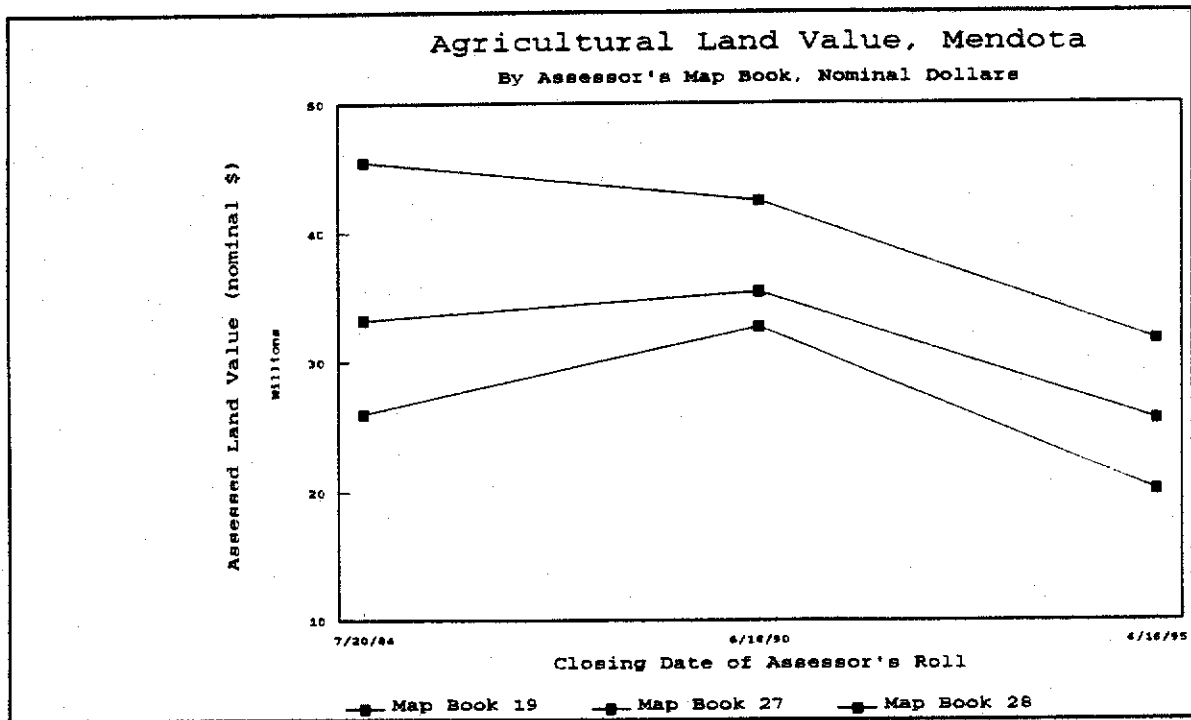


Figure 7 Assessed land valuation, agricultural land within Mendota Zip Code Area, Fresno County Assessor, nominal dollars, by year.

Perhaps the most striking measure of the effect of irrigation water reductions in the area is the effect on agricultural land prices. Figure 7 shows the trend of agricultural land prices within the Mendota Area. These figures have not been adjusted for inflation; they are expressed in nominal dollars. These figures were obtained from summaries of Fresno County Assessor's valuations of real property, sub-totaled by Assessor's Map Book. The Mendota Area includes portions of Map Books 19, 27 and 28. All Map Books reflecting city residential property have been excluded from consideration because we are seeking to determine agricultural land values only. The steep decline associated with the drought is apparent.

For purposes of comparison we have examined similar agricultural land valuations by the Fresno County Assessor in the areas surrounding a number of other Fresno County farm communities. These include Caruthers (Map Book 42), Laton (Map Books 56 & 57), Riverdale (Map Books 53 & 55), Conejo (Map Book 385) and Kingsburg (Map Book 393) in the Central portion of the county, and Parlier (Map Books 353 & 358) and Reedley (Map Books 363 & 365) in eastern Fresno County. The former group of communities have significant field crop and dairy farm operations as well as raisin grapes. The latter have cropping patterns that are predominately tree fruit, especially deciduous tree fruit, as well as raisin and table grapes. In all cases we have carefully excluded residential areas from the determinations of assessed land value of agricultural property.

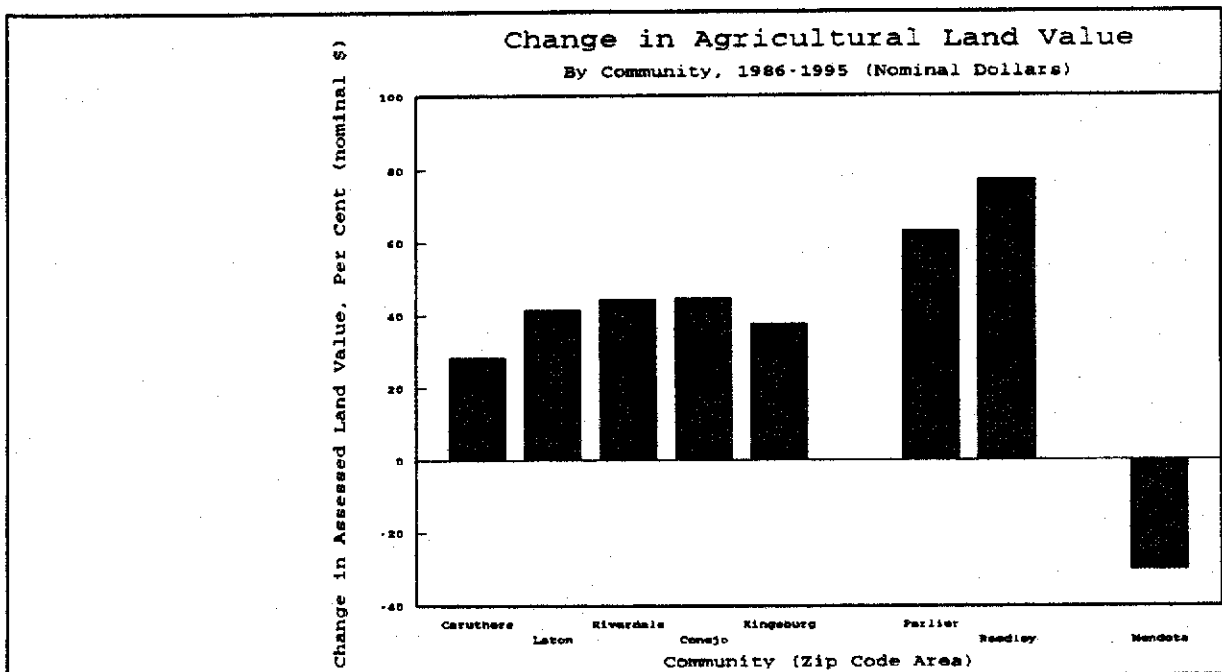


Figure 8 Comparison of changes of assessed agricultural land valuations (nominal dollars), selected zip code areas, Fresno County Assessor.

The findings are quite striking and are shown in Figure 8. In central Fresno County, assessed agricultural land values, measured in nominal dollars, rose by about forty per cent between 1986 and 1995. In eastern Fresno County land values rose by about two-thirds. But in the Mendota Area agricultural land values fell by 30%. This is a remarkable finding, clearly demonstrating the severe impact of the unreliability of irrigation water supplies of adequate

quality on underlying agricultural land values. In part, the geographical isolation of Mendota probably precludes the possibility of developing a "bedroom" community for commuters to Fresno, a likely alternative for all of the other communities shown in Figure 8.

That this is not a spurious finding is underscored by the extraordinary land auction held by the Travelers Insurance company on May 11, 1993. Some 7,155 acres of Westside farm land as well as cotton gin facilities and labor housing were made available at auction. While none of the land was located within the Mendota Area, two large portions were adjacent, sharing property boundaries with the Mendota Postal Zip Code.

In the auction itself land that had been valued in excess of several thousand dollars per acre by the insurance company for purposes of securing mortgage debt was bid down to just a reported eight hundred dollars per acre. This sale stunned Westside farmers and landowners. It also sent a signal to lenders: land values had fallen by such a large amount on the Westside that, unless proven otherwise, it was essentially worthless as collateral for loans.

Lenders are now reportedly asking borrowers to demonstrate their water supply circumstances before discussions of loans can even begin. Thus, the issue of water quantity and quality has become a subject of loan terms for Westside farmers. This is another long-term effect of the water cutbacks during the drought that, because of the uncertainty of future irrigation supplies, will plague the remaining farmers for some time to come.

Mendota Public Resources and the Impact of the Drought

With the decline in the local economy, measured both by decreases in aggregate wages and reduced agricultural land values, tax revenues have also declined. From a peak of about \$577,000 in 1988/89 to just \$392,500 in 1993/94, again in nominal dollars, total general fund tax revenues to the city itself have plunged triggering a major fiscal crisis that is still unresolved. In part, this decline is intertwined with the California recession and the state's public finance crisis.

Revenue from business license fees and permits is also much lower today than they were before the water reductions hit. From an average of about \$90,000 per year before 1988/89, the total today is about \$70,000 per year.

Taken together, these two major sources of city financing have contributed to a general

~~fund operating deficit that has now reached staggering proportions.~~ Cumulative city debt is now approaching annual revenues. While there are some serious management questions that have been raised about city finances, and even more serious questions about school district finances, the city has few options. Communities that are nearly entirely composed of the working poor generally lack a resource base to help pull themselves up. Major urban centers normally include at least some areas of relative affluence that can be relied upon to help maintain important public services. As one resident put it, "Today, Mendota is like a big Mexican Ranch."³⁴

Conclusions and Policy Recommendations

First, it is clear that reduced irrigation supplies during the six-year drought adversely impacted Mendota area employment, personal income, small farmers, vegetable packing businesses, local business viability and tax revenues. The impact was especially severe for agricultural field and packing warehouse employees in the fresh produce business.

Second, on the west side of the San Joaquin Valley, water quality ranks as equally important as water quantity. Groundwater supplies often do not enable farmers to continue to produce crops that are especially sensitive to saline water.

Third, adjustments by producers do not necessarily follow simple ideas about high-value vs. low-value crops in periods of water scarcity. Downside price risk, together with increased production costs during the drought period actually led to a very large reduction in the highest value crops in the Mendota Area. This is exactly opposite to conventional policy wisdom.

Fourth, ~~the full impact on the Mendota community of these reductions in personal income has not been measured.~~ Rather, only the direct agricultural and packing industry sector components of the local economy have been carefully examined. A full-scale econometric analysis of the community would undoubtedly reveal how local businesses were actually affected.

It is important to understand that environmental policy advocates strongly urge substantial cutbacks in irrigation water deliveries to western United States farm operators, not only through the reallocations contemplated by legislation such as the CVPIA, but also through water

³⁴ M. Grossi and L. Galvan, op. cit.

marketing.

However, unlike the federal programs compensating timber and fishing industry workers for their loss of income, or the bailout of Chrysler Corporation, no programs have yet been enacted that recognize the adverse community impact of water reallocations. Industry cutbacks that are analogous to plant closings in their scope are less visible in farm communities. Land that is fallowed or planted to another crop does not have the visual impact of a locked plant gate or the adjacent empty employee parking lot.

Thus, compensation to communities for the damage experienced when their ability to grow crops is undermined by irrigation cutbacks must be at the forefront of water policy discussions. Public sector revenues are also adversely affected when layoffs occur and property values plunge. Compensating public agencies for these losses is essential, especially as the load of public service demand grows in the wake of the community's economic loss.

Federal agencies, such as the Cooperative Extension Service, are not prepared to address these issues. While their staff is highly skilled in developing more efficient methods of crop production, they have little experience in community development issues. A new initiative, rooted in communities and supported by rural economic development policy could provide the capacity to effectively find economic solutions.

Appendix I

Principal Crops Within 93640 Zip Code Area (acres), by Year

<u>Crop</u>	<u>1987</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
alfalfa	3,379	5,035	3,256	3,837
barley	1,153	317	751	885
beans	972	971	922	277
broccoli	1,025	1,110	565	580
cantaloupe	3,026	1,732	1,684	1,124
cotton	21,974	21,255	16,629	20,438
garlic	845	1,590	425	779
grapes	1,413	1,580	1,459	1,459
onions	828	190	122	256
sugarbeets	1,177	1,591	2,122	977
tomatoes, proc.	2,078	6,166	3,940	7,041
wheat	2,324	3,861	1,879	592

Source: CIRS Data Files for Fresno County farm operators, derived from electronic records of Applications for Permits for Use of Restricted Materials or Operator I.D. Permits, Fresno County Agricultural Commissioner.

Appendix II

Trends in Fresno County Commodity Prices (per ton)

<u>Crop</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>Avg</u>	<u>S.D.</u>	<u>S.D.%</u>
alfalfa	\$87	\$90	\$88	\$103	\$80	\$81	\$88	8.3	9%
cotton	0.72	0.68	0.72	0.76	0.73	0.65	0.71	0.39	5%
broccoli	\$338	\$378	\$360	\$510	\$500	\$540	\$438	88	20%
cantaloupe	\$155	\$275	\$294	\$250	\$170	\$242	\$231	56	24%
garlic	\$337	\$245	\$330	\$350	\$315	\$214	\$298	56	19%
onions, f	\$297	\$199	\$320	\$225	\$260	\$237	\$256	46	18%
onions, p	\$67	\$68	\$70	\$69	\$82	\$76	\$72	5.8	8%
tomatoes, f	\$326	\$474	\$520	\$400	\$325	\$393	\$406	78	19%
tomatoes, p	\$47.40	\$48	\$55	\$52	\$52.30	\$46	\$50	3.49	7%

Source: Annual Crop Report, Fresno County Agricultural Commissioner.

Note: Avg. refers to six-year arithmetic mean; S.D. is computed Standard Deviation.

