



San Diego County Water Authority

4677 Overland Avenue • San Diego, California 92123-1233
(858) 522-6600 FAX (858) 522-6568
www.sdcwa.org

April 25, 2002

Mr. Bruce D. Ellis
Bureau of Reclamation
Phoenix Area Office (PXA0-1500)
P.O. Box 81169
Phoenix, AZ 85069-4006

Mr. Elston Grubaugh
Manager of Resources, Management and Planning
Imperial Irrigation District
P.O. Box 937
Imperial, CA 92251

Re: Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the Imperial Irrigation District Water Conservation and Transfer Project and Draft Habitat Conservation Plan (SCH No. 99091142)

Dear Messrs. Ellis and Grubaugh:

The San Diego County Water Authority (Authority) supports the efforts by Imperial Irrigation District (IID) to implement water conservation and transfer programs that assist in reducing California's demand on Colorado River water resources. The proposed water transfer to the Authority is a key component of the Quantification Settlement Agreement, a consensual agreement developed to reduce California's diversions to meet its normal year apportionment of Colorado River water.

The Authority, as a responsible agency under CEQA, has been involved in the analysis of potential environmental impacts associated with the proposed project. In general, we believe the document accurately portrays the potential environmental effects that could occur if any of the project alternatives were approved. We concur that the environmentally superior alternative involves fallowing agricultural lands to avoid potentially significant impacts to the Salton Sea. We also note that the proposed project is defined broadly enough to include fallowing as a substantial component of the water conservation effort. Should fallowing be a part of the ultimately approved project, the Authority would be willing to discuss necessary modifications to the IID/SDCWA Water Conservation and Transfer Agreement.

While fallowing may avoid or minimize many of the identified potential environmental impacts associated with on-farm or system conservation measures,

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fallowing would raise the issue of economic impacts to the Imperial Valley community. If fallowing is utilized, the IID water conservation program should include measures to address any economic impacts that result from the project.

The Draft EIR/EIS contains an estimate of economic impacts that would result from a fallowing program. Other studies have been drafted that employ differing assumptions and determinations of economic impacts that could result from a fallowing program. We note that these other studies assume fallowing will be limited to crops that use more water and generate lower profits than other crops. The Draft EIR/EIS, however, assumes that fallowing will be spread proportionately among all crops, including those that use less water and generate higher profits. It appears to be a matter of common sense to restrict fallowing opportunities to high water use/low profit crops. It would not only reduce the acreage to be fallowed and the amount of lost profits, but would also lessen impacts on the labor force and the community as a whole. We have attached for your consideration one study and one draft study that examine conservation fallowing scenarios for the Imperial Valley. They are: "Economic Impacts of Fallowing Irrigated Land in the Imperial Irrigation District", prepared by the U.S. Bureau of Reclamation, and "Independent Analysis of the Economic Impact Studies in the IID Water Conservation and Transfer Project EIR/EIS", prepared by CIC Research under the direction of the Community Advisory Commission and funded by IID. We believe these studies present a more realistic depiction of how a fallowing program in the Imperial Valley could operate with due consideration for the needs of the farmers and need to minimize economic impacts to the community. We have also attached results from an analysis of the actual economic impacts resulting from the two-year Palo Verde Test Land Fallowing Program between the Palo Verde Irrigation District and the Metropolitan Water District of Southern California (Metropolitan). The principle findings of this study showed that regional economic performance was not altered to any significant degree and that less than 60 jobs were affected by fallowing more than 20,000 acres. Moreover, a high proportion of program payments were injected into the local economy. We believe this study provides real-life information that should be considered in your economic analysis. The Final EIR/EIS should acknowledge that any fallowing for the proposed project can and will be structured such that impacts to the Imperial Valley economy are minimized.

The project purpose, need and objectives section in the Executive Summary (and referenced elsewhere in the document) includes a statement that an Authority objective is "to acquire an independent, alternative, long term water supply that provides drought protection and increased reliability for municipal, domestic, and agricultural uses." It is appropriate to clarify the term "increased reliability" as used in this context. Until now, the reliability of Colorado River supply for Metropolitan and its member agencies, including the Authority, has been constant, even when imported water from the State Water Project and local supplies have been curtailed. For many years, Metropolitan's Colorado River Aqueduct (CRA) has operated near its capacity of about 1.25 million acre feet per year, and the Authority's supply from Metropolitan has consisted of between 75 and 100 percent Colorado River water. Although about 700,000 acre-feet of water required to fill the CRA is not within California's normal year apportionment of 4.4

million acre-feet, that water was available until 1996 due to the availability of the unused apportionments of Arizona and Nevada. As those states are now at or near full use of their apportionment, we have relied on surplus declarations since 1997 to fill the CRA. The IID/Authority water transfer and other elements of the Quantification Settlement Agreement are designed to keep the CRA full into the foreseeable future. This will allow the Authority to continue to rely on Colorado River water to the same extent that it relies on that source today. Therefore, in the context of historic and present availability of Colorado River water, the purpose of the water transfer is to maintain the reliability of that supply. However, if the IID/Authority water transfer and/or other actions designed to ensure a full CRA in the future are not implemented, then the ability to fill the CRA will be dependent on the availability of surplus water as determined by the federal government on a year-to-year basis. So, in the context of a future in which a full CRA would not be guaranteed, the IID/Authority transfer would increase or enhance the reliability of the Authority's future Colorado River supplies, particularly in drought years when the river system supplies less water.

The draft EIR/EIS cites the Authority's Water Resources Plan in several places as "SDCWA 2000". The Authority published the Water Resources Plan in 1997, and an Urban Water Management Plan in 2000. It appears that the draft EIR/EIS uses information from both documents under the citation "SDCWA 2000". For example, on page 1-14, the Authority's projected water needs and water resources to the year 2015 apparently came from 1997 document, yet is cited as "SDCWA 2000". At page 5-39, water demand and supply to the year 2020 is also cited as "SDCWA 2000". Because the 2000 Urban Water Management Plan supercedes the 1997 Water Resources Plan as to projections of regional water needs and resources, we request the only the 2000 plan be used for that purpose, and not the 1997 document.

Thank you for the opportunity to review this draft document. Please retain the Authority on your mailing list to receive the final EIR/EIS when completed. If you have any questions regarding our comments, please contact Larry Purcell at (858) 522-6752.

Sincerely,



Maureen A. Stapleton
General Manager

- Attachments: (1) Economic Impacts of Fallowing Irrigated Land in the Imperial Irrigation District; Alan P. Kleinman; August 2001
(2) Draft Independent Analysis of the Economic Impact Studies in the IID Water Conservation and Transfer Project EIR/EIS, prepared for the Community Advisory Commission of the Imperial Irrigation District; CIC Research, Inc.; March 2002
(3) Regional Economic Impacts of the Palo Verde Test Land Fallowing Program; M. Cubed; December 1994.

Economic Impacts of Fallowing Irrigated Land in the Imperial Irrigation District

Alan P. Kleinman¹

August, 2001

file:fallowpaper

Introduction

An integral part of some alternatives of the Salton Sea Restoration Program (SSRP) involves the fallowing of lands in the Imperial Irrigation District (IID). This paper examines the economic impacts of fallowing in terms of personal income and employment.

Potential fallowing is analyzed in two different scenarios, for quite different purposes. Temporary fallowing is the complete non-use of a given parcel of land for as short a term as one year. A given number of acres of a farm may be fallowed for multiple years, but the actual parcels of land not cropped is expected to change every year as fallowing becomes an integral part of the farm crop rotation pattern. A typical cropping pattern and rotation² is given below:

Year 1	Onions
Year 1	Plant Sugar Beets or Wheat
Year 2	Sugar Beets or Wheat
Year 2	Plant Alfalfa Hay
Year 3	Alfalfa Hay
Year 4	Alfalfa Hay
Year 5	Alfalfa Hay
Year 6	Alfalfa Hay
Year 6	Lettuce
Year 7	Sudan Grass
Year 7	Plant Onions

Shown here is a seven-year rotation with Alfalfa Hay remaining in production for 4 years. Under a temporary fallowing scheme, in which Alfalfa Hay is chosen by the farmer to be the fallowed crop, the 4th year of Alfalfa Hay would be fallowed with a 7-year rotation maintained. Thus, if the farm consisted of 1,000 acres, in any given year under normal rotation, about 570 acres of Alfalfa Hay would be in full production. With the incorporation of fallowing, the acres of full production Alfalfa would decrease to about 430 acres. About 140 acres would be in the fallow category. This 140 acres would very likely change each year. In any given year about 140 acres of new Alfalfa would be planted. The irrigation water not applied to grow Alfalfa on the fallowed land would be used for other purposes associated with the SSRP.

¹ Regional Economist, U.S. Bureau of Reclamation, Boulder City, Nevada

Personal communication with staff at Imperial Irrigation District

Permanent fallowing is the removal of land permanently from the irrigation rotation of a particular farm. The water not used on the permanently fallowed farm land to grow crops would be applied on the land in the form of ponds or other purposes associated with the SSRP.

Water required for restoration elsewhere as part of the SSRP could be secured through either permanent or temporary fallowing. However, if the land is not required as part of an alternative, then the preferred method of securing water for other purposes, such as water transfer, is temporary fallowing because that is thought to have the least negative potential economic impact upon the economy of Imperial County.

The potential impacts of both methods of fallowing are examined here, with estimates made of the direct impact upon farm entities and the third-party impacts upon farm suppliers and processors.

Temporary Fallowing of Irrigated Land

Analytical Methodology

In order to estimate the direct economic impacts upon the farm operator, a simple linear program model was formulated. This model incorporated the major field crops grown in the IID. The crops chosen were Cotton, Wheat, Alfalfa Hay, Bermuda Grass Hay, Sudan Grass Hay, and Sugarbeets. These 6 crops account for almost 360,000 acres of production in the Imperial Valley at the present time. The other crops which account for minor acreage or are in the category of high value or specialty crops make up the balance of the almost half million acres of production in the valley. Comparison of crop budgets reveals that the crops chosen to include in the model are the "marginal" crops which have significant acreage and are those which, on the average, are less profitable to the farmer. About 25 different crops account for over 99 percent of the acreage in IID. Historically, over the past 12 years, 4 crops, Alfalfa Hay, Wheat, Sudan Grass Hay, and Sugarbeets account for about 80 percent of the acres.

The linear programming model with constraints and various accounting values is presented on Table 1. This is the base optimization model to which varying assumptions are applied. The output of the linear programming model becomes the input in estimation of regional economic impacts in the non-farm economy.

The estimation of secondary or third party impacts resulting from changes in farm production were estimated using IMPLAM³ modeling. IMPLAN is an input-output

³IMPLAN allows for the construction of a regional input-output model to assess the potential economic impacts of alternative resource management strategies. Minnesota IMPLAN Group, Inc., IMPLAN System (1998 data and software), 1940 South Greeley Street, Suite 101,

Table 1. Imperial Irrigation District -- Optimization Program -- 2001

	Upland Cotton	Wheat	Alfalfa Hay	Bermuda Grass Hay	Sudan Grass Hay	Sugarbeets	Fallow		Constraints	Accounting Totals
Irrigated Land	6,000	50,000	175,000	42,000	53,000	32,000	0	<=	358,000	358,000
Cotton Acres	6,000	0	0				0	<=	6,000	6,000
Wheat Acres	0	50,000	0				0	<=	50,000	50,000
Alfalfa Acres	0	0	175,000				0	<=	175,000	175,000
Bermuda Grass Acre	0	0	0	42,000			0	<=	42,000	42,000
Sudan Grass Hay	0	0	0	0	53,000		0	<=	53,000	53,000
Sugarbeet Acres	0	0	0	0	0	32,000	0	<=	32,000	32,000
Fallow Land							0	>=	0	0
District Land	6,000	50,000	175,000	42,000	53,000	32,000	0	<=	358,000	358,000
Irrigation Water	30,000.00	150,000.00	1,137,500.00	231,000.00	265,000.00	176,000.00	0.00	<=	1,989,500	1,989,500
Irrigation Water Price	14.56	14.56	14.56	14.56	14.56	14.56	14.56			
Irrigation Water Costs	\$438,800	\$2,184,000	\$16,562,000	\$3,363,360	\$3,858,400	\$2,562,560	\$0			
Yield primary	1400	3	8	10	5.5	36				
secondary	1.4		0							
Price primary	\$0.678	\$153.000	\$97.000	\$90.000	\$90.000	\$42.000				
secondary	\$134.000		\$0.130							
Gross Revenues	\$6,820,800	\$22,950,000	\$135,800,000	\$37,800,000	\$26,235,000	\$48,384,000	\$0			\$277,989,800
Variable Costs	\$5,785,920	\$4,955,000	\$113,253,000	\$26,074,020	\$20,969,450	\$34,148,560	\$0			
Returns over costs	\$598,080	\$4,811,000	\$5,985,000	\$8,362,620	\$1,407,150	\$11,674,880	\$0	max	\$32,838,730	
Profit per acre foot	\$19.94	\$32.07	\$5.26	\$36.20	\$5.31	\$66.33				
Profit per acre	\$99.68	\$96.22	\$34.20	\$189.11	\$26.55	\$364.84				

estimation procedure which is driven by changes in gross output in the region, which in this instance comes from changes in gross farm output. In this application, the model was constrained to Imperial County. Various impacts were estimated including changes in personal income, changes in employment, and changes in local tax revenues when agricultural acreages are followed.

Six Crops and Acres of Production

Based upon historic production⁴ and current trends in the district, the following acres were selected to represent present crop production:

Cotton	6,000 acres
Wheat	50,000 acres
Alfalfa Hay	175,000 acres
Bermuda Grass Hay	42,000 acres
Sudan Grass Hay	53,000 acres
Sugar Beets	32,000 acres

Crop Production Standards

Cost and returns associated with the 6 crops were based upon crop production budgets. Crop production standards were developed from a number of sources. Irrigation district specific information was gained by interviewing of selected farm managers and others associated with agricultural operations in the IID. Production information was also obtained by compiling data directly from field crop production guidelines published by the Cooperative Extension Service.⁵ Expected yields on farm were estimated and used in calculating costs and returns. For purposes of this analysis, the following acre yields were adopted as shown below:

Cotton	1,400 pounds
Wheat	3 tons
Alfalfa Hay	8 tons
Bermuda Grass Hay	10 tons

Stillwater, MN 55082, www.implan.com, 1998.

⁴Historic production over the past 12 years as reported by Imperial Irrigation District to Bureau of Reclamation. Comparisons made with Imperial County Agricultural Commissioner reports for similar years.

⁵ Guidelines to Production Costs and Practices, Imperial County, Field Crops 2000-2001, University of California Cooperative Extension, 1050 E. Holton Road, Holtville, California, Circular 104-F.

Sudan Grass Hay	5.5 tons
Sugar Beets	36 tons

Agricultural Price Standards

The relationship between prices paid and received were taken to represent a long term equilibrium situation between inputs and outputs which is expected to be representative of future years. The most likely prices⁶ for the 6 crops is shown below:

Cotton	67.8 cents per pound
Cotton seed	134 dollars per ton
Wheat	153 dollars per ton
Alfalfa Hay	97 dollars per ton
Bermuda Grass Hay	90 dollars per ton
Sudan Grass Hay	90 dollars per ton
Sugar Beets	42 dollars per ton

These crop prices were based on recent 5-year average (1995-1999) as reported by the Imperial County Agricultural Commissioner.

Enterprise Crop Budgets

The enterprise crop budgets used from the University of California Extension Service⁷ are believed to represent the actual future costs and returns to production of those crops in Imperial Valley. The costs of production include all variable costs and estimated fixed and overhead costs with the exception of any returns to land. The per acre profitability of each of the 6 crops is shown below, without cost or returns to land.

Cotton	\$99.68
Wheat	\$96.22
Alfalfa Hay	\$34.2
Bermuda Grass Hay	\$199.11
Sudan Grass Hay	\$26.56
Sugar Beets	\$364.84

According to these data, Alfalfa Hay and Sudan Grass Hay are the least profitable

⁶ Crop prices calculated from Imperial Agricultural Commissioner reports of the five most recent years.

⁷ Guidelines to Production Costs and Practices, Imperial County, Field Crops 2000-2001, University of California Cooperative Extension, 1050 E. Holton Road, Holtville, California, Circular 104-F.

crops for farmers to grow in the Imperial Valley.

Water Use by Crop

Estimated water use by each of the 6 crops was taken from the Extension Service publication, Circular 104-F. Per acre water deliveries to produce each crop as used in the linear programming model are as follows:

Cotton	5 acre feet
Wheat	3 acre feet
Alfalfa Hay	6.5 acre feet
Bermuda Grass Hay	5.5 acre feet
Sudan Grass Hay	5 acre feet
Sugar Beets	5.5 acre feet

The weighted average use of these crops is 5.56 acre feet per acre.

Maintenance of Fallowed Land

Land which is fallowed on a temporary basis must be maintained in a weed-free condition. It is assumed that a farmer would be required to disk the ground for weed control 4 to 5 times during a year's time. Regular discing costs about \$11.50 per acre for each time over the field. This would result in total costs of \$46 to \$57.50 per acre. It is assumed that \$60 per acre would cover the cost of maintenance. Thus, in addition to the lost profits on the fallowed land, \$60 is added to the farmer cost of operation.

Operation of the Linear Programming Model

The linear programming model results representative of the present condition is shown in Table 1. Gross profits for the 6 crops is shown as \$32,838,730. The least profitable crop shown is Sudan Grass Hay at \$26.55 per acre, followed closely by Alfalfa Hay at \$34.20 per acre. On a per acre foot basis, Alfalfa Hay shows the least profit at \$5.26 per acre foot followed closely by Sudan Grass Hay at \$5.31 per acre foot. This acre foot profit calculation is after the cost of irrigation water is paid. On a grower by grower basis, these profits could easily be reversed. In any event, it is clear that Alfalfa Hay and Sudan Grass Hay are the prime candidates for fallowing, because no other crops are in a similar profit range.

The optimization model was run iteratively 5 times. In each subsequent run the amount of water available for crop production was reduced by 1 percent of the total, or 19,895 acre feet.

The gross farm output for the 6 crops is shown as gross revenues. The base case shows output of \$277,989,800. This is the calculation which drives the IMPLAN model to estimate 3rd party impacts in the local economy. The change in gross output due to fallowing is modeled through the economy to derive estimates of impacts to personal income, employment, and local taxes.

Down 1 percent. The results of the first iteration of reducing water supply by 1 percent is shown on Table 2. The fallowed land comes from Alfalfa Hay production. Farm profit is reduced by \$288,324, or \$94.19 per acre of fallowed land. Total land fallowed is 3,061 acres of Alfalfa based upon water being restricted by 19,895 acre feet.

Down 2 percent. The results of the second iteration of reducing water supply by another 1 percent is shown on Table 3. All of the fallowed land comes from Alfalfa Hay production. Farm profit is reduced by \$576,649, or \$94.19 per acre of fallowed land. Total land fallowed is 6,122 acres of Alfalfa based upon water being restricted by 39,790 acre feet.

Down 3 percent. The results of the third iteration of reducing water supply by another 1 percent is shown on Table 4. All of the fallowed land comes from Alfalfa Hay production. Farm profit is reduced by \$864,973, or \$94.20 per acre of fallowed land. Total land fallowed is 9,182 acres of Alfalfa based upon water being restricted by 59,685 acre feet.

Down 4 percent. The results of the fourth iteration of reducing water supply by another percent is shown on Table 5. All of the fallowed land comes from Alfalfa Hay production. Farm profit is reduced by \$1,153,298, or \$94.20 per acre of fallowed land. Total land fallowed is 12,243 acres of Alfalfa based upon water being restricted by 79,580 acre feet.

Down 5 percent. The results of the fifth iteration of reducing water supply by a full 5 percent is shown on Table 6. All of the fallowed land comes from Alfalfa Hay production. Farm profit is reduced by \$1,441,622, or \$94.20 per acre of fallowed land. Total land fallowed is 15,304 acres of Alfalfa based upon water being restricted by 99,475 acre feet.

Depending upon differences in farm profit and farmer preference, part or all of the fallowed acres could come from Sudan Grass Hay production. The profit per acre foot for Alfalfa Hay and Sudan Grass Hay is essentially equal. If the numbers shown are an accurate representation of production costs and returns in the Imperial Valley, on a financial basis, a farmer should be indifferent between the choice of crops (Alfalfa or Sudan Grass) to fallow.

Table 2. Imperial Irrigation District -- Optimization Program -- 2001 -- down 1 percent

	Upland Cotton	Wheat	Alfalfa Hay	Bermuda Grass Hay	Sudan Grass Hay	Sugarbeets	Fallow		Constraints	Accounting Totals
Irrigated Land	6,000	50,000	171,939	42,000	53,000	32,000	3,061	<=	358,000	354,939
Cotton Acres	6,000	0	0				0	<=	6,000	6,000
Wheat Acres	0	50,000	0				0	<=	50,000	50,000
Alfalfa Acres	0	0	171,939				0	<=	171,939	171,939
Bermuda Grass Acre	0	0	0	42,000			0	<=	42,000	42,000
Sudan Grass Hay	0	0	0	0	53,000		0	<=	53,000	53,000
Sugarbeet Acres	0	0	0	0	0	32,000	0	<=	32,000	32,000
Fallow Land							3,061	>=	0	3,061
District Land	6,000	50,000	171,939	42,000	53,000	32,000	3,061	<=	358,000	354,939
Irrigation Water	30,000	150,000	1,117,605	231,000	265,000	176,000	0	<=	1,969,605	1,969,605
Irrigation Water Price	\$14.56	\$14.56	\$14.56	\$14.56	\$14.56	\$14.56	\$14.56			
Irrigation Water Costs	\$436,800	\$2,184,000	\$16,272,329	\$3,363,360	\$3,858,400	\$2,562,560	\$0			
Yield primary	1400	3	8	10	5.5	36				
secondary	1.4		0							
Price primary	\$0.678	\$153.000	\$97.000	\$90.000	\$90.000	\$42.000				
secondary	\$134.000		\$0.130							
Gross Revenues	\$6,820,800	\$22,950,000	\$133,424,843	\$37,800,000	\$26,235,000	\$48,384,000	\$0			\$275,614,843
Variable Costs	\$5,785,820	\$15,955,000	\$111,272,193	\$26,074,020	\$20,969,450	\$34,146,560	\$183,646			
Returns over costs	\$598,080	\$4,811,000	\$5,880,322	\$8,382,620	\$1,407,150	\$11,674,880	-\$183,646	max	\$32,550,408	
Profit per acre foot				\$36.20	\$5.31	\$66.33				
Profit per acre				\$199.11	\$26.55	\$364.84				

Table 3. Imperial Irrigation District -- Optimization Program -- 2001 -- down 2 percent

	Upland Cotton	Wheat	Alfalfa Hay	Bermuda Grass Hay	Sudan Grass Hay	Sugarbeets	Fallow		Constraints	Accounting Totals
Irrigated Land	6,000	50,000	168,878	42,000	53,000	32,000	6,122	<=	358,000	351,878
Cotton Acres	6,000	0	0	0	0	0	0	<=	6,000	6,000
Wheat Acres	0	50,000	0	0	0	0	0	<=	50,000	50,000
Alfalfa Acres	0	0	168,878	0	0	0	0	<=	168,878	168,878
Bermuda Grass Acre	0	0	0	42,000	0	0	0	<=	42,000	42,000
Sudan Grass Hay	0	0	0	0	53,000	0	0	<=	53,000	53,000
Sugarbeet Acres	0	0	0	0	0	32,000	0	<=	32,000	32,000
Fallow Land							8,122	>=	0	6,122
District Land	6,000	50,000	168,878	42,000	53,000	32,000	6,122	<=	358,000	351,878
Irrigation Water	30,000	150,000	1,097,710	231,000	265,000	176,000	0	<=	1,949,710	1,949,710
Irrigation Water Price	\$14.56	\$14.56	\$14.56	\$14.56	\$14.56	\$14.56	\$14.56			
Irrigation Water Costs	\$438,800	\$2,184,000	\$15,982,658	\$3,363,360	\$3,858,400	\$2,582,560	\$0			
Yield primary	1400	3	8	10	5.5	36				
secondary	1.4		0							
Price primary	\$0.678	\$153.000	\$97.000	\$90.000	\$90.000	\$42.000				
secondary	\$134.000		\$0.130							
Gross Revenues	\$6,820,800	\$22,950,000	\$131,049,686	\$37,800,000	\$26,235,000	\$48,384,000	\$0			\$273,239,486
Variable Costs	\$5,785,920	\$15,955,000	\$108,291,385	\$26,074,020	\$20,969,450	\$34,146,560	\$367,292			
Returns over costs	\$598,080	\$4,811,000	\$5,775,643	\$8,362,620	\$1,407,150	\$11,674,880	-\$387,292	max	\$32,262,081	
Profit per acre foot		\$32.07		\$36.20		\$66.33				
Profit per acre		\$96.22		\$199.11		\$364.84				

Table 4. Imperial Irrigation District -- Optimization Program -- 2001 -- down 3 percent

	Upland Cotton	Wheat	Alfalfa Hay	Bermuda Grass Hay	Sudan Grass Hay	Sugarbeets	Fallow		Constraints	Accounting Totals
Irrigated Land	6,000	50,000	165,818	42,000	53,000	32,000	9,182	<=	358,000	348,818
Cotton Acres	6,000	0	0				0	<=	6,000	6,000
Wheat Acres	0	50,000	0				0	<=	50,000	50,000
Alfalfa Acres	0	0	165,818				0	<=	165,818	165,818
Bermuda Grass Acre	0	0	0	42,000			0	<=	42,000	42,000
Sudan Grass Hay	0	0	0	0	53,000		0	<=	53,000	53,000
Sugarbeet Acres	0	0	0	0	0	32,000	0	<=	32,000	32,000
Fallow Land							9,182	>=	0	9,182
District Land	6,000	50,000	165,818	42,000	53,000	32,000	9,182	<=	358,000	348,818
Irrigation Water	30,000	150,000	1,077,815	231,000	265,000	176,000	0	<=	1,929,815	1,929,815
Irrigation Water Price	\$14.56	\$14.56	\$14.56	\$14.56	\$14.56	\$14.56	\$14.56			
Irrigation Water Costs	\$438,800	\$2,184,000	\$15,692,986	\$3,363,360	\$3,858,400	\$2,562,580	\$0			
Yield primary	1400	3	8	10	5.5	36				
secondary	1.4		0							
Price primary	\$0.678	\$153.000	\$97.000	\$90.000	\$90.000	\$42.000				
secondary	\$134.000		\$0.130							
Gross Revenues	\$6,820,800	\$22,950,000	\$128,674,529	\$37,800,000	\$26,235,000	\$48,384,000	\$0			\$270,864,329
Variable Costs	\$5,785,920	\$15,955,000	\$107,310,578	\$26,074,020	\$20,969,450	\$34,146,560	\$550,938			
Returns over costs	\$598,080	\$4,811,000	\$5,670,965	\$8,362,620	\$1,407,150	\$11,674,880	-\$550,938	max	\$31,973,757	
Profit per acre foot	\$19.94	\$32.07	\$5.26	\$36.20	\$5.31	\$66.33				
Profit per acre	\$99.88	\$96.22	\$34.20	\$199.11	\$26.55	\$384.84				

Table 5. Imperial Irrigation District -- Optimization Program -- 2001 -- down 4 percent

	Upland Cotton	Wheat	Alfalfa Hay	Bermuda Grass Hay	Sudan Grass Hay	Sugarbeets	Fallow		Constraints	Accounting Totals
Irrigated Land	6,000	50,000	162,757	42,000	53,000	32,000	12,243	<=	358,000	345,757
Cotton Acres	6,000	0	0				0	<=	6,000	6,000
Wheat Acres	0	50,000	0				0	<=	50,000	50,000
Alfalfa Acres	0	0	162,757				0	<=	162,757	162,757
Bermuda Grass Acre	0	0	0	42,000			0	<=	42,000	42,000
Sudan Grass Hay	0	0	0	0	53,000		0	<=	53,000	53,000
Sugarbeet Acres	0	0	0	0	0	32,000	0	<=	32,000	32,000
Fallow Land							12,243	>=	0	12,243
District Land	6,000	50,000	162,757	42,000	53,000	32,000	12,243	<=	358,000	345,757
Irrigation Water	30,000	150,000	1,057,920	231,000	265,000	176,000	0	<=	1,909,920	1,909,920
Irrigation Water Price	\$14.56	\$14.56	\$14.56	\$14.56	\$14.56	\$14.56	\$14.56			
Irrigation Water Costs	\$436,800	\$2,184,000	\$15,403,315	\$3,363,360	\$3,858,400	\$2,582,560	\$0			
Yield primary	1400	3	8	10	5.5	36				
secondary	1.4		0							
Price primary	\$0.678	\$153.000	\$97.000	\$90.000	\$90.000	\$42.000				
secondary	\$134.000		\$0.130							
Gross Revenues	\$6,820,800	\$22,950,000	\$126,299,372	\$37,800,000	\$28,235,000	\$48,384,000	\$0			\$268,489,172
Variable Costs	\$5,785,920	\$15,955,000	\$105,329,770	\$26,074,020	\$20,969,450	\$34,146,560	\$734,585			
Returns over costs	\$598,080	\$4,811,000	\$5,586,287	\$8,362,620	\$1,407,150	\$11,674,880	-\$734,585	max	\$31,685,432	
Profit per acre foot	\$19.94	\$32.07	\$5.26	\$36.20	\$5.31	\$68.33				
Profit per acre	\$99.68	\$96.22	\$34.20	\$199.11	\$26.55	\$364.84				

Table 6. Imperial Irrigation District – Optimization Program -- 2001 -- down 5 percent

	Upland Cotton	Wheat	Alfalfa Hay	Bermuda Grass Hay	Sudan Grass Hay	Sugarbeets	Fallow		Constraints	Accounting Totals
Irrigated Land	6,000	50,000	159,696	42,000	53,000	32,000	15,304	≤	358,000	342,696
Cotton Acres	6,000	0	0	0	0	0	0	≤	6,000	6,000
Wheat Acres	0	50,000	0	0	0	0	0	≤	50,000	50,000
Alfalfa Acres	0	0	159,696	0	0	0	0	≤	159,696	159,696
Bermuda Grass Acres	0	0	0	42,000	0	0	0	≤	42,000	42,000
Sudan Grass Hay	0	0	0	0	53,000	0	0	≤	53,000	53,000
Sugarbeet Acres	0	0	0	0	0	32,000	0	≤	32,000	32,000
Fallow Land							15,304	≥	0	15,304
District Land	6,000	50,000	159,696	42,000	53,000	32,000	15,304	≤	358,000	342,696
Irrigation Water	30,000	150,000	1,038,025	231,000	266,000	176,000	0	≤	1,890,025	1,890,025
Irrigation Water Price	\$14.58	\$14.58	\$14.58	\$14.58	\$14.58	\$14.58	\$14.58			
Irrigation Water Costs	\$436,800	\$2,184,000	\$15,113,644	\$3,383,360	\$3,858,400	\$2,562,560	\$0			
Yield primary	1400	3	8	10	5.5	38				
secondary	1.4		0							
Price primary	\$0.678	\$153.000	\$97.000	\$90.000	\$90.000	\$42.000				
secondary	\$134.000		\$0.130							
Gross Revenues	\$6,820,800	\$22,950,000	\$123,924,215	\$37,800,000	\$26,235,000	\$48,384,000	\$0			\$266,114,015
Variable Costs	\$5,785,920	\$15,955,000	\$103,348,953	\$26,074,020	\$20,989,450	\$34,146,560	\$918,231			
Returns over costs	\$598,080	\$4,811,000	\$5,461,608	\$8,382,820	\$1,407,150	\$11,674,880	-\$918,231	max	\$31,397,108	
Profit per acre foot	\$19.94	\$32.07	\$5.26	\$36.20	\$5.31	\$66.33				
Profit per acre	\$99.68	\$96.22	\$34.20	\$199.11	\$26.55	\$364.84				

Summary of Optimization Program

Table 7 summarizes the results of all of the linear programming runs. Direct impacts are shown on the left side of the table. It should be kept in mind that the absolute amounts calculated are not as important as the differences between iterations.

Third Party or Induced Impacts of Fallowing

The right side of Table 7 displays the estimated impacts upon third parties in Imperial County. The values in the Gross Crop Output column come directly from the accounting rows of the linear programming output (Tables 1-6). When comparing the reduction in gross output due to a reduction in water of 5 percent with the base case, it can be seen that \$11,875,785 of gross output would be lost to the economy.

Using Alfalfa Hay production as the source of the fallowed land, the multiplier into the economy is 1.298. This means that about 23 percent ($.298 / 1.298$) of the impact is felt in third party economic activities. Thus, 77 percent of the impact is realized on-farm. The column headed Impact upon Third Parties in Economy shows the dollar impact in terms of gross output. As can be seen in the final row, the 5 percent water reduction results in \$3,538,984 reduction in economic activity. The total economy of Imperial County is estimated to be about \$1.783 billion annually. Hence, this reduction amounts to about two tenths of one percent in the economy of Imperial County.

The final column of Table 7 shows the impact upon jobs and employment. Each 1 percent reduction in water availability is estimated to eliminate about 10 jobs in the off-farm local economy. Not shown on the table is the fact that 34 jobs lost are on-farm, for a total impact of 44 jobs. The total private sector jobs in Imperial County is estimated to be 52,700. With a 5 percent reduction of water supply and attendant fallowing, the impact upon third party employment is estimated to be about 50 jobs. This number of jobs lost amounts to about one tenth of one percent of employment in Imperial County. The on-farm jobs lost would be about 220.

An offset to loss of on-farm employment is the requirement to maintain the fallowed land in a weed-free condition. It is estimated that the labor requirement for that activity on 15,000 acres would be about 25 equivalent full-time jobs for equipment operators.⁸

Summary and Conclusions

⁸ Based upon data supplied by the Arizona Cooperative Extension Service, 0.6 hours of labor are required to disc an acre of land.

Table 7. Summary of Imperial Irrigation District Optimization Program

file:lldsum

	Gross Profits (dollars)	Profit Lost (dollars)	Land Fallowed (acres)	Profit Lost per acre (dollars)	"Water Saved" (acre feet)	Profit Lost per Acre Foot "(dollars)	Gross Crop Output (dollars)	Reduction in Gross Output (dollars)	Impact upon Third Parties in Economy (dollars) (note)	Impact upon Third Parties Employment (# of jobs) (note)
Base case gross profits	\$32,838,730						\$277,989,800			
Reduce water by one percent percentage	\$32,550,408	\$288,324	3,081	\$94.19	19,895		\$275,614,643	\$2,375,157	\$707,797 0.04%	10 0.02%
Reduce water by two percent percentage	\$32,262,081	\$576,649	6,122	\$94.19	39,790		\$273,239,488	\$4,750,314	\$1,415,594 0.08%	20 0.04%
Reduce water by three percent percentage	\$31,973,757	\$864,973	9,182	\$94.20	59,685		\$270,864,329	\$7,125,471	\$2,123,390 0.12%	30 0.06%
Reduce water by four percent percentage	\$31,685,432	\$1,153,298	12,243	\$94.20	79,580		\$268,489,172	\$9,500,628	\$2,831,187 0.16%	40 0.08%
Reduce water by five percent percentage	\$31,397,108	\$1,441,622	15,304	\$94.20	99,475		\$266,114,015	\$11,875,785	\$3,538,984 0.20%	50 0.10%

Note: All acreage losses come from Alfalfa hay production. Hay multiplier is 1.298
 Total economy of Imperial County is about \$ 1.783 billion annually.
 Total private sector jobs in Imperial County is about 52,700.

The direct financial impacts of fallowing irrigated land in the Imperial Irrigation District are quite small due to the low profitability of some of the crops in the farm rotations. Combining lost profit and increased costs associated with fallowing of Alfalfa Hay production results in less than \$100 per acre impact annually. Conceptually, if a farmer in IID were offered \$100 per acre annually to fallow land, he would be kept whole financially. No analysis was undertaken to ascertain the disposition of that income with respect to expenditure patterns by a cooperating farmer.

The loss of employment in the local non-farm economy is relatively minor. The impact of loss of jobs in the non-farm economy might be mitigated by direct payments to Imperial County to be utilized as locally determined. The magnitude of such potential compensation has not been investigated.

Of significant concern is the loss of on-farm employment opportunities. Farm labor requirements are estimated below, based on similar agricultural production in Arizona.⁹

Cotton	9.5 hours per acre
Wheat	3.5 hours per acre
Alfalfa Hay	9.7 hours per acre
Bermuda Grass Hay	na
Sudan Grass Hay	5.7 hours per acre
Sugar Beets	na

Even though Alfalfa Hay and Sudan Grass Hay have somewhat similar water requirements, (6.5 acre feet compared with 5 acre feet) there is a more significant difference in labor requirements. One would expect that the labor impact of fallowing Sudan Grass Hay would be substantially less than for Alfalfa Hay.

Permanent Fallowing of Irrigated Land

Under the concept of permanent fallowing of irrigated land, acres would be withdrawn from irrigation for an indefinite period of time. So, essentially the land would be purchased and never again returned to agricultural production.

Purchase of Irrigated Land

The quality of irrigated land in the IID varies tremendously. Some parcels are only marginally suited for agricultural production, while other parcels produce a large stream of income year after year. Average prices for land in the Imperial Valley presently

⁹ Arizona Cooperative Extension Service, Department of Agriculture and Resource Economics, Field Crop Budgets, 1999, Tucson, Arizona.

range from about \$2,000 to \$3,000 per acre.¹⁰ Using a factor of 6 percent, the annual equivalent cost to purchase land would range from \$120 to \$180 per acre annually. This amount is slightly higher than the cost of temporary fallowing. If the current cost of government borrowing of 5 percent were applied, the annual equivalent would range from \$100 to \$150 per acre annually.

Imputed Returns to Land

Based upon average returns of the 6 crops considered in the temporary fallowing scenario, the imputed return to land is calculated to be about \$92 per acre annually. The difference between this return to land and purchase cost is obviously in the impact of the returns to the higher valued crops.

The linear programming model employed, resulted in a gross value for the 6 crops of about \$278 million per year. The Imperial County Agricultural Commissioner estimates gross value of field crops to be about \$257 million in 1999. By contrast, the gross value of vegetable and melon crops was estimated to be \$458 million for 1999. If one made the heroic assumption that the margin for returns to land is the same for vegetables and melons as it is for field crops (about 12 percent), the imputed land return would be about \$388 per acre. The weighted average return to all land for all crops might then be expected to be about \$174 per acre annually. This value compares favorably with the cost of \$3,000 per acre land.

Actual Land Market in Imperial County

A cursory survey of real estate agents with listings of irrigated agricultural land was made. Agents indicated a wide variation in asking price due to land quality considerations. Table 8 provides a summary sample of asking prices for farm land currently for sale in the IID.

Conclusions

Permanent fallowing can probably best be achieved through actual purchase of farm lands. It appears that the annual cost of land is in the range of \$120 to \$180 per acre. The SSRP need for permanently fallowed land appears to be centered on lands near the Salton Sea in the vicinity of Niland and Calipatria. These lands appear to have values on the low end of the range, around \$2,000 per acre. Thus, the annual cost for such lands may be in the range of \$100 to \$120 per acre.

¹⁰ Informal survey of real estate agents in Brawley and El Centro. Display of data received is shown on Table 8.

Table 8. Irrigated Land for Sale in Imperial Irrigation District - August, 2001

file:landprice

Location	Acres	Asking Price	Price/Acre	
Forrester and Edgar	161	\$350,000	\$2,174	
Weed and Anza	Bermuda	101	\$260,000	\$2,574
East of Holtville	citrus/drip	480	\$2,400,000	\$5,000
Weed and Anza	80	\$192,000	\$2,400	
S.E. of El Centro	1254		\$3,250	
N.W. of Holtville	582		\$3,200	
E. of Brawley	157		\$3,000	
E. of Brawley	156		\$2,650	

Summary of Alternative Fallowing Scenarios for Imperial Valley

Alan P. Kleinman

30-Oct-01

file:IIDproforma

	Cropping Assum.	Acres Fallowed (acres)	Water Yield (acre feet)	Farm Payments (dollars)	Community Mitigation Costs (dollars)	Net Employment Impact (jobs)	Personal Income Impacts (dollars)	Total Program Cost < 3yr (\$ per year)	Total Program Cost > 3yr (\$ per year)
Scenario One	Full Crop	35,520	200,000	\$8,200,000	\$18,000,000	(420)	\$3,000,000	\$31,000,000	\$14,000,000
Scenario Two	Hay Crop	35,520	200,000	\$8,200,000	\$12,000,000	50	\$5,500,000	\$25,000,000	\$13,000,000
Scenario Three	Full Crop	53,280	300,000	\$12,300,000	\$18,000,000	(635)	\$4,100,000	\$36,000,000	\$13,000,000
Scenario Four	Hay Crop	53,280	300,000	\$12,300,000	\$18,000,000	300	\$13,500,000	\$36,000,000	\$13,000,000
Scenario Five	Full Crop	75,000	425,000	\$17,250,000	\$36,000,000	(960)	\$4,300,000	\$55,000,000	\$23,800,000
Scenario Six	Hay Crop	75,000	425,000	\$17,250,000	\$18,000,000	100	\$11,800,000	\$40,000,000	\$13,000,000

Pro Forma Balance Sheet for Providing Transfer Water and Salton Sea Restoration in Imperial Valley

Alan P. Kleinman

October 29, 2001

file:IIDproforma

Full Crop Following

Assumptions: 200,000 acre feet of water from following - 35,520 acres
Full crop following scenario and Salton Sea Restoration Program

	Economic Reductions from Following	Payments, Compensation, and Mitigation Activities and Options							Net Program Impacts (note 7)
		Farm Payments Impacts (note 1)	Salton Sea Program Impacts (note 6)	Employee Retraining Impacts (note 2)	Worker Compensation Impacts (note 3)	Business Development Impacts (note 4)	In-lieu Business Tax Impacts (note 5)		
Direct Economic Level									
Farm Returns	\$8,200,000	\$8,200,000							\$0
Direct Employment - jobs	378.4		45	161	105.0	52.4			13.0
Employee Compensation	\$3,651,276		\$815,832	\$2,237,024	\$5,156,022	\$1,153,004			(\$5,710,605)
Indirect Support Industries									
Farm Support Employment - jobs	459.6		10.2	20.6		19.2			409.6
Employee Compensation	\$4,626,684		\$236,292	\$866,207		\$652,824			\$2,871,361
Proprietor Income	\$1,679,364		\$82,560	\$180,880		\$116,080			\$1,299,864
In-direct Business Taxes	\$915,708		\$32,700	\$102,638		\$145,952	\$700,000		(\$65,582)
Retail Activities									
Retail Employment - jobs	93.6		18.8	12.4	18.4	32.9	14.8		(3.7)
Employee Compensation	\$1,758,424		\$367,168	\$233,390	\$344,841	\$617,762	\$252,412		(\$57,149)
Proprietor Income	\$446,098		\$116,512	\$59,404	\$87,756	\$157,290	\$70,200		(\$45,066)
In-direct Business Taxes	\$491,136		\$81,948	\$65,054	\$46,129	\$172,155	\$77,152		\$48,698

Note 1. Payment amounts to about \$230 per acre

Note 2. Compensation amounts to about \$169 per acre, but would not be required for more than 3 years (\$6,000,000)

Note 3. Compensation amounts to about \$169 per acre over 3 years. Assumes the retraining effort results in workers securing new jobs (\$6,000,000)

Note 4. Mitigation amounts to about \$169 per acre, but would not be required for more than 2 years (\$6,000,000)

Note 5. Mitigation amounts to about \$20 per acre (\$700,000)

Note 6. Construction Impacts last for only about 2 years - adjusted to a longer term impact

Note 7. Overall employee compensation would increase by over \$3 million per year for the first 3 years

Summary Notes: Total cash payment, compensation and mitigation is estimated to be about \$757 per acre for first 3 years

After 3 years, cash payment is estimated to be about \$250 per acre

Assumed scenario results in reduction of lost jobs from 930 to 420 lost jobs and business taxes being about equal

Total program cost is estimated to be about \$31 million per year initially

After about 3 years, program costs would drop to about \$14 million per year

Total program cost includes administration costs of IID, which are not shown above (about \$5 million annually)

Pro Forma Balance Sheet for Providing Transfer Water and Salton Sea Restoration in Imperial Valley

Alan P. Kleinman

October 29, 2001

file:IIDproforma

Hay Crop Following

Assumptions: 200,000 acre feet of water from fallowing - 35,520 acres
Hay crop fallowing scenario and Salton Sea Restoration Program

	Economic Reductions from Fallowing	Payments, Compensation, and Mitigation Activities and Options						
		Farm Payments Impacts (note 1)	Salton Sea Program Impacts (note 6)	Employee Retraining Impacts (note 2)	Worker Compensation Impacts (note 3)	Business Development Impacts (note 4)	In-lieu Business Tax Impacts (note 5)	Net Program Impacts (note 7)
Direct Economic Level								
Farm Returns	\$8,200,000	\$8,200,000						\$0
Direct Employment - jobs	181.8		45	107.9	70.4	35.1		(76.6)
Employee Compensation	\$1,763,555		\$815,832	\$1,498,808	\$3,454,585	\$772,513		(\$4,778,191)
Indirect Support Industries								
Farm Support Employment - jobs	107.8		10.2	13.8		12.9		70.7
Employee Compensation	\$1,266,442		\$236,282	\$580,359		\$437,392		\$12,399
Proprietor Income	\$455,684		\$82,560	\$121,176		\$77,774		\$174,184
In-direct Business Taxes	\$329,774		\$32,700	\$68,767		\$97,788	\$0	\$130,519
Retail Activities								
Retail Employment - jobs	30.7	18.8	12.4	12.3	22.1	9.9		(44.8)
Employee Compensation	\$575,885	\$352,859	\$233,390	\$231,043	\$413,901	\$169,116		(\$824,224)
Proprietor Income	\$145,819	\$89,296	\$59,404	\$58,797	\$105,884	\$47,034		(\$214,596)
In-direct Business Taxes	\$161,038	\$98,816	\$65,054	\$30,906	\$115,345	\$51,692		(\$200,575)

Note 1. Payment amounts to about \$230 per acre

Note 2. Compensation amounts to about \$113 per acre, but would not be required for more than 3 years (\$4,000,000)

Note 3. Compensation amounts to about \$113 per acre over 3 years. Assumes the retraining effort results in workers securing new jobs (\$4,000,000)

Note 4. Mitigation amounts to about \$113 per acre, but would not be required for more than 2 years (\$4,000,000)

Note 5. There would be an increase in in-direct business taxes of about \$70,000 annually

Note 6. Construction impacts last for only about 2 years - adjusted to a longer term impact

Note 7. Overall employee compensation would increase by over \$5.5 million per year for the first 3 years

Summary Notes: Total cash payment, compensation and mitigation is estimated to be about \$569 per acre for first 3 years

After 3 years, cash payment is estimated to be about \$230 per acre

Assumed scenario results in reduction of lost jobs from 320 to a gain of almost 50 jobs and business taxes increase by \$70,000

Total program cost is estimated to be about \$25 million per year initially

After about 3 years, program costs would drop to about \$13 million per year

Total program cost includes administration costs of IID, which are not shown above (about \$5 million annually)

Pro Forma Balance Sheet for Providing Transfer Water and Salton Sea Restoration in Imperial Valley

Alan P. Kleinman

October 30, 2001

file:IIDproforma

Full Crop Following

Assumptions: 300,000 acre feet of water from following - 53,280 acres
Full crop following scenario and Salton Sea Restoration Program

	Economic Reductions from Following	Payments, Compensation, and Mitigation Activities and Options						Net Program Impacts (note 7)
		Farm Payments Impacts (note 1)	Salton Sea Program Impacts (note 6)	Employee Retraining Impacts (note 2)	Worker Compensation Impacts (note 3)	Business Development Impacts (note 4)	In-lieu Business Tax Impacts (note 5)	
Direct Economic Level								
Farm Returns	\$12,300,000	\$12,300,000						\$0
Direct Employment - jobs	584.8		87.5	241.5	157.5	78.6		19.5
Employee Compensation	\$5,476,914		\$1,223,748	\$3,355,536	\$7,734,033	\$1,729,508		(\$8,565,909)
Indirect Support Industries								
Farm Support Employment - jobs	689.4		15.3	30.9	0.0	28.8		614.4
Employee Compensation	\$6,940,026		\$354,438	\$1,299,311		\$978,238		\$4,307,042
Proprietor Income	\$2,518,046		\$123,840	\$271,290		\$174,120		\$1,949,798
In-direct Business Taxes	\$1,373,562		\$49,050	\$153,957		\$218,928	\$1,025,000	(\$73,373)
Retail Activities								
Retail Employment - jobs	140.4	28.2	18.6	27.6	49.4	22.2		(5.6)
Employee Compensation	\$2,637,636	\$550,752	\$350,085	\$517,262	\$926,643	\$378,618		(\$85,724)
Proprietor Income	\$669,144	\$174,768	\$89,108	\$131,634	\$235,935	\$105,300		(\$67,599)
In-direct Business Taxes	\$736,704	\$122,922	\$97,581	\$69,184	\$258,233	\$115,728		\$73,047

Note 1. Payment amounts to about \$230 per acre

Note 2. Compensation amounts to about \$113 per acre, but would not be required for more than 3 years (\$6,000,000)

Note 3. Compensation amounts to about \$113 per acre over 3 years. Assumes the retraining effort results in workers securing new jobs (\$6,000,000)

Note 4. Mitigation amounts to about \$113 per acre, but would not be required for more than 2 years (\$6,000,000)

Note 5. Mitigation amounts to about \$20 per acre (\$1,025,000)

Note 6. Construction impacts last for only about 2 years - adjusted to a longer term impact

Note 7. Overall employee compensation would increase by over \$4.1 million per year for the first 3 years

Summary Notes: Total cash payment, compensation and mitigation is estimated to be about \$589 per acre for first 3 years

After 3 years, cash payment is estimated to be about \$250 per acre

Assumed scenario results in reduction of lost jobs from 1,084 to 835 lost jobs and business taxes being about equal

Total program cost is estimated to be about \$36 million per year initially

After about 3 years, program costs would drop to about \$13 million per year

Total program cost includes administration costs of IID, which are not shown above (about \$5 million annually)

Pro Forma Balance Sheet for Providing Transfer Water and Salton Sea Restoration in Imperial Valley

Alan P. Kleinman

October 30, 2001

file:IIDproforma

Hay Crop Following

Assumptions: 300,000 acre feet of water from following - 53,280 acres
Hay crop following scenario and Salton Sea Restoration Program

	Economic Reductions from Following	Payments, Compensation, and Mitigation Activities and Options							Net Program Impacts (note 7)
		Farm Payments Impacts (note 1)	Salton Sea Program Impacts (note 6)	Employee Retraining Impacts (note 2)	Worker Compensation Impacts (note 3)	Business Development Impacts (note 4)	In-Direct Business Tax Impacts (note 5)		
Direct Economic Level									
Farm Returns	\$12,300,000	\$12,300,000							\$0
Direct Employment - jobs	272.7		67.5	241.5	157.5	78.6			(272.4) (114.9)
Employee Compensation	\$2,845,348		\$1,223,748	\$3,355,538	\$7,731,033	\$1,729,508			(\$11,397,476) (3,360,000)
Indirect Support Industries									
Farm Support Employment - jobs	161.4		15.3	30.8	0.0	28.8			86.4
Employee Compensation	\$1,899,663		\$354,438	\$1,299,311		\$979,236			(\$733,322)
Proprietor Income	\$683,541		\$123,840	\$271,290		\$174,120			\$114,291
In-direct Business Taxes	\$494,661		\$48,050	\$153,957		\$218,928	\$0		\$72,726
Retail Activities									
Retail Employment - jobs	48.1		28.2	18.6	27.6	49.4	22.2		(99.9)
Employee Compensation	\$863,828		\$550,752	\$350,085	\$517,282	\$928,843	\$378,618		(\$1,859,532)
Proprietor Income	\$218,729		\$174,768	\$88,106	\$131,634	\$235,935	\$105,300		(\$518,015)
In-direct Business Taxes	\$241,557		\$122,922	\$97,581	\$69,194	\$258,233	\$115,728		(\$422,100)

- Note 1. Payment amounts to about \$230 per acre
- Note 2. Compensation amounts to about \$113 per acre, but would not be required for more than 3 years (\$6,000,000)
- Note 3. Compensation amounts to about \$113 per acre over 3 years. Assumes the retraining effort results in workers securing new jobs (\$6,000,000)
- Note 4. Mitigation amounts to about \$113 per acre, but would not be required for more than 2 years (\$6,000,000)
- Note 5. There would be an increase in in-direct business taxes of about \$350,000 per year
- Note 6. Construction impacts last for only about 2 years - adjusted to a longer term impact
- Note 7. Overall employee compensation would increase by over \$12.6 million per year for the first 3 years

Summary Notes: Total cash payment, compensation and mitigation is estimated to be about \$569 per acre for first 3 years
 After 3 years, cash payment is estimated to be about \$230 per acre
 Assumed scenario results in reduction of lost jobs from 480 to a 200 job gain and business taxes being about equal
 Total program cost is estimated to be about \$36 million per year initially
 After about 3 years, program costs would drop to about \$13 million per year
 Total program cost includes administration costs of IID, which are not shown above (about \$5 million annually)

Emp. Comp
= Labor Comp
Proprietor Inc.
Property taxes
Business Tax

Total Value Added
1 million
Income output
1.5 million

Pro Forma Balance Sheet for Providing Transfer Water and Salton Sea Restoration in Imperial Valley

Alan P. Kleinman

October 30, 2001

file:IIDproforma

Full Crop Following

Assumptions: 425,000 acre feet of water from following - 75,000 acres
Full crop following scenario and Salton Sea Restoration Program

	Economic Reductions from Following	Payments, Compensation, and Mitigation Activities and Options						Net Program Impacts (note 7)
		Farm Payments Impacts (note 1)	Salton Sea Program Impacts (note 6)	Employee Retraining Impacts (note 2)	Worker Compensation Impacts (note 3)	Business Development Impacts (note 4)	In-New Business Tax Impacts (note 5)	
Direct Economic Level								
Farm Returns	\$17,250,000	\$17,250,000						\$0
Direct Employment - jobs	790.4		87.5	322.0	210.0	104.8		86.1
Employee Compensation	\$7,887,680		\$1,223,748	\$4,474,048	\$10,312,044	\$2,306,008		(\$10,648,168)
Indirect Support Industries								
Farm Support Employment - jobs	865.2		15.3	41.2	0.0	38.4		870.3
Employee Compensation	\$9,718,036		\$354,438	\$1,732,414		\$1,305,648		\$6,323,538
Proprietor Income	\$3,526,664		\$123,840	\$361,720		\$232,160		\$2,808,944
In-direct Business Taxes	\$1,922,987		\$49,050	\$205,276		\$291,904	\$1,550,000	(\$173,243)
Retail Activities								
Retail Employment - jobs	198.8		39.5	18.6	38.8	65.8	29.6	6.3
Employee Compensation	\$3,692,690		\$771,053	\$350,085	\$889,682	\$1,235,524	\$504,824	\$141,523
Proprietor Income	\$938,802		\$244,675	\$89,108	\$175,512	\$314,580	\$140,400	(\$27,472)
In-direct Business Taxes	\$1,031,386		\$172,091	\$97,581	\$92,258	\$344,310	\$154,304	\$170,842

Note 1. Payment amounts to about \$230 per acre

Note 2. Compensation amounts to about \$160 per acre, but would not be required for more than 3 years (\$12,000,000)

Note 3. Compensation amounts to about \$160 per acre over 3 years. Assumes the retraining effort results in workers securing new jobs (\$12,000,000)

Note 4. Mitigation amounts to about \$160 per acre, but would not be required for more than 2 years (\$12,000,000)

Note 5. Mitigation amounts to about \$22 per acre (\$1,550,000)

Note 6. Construction impacts last for only about 2 years - adjusted to a longer term impact

Note 7. Overall employee compensation would increase by over \$4.3 million per year for the first 3 years

Summary Notes: Total cash payment, compensation and mitigation is estimated to be about \$732 per acre for first 3 years

After 3 years, cash payment is estimated to be about \$252 per acre

Assumed scenario results in reduction of lost jobs from 1,952 to 860 lost jobs and business taxes being about equal

Total program cost is estimated to be about \$55 million per year initially

After about 3 years, program costs would drop to about \$23.8 million per year

Total program cost includes administration costs of IID, which are not shown above (about \$5 million annually)

Pro Forma Balance Sheet for Providing

Alan P. Kleinman

October 30, 2001

for Water and Salton Sea Restoration in Imperial Valley

file:IIDproforma

Hay Crop Following

Assumptions: 425,000 acre feet of water from following - 75,000 acres
Hay crop following scenario and Salton Sea Restoration Program

	Economic Reductions from Following	Payments, Compensation, and Mitigation Activities and Options						Net Program Impacts (note 7)
		Farm Payments Impacts (note 1)	Salton Sea Program Impacts (note 6)	Employee Retraining Impacts (note 2)	Worker Compensation Impacts (note 3)	Business Development Impacts (note 4)	In-lieu Business Tax Impact (note 5)	
Direct Economic Level								
Farm Returns	\$17,250,000	\$17,250,000						\$0
Direct Employment - jobs	381.8		67.5	241.5	157.5	78.8		(163.3)
Employee Compensation	\$3,703,487		\$1,223,748	\$3,355,536	\$7,734,033	\$1,729,506		(\$10,339,337)
Indirect Support Industries								
Farm Support Employment - jobs	226.0		15.3	30.9	0.0	28.8		151.0
Employee Compensation	\$2,859,528		\$354,438	\$1,299,311		\$979,238		\$28,544
Proprietor Income	\$956,957		\$123,840	\$271,290		\$174,120		\$387,707
In-direct Business Taxes	\$692,525		\$49,050	\$153,957		\$218,928	\$0	\$270,590
Retail Activities								
Retail Employment - jobs	64.5	39.5	18.6	27.6	49.4	22.2		(92.8)
Employee Compensation	\$1,209,359	\$771,053	\$350,085	\$517,262	\$926,843	\$376,818		(\$1,734,302)
Proprietor Income	\$306,220	\$244,675	\$89,108	\$131,834	\$235,935	\$105,300		(\$500,430)
In-direct Business Taxes	\$338,180	\$172,091	\$97,581	\$89,194	\$258,233	\$115,728		(\$374,646)

Note 1. Payment amounts to about \$230 per acre

Note 2. Compensation amounts to about \$80 per acre, but would not be required for more than 3 years (\$6,000,000)

Note 3. Compensation amounts to about \$80 per acre over 3 years. Assumes the retraining effort results in workers securing new jobs (\$6,000,000)

Note 4. Mitigation amounts to about \$80 per acre, but would not be required for more than 2 years (\$6,000,000)

Note 5. There would be an increase in in-direct business taxes of about \$100,000 per year

Note 6. Construction impacts last for only about 2 years - adjusted to a longer term impact

Note 7. Overall employee compensation would increase by over \$11.8 million per year for the first 3 years

Summary Notes: Total cash payment, compensation and mitigation is estimated to be about \$470 per acre for first 3 years

After 3 years, cash payment is estimated to be about \$230 per acre

Assumed scenario results in reduction of lost jobs from 675 to a 100 job gain and business taxes being about equal

Total program cost is estimated to be about \$40 million per year initially

After about 3 years, program costs would drop to about \$13 million per year

Total program cost includes administration costs of IID, which are not shown above (about \$5 million annually)



DRAFT

**INDEPENDENT ANALYSIS OF THE ECONOMIC IMPACT STUDIES IN THE
IID WATER CONSERVATION AND TRANSFER PROJECT EIR/EIS**

Prepared For:

**THE COMMUNITY ADVISORY COMMISSION OF THE
IMPERIAL IRRIGATION DISTRICT
P.O. Box 1944
El Centro, CA 92244**

Prepared By:

**CIC Research, Inc.
8361 Vickers Street
San Diego, CA 92111-2112
Tel: (858) 637-4000
Fax: (858) 637-4040**

March 15, 2002



EXECUTIVE SUMMARY

After replicating much of the CH2M Hill analysis of Socioeconomic Impacts, CIC could find no substantive disagreement with the results as presented the IID Water Conservation and Transfer Project Draft EIR/EIS. We did find some differences in the data, and some differences in the arithmetic. We also think those results could have been presented more succinctly, and we present Table 1 as a summary of the essential features of the economic analysis. However, as far as the analysis goes, we would not venture any substantial disagreement. We think it is fair, however, to point out some possible results that were not fully developed and analyzed.

1. Some of the programs presented in the CH2M Hill analysis are not economically viable.
2. There is no economically viable program that does not include at least some of the higher prices contained in the IID/SDCWA agreement.
3. 100 KAFY transferred to CVWD/MWD under the QSA is not economically viable if the 100 KAFY is obtained through conservation. However, there is no requirement in the QSA against fallowing.
4. The IID/SDCWA agreement which does prohibit fallowing, (although this requirement is evidently capable of being revised or eliminated) requires a minimum transfer of 130 KAFY. Any transfer under this agreement adds significantly to the total revenue because of the much higher SDCWA prices. The minimum project under the QSA that takes advantage of the higher prices is 230 KAFY. Adding an additional 70 KAFY under the IID/SDCWA agreement makes the project more financially attractive.
5. Although not considered in the EIR/EIS analysis, even if the IID/SDCWA agreement is not modified, nothing in either agreement prohibits a program of fallowing to supply the QSA requirement for CVWD and/or MWD. So a feasible program would fallow for this 100 KAFY, while using conservation for the 130 to 200 KAFY for SDCWA.
6. The analysis of the effects of fallowing was slanted in the direction of maintaining the same proportions in cropping patterns in the future as there has been in the past. This has the advantage of being similar to the expected cropping given conservation as the means of freeing up agricultural water for transfer. However, much more efficient results could be obtained by changing this assumption. From the viewpoint of economic efficiency, the analysis would consider reducing production in agricultural practices that had high water requirements relative to crop value. CIC came up with an approximate analysis by fallowing only hay and pasture crops. Besides requiring fallowing

only 37,500 acres instead of the 53,286 acres required to maintain proportionality, the employment impacts are reduced to just over 500 jobs lost as compared to over 1,400.

7. Water freed-up by conservation under any scenario is not as economically attractive as simply buying the required acreage and saving the water that would have been used on it. This would not pre-empt using systems that would encourage conservation through better use of water and/or better agricultural practices. This should have been part of the analysis.
8. Apparently, a great deal of the compensation to farmers goes to State and Federal taxes (40.3%). Needless to say, programs for mitigating adverse impacts such as job development and job training for jobs lost as a result of fallowing would reduce the State and Federal tax bill by 40.3% of the program cost.

Table 1

Summary of Scenarios Presented in the EIR/EIS (in constant 2001 dollars - millions)

Scenario (1)	Where Water Comes From (1)	Amount of Water Transferred (1)	Prices Used (2)	Average Yearly Revenue (3)	Annual Average Conservation Costs (4)	Annual Farmer Compensation After Taxes (4)	Annual Federal and State Taxes (5)	IID Program Costs (6)
Project A	All Conservation	300 KAFY	SDCWA for all 300 KAFY	\$87.2	\$36.8	\$23.0	\$15.5	\$11.9
Project B	All Conservation	300 KAFY	100 KAFY @ MWD + 200 @ SDCWA	\$71.3	\$38.3	\$12.8	\$8.6	\$11.5
Project C	All Following	300 KAFY	SDCWA for all 300 KAFY	\$87.2	\$0.0	\$51.2	\$34.5	\$1.5
Project D	All Following	300 KAFY	50 KAFY @ CVWD + 50 KAFY @ MWD + 200 KAFY @ SDCWA	\$68.2	\$0.0	\$39.0	\$26.3	\$3.0
Alternative 2	All Conservation	130 KAFY	All SDCWA	\$40.6	\$22.5	\$13.7	\$9.2	-\$4.9
Alternative 3A	All Conservation	230 KAFY	MWD 100 KAFY+130 KAFY to SDCWA	\$50.5	\$35.8	\$11.0	\$7.4	-\$3.7
Alternative 3B	All Following	230 KAFY	CVWD 50 KAFY + MWD 50 KAFY + 130 KAFY to SDCWA	\$47.4	\$0.0	\$26.9	\$18.1	\$2.4

(1) Draft EIR/EIS Section 3.14 pp. 10 & 16.

(2) Draft EIR/EIS Appendix G pp. G-9 to G-11.

(3) CIC Research, based on price data in Appendix G, and Transfer Ramp-up Schedules in Appendix G p. G-4.

(4) Based on 75 year average of data contained in Appendix G Table G-5 p.G-16 and Appendix Table G-6 p. G-17.

(5) Based on Draft EIR/EIS Appendix G p. G-11 "40.3%."

(6) IID program costs are based on the statement in Appendix G, p. G-11... All revenues above IID's Program costs are paid to farmers as a per acre foot compensation. This column is derived as a residual based on the other cost data presented in Appendix G.



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INTRODUCTION

CIC Research, Inc. conducted a review of the socioeconomic sections of the Draft EIR/EIS on the IID Water Conservation and Transfer Project. The purpose of this report is to provide an independent analysis of the socioeconomic material contained in the report.

BACKGROUND

Draft EIR/EIS

This report contains an analysis of a number of different projects and alternatives arriving at statements about best case and worst case, which seem to revolve around positive versus negative changes in Imperial County employment. There is a labored discussion about revenues, costs of conservation, and payments to farmers. However, the analysis is complicated by very different water price schedules, "ramp-up" timing schedules for water transfers and other time frames for the analysis. We will summarize these elements before discussing the economic impact analysis.

Water Transfer Revenues

The different projects and alternatives have revenues that vary for two reasons. First, the quantity of water transferred varies, and at different "ramp-up" schedules over time. Second, the prices received for different quantities of water varies over time and between programs. Price variation depends on whether the Quantification Settlement Agreement (QSA) is or is not in effect, and whether or not water is transferred to CVWD or MWD, or SDCWA, and the amounts going to each. These two variables are intertwined, but are best explained by examining prices first.

The lowest price is obtained for the first 50 KAFY if it is transferred to CVWD... \$50 per acre foot, (actually, escalated by 2.5% per year to \$52 in 2001 dollars). After 2001, the value of this \$52 decreases gradually in constant 2001 dollars to account for future inflation. A discount rate of 3.2% is used to maintain prices in real 2001 dollars. This has the effect of lowering the real value of constant future prices. By the end of the 75 year period of analysis the real price in constant 2001 dollars for this first 50 KAFY in effect is reduced to \$32 per acre foot. A similar analysis is made for the \$125 price for any water transferred to MWD or the second 50 KAFY transferred to CVWD. The price in 2001 dollars is estimated at real value \$130 in 2002 and declines in value (due to inflation) gradually after 2002 to \$79 over the next 75 years.

By contrast, prices under the IID SDCWD agreement are not only higher in 2001 (\$241) but under the agreement increase for the first 16 years of transfers to a high of \$373 (in constant

Table 1

Summary of Scenarios Presented in the EIR/EIS (in constant 2001 dollars - millions)

Scenario (1)	Where Water Comes From (1)	Amount of Water Transferred (1)	Prices Used (2)	Average Yearly Revenue (3)	Annual Average Conservation Costs (4)	Annual Farmer Compensation After Taxes (4)	Annual Federal and State Taxes (5)	IID Program Costs (6)
Project A	All Conservation	300 KAFY	SDCWA for all 300 KAFY	\$87.2	\$36.8	\$23.0	\$15.5	\$11.9
Project B	All Conservation	300 KAFY	100 KAFY @ MWD + 200 @ SDCWA	\$71.3	\$38.3	\$12.8	\$8.6	\$11.5
Project C	All Following	300 KAFY	SDCWA for all 300 KAFY	\$87.2	\$0.0	\$51.2	\$34.5	\$1.5
Project D	All Following	300 KAFY	50 KAFY @ CVWD + 50 KAFY @ MWD + 200 KAFY @ SDCWA	\$68.2	\$0.0	\$39.0	\$26.3	\$3.0
Alternative 2	All Conservation	130 KAFY	All SDCWA	\$40.6	\$22.5	\$13.7	\$9.2	-\$4.9
Alternative 3A	All Conservation	230 KAFY	MWD 100 KAFY+130 KAFY to SDCWA	\$50.5	\$35.8	\$11.0	\$7.4	-\$3.7
Alternative 3B	All Following	230 KAFY	CVWD 50 KAFY + MWD 50 KAFY + 130 KAFY to SDCWA	\$47.4	\$0.0	\$26.9	\$18.1	\$2.4

(1) Draft EIR/EIS Section 3.14 pp. 10 & 16.

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(5) Based on Draft EIR/EIS Appendix G p. G-11 "40.3%."

(6) IID program costs are based on the statement in Appendix G, p. G-11... All revenues above IID's Program costs are paid to farmers as a per acre foot compensation. This column is derived as a residual based on the other cost data presented in Appendix G.

2001 dollars) by 2018.¹ After 2018, the price quoted in real 2001 dollars then declines in value due to inflation reaching \$272 (in 2001 dollars) after 75 years.

Water transfer quantity variation seems to be tied to time requirements to get conservation measures in place. The discussed scenarios ramp-up as follows; 20 KAFY in 2002, 40 KAFY in 2003, 60 KAFY in 2004, 80 KAFY in 2005, 100 to 110 KAFY (depending on project) in 2006.² One limit is reached in 2008 at 130 KAFY.³ Under another program, the quantity transferred continues to grow to 230 KAFY by 2025. Two other programs continue to 300 KAFY reached in 2021 if the QSA is not in effect, and 2026 if the QSA is in effect.

An analysis of these different possibilities from least revenue to most, makes it clear that transfers of 50 KAFY to CVWD at about \$2.5 million is only a good deal if compared to what it brings in IID sales (at about \$15 per acre foot, \$75,000). If this amount is transferred to MWD at QSA mandated \$125 it brings \$6.25 million, and if transferred at the lowest rate in the agreement with SDCWA it would yield revenues of \$12 million.

At the first limit of transfers, (130 KAFY) least revenues are obtained at 50 KAFY transfer to CVWD and next 80 KAFY transferred at \$125. Skipping the ramp-up and inflation adjustments this is revenue of \$12.5 million in 2001 dollars. The same quantity transferred under the SDCWA agreement price schedule yields \$32 million at the lowest price in the agreement, and \$48 million at the highest price.

An examination of the revenue associated with the range of possibilities for the 75 years under consideration results in the following, in constant 2001 dollars.

- ◆ Least for 130 KAFY \$722 million total, or \$9.7 million per year on average (CVWD/MWD prices).
- ◆ Most for 130 KAFY \$3 billion total, or \$40.6 million per year on average (IID/SDCWA prices only).
- ◆ Least for 230 KAFY \$3.6 billion, or \$47.4 million per year on average (CVWD/MWD QSA prices for 100 KAFY and IID/SDCWA prices for 130 KAFY).
- ◆ Most for 230 KAFY \$5 billion, or \$67 million per year on average (IID/SDCWA prices only).
- ◆ Least for 300 KAFY \$5.1 billion, or \$68.2 million per year on average (CVWD/MWD QSA prices for 100 KAFY and IID/SDCWA prices for 200 KAFY).
- ◆ Most for 300 KAFY \$6.5 billion, or \$87.2 million per year on average (IID/SDCWA prices only).

This is a wide range of revenue possibilities illustrating the importance of the price differences between CVWD, MWD, and SDCWD.

¹ Actually, the agreement calls for a 25% discount that diminishes yearly over the first 17 years of the agreement

² Appendix G p. G-4.

³ Draft EIR/EIS p. 13.14-10.

Conservation Costs

On farm conservation costs are listed as \$83,720 per for an 80 acre tailwater recovery system (TRS) composed of:

\$25,000 for a diesel pump having a useful life of 10 years.

\$27,270 for piping that has to be replaced after 30 years.

\$31,000 for pond excavation and components lasting 75 years.

If this \$83,720 takes replacement costs into consideration, the actual cost over the 75 years is \$286,675 per 80 acres, or \$3,583 per acre, or about \$45 per acre per year. Additionally, each TRS requires an annual expenditure of \$1,980 for energy, and \$1,885 for maintenance. This adds an additional annual cost for each 80 acre TRS of \$3,865 or \$48 per acre, bringing the total annual cost per acre to \$93. Each 80 acre conservation TRS saves 53 acre feet, or 0.66 acre feet per acre. The average on farm annual cost reduction for this level of water savings is about \$10 per acre. Obviously no farmer would spend \$93 per acre per year to save \$10 so an incentive payment of some sort would be required to bring about this type of conservation. At the least revenue for 130 KAFY transfer, (\$10 million per year) divided over the approximate 200,000 acres required to conserve 130 KAFY would yield \$50 per acre. Under this scenario then, would a farmer spend \$96 in order to save \$10 in water costs if given \$50 for the trouble? Not likely, and we have not even considered interest charges in the conservation capital costs of \$3,583. Obviously then at the lower water prices quoted for transfers to CVWA and/or MWD there is insufficient money for conservation to be economically viable. However, conservation is not required under the QSA, so distributing \$50 per acre for using less water may provide a workable incentive, for example for following.

The purpose of the above analysis is to show that in the absence of higher prices as in the IID/SDCWA agreement, proposals for transfers of water through conservation measures applied to Imperial Valley agriculture are not economically feasible. Some transfer at the higher SDCWA price schedule is required, or alternatively transfers involving following rather than conservation would be required. The minimum transfer quantity specified in the IID/SDCWA agreement is 130 KAFY.

The higher prices in the SDCWA agreement would result in \$41 million per year (in constant 2001 dollars) for 130 KAFY obtained by conservation on 200,000 acres or \$205 per acre per year. This would provide a greater incentive for farmers to spend \$93 per acre to save \$10 in water costs. Again, not including interest costs, payoff for all 75 years of conservation costs could be made in just 16 years.⁴ But if this is a good deal, why limit it to 130 KAFY when at 300 KAFY, every farmer in the valley could participate. Moreover, if this is a good deal why bother with the conservation costs at all. 300 KAFY

⁴ There is a disparity between these conservation costs and those used by CH2M Hill. They estimate conservation costs in this alternative at an annual average of \$22.5 million, and payments to farmers at \$22.9 million, which leaves the program about \$5 million short of paying for itself.

could be obtained by fallowing 53,286 acres and a no cost \$200 per acre per year distributed to every farmer, never-mind saving the \$10 per acre. That avoids the \$93 per acre expense to save \$10, which after all is not a sound way to do business.

Between these two cases is a 230 KAFY scenario that represents the minimum transfer that fulfills the requirements of both the QSA and the IID/SDCWA agreement. I.e., in case the 100 KAFY at the lower prices is a requirement. We examined this case, and at the \$50.5 million average annual revenue and the CH2M Hill analysis of \$35.8 million in annual conservation costs plus \$18.4 million in annual farmer payments, the program ends up \$3.7 million per year on average short of paying for itself. However, if this unsound business proposition could be made more attractive by increasing the transfer to SDCWA to 200 KAFY, the extra \$11.3 million makes it a workable program (Project B). This would pump up the revenue enough to make conservation a more attractive alternative if the QSA is in effect and the lower prices apply to the first 100 KAFY.

These issues are not explored in any depth in the draft EIR/EIS. The analysis rather turns to an assessment of economic impacts under 7 different scenarios.

Economic Impact Analysis

The economic impact analysis considers scenarios A, B, C, and D. Also, alternatives 2, and 3A and 3B.. In A and B, 300 KAFY are saved through conservation, 230 KAFY by on farm TRS measures and 70 KAFY saved through delivery system improvements. Project A transfers all 300 KAFY at SDCWA prices. Project B transfers 100 KAFY at the lower MWD price (without the first 50 KAFY at \$50 in effect) and transfers 200 KAFY according to the SDCWA price schedule.

Scenarios C and D also assume 300 KAFY transferred. Only in this case, the 300 KAFY is obtained by fallowing approximately 50,000 acres. (Actually, at the quoted average 5.63 acre feet of water per acre of land, it takes fallowing 53,286 acres to save 300 KAFY). However, because of multi-cropping, 1.17 acres of crops are lost on average for each acre fallowed. Thus the opportunity costs of fallowing 53,286 acres is 62,345 acres of crops. An analysis of the crops lost through fallowing is subject to several issues, some of which are summarized below. The only differences between Scenario C and Scenario D, is the revenue associated with each. Scenario C assumes all 300 KAFY is water transferred under the price schedule contained in the IID/SDCWA agreement. While Scenario D assumes only 200 KAFY of revenue is obtained at SDCWA prices and 100 KAFY is transferred at the lower CVWD/MWD prices and in this case, the first 50 KAFY does transfer at the lowest CVWD rate (\$50 per acre foot for the first 50 KAFY).

Revenues under each scenario are summarized here and simplifying for the discounted values (to express dollars in constant 2001 dollars), and also the ramp-up schedule for water transfers.

- ◆ Scenario A could be as high as \$110 million per year using highest prices, but averaged over the life of the project, (75 years and using the gradual ramp-up schedule) is about \$87.2 million dollars per year in constant 2001 dollars.
- ◆ Scenario B assumes 100 KAFY at about \$130 per acre foot in 2002 dollars declining over 75 years to \$79 per acre foot in real 2001 dollars. This amounts to an average of \$9.9 million per year in 2001 dollars. The additional 200 KAFY transferred at SDCWA prices would result in an additional average annual revenue of \$61.4 million or total revenue of \$71.3 million per year in constant 2001 dollars.
- ◆ Scenario C assumes 300 KAFY at SDCWA prices or an average of \$87.2 million per year in constant 2001 dollars.
- ◆ Scenario D assumes 50 KAFY at the lowest price (75 year average of \$2 million per year), and 50 KAFY at the MWD price (an average of about \$5 million per year) and 200 KAFY at SDCWA prices, which as in Scenario B is an average revenue of \$61.4 million. Over the 75 years the average total revenue per year in constant 2001 dollars would therefore be about \$68.2 million.

These projects are summarized in Table 1, along with 3 other alternatives that were presented in the report involving lower amount of transfers (130 KAFY & 230 KAFY).

(a) Conservation Projects A and B

Scenario A and B, proposes on farm conservation capital costs of \$83,270 (\$286,675 including replacement capital costs) per 80 acre tailwater recovery system (TRS). There would also be labor and maintenance charges of \$1,885 per year per TRS and \$1,980 per year in energy costs to operate the systems. It would require 376 TRS systems to obtain 20 KAFY in the first year of the program. To get to 230 KAFY it would take 4,324 such TRSs on 346,000 acres. The remaining 70 KAFY are proposed to come from delivery system improvements. Specifically:

- ◆ 10 subsurface systems at an average capital cost of \$271,000 (\$2.7 million) each would conserve 511 acre feet per year, (5.1 KAFY total for the 10). These systems would each have an annual energy cost of \$1,691 and annual labor and other costs of \$3,000 per system (\$121,966 total annual costs). This makes the average annual cost of about \$20 per acre foot.
- ◆ 16 surface systems at an average cost of \$180,000 (\$2.9 million total) that would conserve 622 acre feet per year each (a total of 10 KAFY). In addition to these capital costs, these systems would each have an annual energy cost of \$1,715 and annual labor and other costs of \$3,000 per system (\$121,966 total annual costs). This tally's to about \$15 per year per acre foot.
- ◆ Additional conservation of up to 85 KAFY are assumed from 14 sites for lateral interceptor systems at an initial capital cost of \$495 per acre foot conserved plus energy and maintenance

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costs of \$5 and \$6 per acre foot respectively. Assuming a useful life of 25 years, this would add to an acre foot cost of about \$30 in constant 2001 dollars.

To initiate a 300 KAFY conservation program would require about \$1,310 in initial capital cost plus \$58 in annual energy and operations and maintenance costs per acre foot. Replacement capital costs could add as much as \$3,200 to the capital costs per acre foot, or a total capital cost outlay over the 75 years of \$4,500 per acre foot. Averaged over a 75 year period this amounts to \$60 per acre foot in capital outlays, and \$58 per acre foot in annually recurring operations and maintenance costs. Not including interest costs, this is a cost of \$118 per acre foot of water conserved for transfer. The figure the report arrives at including interest is about \$127.

(b) Conservation Expenditure Impacts

Tables 2 through 5 show the results of CIC's replication of CH2M Hill's analysis of the economic impacts of the extensive conservation projects required to conserve 300 KAFY, based on the Project A scenario. The results are based on total conservation expenditures averaged over 75 years in constant 2001 dollars.

Table 2 - 75 Year Annual Average Output Impacts – (Millions of 2001 Dollars)

Project A Conservation Impacts	Direct Output	Indirect Output	Induced Output	Total Output
New Utility Structures	\$15.0	\$3.7	\$3.5	\$22.2
Maintenance and Repair Other Facilities	\$7.1	\$1.0	\$2.3	\$10.5
Electric Services	\$1.0	\$0.1	\$0.1	\$1.1
Wholesale Trade	\$7.5	\$1.3	\$1.7	\$10.4
Banking	\$6.2	\$0.7	\$0.9	\$7.8
Total	\$36.8	\$6.7	\$8.6	\$52.1

Table 3 - 75 Year Annual Average Employment Impacts

Project A Employment	Direct Employment	Indirect Employment	Induced Employment	Total Employment
New Utility Structures	161	50	51	262
Maintenance and Repair Other Facilities				
Electric Services				
Wholesale Trade	83	16	25	123
Banking	55	9	13	77
Total	427	89	125	641

Table 4 - 75 Year Annual Average Labor Compensation Impacts– (Millions of 2001 Dollars)

Project A Labor Income	Direct Income	Indirect Income	Induced Income	Total Income
New Utility Structures	\$3.6	\$1.1	\$1.0	\$5.7
Maintenance and Repair Other Facilities				\$3.7
Electric Services				
Wholesale Trade				
Banking				
Total				

Table 5 - 75 Year Annual Average Proprietors Income Impacts- (Millions of 2001 Dollars)

Project A Proprietors Income	Direct Income	Indirect Income	Induced Income	Total Income
New Utility Structures	\$1.9	\$0.3	\$0.3	\$2.5
Maintenance and Repair Other Facilities	\$1.4	\$0.1	\$0.2	\$1.7
Electric Services	\$0.1	\$0.0	\$0.0	\$0.1
Wholesale Trade	\$0.2	\$0.1	\$0.1	\$0.4
Banking				

(c) Following Projects C and D.

The cost of water conserved for transfer by following agricultural acreage is estimated by using 5.63 average water used in irrigation per acre under cultivation. Obtaining 300 KAFY, requires following 53,286 acres. Converting this reduced cropping to dollars requires knowing what crops are lost and their market value. The EIR/EIS used the following data;

1. Cotton	2%	962 acres at	\$1,003 per acre = \$0.97 million.
2. Food grains	13%	7,271 acres at	\$425 per acre = \$3.09 million.
3. Hay and pasture	51%	26,989 acres at	\$444 per acre = \$11.98 million.
4. Grass seed	5%	2,576 acres at	\$638 per acre = \$1.64 million.
5. Vegetables	22%	11,614 acres at	\$3,400 per acre = \$39.49 million.
6. Sugar crops	7%	3,873 acres at	1,227 per acre = \$4.75 million.
Total	100%	53,285 acres at	\$1,166 per acre = \$62.13 million.

The total opportunity costs of transferring 300 KAFY in terms of crops lost, according to this assessment is \$207 in lost crops per acre foot of water transferred. However, gross value of crops not produced would be an exaggerated assessment of opportunity costs. Economic Impact Analysis is a preferred method for assessing economic impacts for decreases or increases in an economy for changes that effect a few sectors directly.⁵

The EIR/EIS socioeconomic study employed the IMPLAN Pro input-output modeling software with 1998 Imperial County data to make these assessments. CIC Research tried to replicate this approach generating the following tables 6 through 11. In general, the results are the same as in the Draft EIR/EIS.

Table 6 - Estimated Crop Losses for 300 KAFY Following

Crops Impacted	Percentage of Total Acres	Crop Acres Lost	Value per Acre	Total Value In Millions
1. Cotton	-2%	-962	\$1,003	-\$0.97
2. Food grains	-14%	-7,271	\$425	-\$3.09
3. Hay and pasture	-51%	-26,989	\$444	-\$11.98
4. Grass seed	-5%	-2,576	\$638	-\$1.64
5. Vegetables	-22%	-11,614	\$3,400	-\$39.49
6. Sugar crops	-7%	-3,873	\$1,227	-\$4.75
Total	100%	-53,285	\$1,166	-\$62.13

⁵ The impact on the entire economy is measured by estimating indirect impacts, and induced impacts. Indirect impacts are changes associated those sectors that produce inputs for sectors that are directly impacted. Induced impact are changes associated with the change in expenditures by households because of the change in income payments by sectors that are directly or directly impacted.

Table 7 - Estimated County-wide Output Losses for 300 KAFY Following

Output Impacts	Direct Output Changes	Indirect Output Changes	Induced Output Impacts	Total Output Impacts
1. Cotton	-\$0.97	-\$0.42	-\$0.16	-\$1.54
2. Food grains	-\$3.09	-\$1.15	-\$0.36	-\$4.60
3. Hay and pasture	-\$11.98	-\$3.89	-\$1.87	-\$17.74
4. Grass seed	-\$1.64	-\$0.44	-\$0.22	-\$2.30
5. Vegetables	-\$39.49	-\$18.24	-\$7.94	-\$65.66
6. Sugar crops	-\$4.75	-\$1.68	-\$0.64	-\$7.07
Total	-\$61.92	-\$25.81	-\$11.19	-\$98.92

Table 8 - Estimated Employment Losses for 300 KAFY Following

Employment Impacts	Direct Jobs	Indirect Jobs	Induced Jobs	Total Jobs
1. Cotton	-.3	-.11	-.2	-.16
2. Food grains	-.35	-.16	-.5	-.56
3. Hay and pasture	-.267	-.81	-.27	-.375
4. Grass seed	-.68	-.5	-.3	-.76
5. Vegetables	-.162	-.540	-.116	-.818
6. Sugar crops	-.35	-.33	-.9	-.77
Total	-.569	-.686	-.163	-.1,418

Table 9 - Estimated Labor Income Losses for 300 KAFY Following

Labor Income	Direct Labor Income	Indirect Labor Income	Induced Labor Income	Total Labor Income
1. Cotton	-\$0.08	-\$0.06	-\$0.03	-\$0.16
2. Food grains	-\$0.07	-\$0.26	-\$0.10	-\$0.43
3. Hay and pasture	-\$0.26	-\$0.96	-\$0.51	-\$1.73
4. Grass seed	-\$0.03	-\$0.10	-\$0.06	-\$0.19
5. Vegetables	-\$4.93	-\$5.08	-\$2.18	-\$12.19
6. Sugar crops	-\$0.10	-\$0.39	-\$0.18	-\$0.66
Total	-\$5.46	-\$6.85	-\$3.07	-\$15.37

Table 10 - Estimated Proprietor Earnings Reductions for 300 KAFY Fallowing

Proprietor Income \$Millions	Direct Proprietor Income	Indirect Proprietor Income	Induced Proprietor Income	Total Proprietor Income
1. Cotton	-\$0.09	-\$0.04	-\$0.01	-\$0.14
2. Food grains	-\$0.30	-\$0.09	-\$0.03	-\$0.41
3. Hay and pasture	-\$2.15	-\$0.34	-\$0.13	-\$2.63
4. Grass seed	-\$0.27	-\$0.03	-\$0.02	-\$0.31
5. Vegetables	-\$3.89	-\$1.86	-\$0.57	-\$6.32
6. Sugar crops	-\$0.64	-\$0.15	-\$0.05	-\$0.84
Total	-\$7.34	-\$2.50	-\$0.80	-\$10.65

IMPLAN pro could also be used to explore impacts on indirect business taxes, as part of a fiscal impact analysis. CIC took the liberty of adding a table that would show this. It pales beside the Draft EIR/EIS estimate of 40.3 percent of net revenue payable to state and federal taxes.

Table 11 - Estimated Decreases in Indirect Business Tax Collections for 300 KAFY Fallowing

Indirect Business Taxes \$Millions	Direct Taxes	Indirect Taxes	Induced Taxes	Total Indirect Business Taxes
1. Cotton	-\$0.02	-\$0.03	-\$0.01	-\$0.06
2. Food grains	-\$0.08	-\$0.09	-\$0.03	-\$0.19
3. Hay and pasture	-\$0.48	-\$0.25	-\$0.14	-\$0.87
4. Grass seed	-\$0.01	-\$0.03	-\$0.02	-\$0.05
5. Vegetables	-\$0.57	-\$0.87	-\$0.61	-\$2.04
6. Sugar crops	-\$0.14	-\$0.10	-\$0.05	-\$0.29
Total	-\$1.29	-\$1.37	-\$0.85	-\$3.51

(d) Alternative Fallowing Scenario

There are many other ways to free up 300 KAFY through changing agricultural practices. For example, by fallowing 37,500 Acres of Hay and Pasture production 300 KAFY could be saved. This would reduce adverse impacts to \$16.65 million direct farm output, \$25 million county-wide output, 521 total jobs, that produce \$2.41 million in employee compensation, and \$3.65 million proprietors income. (See Tables 10 through 17).

Table 12 - Economic Impacts of Fallowing 37,500 acres of Hay and Pasture Production

Crops Impacted	Percentage of Total Acres	Crop Acres Lost	Value per Acre	Total Direct Value In Millions
1. Cotton	-2%	0	\$1,003	\$0.00
2. Food grains	-14%	0	\$425	\$0.00
3. Hay and pasture	-51%	37,500	\$444	\$16.65
4. Grass seed	-5%	0	\$638	\$0.00
5. Vegetables	-22%	0	\$3,400	\$0.00
6. Sugar crops	-7%	0	\$1,227	\$0.00
Total	100%	37,500	\$1,166	\$16.65

Table 13 - County Wide Impacts of Fallowing 37,500 acres of Hay and Pasture Production (Millions of 2001 Dollars)

Output Impacts	Direct Output Changes	Indirect Output Changes	Induced Output Impacts	Total Output Impacts
1. Cotton	\$0.00	\$0.00	\$0.00	\$0.00
2. Food grains	\$0.00	\$0.00	\$0.00	\$0.00
3. Hay and pasture	\$16.65	\$5.41	\$2.60	\$24.65
4. Grass seed	\$0.00	\$0.00	\$0.00	\$0.00
5. Vegetables	\$0.00	\$0.00	\$0.00	\$0.00
6. Sugar crops	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$16.65	\$5.41	\$2.60	\$24.65

Table 14 - Employment Impacts of Fallowing 37,500 acres of Hay and Pasture Production (Millions of 2001 Dollars)

Employment Impacts	Direct Jobs	Indirect Jobs	Induced Jobs	Total Jobs
1. Cotton	0	0	0	0
2. Food grains	0	0	0	0
3. Hay and pasture	370	113	38	521
4. Grass seed	0	0	0	0
5. Vegetables	0	0	0	0
6. Sugar crops	0	0	0	0
Total	370	113	38	521

**Table 15 - Labor Income Impacts of Following 37,500 acres of Hay and Pasture Production
(Millions of 2001 Dollars)**

Labor Income	Direct Labor Income	Indirect Labor Income	Induced Labor Income	Total Labor Income
1. Cotton	\$0.00	\$0.00	\$0.00	\$0.00
2. Food grains	\$0.00	\$0.00	\$0.00	\$0.00
3. Hay and pasture	\$0.36	\$1.33	\$0.71	\$2.41
4. Grass seed	\$0.00	\$0.00	\$0.00	\$0.00
5. Vegetables	\$0.00	\$0.00	\$0.00	\$0.00
6. Sugar crops	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$0.36	\$1.33	\$0.71	\$2.41

**Table 16 - Proprietor Income Impacts of Following 37,500 acres of Hay and Pasture Production
(Millions of 2001 Dollars)**

Proprietor Income \$Millions	Direct Proprietor Income	Indirect Proprietor Income	Induced Proprietor Income	Total Proprietor Income
1. Cotton	\$0.00	\$0.00	\$0.00	\$0.00
2. Food grains	\$0.00	\$0.00	\$0.00	\$0.00
3. Hay and pasture	\$2.99	\$0.48	\$0.19	\$3.65
4. Grass seed	\$0.00	\$0.00	\$0.00	\$0.00
5. Vegetables	\$0.00	\$0.00	\$0.00	\$0.00
6. Sugar crops	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$2.99	\$0.48	\$0.19	\$3.65

Table 17 - Impacts of Following 37,500 acres of Hay and Pasture Production on Indirect Business Taxes (Millions of 2001 Dollars)

Indirect Business Taxes \$Millions	Direct Taxes	Indirect Taxes	Induced Taxes	Total Indirect Business Taxes
1. Cotton	\$0.00	\$0.00	\$0.00	\$0.00
2. Food grains	\$0.00	\$0.00	\$0.00	\$0.00
3. Hay and pasture	\$0.67	\$0.35	\$0.20	\$1.22
4. Grass seed	\$0.00	\$0.00	\$0.00	\$0.00
5. Vegetables	\$0.00	\$0.00	\$0.00	\$0.00
6. Sugar crops	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$0.67	\$0.35	\$0.20	\$1.22

Farmer Compensation Impacts

The 4 projects (A,B,C,D) have widely varying payments in the form of land owner compensation.⁶

1. Project A - Total Compensation -\$600 Million, or \$8 Million per year.
2. Project B – Total Compensation \$300 Million, or \$4 Million per year.
3. Project C – Total Compensation \$1.6 Billion or \$20.7 Million per year.
4. Project D – Total Compensation \$1.2 Billion or \$15.8 Million per year.

The EIR/EIS assumes 50 percent of these payments would impact the Imperial County economy through personal consumption expenditures. The rest (50%) was assumed to be used outside to county, because 37 percent of these payments would go to non-resident land owners, and because it is assumed that the location of Imperial County makes the probable leakage greater than it would be in other counties in the United States. (Because IMPLAN Pro does not differentiate for border/non-border locations.)

Direct expenditures into the local economy of:

1. Project A - \$4 Million per year.
2. Project B – \$2 Million per year.
3. Project C – \$10.4 Million per year.
4. Project D – \$7.9 Million per year.

⁶ The difference between project A and project B is lower prices for water, thus lower revenues. Conservation costs are the same (with only some differences in timing), so the lower compensation to landowners is reflective of lower overall revenue. The same is true for the following scenarios Project C compared to Project D.

REVIEW OF PROFESSIONAL STANDARDS

In general, the professional economic standards used the analysis is common, However, the use of input-output analysis to examine long term economic events is a bit unusual. Since the analysis is in constant 2001 prices, the only other variables that would not be expected to remain constant would be technological in nature, effecting cost functions and labor and capital productivity. One minor shortcoming in this regard is the use of 1998 technology and labor productivity with 2001 price data. This would tend to overestimate the labor requirement per dollar of output because of price increases from 1998 to 2001. This probably results in estimates of employment impacts larger than they should be by 8 or 9 percent in both directions. (i.e. Negative changes more negative and positive changes more positive)

REVIEW OF DATA USE

The economic impact analysis made some adjustments in the IMPLAN agricultural sectors, which are not regarded as the best data on agriculture. However, these changes were not well documented and CIC's replication analysis based on unadjusted IMPLAN data yielded very similar results. CIC found that the lower value crops tended to be overvalued in CH2M Hill's analysis, while higher value crops were under valued. The valuation differences were largest for sugar beets, (46.5%) but all differences were greater than 10 percent.

Table 18 – Average Crop Value Per Acre - 1999 Data

	CH2M Hill (1)	1999 Data (2)	Percent Difference
Cotton	\$1,003	\$1,109	10.6%
	\$425	\$361	-15.1%
	\$444	\$390	-12.2%
	\$638	\$553	-13.3%
	\$3,400	\$3,753	10.4%
	\$1,227	\$1,797	46.5%

(1) CH2M Hill EIR/EIS Appendix G. p. G-13

(2) Imperial County 1999 Agricultural Crop and Livestock Report.

These differences tend to support the argument that a more selective fallowing, (lower value crops first) would significantly reduce the adverse economic impacts. See MITIGATION discussion below.

SHORT AND LONG TERM ECONOMIC IMPACTS

The use of six 5-year blocks up to 30 years followed by a 45-year block is an unusual way to present results. We would have preferred to see the effective cash flow during the ramp-up years. However, most of the issues can be understood by summing the 75 years of transfer costs and revenues

then dividing by 75 to see what the typical (average) year looks like. This approach was used by CIC to produce replications of the economic impact analysis, and for producing a summary view of the different projects (Table 1).

MITIGATION

There are conflicting statements about the impact of fallowing on the Salton Sea. In Appendix D a statement is made that the all fallowing 300 KAFY project would result in lower adverse impacts on the Salton Sea because most drain water would continue to flow into the Sea. Table 3.14-1 states that the effects on the Salton Sea would be the same as under the conservation alternatives i.e. 11 years shaved off the life of the Sea. The Salton Sea's future depends on how the Salton Sea Restoration Program unfolds. A firm decision on restoration is still in the future. Demise of the sport-fishery seems eminent with the associated adverse impacts attributable to a decline in visitors and visitor spending. Inability of the tilapia to reproduce would be the next crises in the death of the Sea, although, tilapia can survive in water that is almost twice as saline as water in which they can reproduce. As long as there are tilapia in the Sea, the Sea would continue to function. For this reason, a mitigation that is popular at the moment is one that would grow the tilapia in hatcheries for plantings into the Sea. The land required for the hatcheries is estimated at 5,000 acres. Cost for hatcheries is estimated at between \$350 and \$800 million.⁷ The EIR/EIS estimates fallowing 5,000 acres would impact employment by -150 jobs, but no estimate is offered for the beneficial effects of building and operating hatcheries. A second approach to mitigation of adverse impacts is also presented in the report. This approach would fallow 25,000 acres and drain the associated water (140 KAFY) directly into the Sea as a replacement for the 300 KAFY transferred. The adverse impacts are estimated at -750 jobs. Since the opportunity cost of 140 KAFY is over \$40 million (in IID/SDCWA agreement prices) this would seem to be expensive enough to discourage any transfer program with the possible exception of the most selective fallowing program on over 60,000 acres. This would increase the adverse employment impacts to about -2,000 jobs, since there would be no offsetting expenditures.

Adverse employment impacts resulting from fallowing could be minimized by using employment impacts as a criteria for selecting which acreage and which crops would be fallowed. We suggested one possible scenario which was to fallow Hay and Pasture acreage that uses as much as 8 acre feet of water per acre. This would require fallowing 37,500 acres with a reduction in county-wide sales of \$25 million and employment of 521. This compared to the nearly \$100 million reduction in sales and 1,400 jobs contained in the socioeconomic analysis in Section 3.14 and Appendix G of the Draft EIR/EIS.

Other more creative fallowing approaches might result in even better results. For example, inefficient water users could be identified, and marginally productive lands.

⁷ EIR/EIS p. 3.14-22.

Finally, the IID would have sufficient cash flow to purchase the land to be fallowed. Even at the discounted start up prices in the SDCWA agreement, the cash flow would cover the cost of buying 50,000 acres in only 2 years (although the ramp-up schedule in the IID SDCWA agreement might make this a more gradual acquisition). This would leave 73 years of a substantial revenue stream which could be used, for example, to lower or even zero water prices to IID water buyers, support economic development investments, support conservation, and environmental enhancements. There would also be sufficient funds available to undertake significant job retraining – skills development for Imperial County residents.

APPENDIX A
ENVIRONMENTAL JUSTICE

1

**REVIEW OF THE DRAFT EIR/EIS
FOR THE PROPOSED IID WATER CONSERVATION AND TRANSFER PROJECT:
ENVIRONMENTAL JUSTICE IMPACT ANALYSIS**

ENVIRONMENTAL JUSTICE IMPACTS OF FEDERAL PROJECTS

Executive Order 12898, was signed by President Clinton on February 11, 1994. EO 12898 directs "*Federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of Federal projects on the health or environment of minority and low- income populations to the greatest extent practicable and permitted by law.*" However, the further objective of the EO is to enhance the provision of nondiscrimination in Federal programs affecting human health and the environment by promoting meaningful opportunities to access of public information and participation in matters relating to minority and low- income populations.

Therefore, the intent of EO 12898 is to identify the potential for disproportionate impacts to minority and/or low income populations as a result of a Federal project like the IID water transfer, and then to provide informational outreach to these populations to make them aware of the potential impacts and to involve them in the decision process and evaluation of potential alternatives. The reasoning behind this informational outreach is to involve populations that have historically been disenfranchised from the standard public informational process. The Federal policy recognizes that low-income and minority populations have a right to information regarding these Federal projects, but do not have the same access or may have language, transportation, education or other obstacles that make it difficult for them to participate in the public information and planning process.

The Environmental Justice (EJ) analysis should not be limited in focus to low-income/minority "communities" only, although this is a common misconception. Indeed the EJ analysis is not limited to a specific minimum threshold level of population impacts and may be found when a very small low-income/minority population is impacted whether or not that population would be readily defined as a community. Part of this misconception has been generated by analysis of Federal project impact areas that are usually defined as adjacent to or the general area surrounding a proposed Federal project. However, the proposed IID water transfer is not a specific localized project, but rather a regional project with potential impacts to the greater Imperial Valley economy.

**CIC RESEARCH COMMENTS ON THE DRAFT EIR/EIS ENVIRONMENTAL JUSTICE
IMPACT ANALYSIS**

3.15 Environmental Justice

- 1) The Draft EIR/EIS Environmental Justice analysis employed a census tract impact methodology, based on physical proximity to the proposed project. Based on this definition (i.e., census tracts) the study identified low-income and minority communities as areas which were represented by above and below average percentage comparisons to the countywide average ethnicity and income, respectively.
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- 2) In general the Environmental Justice impact analysis concluded that no EJ impact would occur disproportionately to any one specific low-income/minority community because the project impacts are countywide and not community specific (i.e., census tract specific). Further the study concludes that the impacts would likely occur throughout the region, therefore, low-income/minority communities would not be disproportionately impacted.
- 3) Further the study concluded that even though the worst case loss of farm employment is 1,400 jobs this would only represent 2.8% of the countywide employment (48,900). Therefore, it would not be a significant impact. Even within the farm employment sector the loss of 1,400 jobs would represent only 12% of the county's total farm jobs.
- 4) The Draft EIR/EIS states, "However, farm laborers could be affected as a group by fallowing activities and on-farm irrigation system conservation measures, which would reduce the demand for farm labor in some areas."

CIC Research Comments To The Consultant's Findings.

The census tract/community impact analysis performed by the Consultant for this project is not an appropriate methodology. The Consultant has misinterpreted the environmental impact criteria of EO 12898 as only pertaining to a "community" and that these communities can be defined by census tracts. The Consultant has also misapplied the impact of a region-wide Federal project as if it were a community-level project. In so doing the Consultant has ignored the region wide socioeconomic impacts and fails to address the potential for disproportionate impacts to the low-income and minority population throughout the Imperial Valley economy.

The proposed IID water transfers are a regional project with region-wide effects on employment loss. The Consultant has correctly identified the 48,900 countywide jobs. However, the appropriate measure of disproportionate impacts would have focused on the resulting 1,400 lost agricultural jobs identified by the Consultant and whether this employment loss would disproportionately affect low-income and/or minority households compared to the countywide population.

The census data clearly indicates that agricultural workers in general represent significantly higher proportions of low-income and/or minority households than the county's average employee/household characteristics. Therefore, a disproportionate Environmental Justice impact is likely. Indeed the Consultant states:

"However, farm laborers could be affected as a group by fallowing activities and on-farm irrigation system conservation measures, which would reduce the demand for farm labor in some areas. This effect would not disproportionately affect a specific community or area but could affect farm laborers, which are predominantly minority and low-income, as a population group."

The Consultant has clearly recognized that the predominate impacts of the water transfer program would be to minority and low-income farm laborers. However, the Consultant has inappropriately dismissed these impacts because the impacted low-income and/or minority population doesn't live in a specific community within the Imperial Valley. The correct application and study conclusion using EO 12898 is that the water transfer program results in a disproportionate impact to the low-income and minority population of the Imperial Valley.

When Environmental Justice impacts are found, then Federal Government policy guidelines require significant outreach to the low-income and/or minority population. This outreach should begin very early in the study phase in order to inform the potentially affected low-income and minority populations of the proposed project, including proposed project alternatives. The informational outreach to this population should be conducted in a way that is conducive to their inclusion in the decision and planning process, including in a language, time, and place that is convenient to them.

Overall Environmental Justice Review Findings.

In general the Environmental Justice analysis performed by the Consultant is superficial and inappropriately applied. Specifically, the community-level impact analysis was inappropriate for this project. The Consultant on the Draft EIR/EIS for the Proposed IID Water Conservation And Transfer Project should redo the Environmental Justice analysis based on the potential region wide disproportional impacts to minority and low-income households resulting from the water transfer program. Furthermore, the Consultant should then provide recommendations for informational outreach to the impacted population and possible mitigation measures.

Regional Economic Impacts
of the
Palo Verde Test Land Fallowing Program

Prepared by

M.Cubed,

for

The Metropolitan Water District of Southern California

December 1994



EXECUTIVE SUMMARY

On August 1, 1992, the Metropolitan Water District of Southern California (Metropolitan) initiated the Test Land Fallowing Program (Program) with farmers within the Palo Verde Irrigation District (PVID). The two-year agreement worked as follows: Program participants could enroll up to 25% of their productive acreage in the Program in exchange for a per enrolled acre payment of \$1,240; enrolled acreage was then left fallow and not irrigated for two years; water savings were calculated and credited to Metropolitan. In total, 20,215 acres--roughly 22% of the valley's cultivated acreage--were enrolled in the Program. Program payments totaled approximately \$25.1 million.

Program participants were surveyed at the end of the first and second years of the Program to evaluate farm level adjustments and costs associated with Program participation. The results of these surveys are reported in Great Western Research (1993; forthcoming).

The purpose of this study is to evaluate the economic impacts to Program non-participants such as local businesses providing farm services or supplies, as well as the Program's overall impact on the regional economy. Reported findings are based on telephone and field interviews and survey of local retail and wholesale businesses and community officials; crop budget analyses of changes in input purchase patterns; and analyses of regional quarterly sales tax and monthly employment data.

The principal findings of this study are as follows:

- The Program was not found to have affected overall regional economic performance to any significant degree. City officials and local bank representatives characterized the current state of the region's economy as improved relative to prior to the Program. The Program was not found to have affected the region's property or sales tax bases, or the provision of government services. It was, however, found to have contributed to a modest loss of employment in the region. Over the two-year period, the Program was found to have contributed to the loss of 27 full-time farm jobs, 25 full-time jobs in farm-related businesses, and seven part-time/seasonal jobs in farm-related businesses. The combined losses were equal to approximately 1.3% of the region's average employment for 1991-92.
- The Program was not found to have caused non-farm-related businesses in the region to reduce employment or lose revenue. Surveyed and interviewed non-farm-related businesses indicated that the Program had no perceptible effect on their revenues, and did not cause them to adjust their employment. In addition, businesses surveyed whose farm-related sales in the region comprised less than 20% of their total revenue also indicated that the Program did not affect their businesses in any significant way.
- Negative economic impacts of the Program concentrated within farm-related businesses providing services or supplies to the region's farmers. Three-fourths of surveyed businesses providing farm services characterized the Program as causing a significant decrease in revenues in 1993, while three of four respondents providing farm supplies characterized it as causing a minor decrease. It should be noted, however, that approximately 70% of all firms surveyed characterized the Program as causing only a minor decrease or having no impact on their revenues during the first year, while approximately 77% characterized it as causing a minor decrease, no impact, or a minor increase in their revenues during the second year.

Employment losses caused by the Program also were found to have concentrated within farm-related businesses. Overall, four of five surveyed firms providing farm services or supplies characterized the Program as a primary, though not necessarily the only, reason for

reducing employment between 1992 and 1994. These firms reduced full-time employment by a total of 25 jobs and part-time/seasonal employment by seven jobs over the two-year period.

While the Program did not negatively affect the overall performance of the local economy, it did result in concentrated impacts on a few businesses providing farm services and, to a lesser extent, farm supplies.

- The Program was found to be only one of several causes for a reduced regional demand for farm-related labor, services, and manufactured inputs. It is important to emphasize that there were many factors simultaneously affecting the local demand for farm services and supplies. For example, since 1988, the region's lettuce acreage has decreased by approximately 15,000 acres due to whitefly infestation and other factors unrelated to the Program. It is estimated that this reduction has caused the annual demand for seed, fertilizer, chemicals, and custom services to fall by approximately \$8.3 million, and the annual demand for custom harvest services by approximately \$19 million. By comparison, it is estimated that the Program reduced the annual demand for seed, fertilizer, chemicals, and custom services by approximately \$4.0 million while it was in effect. While the Program did produce a measurable decrease in farm-related activity, it should be noted that the significant decrease in vegetable and melon production in the region due to whitefly and other factors not related to the Program has had a more pronounced and lasting effect on the demand for farm labor, services, and supplies.
- A high proportion of Program payments were injected into the local economy. Program participants reportedly spent 93% of Program payments in excess of fallowing and maintenance costs on farm-related investments, purchases, and debt repayment. Approximately 61% of Program payments in excess of costs was spent within the local economy. The Program was found to have provided timely financial relief to the region's agricultural producers who had been under significant hardship due to low prices for key commodities, especially alfalfa, and pest infestation.

Overall, the analysis indicates that the Program contributed to a modest decrease in regional employment--approximately 1.3% of average employment for 1991-92--but did not result in measurable changes in other regional economic performance indicators such as taxable sales, property tax revenues, and construction activity. It also should be noted that while approximately 61% of Program payments were reportedly spent locally, it was beyond the scope of this study to attempt to measure possible job gains or increased economic activity associated with this spending.

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Appendices

1.0 INTRODUCTION

On August 1, 1992, the Metropolitan Water District of Southern California (Metropolitan) initiated the Test Land Fallowing Program (Program) with farmers within the Palo Verde Irrigation District (PVID). The two-year agreement worked as follows: Program participants could enroll up to 25% of their productive acreage in the Program in exchange for an annual payment of \$620 per enrolled acre; enrolled acreage was then left fallow and not irrigated for two years; water savings were calculated and credited to Metropolitan. Farmers enrolled 20,215 acres--roughly 22% of the valley's cultivated acreage--in the Program.

The Program was monitored and periodically reviewed by a five-member Measurement Committee consisting of representatives from Metropolitan, PVID, Coachella Valley Water District, Imperial Irrigation District, and the Bureau of Reclamation. In addition, Program participants were surveyed at the end of the first and second years to tabulate farm level adjustments and costs associated with the Program. The results of these surveys are presented in Great Western (1993; forthcoming).

The purpose of this study is to further document the impact the Program has had on the local economy. Particular emphasis is given to businesses and individuals that provide farm services or supplies, or handle farm products, since these were likely to be the most significantly affected by the Program. The overall impact on the regional economy is investigated as well.

The analysis contained herein reflects an extensive literature review; telephone and field interviews and survey of local retail and wholesale businesses and community officials; analyses of regional quarterly sales tax and monthly employment data; as well as an analysis of agricultural production adjustments within the valley.

1.1 REPORT ORGANIZATION

The remainder of this report is organized as follows:

Section 2 provides background on the Palo Verde Valley, its regional economy, and recent economic events other than the Program that have impacted the regional economy.

Section 3 documents impacts of the Program using results from the local business surveys, interviews, employment and sales tax data analysis, and farm production adjustment analysis.

Section 4 examines community perceptions towards the Program as elicited from surveys and interviews with local businesses and community officials.

2.0 THE REGION

The Palo Verde Valley runs north to south for approximately 30 miles along the California side of the Colorado River as it flows between Arizona and California. From the river, the

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

valley extends westerly for about 9 miles until the Palo Verde Mesa is reached. In total, the valley encompasses an area of approximately 270 square miles of level, alluvial flood plain. The valley lies primarily within Riverside County, with its southern edge resting in Imperial County. U.S. Interstate Highway 10 (I-10) bisects the valley from east to west. State Routes 95 and 78 run north to south through the valley.

The valley's economic center is the City of Blythe, located along I-10 about five miles west of the Colorado River. Other communities within the valley include the small towns of Ripley and Palo Verde south on State Route 78. In Arizona, the towns of Ehrenberg and Quartzsite lie approximately six and twenty miles east of Blythe, respectively, along I-10.

The population of the market region is approximately 27,000, of which about half resides within Blythe. Official population estimates for the area include inmates and staff of the recently constructed Chuckawalla and Ironwood State Prisons. Excluding the incarcerated, the region's year-round population is approximately 23,000.¹ Table 1 shows the non-institutionalized population by subregion for 1990 and 1994. Since 1990, regional population has increased 11%, an average annual rate of growth of 2.7% for the period.

Table 1
Year-Round Population
by Region of the Palo Verde Valley Market Area

Region	1990	1994	Percent Change
City of Blythe	8,269	9,850	19%
East Blythe & Valley	5,429	6,011	11
Chuckawalla Division	1,750	1,699	(3)
City of Palo Verde	658	695	6
Ehrenberg, AZ	1,197	1,277	7
Quartzsite, AZ	1,833	1,950	6
Southern La Paz Co., AZ	1,660	1,660	0
Total	20,796	23,142	11
Average Annual Rate of Growth			2.71

Source: Community and Economic Profile: Blythe and Palo Verde Market Area. City of Blythe, 1994.

2.1 THE ECONOMY

AGRICULTURE

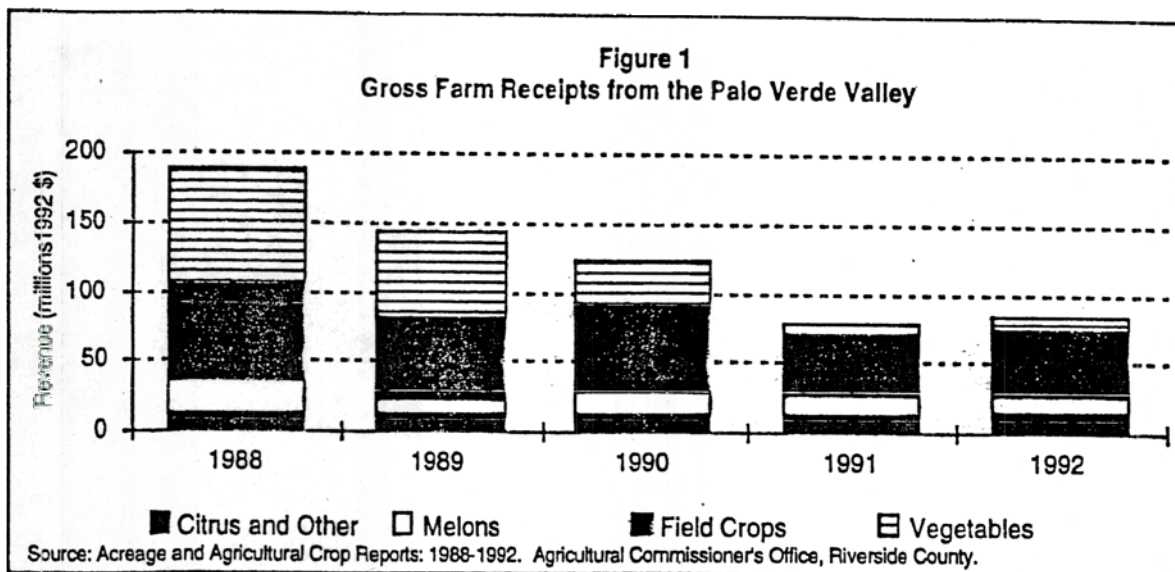
The Palo Verde Valley has been and continues to be rooted in agriculture. Its 270 square miles of level, alluvial soils, ample supply of Colorado River water, and year-round growing

¹ Institutionalized population is included in the official estimates so that the region may receive various state subventions based on population.

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season create an ideal environment for irrigated crop production. In a typical year, between 90,000 and 95,000 acres of the valley are cultivated. A portion of this land is double cropped, so that gross acreage planted in the valley in a typical year is about 110,000 acres (Palo Verde Irrigation District 1977-1994). Principal crops grown in the valley include alfalfa, cotton, sudan grass, wheat, melons, lettuce, and onions, with alfalfa being by far the dominant crop in terms of acreage.

Between 1988 and 1992, the gross value of crops produced in the valley has, in 1992 dollars, ranged between \$79 and \$189 million, as shown in Figure 1. The average gross value of crop production over the period was approximately \$124 million. As discussed more fully below, vegetable production in the valley has declined sharply over the past decade, both in terms of acreage and yield, and this has had a significant impact on the region's farm employment and gross value of production. Between 1988 and 1992, the gross value of vegetable production fell by 86%. It is important to emphasize that the regional decline in vegetable production is in no way related to the Program.



• OTHER ECONOMIC ACTIVITY

Other base economic activity in the region includes light manufacturing, tourism, and the two new prisons. The valley's location along I-10, the proximity of the Colorado River, and the desert climate make it host to a variety of seasonal visitors. In the winter, the area receives a substantial influx of "snowbirds" seeking the mild desert winters. It is estimated that during the five months of winter, the population in the area more than doubles (City of Blythe 1994). Most of this increase occurs around the town of Quartzite, Arizona, but some of it spills into the Blythe area. The City of Blythe also supports a large number of service stations, fast food restaurants, and motels that serve I-10 travelers. Service stations and fast food restaurants are the principal sources of sales tax revenue for the city (City of Blythe 1994).

Recently, the region became host to two new state prisons: the Chuckawalla Valley State Prison opened in November 1993; and the Ironwood State Prison opened in October 1994. With approximately 800 jobs at each prison, these are now the largest employers in the area (City of

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Blythe 1994; Per. Comm. Steve Morgan 1994; Per. Comm. William Martindale 1994). Ironwood State Prison expects to hire an additional 200 people by the end of the year (Per. Comm. William Martindale 1994).

The region's largest employers are listed in Table 2. In addition to the prisons, major employers include manufacturing and agricultural processing firms, the Palo Verde Irrigation District, municipal services, and schools. Most businesses in the region, however, are small, averaging seven employees per business (City of Blythe 1994).

Table 2
Employers in the Palo Verde Valley Market Area
with more than 50 Employees

Name of Employer	Employment	Description
Cuckawalla State Prison	800	Level II Prison
Ironwood State Prison	800	Level III Prison
Palo Verde School Dist.	384	Public School
Morgan Corp.	231	Manufacturing
Palo Verde Hospital	137	Medical
Hi-Value Processors	120	Vegetable packer
County of Riverside	120	Government
Palo Verde Irrigation Dist.	76	Public Irrigation
City of Blythe	71	Municipality
Toshin Trading Co.	65	Feed Processor
Palo Verde Comm. College	60	Comm. College

Source: Community and Economic Profile: Blythe and Palo Verde Market Area. City of Blythe, 1994.

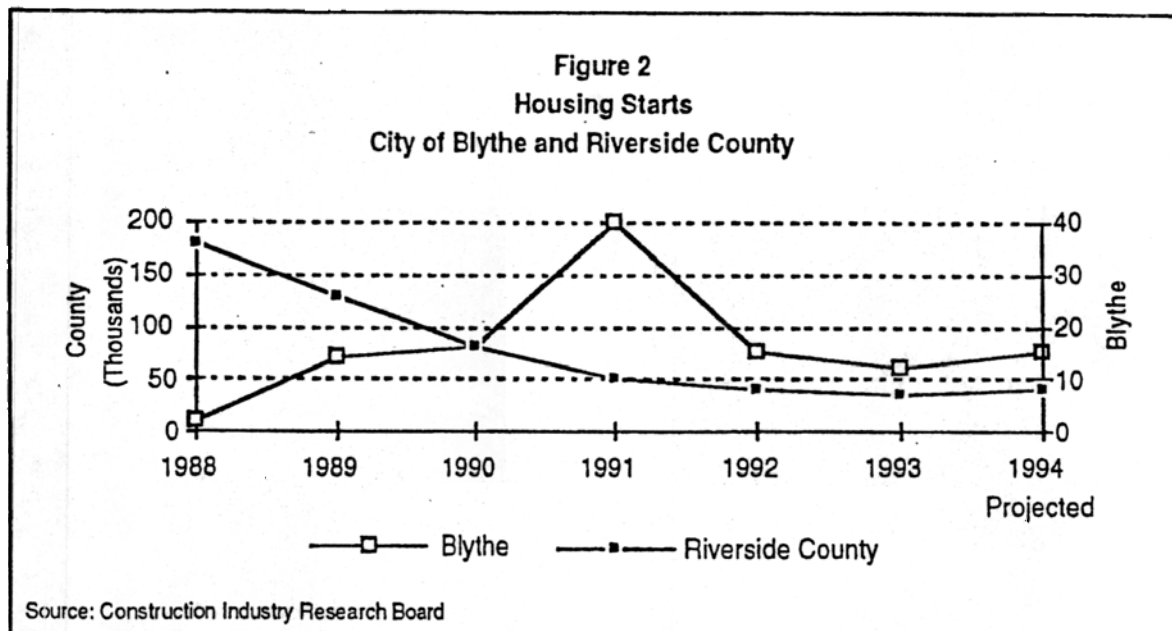
2.2 NON-PROGRAM FACTORS AFFECTING THE REGIONAL ECONOMY OF PALO VERDE VALLEY

In recent years, several events other than the Program have affected regional economic activity, either positively or negatively. To assess the effect that the Program had on the local economy, it is necessary to first identify these other influences. These are briefly discussed below and include the following:

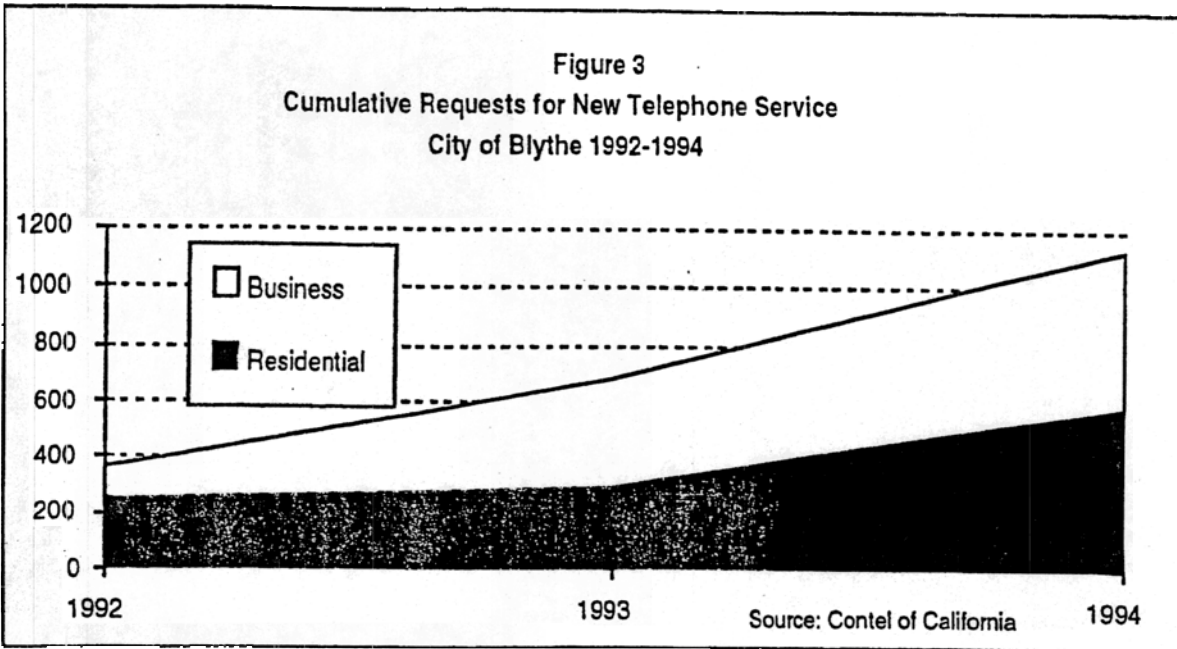
- the construction and staffing of Chuckawalla Valley and Ironwood State Prisons;
 - a substantial increase in housing and commercial construction;
 - the statewide economic recession; and
 - the depressed agricultural economy in the valley.
- **State Prisons** -- The opening of the state prisons created a significant new source of employment and income for the region. As discussed above, 1,600 new jobs were added to the region, and an additional 200 are expected. Annual salaries for the majority of these jobs range between \$20,000 and \$30,000. An estimated 85% of prison employees reside within or around Blythe, with the remaining 15% commuting from Ehrenberg, Parker, Indio, and other outlying areas (Per. Comm. William Martindale 1994). The new prisons are a significant source of income to the region and have invigorated the Blythe economy.

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

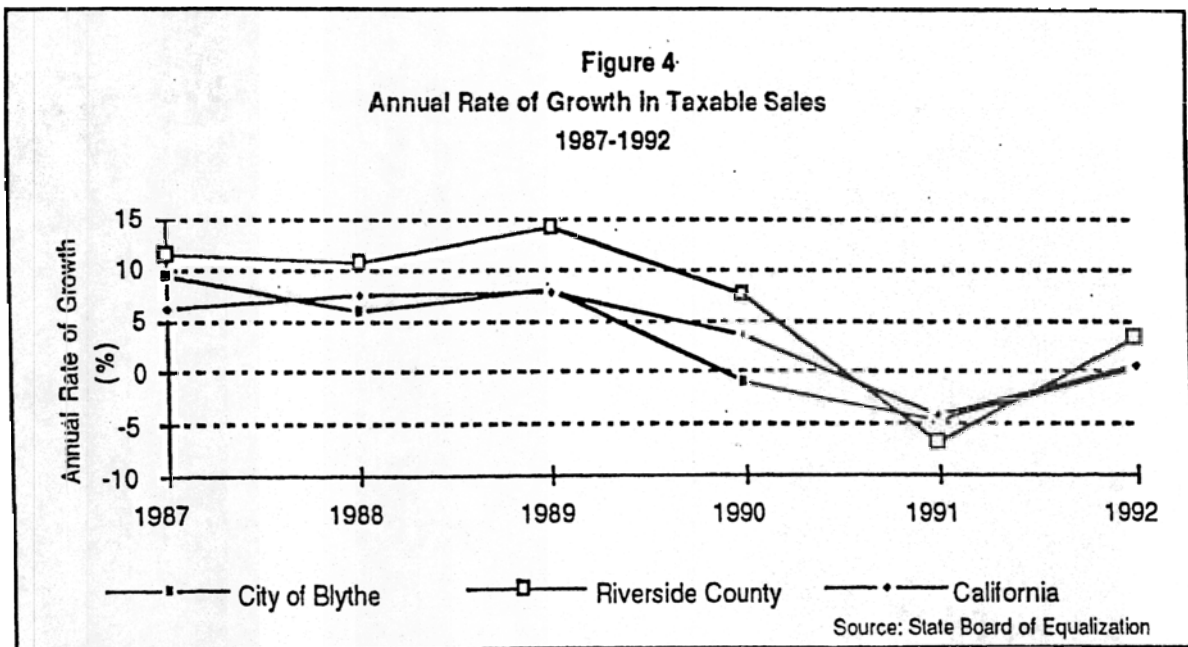
- **New Construction** -- The construction of the prisons also created a significant demand for construction labor. In addition, the recent surge in new construction in the region is largely attributed to the additional demand for housing created by prison jobs (Per. Comm. J. Newell Sorensen 1994). As shown by Figure 2, new housing construction has occurred consistently in Blythe since 1988 despite a steady decline in housing starts for the whole of Riverside County over the same period. There were 2,968 units in the Blythe area in 1990 (U.S. Census 1990; U.S. Census 1990). In May 1994, there were approximately 3,488 units, an increase of eighteen percent (Construction Industry Research Board 1984-1994). In addition, there has been a considerable amount of new commercial construction, including two shopping centers and a 52 room motel.



Another measure of growth in the region is the rate of new telephone service requests. In 1992, a second prefix for Blythe and surrounding areas was added to accommodate increasing demand. Requests for new service have grown steadily during the last three years, as shown in Figure 3. New service requests for 1994 are projected based on new service requests through June 1994. The large increase in business hookups between 1992 and 1993 is largely due to the opening of Ironwood State Prison.



- Statewide Recession** -- The statewide recession had a measurable effect on taxable sales in Blythe, which have declined a total of 19.8% since 1989, as shown in Figure 4. Taxable sales in Blythe are generated primarily by fast food establishments and service stations serving I-10 travelers. The recession probably caused both tourism and commercial travel to decline, which would explain the sharp decrease in taxable sales revenue. The percentage decrease in taxable sales is consistent with that for Riverside County and the entire state, though, as seen by the figure, the trough in growth for Blythe was somewhat less than for the whole of Riverside County.



Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

A similar data series for regional employment cannot be constructed because of a change in the Employment Development Department's (EDD) employment reporting procedure in 1991. This change made counts occurring before 1991 inconsistent with those occurring after, particularly for small regions such as Blythe (Per. Comm. Diane R. Gilmore 1994).²

- **Depressed Agricultural Economy** – Prior to the Program, the agricultural economy of Palo Verde Valley was under significant financial stress. Starting in 1989, gross farm receipts fell for three consecutive years: receipts fell by \$45.2 million in 1989; by \$19.6 million in 1990; and by \$45.2 million in 1991 (Agricultural Commissioner's Office, Riverside County, 1988-92). In 1992, receipts increased a modest \$5.1 million (Agricultural Commissioner's Office, Riverside County, 1988-92). By this date, however, gross agricultural revenue for the region was \$84.5 million, or 56% , below its 1988 level. There are three primary causes for this decline: (1) the whitefly infestation; (2) the collapse of the alfalfa market in 1991; and (3) the long-term decline in the region's vegetable production. Each of these is discussed below.

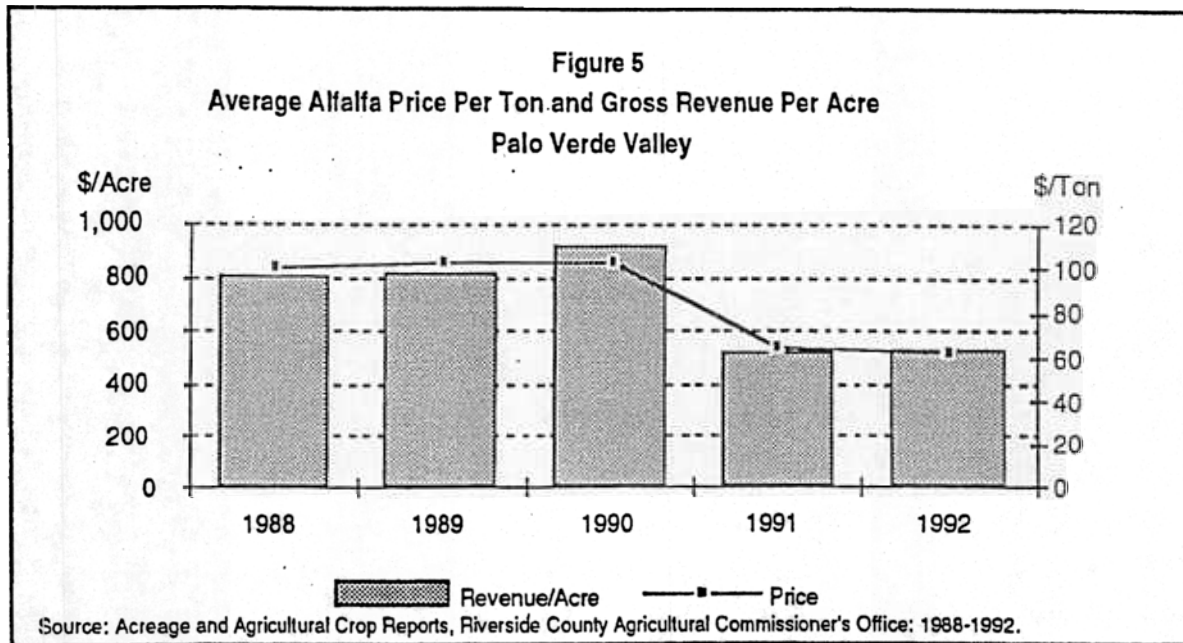
(1) **Whitefly Infestation** – The infestation of whitefly started about 1986 and had a significant impact on the production of many crops grown in the valley, but particularly on fall melons and lettuce. These two crops have essentially been lost to the valley until an economical control for the whitefly is found (Per. Comm. Bob Micalizio 1994). The whitefly is a principal cause for the decline in vegetable production in the valley, lettuce in particular. Cotton production also has been significantly impacted by whitefly.

(2) **Alfalfa Market** – Between 1990 and 1991, the average price per ton received for alfalfa in the Palo Verde Valley fell by 36% and the average revenue per acre fell by 43%, as shown in Figure 5. Gross revenue per acre fell more than price because yields also fell between 1990 and 1991. The alfalfa market did not recover until 1993, after the Program had started.

The collapse of the alfalfa market had a significant effect on farm income in the valley. Gross receipts for field crops declined by \$19 million or 31% between 1990 and 1991 -- this accounts for a little less than half of the valley's \$45.2 million decline in total farm receipts between those two years. Gross receipts for field crops increased slightly in 1992 -- about \$4 million -- but remained 32% below their 1988 level. The decline in employment was significantly less. It is estimated that the demand for farm labor in the region would have decreased by about 5% from its 1990 level whereas the decrease in total gross revenue was about 15%.³ The difference is due to the fact that, acre for acre, field crops such as alfalfa are about 20 times less labor intensive than vegetable and fruit crops (Mitchell 1993).

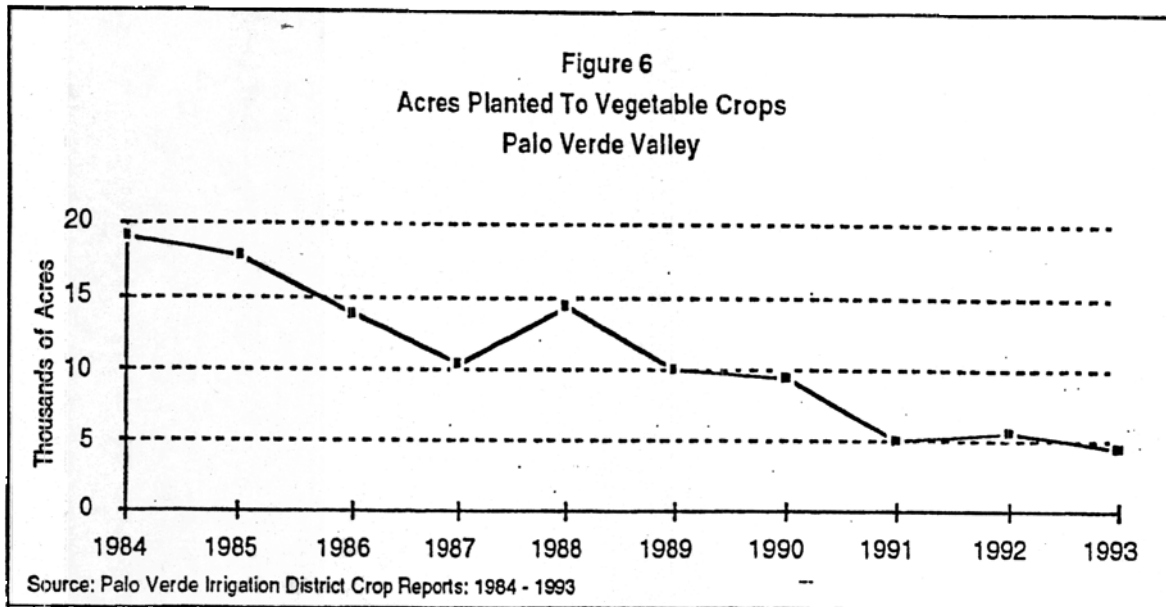
² It was also discovered that there was double counting of employment that resulted in inflated employment estimates prior to 1991. The EDD believes that this could significantly bias an analysis of employment changes that involved dates before and after 1991, particularly for small regions.

³ Demand for direct farm labor was estimated for each crop category -- vegetables, melons, field crops, and citrus/other -- using employment multipliers from the Department of Water Resources 528 Sector Input-Output Model. These multipliers were used to derive annual hours of demand per million dollars of crop revenue.



(3) **Decline in Vegetable Acreage** -- Vegetable production within the valley has been in almost steady decline for a decade or more, as shown by Figure 6. Since 1984, vegetable acreage has declined, on average, by 1,600 acres, each year. By 1992, vegetable acreage was 76% below its 1984 level. Since 1988, gross revenue from vegetable production has decreased by 86%, or \$73.6 million.

This has had a significant effect on the region's agricultural gross revenues and employment. In 1988, vegetable production accounted for 45% of gross farm revenue in the valley, by 1990 this had fallen to 28%, and by 1992 it was just 14%. In 1988, vegetable production accounted for an estimated 36% of the region's demand for farm labor. By 1992, this share had fallen to an estimated 16%. It is estimated that the total demand for farm labor in the region fell by 31% between 1988 and 1992 due to the decrease in vegetable production.



2.3 SUMMARY OF REGIONAL ECONOMY PRIOR TO START OF PROGRAM

Prior to the start of the Program, the economic performance of the regional economy was mixed. The construction and subsequent staffing of the prisons brought an important new source of jobs and income to the region. By the end of 1994, it is estimated that the prisons will have created 1,800 jobs for the region. The prisons also are largely responsible for the mini-construction boom the valley has experienced since 1988, and probably helped lessen the regional effects of the statewide recession (Per. Comm. J. Newell Sorensen 1994). At the same time, the region's agricultural economy had been under significant financial stress. Gross farm revenue in 1991 was 58% below its 1988 level and the estimated total demand for farm labor was 68% lower.

It is important to emphasize that this decline occurred prior to the start of the Program and is largely due to the region's long-term decline in vegetable production and the more recent loss of much of the region's melon production (due to whitefly). In particular, it should be noted that the farm job losses associated with these adjustments are far larger than those that have been associated with the Program. As will be discussed more fully below, the Program was found to have resulted in the loss of 26 full-time farm jobs, whereas the imputed decrease in demand for farm labor associated with the reduction in vegetable and melon production between 1988 and 1991 is approximately 1,400 full-time-equivalent jobs.⁴

⁴ The decrease in vegetable and melon production mostly affected the demand for migratory seasonal labor. We therefore estimated the change in hours demanded and converted to full-time-equivalents, where one full-time-equivalent job equaled 2000 hours of labor. Labor demand estimates for production changes that occurred prior to the Program are based on direct employment multipliers for vegetables and field crops, as reported in the Department of Water Resources 528-sector input-output model for California. Estimates of farm job losses associated with the Program are based on field surveys of Program participants.

3.0 ECONOMIC IMPACTS OF THE TEST LAND FALLOWING PROGRAM

The Program started August 1, 1992 and ended July 31, 1994. It enrolled 20,215 acres of productive farmland. During the length of the Program this acreage was neither planted to a commercial crop nor irrigated. Weeds were controlled on Program acreage, and on a small portion of this acreage a cover crop was planted (but not irrigated) to control wind erosion. Program participants received \$1,240 per enrolled acre, paid in five installments over the two-year program. Total Program payments equaled \$25.1 million.

3.1 ESTIMATED IMPACTS ON CROP PRODUCTION

Between 1992 and 1993, the Program displaced approximately 20,215 acres of field crop production. Based on interviews with growers and farm-related businesses, the most likely crops displaced by the Program were hays (primarily alfalfa) and grains (primarily wheat). While cotton acreage was lower in 1993 and 1994 compared to 1992, this was thought to have been caused primarily by the strong price for alfalfa in 1993, and most likely would have occurred with or without the Program (Per. Comm. Lloyd Colbert 1994).⁵ It is not thought that the Program had any appreciable effect on planting decisions for vegetable and melon acreage.⁶

- **Change in Acreage**

The net change in field crop production due to the Program was approximated from Agricultural Commissioner's Acreage and Agricultural Crop Report data for 1992 and 1993. These data are shown in Table 3. Wheat, Sudan grass, and alfalfa are the crops most likely to have been affected by the Program. As can be seen in the table, the reported difference for these crops is very close to the Program acreage amount, though not exact. Estimated changes in gross farm revenue as well as purchases of farm inputs -- such as seed, fertilizer, other chemicals, and custom services -- due to the Program are based on the scaled acreage estimates shown in the right-hand column of the table.

Change in Gross Farm Revenue

The Program did not have a significant impact on regional gross farm revenue because revenue losses from reduced acreage were mostly offset by Program payments. Gross receipts are estimated to have declined by \$33.7 million (in nominal dollars) over the two years of the Program.⁷ Program payments of \$25.1 million partially offset this decrease, resulting in a net

⁵ Cotton and alfalfa acreage in the valley have a high negative correlation because alfalfa is one of the few crops that can be grown on cotton acreage that is enrolled in the Federal Commodity Program. When alfalfa prices are high, growers can shift out of cotton and into alfalfa without affecting their status in the Federal Commodity Program. Alfalfa prices in 1993 and 1994 were at historically high levels for the region.

⁶ Although vegetable and melon acreage also decreased between 1992 and 1993, it is not thought that this was related to the Program. Interviews with farm-related businesses, as well as with growers provide the basis for this belief. Those interviewed expressed the opinion that the Program affected field crop acreage in the valley but not melon or vegetable acreage. Not a single person interviewed expressed the opinion that the Program has affected vegetable and melon production.

⁷ Revenue estimates based on 1993 average farm-gate prices as reported by the Riverside County Agricultural Commissioner.

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

reduction of \$8.6 million over the two-year period. This is 4.5% below what would have occurred absent the Program, assuming 1993 average prices and yields.

It must be emphasized, however, that the Program altered the distribution of farm revenue within the valley. Income to farm operators participating in the Program was at least as high, and possibly higher, than it would have been absent the Program because of Program payments, while for at least some farm-related businesses, income may have been lower than it would have been absent the Program because of reduced purchases of farm inputs. To some degree Program receipts were reinvested in the local economy through additional purchases by Program participants, as will be discussed below.

Table 3
Estimated Program Crop Acreage Adjustments

Crop	1992	1993	Reported Difference	Scaled Difference
Wheat	6,434	4,904	(1,530)	(1,521)
Sudan	6,427	4,000	(2,427)	(2,413)
Alfalfa	52,232	35,853	(16,379)	(16,282)
Total	65,093	44,757	(20,336)	(20,215)

Source: Acreage and Agricultural Crop Report: Palo Verde Valley, 1992-93.
Agricultural Commissioner's Office, Riverside County.

Change in Input Purchases

The reduction of input purchases implied by the acreage reductions shown in Table 3 were estimated with cost data from UC Cooperative Extension Crop Budgets, which tabulate production costs by activity for different crops and regions. Estimates of input purchases for each crop in Table 3 are provided in Appendix B. Some input purchases -- such as for fuels, oils, or repair and replacement of broken equipment -- are not broken out separately by UC Crop Budgets. These were estimated using data from the California Statistical Abstract on farm gross receipts and input expenditures. Table 4 presents the aggregated results for the two-year period of the Program. Table 4 also includes expenditures by Program participants to comply with fallowing, weed control, and wind erosion requirement. It is estimated that Program participants spent approximately \$862,000 and \$143,000 the first and second years of the Program, respectively. The high expenditure in the first year relative to the second was caused by (1) the need to rip and plow under alfalfa stands on some fields in the first year and (2) high weed control costs in the first year due to above average rainfall.

A net decrease of \$7.9 million in farm input purchases over the two years of the Program was estimated, or approximately \$4.0 million per year. It was beyond the scope of this study to estimate the percentage reduction this represented in total purchased farm inputs for all crops during the period. However, it was possible to compare the Program-induced reduction in input purchases to that associated with the recent decrease in lettuce acreage to gain a better sense of their relative impacts on input suppliers. Between 1988 and 1991, lettuce acreage decreased by approximately 15,000 acres. Based on UC Crop Budgets, it is estimated that this would have reduced annual purchases of inputs associated with lettuce production up to the

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

point of harvest by approximately \$8.3 million. This is approximately 2.1 times greater than the annual reduction in purchased inputs associated with the Program.⁸

Table 4
Estimated Change in Purchased Farm Inputs
During Test Land Fallowing Program 1,2/

Input Category	Estimated Reduction in Purchased Farm Inputs Over Two-Year Period
Irrigator Labor	(1,952,000)
Seed	(620,000)
Chemical Fertilizer	(1,060,000)
Other Chemicals	(2,518,000)
Fuel and Oil 3/	(572,000)
Repair and Maintenance 4/	(842,000)
Custom Services 5/	(1,300,000)
Total	(\$8,864,000)
1992-93 Fallowing Expenditures 6/	\$862,000
1993-94 Fallowing Expenditures 7/	\$143,000
Net Reduction	(\$7,859,000)

Notes:

1/ Estimates do not account for more intensive use of inputs on remaining cultivated acreage.

2/ Labor and material usage and cost estimates based on UC Cooperative Extension crop budgets, unless otherwise stated.

3/ Includes custom applications of seed, fertilizer, and chemicals. Does not include custom harvesting.

4/ Estimated from five-year average ratio of expenditures on fuel and oil to farm cash receipts, as reported in California Statistical Abstract, 1993.

5/ Estimated from five-year average ratio of expenditures on repair and maintenance to farm cash receipts, as reported in California Statistical Abstract, 1993.

6/ As reported in Great Western Research (1993).

7/ As reported in Great Western Research (1994).

Use of Program Payments

Program participants indicated that a high proportion of Program payments were applied towards local farm-related expenditures (Great Western Research forthcoming). Program participants were asked to identify the primary uses of Program payments in excess of costs to

⁸ It should be noted that this estimate does not account for costs associated with the lettuce harvest, which is very labor intensive. It is estimated that the reduction in lettuce production between 1988 and 1991 has reduced the annual regional demand for custom harvesters by approximately \$19 million.

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

fallow and maintain Program acreage. Responses are summarized in Table 5. As shown by the table, Program participants indicated that 93% of excess Program payments were reinvested into the farm economy, either to pay down debt (37%), make farm improvements (11%), or cover operating expenses and rent (45%). The majority of Program payments were spent locally. Participants reported that 49% of Program payments--approximately \$12 million--was directly injected into the local economy through purchases for farm improvements and operations. An additional 7% of Program payments--approximately \$2 million--was locally applied towards debt repayment and rent. Overall, the Program was found to have provided timely financial relief to the region's agricultural producers following several years of depressed commodity prices and pest infestation that had seriously eroded farm incomes.

Table 5
Primary Use of Program Payments in Excess of Fallowing Costs

	Total	Local	Outside of Area
Farm Improvements	11%	11%	0%
Debt Repayment	37%	5%	32%
Farm Operations	42%	38%	4%
Rent	3%	2%	1%
Other	7%	5%	2%
Total	100%	61%	39%

Source: Great Western Research (forthcoming)

3.2 LOCAL AREA BUSINESS SURVEY RESULTS

A survey of businesses in the Blythe Market Area was fielded to gather additional information on impacts of the Program to non-Participants. This data supplements and adds to that collected through earlier surveys of Program participants (Great Western Research 1993; Great Western Research forthcoming). The purposes of the survey were as follows:⁹

- provide indication of how revenues of local businesses were affected by the Program versus other economic events;
- provide indication of how employment of local businesses was affected by the Program versus other economic events; and
- provide indication of perceptions held by local businesses of the Program and how it affected the local economy.

The scope of the project did not allow for random sampling of local businesses on a scale large enough to develop a sample from which statistically valid inferences could be drawn. Therefore, efforts were focused on identifying business most likely to have been affected by the Program and administering the survey to them. A list of these businesses was developed in consultation with Metropolitan consultants and with the aid of the Blythe Chamber of

⁹ Appendix A provides a copy of the survey instrument.

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

Commerce roster. Twenty businesses were so identified.¹⁰ The sampling population was reflective of farm-related businesses in the area. Survey participants also were asked to identify firms other than themselves in the region that they thought were affected by the Program. The sampling population included all but one firm mentioned.

The sample was classified into four categories, as follows:

- (1) **Firms providing farm services** -- this category includes applicators of fertilizer, pesticide, seed, etc.; labor contractors; harvesters, packers, and haulers; maintenance and repair, and field preparation.
- (2) **Firms providing farm supplies** -- this category includes suppliers of seed, nursery stock, fertilizer and chemicals; equipment rental and sales; and suppliers of fuels, oils, and lubricants.
- (3) **Firms handling farm products** -- this category includes firms that store, process, sell, or ship farm products.
- (4) **Firms not directly related to agriculture** -- this category includes businesses that do not directly provide farm services or supplies, or handle farm products.

Table 6 shows the number of businesses in each category and the number of returned surveys.

Table 6
Businesses Contacted and Surveyed

Type of Business	Number Contacted	Number Completed and Returned
Provides Farm Services	5	4
Provides Farm Supplies	6	4
Handles Farm Products	4	3
Non-farm Related	5	2*
Total	20	13

*Two surveys were returned with notes stating that the Program had not affected their business.

As shown in the table, surveys were received from 13 of the initial 20 contacted. While five non-farm-related businesses were contacted and expressed willingness to participate in the

¹⁰ These businesses were contacted by telephone and asked to participate. Surveys were mailed to willing participants. In most cases, surveys were collected in-person. When it was not possible to schedule an interview, participants were asked to return their survey by mail.

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

survey, only two returned the survey.¹¹ In both of these cases, the surveys were returned with notes stating that their businesses had not been affected by the Program.

3.2.1 REPORTED REVENUE IMPACTS

Surveyed businesses were asked a series of questions about their revenues in 1992, 1993, and 1994. Responses are summarized below:

Change in Revenue 1992-1993

- Five respondents reported that revenues in 1993 were lower than in 1992, four reported that they were higher, and 2 reported that they were unchanged.
- Of the firms providing farm services, three of four reported lower revenues in 1993 than in 1992, and one reported revenues unchanged.
- Of the firms providing farm supplies, two of four reported lower revenues in 1993 than in 1992, one reported revenues unchanged, and one reported higher revenues.
- Of the firms handling farm products, three of three reported higher revenues in 1993 than in 1992.
- Of the five respondents reporting lower revenues, three identified the Program as the primary reason for the decrease; one reported the Program and the whitefly infestation as the primary reasons; and one reported the Program and low crop prices as the primary reasons. It should be noted that all five regarded the Program as a primary reason, though not necessarily the only reason, for lower revenues in 1993 compared to 1992.
- Of the four firms reporting higher revenues, none identified the Program as the primary reason for the increase.
- Firms were asked to indicate if a factor caused a significant decrease, minor decrease, no impact, minor increase, or significant increase in 1993 revenue. Ten factors, including the Program, were listed (see Appendix A, questions 11-12). Four of thirteen firms reported that the Program caused a significant decrease; five reported that it caused a minor decrease; and four reported it had no impact. Overall, nine of thirteen firms believed the Program had no impact or resulted in a minor decrease to their revenues, while four reported that the Program caused a significant decrease to their revenues.¹²
- Of the five firms reporting that revenues were lower in 1993 than in 1992, three disclosed actual revenues for each year.¹³ For these three firms, revenue in 1993 was, on average, 13.0% below its 1992 level. The average dollar decrease was slightly more than \$167,800 per firm.

¹¹ For all survey participants, follow-up contacts-- both by telephone and in-person -- were made to make sure the survey was received and to address questions.

¹² Note that while nine firms reported that the Program caused either a significant or minor decrease in 1993 revenue, only five actually reported that revenues in 1993 were lower than in 1992. In four cases, the negative impact of the Program was offset by other factors that positively impacted revenue.

¹³ Of the eleven respondents, three regarded revenues as proprietary information and chose not to disclose them. These firms did indicate whether revenues were lower, higher, or unchanged, and the

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

Change in Revenue 1993-1994¹⁴

- Five respondents reported that revenues in 1994 were expected to be lower than in 1993, while six reported that revenues were expected to be higher.
- Of the firms providing farm services, two of four reported that revenues were expected to be lower in 1994 than in 1993, and two reported that they were expected to be higher. This differs from responses for the prior year, where three of four firms reported lower revenue, one reported revenue unchanged, and none reported higher revenue.
- Of the firms providing farm supplies, one of four expected lower revenues in 1994 than in 1993, and three expected higher revenues.
- Of the firms handling farm products, two of three expected lower revenues in 1994 than in 1993, and one expected higher revenues.
- Of the five respondents expecting lower revenues, three identified the Program as a primary reason for the expected decrease; two did not indicate the Program as a primary reason for the expected decrease.
- Of the six firms expecting higher revenues, two identified the Program as a primary reason for the expected increase, both because farming activity increased when the Program ended and because farm operators were investing revenue from the Program into their farms.
- As for 1993, firms were asked to indicate if a factor caused a significant decrease, minor decrease, no impact, minor increase, or significant increase in 1994 revenue. Three of thirteen firms reported that the Program caused a significant decrease; four reported that it caused a minor decrease; four reported it had no impact; and two reported a minor increase. Overall, ten of thirteen firms expected the Program would cause either a minor decrease, no impact, or a minor increase in their 1994 revenue, while three expected it would cause a significant decrease in 1994 revenue. In general, respondents viewed the impacts of the Program in 1994 as less severe than in 1993.
- Firms were asked to estimate 1994 revenue. Seven firms disclosed these estimates. For these firms, revenue was, on average, expected to be 14.5% higher in 1994 than in 1993. For the two firms that attributed higher revenue in 1994 to the Program, expected revenue was, on average, 23.4% higher than in 1993. Only one of the three firms that attributed lower revenue in 1994 to the Program provided an estimate of 1994 revenue. For this firm, 1994 revenue was expected to be 12.8% lower than in 1993.

impact of the Program on revenues. In one case, the firm indicated the average percentage decrease in revenue over the last several years. The estimate above does not use that information, however, because it was unclear to which years the average percentage decrease referred.

¹⁴ The survey was conducted during August of 1994. Therefore, respondents were asked to estimate changes in 1994 revenues and employment based on year-to-date performance.

Revenue Impacts to Non-Farm Related Businesses

As previously discussed, two of the five non-farm related businesses contacted returned the survey. Both indicated that they did not believe the Program had impacted their businesses. Of the eleven farm-related businesses completing the survey, two indicated that farm-related sales accounted for between 10% and 19% of total revenues, while the remaining nine indicated that they accounted for more than 75%. Neither of the two firms with the low proportion of farm-related revenue indicated that total revenues declined between 1992 and 1993; and both indicated that revenues increased between 1993 and 1994. Both indicated that, overall, the Program did not impact their businesses. The above results, plus interviews with local bank representatives and City of Blythe staff, suggest that revenue impacts of the Program did not extend to any significant degree beyond farm-related enterprises (Per. Comm. Alan Denewiler 1994; Per. Comm. J. Newell Sorensen 1994).

- **Summary of Reported Revenue Impacts** -- Responses indicate that revenues of firms providing farm services were the most significantly affected by the Program, followed by firms providing farm supplies. Three of four respondents providing farm services indicated that the Program resulted in a significant decrease in revenues in 1993, whereas three of four respondents providing farm supplies indicated that it resulted in only a minor decrease, and two of three respondents handling farm products indicated that it resulted in no revenue impacts. Available data does not indicate that non-farm related businesses were significantly impacted by the Program. It also should be noted that two respondents identified the Program as a primary reason for an expected increase in 1994 revenue, in part because farm operators were investing revenue from the Program into their farms.

3.2.2 REPORTED EMPLOYMENT IMPACTS

The second part of the survey asked the respondent a series of questions about full-time and part-time/seasonal employment for 1992, 1993, and 1994. Responses are summarized below:

Change in Employment 1992-1993

- Five respondents reported that their full-time employment in 1993 was lower than in 1992, two reported it higher, two reported it unchanged, and four did not respond. Five reported that their part-time/seasonal employment in 1993 was lower than in 1992, two reported it higher, two reported it unchanged, two did not employ part-time/seasonal labor, and two did not respond.
- Of the firms providing farm services, two of four reported lower full-time employment in 1993 than in 1992, and two reported it unchanged. Three reported lower part-time/seasonal employment, and one reported it unchanged.
- Of the firms providing farm supplies, three of four reported lower full-time employment in 1993 than in 1992, and one reported it higher. One reported lower part-time/seasonal employment, one reported it higher, and two did not employ part-time/seasonal labor.
- Of the firms handling farm products, one of three reported lower employment in 1993 than in 1992, one reported it higher, and one did not respond. One reported lower part-time/seasonal employment, one reported it higher, and one reported it unchanged.

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- Of the five respondents reporting lower full-time employment, three identified the Program as the primary reason for the decrease, one reported the Program and the whitefly infestation as the primary reasons, and one did not attribute the decrease to the Program. Overall, four of five respondents reporting lower full-time employment identified the Program as a primary, though not necessarily the only, reason for the decrease. These firms reduced full-time employment by a total of 15 jobs.
- Of the five respondents reporting lower part-time employment, two identified the Program as the primary reason for the decrease, two did not attribute the decrease to the Program, and one did not respond. Overall, only two of five respondents reporting lower part-time/seasonal employment identified the Program as a primary reason for the decrease. These firms decreased part-time employment by a total of seven jobs.

Change in Employment 1993-1994 ¹⁵

- One respondent expected full-time employment to be lower in 1994 than in 1993, three expected it to be higher, six expected it to remain unchanged, and three did not respond. One expected part-time/seasonal employment to be lower in 1994 than in 1993, one expected it to be higher, seven expected it to remain unchanged, two did not employ part-time/seasonal labor, and two did not respond.
- Of the firms providing farm services, none expected lower full-time employment in 1994 than in 1993, one expected it to increase, and three expected it to remain the same as in 1993. All four expected part-time/seasonal employment to remain unchanged.
- Of the firms providing farm supplies, one of four expected lower full-time employment in 1994 than in 1993, one expected it to increase, and two expected it to remain the same. Two expected part-time/seasonal employment to remain unchanged, and two did not use part-time/seasonal employment.
- Of the firms handling farm products, one of three expected employment to be lower in 1994 than in 1993, one expected it to be higher, and one did not respond. One expected part-time/seasonal employment to decrease, one expected it to increase, and one expected it to remain unchanged.
- Of the two firms expecting lower full-time employment, one indicated the Program as the primary reason for the expected decrease and one did not attribute the expected decrease to the Program. The Program was not identified as a cause for lower part-time/seasonal employment in 1994 by any respondent. The one firm identifying the Program as a primary reason for lower full-time employment reported reducing its workforce by four jobs.
- None of the respondents that experienced higher employment in 1994 attributed the increase to the Program.
- **On-farm Employment Impacts** – On-farm employment impacts of the Program are reported in Great Western Research (1993; forthcoming). Program participants reported that

¹⁵ Respondents were asked to estimate their full-time and seasonal employment for 1994.

they reduced their full-time workforce by 27 jobs due to the Program. None reported a change in part-time/seasonal workforce.

- **Reported Business Failure** – There is one known instance where the Program may have contributed to a business failure in the region. This was a fertilizer and agricultural chemical supplier operated by Crop Protection Services, Inc. According to the former plant manager, the facility was shut down in part because of the revenue risk should the Program be repeated within the next five or ten years. At the time of its closing the facility was generating approximately 30% below its revenue target of \$5 million. It is important to emphasize that the Program was not identified as the only cause for the closing, but it was identified as an important contributing factor. Other factors that contributed to the closing included the loss of vegetable production to the valley, which altered input purchase patterns, especially for fertilizer and chemicals, whitefly infestation, and heightened competition from other suppliers. Six full-time jobs were connected with the plant when it was closed (Per. Comm. Richard Wellman 1994).

- **Summary of Reported Employment Impacts** -- Over the two-year period of the Program, business survey respondents attributed the loss of 19 full-time and seven part-time/seasonal jobs to the Program. Including the 27 on-farm job losses reported by Program participants and the six associated with the closing of the fertilizer plant owned by Crop Protection Services, Inc. increases reported full-time job losses to 52.¹⁶

For farm-related businesses, survey respondents providing farm services and supplies reported the largest employment losses. Respondents handling farm products did not report any Program related employment losses. Similarly, respondents whose farm-related revenue was a low proportion of their total revenue did not report any Program related employment losses. Employment losses related to the Program were not found to have extended to non-farm related businesses. Based on Employment Development Department employment counts for the region, tallied employment losses associated with the Program are equal to approximately 1.3% of average regional employment for 1991-92. It should be noted, however, that it was beyond the scope of this analysis to estimate the employment stimulus associated with regional spending of Program payments. As a result, employment losses due to the Program may be less than stated here.

3.3 REGIONAL MACRO ECONOMIC INDICATORS

Employment and taxable sales data for the Blythe area were analyzed to determine if a statistically significant change in employment or taxable sales occurred following the start of the Program. It is important to note that such a difference does not establish the Program as the cause for the change. However, it would indicate that changes in the economy occurred that were coincident with the Program.

- **Employment** -- Monthly employment counts by zip code for the Blythe market area were provided by the Employment Development Department for the period January 1991 to

¹⁶ It is important to note that this is only a tally of reported employment loss and not an estimate of the total change in employment caused by the Program. As previously mentioned, a sample of local businesses of sufficient scale to construct such an estimate was beyond the scope of this investigation.

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December 1993, as shown in Figure 7.¹⁷ Monthly employment counts were then classified as occurring either before or after the start of the Program, the cutoff month being July 1992. Because employment is strongly seasonal, monthly employment was also classified as either high-season or low-season. High-season included the months of June, July, and August; low-season included all other months.

In this way, two paired-samples of monthly employment were developed: (1) low-season employment before the Program paired with low-season employment while the Program was in effect; and (2) high-season employment before the Program paired with high-season employment while the Program was in effect. A standard t-test was used to determine if a statistically-significant difference in paired-means existed.¹⁸

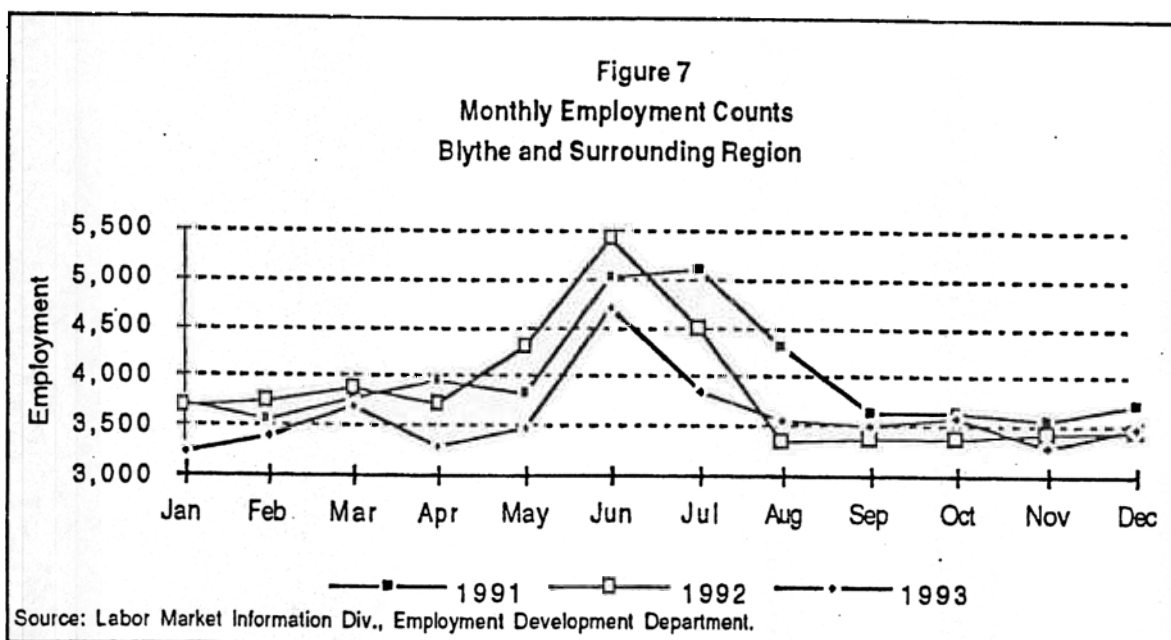


Table 7 shows the difference in means, critical value, and p-value for the two paired-samples. In each case, the difference in paired-means was statistically significant at a level of confidence greater than 95%. Mean low-season employment for the period September 1992

¹⁷ The four zip codes are 92225, 92226, 92266, 92272. Employment counts after 1993 were not available. Employment counts prior to 1991 were not comparable with those after that date. See footnote 3.

¹⁸ A paired t-test tests the hypothesis that the mean differences between pairs of experimental units is equal to some hypothesized value, usually set at zero. An hypothesized value of zero is equivalent to the hypothesis that there is no difference between the two samples. The test compares the two samples and determines the likelihood of the observed difference occurring by chance. The chance is reported as the p-value. A small p-value indicates that it is unlikely that the observed difference would occur by chance under the hypothesis that the two samples were generated from the same distribution. For example, a p-value of 0.01 indicates that the probability of the observed difference is only one in 100 if the samples came from the same distribution. Rather than accepting these long-odds, the hypothesis of no difference is typically rejected. In classical statistics, it is standard practice to reject the hypothesis of no difference if the p-value is less than 0.05. When this is the case, it is said that the hypothesis was rejected at the 95% level of confidence. This means that there was no more than a 5% chance of falsely rejecting the null hypothesis.

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

through December 1993 was 334 jobs lower than for the period December 1991 through May 1992. Mean high-season monthly employment for the period September 1992 through December 1993 was 1,000 jobs lower than for the period December 1991 through May 1992.

The reduction in melon acreage in 1993 is the most likely explanation for the decrease in monthly high-season employment (Per. Comm. Loraine Figueroa 1994). The spring melon harvest, which occurs in June of each year, is very labor-intensive, and creates the peak in the region's monthly employment, as shown in Figure 7. June employment in 1993 was 13% lower than in 1992. It is believed that this was primarily due to a 25% decrease in melon acreage from 1992 to 1993, and the subsequent decrease in demand for harvest labor.

The decrease in low-season employment could be due to a variety of factors. These include the Program, the continued decline in lettuce production – spring lettuce decreased by 1,541 acres between 1992 and 1993 -- the decrease in construction activity following the completion of Ironwood State Prison in the fourth quarter of 1993, as well as normal fluctuation inherent in any economy. It is likely that each of these factors contributed to the observed decrease in low-season employment. It was not possible to analyze employment data at the industry level to determine the relative importance of each factor because of Employment Development Department data disclosure rules.¹⁹ Industry level data would better indicate which, if any, agriculturally-related industries suffered a significant decrease in employment over the period analyzed. However, based on the survey responses, it is unlikely that Program impacts would be able to account a large portion of the decrease.

Table 7
Difference in Mean Monthly Employment Prior To and During Program

Paired t-test Effect: Land Fallowing Program Significance Level: 5 % Split By: Season Season: Low				Paired t-test Effect: Land Fallowing Program Significance Level: 5 % Split By: Season Season: High			
	Mean Diff.	Crit. Diff.	P-Value		Mean Diff.	Crit. Diff.	P-Value
Yes, No	-334.549	129.454	<.0001	Yes, No	-1000.950	827.416	.0243

Employment Zip Code Regions: 92225, 92226, 92266, 92272

- **Taxable Sales** -- an analysis similar to the one just described was also done for quarterly taxable sales data provided by the State Board of Equalization for the City of Blythe. Quarterly taxable sales for 1991 through the third quarter of 1993 were classified as occurring either before or after the start of the Program, with the cutoff quarter for before the start of the Program being the second quarter 1992.²⁰ These data are shown in Figure 8.

¹⁹ EDD will not release employment data counts by industry classification if it would be possible to infer from the data employment or wages reported by an individual employer. Because of the size of the region being studied and its geographic isolation, this was mostly the case.

²⁰Taxable sales for Q3 1993 are the most recent available.

Regional Economic Impacts of the Palo Verde Valley Test Land Following Program

As with employment, a standard t-test was used to determine if a statistically-significant difference in mean quarterly taxable sales existed. This was done for total taxable sales and for just the Building Material and Farm Implements category. In each case, the difference in mean quarterly taxable sales was not statistically-significant. Table 8 shows the differences in means, critical values, and p-values for the two tests.

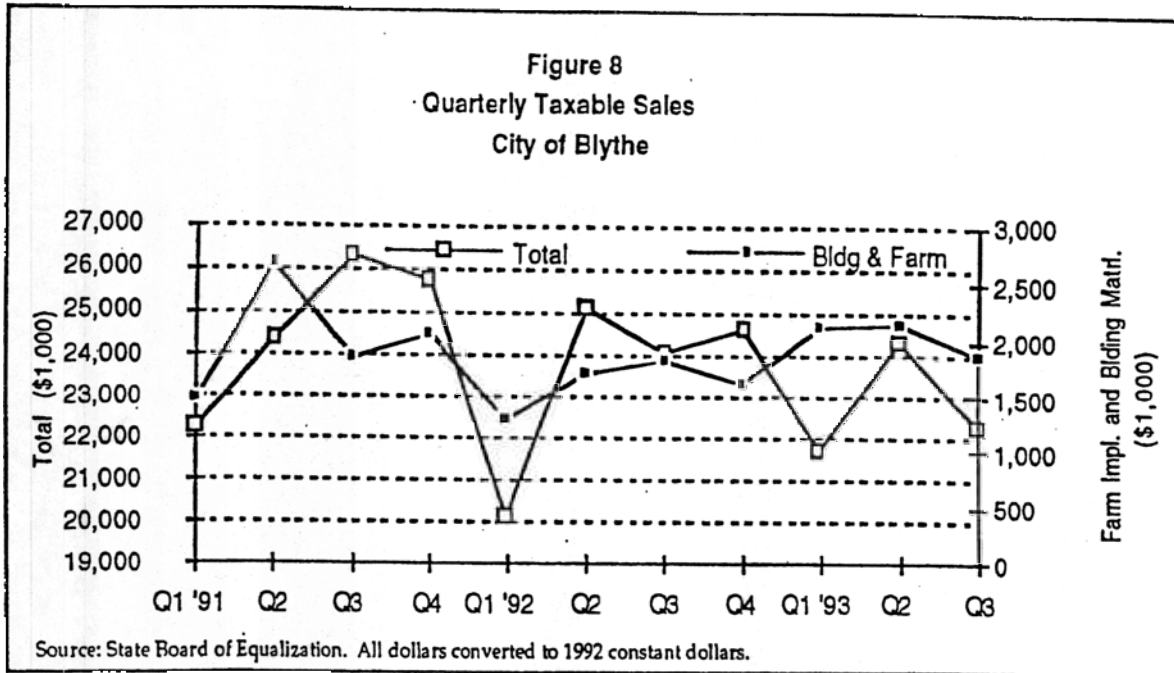


Table 8
Difference in Mean Quarterly Taxable Sales Prior To and During Program

Paired t-test: Total Taxable Sales Effect: Land Following Program Significance Level: 5 %			Paired t-test: Taxable Sales Bldng Mtrl. and Farm Impl. Effect: Land Following Program Significance Level: 5 %				
	Mean Diff.	Crit. Diff.	P-Value		Mean Diff.	Crit. Diff.	P-Value
Yes, No	-600.100	2676.800	.6242	Yes, No	78.200	544.127	.7525

- **Summary of Macro Economic Indicators²¹** -- Employment count data indicate that the Program coincided with a decrease in regional employment in 1993. Both low- and high-season employment counts decreased following the advent of the Program. As discussed above, however, a reduced spring melon harvest is the most likely cause for the decrease in high-season employment, and is not considered an impact of the Program. The Program probably was a contributing factor to the decrease in low-season employment. However, data limitations

²¹ It is important to note that the above analysis covers only a portion of the Program period. Data on 1994 employment and taxable sales were not available at the time this study was conducted.

prevent further analysis at this time to determine the extent to which the overall decrease was related to the Program versus other factors, including a tailing-off of prison construction activity and a decrease in lettuce harvest.²²

The mean of quarterly taxable sales was 2.5% lower for all businesses in the five quarters following the advent of the Program compared to the six quarters prior, while it was 4.2% higher for just the building material and farm implements category. In both cases, the differences in mean values were not statistically-significant, i.e., the differences were consistent with the normal variation of the indicators and were not indicative of a significant decrease or increase. Taxable sales in the region are generated primarily by fast food restaurants and service stations serving I-10 travelers. These businesses were not found to be affected by the Program.

4.0 PERCEPTIONS OF THE PROGRAM

The research for this study entailed extensive telephone interviews with local business and community leaders, as well as a week of field work to conduct in-person interviews and collect survey data. From these informational interviews, several observations regarding how the community perceived the Program can be made. These are as follows:

- **High level of awareness** -- The community had a high level of awareness about the Program, though few contacted knew it as the Test Land Following Program. The Program was commonly referred to as the set-aside, layby, water-sale, and water exchange.
- **Unclear on how Program worked** -- Though aware of it, many were unclear as to how the Program worked. Many expressed the belief that farmers had sold Metropolitan their rights to water, either temporarily or permanently, or that they had sold or leased their land.
- **Mistrustful of Metropolitan's intentions** -- Many were also mistrustful of Metropolitan's intentions. Several expressed the belief that the Program would lead to larger following programs in the future, or that Metropolitan would gain access to more water by purchasing agricultural land in the valley.
- **Contributed to recovery of region's agriculture** -- The majority of persons interviewed, regardless of how they were personally affected by the Program, indicated that it provided timely relief to the region's farmers, who had been under significant financial stress since the mid 1980s, as discussed in Section 2.2. In this regard, the majority of those interviewed viewed the Program as contributing to the long-term stability of the region's agricultural base.
- **Benefited growers at the expense of other farm businesses** -- The majority of persons interviewed also perceived the Program as benefiting growers at the expense of other farm businesses. Several expressed the belief that businesses closely connected to the region's agriculture should also be compensated.

²² The limited data available -- both in terms of industry aggregation and extent of the time-series -- make these conclusions tentative. For example, when post-Program data on employment and taxable sales become available, a more definitive analysis on Program impacts would be possible.

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

- **Impact to the region's economy** -- Perceptions were mixed with regard to the Program's overall impact on the region's economy. Some expressed the belief that the Program had benefited the region's economy by stabilizing farm incomes and injecting a large amount of money into the region. Others expressed the opposite; that the Program had destroyed jobs and businesses, and was generally bad for the region. In this regard, no consensus view emerged. However, the impressions of those with a high degree of knowledge about the local economy -- local bank officials and City Planning staff -- expressed the belief that the Program did not have a negative impact on the overall economy, though it clearly affected some businesses.

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

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APPENDIX A

LOCAL AREA BUSINESS SURVEY

Regional Economic Impacts of the Palo Verde Valley Test Land Following Program

Name: _____
Business name: _____
Address: _____
Phone: _____

LOCAL AREA BUSINESS SURVEY
PVID TEST LAND FOLLOWING PROGRAM

Please answer the questions in this packet for

Your entire business
The branch/division doing business in the Blythe area

Please direct questions about this survey to:

David Mitchell
M.Cubed
5358 Miles Avenue
Oakland, CA 94618
510/547-4369 (phone/fax)

If you are returning your survey by mail, please use the above address.

STATEMENT OF CONFIDENTIALITY

All information that would permit identification of any person who completes this questionnaire will be regarded as strictly confidential. Such information will be used only for the purposes of this study and will not be disclosed or released for any other purposes without prior consent, except as required by law.

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

ABOUT YOUR BUSINESS

1a. In 1992, how many full-time employees (including yourself) were employed by this business?

- (Circle One)
- Less than 5 01
 - 5 to 9 02
 - 10 to 19 03
 - 20 to 49 04
 - 50 or more 05

1b. In 1992, how many part-time or seasonal employees were employed by this business?

- (Circle One)
- Less than 5 01
 - 5 to 9 02
 - 10 to 19 03
 - 20 to 49 04
 - 50 or more 05

1c. In 1992, were the gross revenues of this business ...

- (Circle One)
- Less than \$50,000 01
 - \$50,000 to \$99,999 02
 - \$100,000 to \$499,999 03
 - \$500,000 to \$999,999 04
 - \$1,000,000 to \$4,999,999 05
 - \$5,000,000 to \$9,999,999 06
 - \$10,000,000 or more 07

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

2. Which of the following describes what your business does?

	ALL ACTIVITIES (circle all that apply)	PRIMARY ACTIVITY (circle one)
A. PROVIDES FARM SERVICES		
Application of pesticides, fertilizer, seed, etc.	01	01
Labor contracting.....	02	02
Maintenance/repair	03	03
Harvesting	04	04
Packing of farm products	05	05
Hauling of farm products	06	06
Land leveling.....	07	07
Other _____	08	08
B. PROVIDES FARM SUPPLIES		
Seed	09	09
Nursery stock	10	10
Fertilizer and chemicals	11	11
Equipment rental	12	12
Equipment sales	13	13
Fuel, oils, and lubricants	14	14
Other _____	15	15
C. HANDLES FARM PRODUCTS		
Storer 16.....	16	
Processor	17	17
Seller 18.....	18	
Shipper/Hauler	19	19
Other _____	20	20
D. NOT FARM RELATED BUSINESS		
(describe) _____	21	21

3. Is this business a farmer-owned cooperative?

	(Circle One)
Yes	01
No	02

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

ABOUT SALES TO AND PURCHASES FROM FARMS

4a. Did this business sell products or services to farms in 1992, 1993, or 1994? (Please include cattle and dairy operations with farms.)

(Circle One)

Yes 01
 No 02 go to question 5a

4b. Of the revenues this business received from farms in 1992, 1993, and 1994, approximately what percent came from farms within PVID and from farms outside PVID?

1992 1993 1994

Within PVID
 Outside PVID

Total must add to: 100% 100% 100%

5a. Did this business buy farm products directly from farms in 1992, 1993, or 1994? (Please include cattle and dairy operations with farms.)

(Circle One)

Yes 01
 No 02 go to question 6

5b. Of the payments this business made directly to farmers in 1992, 1993, 1994, approximately what percent were made to farms operating within PVID and to farms operating outside PVID?

1992 1993 1994

Within PVID
 Outside PVID

Total must add to: 100% 100% 100%

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

ABOUT THIS BUSINESS' FINANCES

6. Approximately, what were the gross revenues for this business during the following years?
(Please estimate what you expect gross revenues will be for 1994.)

1992 gross revenues	\$ _____
1993 gross revenues	\$ _____
1994 gross revenues	\$ _____

7. Were revenues higher, lower, or the same in 1993 as in 1992?

	(Circle one)
Higher	01
Lower	02
Same	03

8. What do you believe to be the primary reason for the change in revenue between 1992 and 1993 you indicated above?

9. Do you expect revenues will be higher, lower, or the same in 1994 as in 1993?

	(Circle one)
Higher	01
Lower	02
Same	03

10. What do you believe to be the primary reason for the expected change in revenue between 1993 and 1994 you indicated above?

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

11. Please indicate what you believe the impact of the following factors were on your revenues in 1993:

(Circle One for each factor)

	Significant Decrease	Minor Decrease	No Impact	Minor Increase	Significant Increase
Prices/availability of goods/services you sell ...01		02	03	04	05
Prices/availability of goods/services you buy ..01		02	03	04	05
Statewide recession.....01		02	03	04	05
Weather01		02	03	04	05
Land Fallowing Program01		02	03	04	05
Gov't Commodity Program01		02	03	04	05
Consolidation of business operation01		02	03	04	05
Change in business competition01		02	03	04	05
Prison expansion01		02	03	04	05
Housing construction01		02	03	04	05
Other _____01		02	03	04	05

12. Please indicate what you expect the impact of the following factors will be on your revenues in 1994:

(Circle One for each factor)

	Significant Decrease	Minor Decrease	No Impact	Minor Increase	Significant Increase
Prices/availability of goods/services you sell ...01		02	03	04	05
Prices/availability of goods/services you buy ..01		02	03	04	05
Statewide recession.....01		02	03	04	05
Weather01		02	03	04	05
Land Fallowing Program01		02	03	04	05
Gov't Commodity Program01		02	03	04	05
Consolidation of business operation01		02	03	04	05
Change in business competition01		02	03	04	05
Prison expansion01		02	03	04	05
Housing construction01		02	03	04	05
Other _____01		02	03	04	05

13. If this business sold products/services to farms, approximately what percent of total revenues did these sales account for?

(Circle One)

Less than 10%	01
10% to 19%	02
20% to 49%	03
50% to 75%	04
More than 75%	05

Regional Economic Impacts of the Palo Verde Valley Test Land Following Program

ABOUT THIS BUSINESS' EMPLOYEES

14. Approximately how many full-time employees (including yourself) were employed by this business in 1992, 1993, and 1994? (By full-time we mean people who worked 40 or more hours per week for nine or more months per year.)

1992 Full-time Employees _____
1993 Full-time Employees _____
1994 Full-time Employees _____

15. Did you employ more, less, or the same number of full-time employees in 1993 as in 1992?

(Circle one)
More 01
Less 02
Same 03

16. What do you believe to be the primary reason for the change in employment between 1992 and 1993 you indicated above?

17. Will you employ more, less, or the same number of full-time employees in 1994 as in 1993?

(Circle one)
More 01
Less 02
Same 03

18. What do you believe to be the primary reason for the expected change in employment between 1993 and 1994 you indicated above?

20. Approximately how many part-time/seasonal employees were employed by this business in 1992, 1993, and 1994? (By part-time/seasonal we mean people who work less than 40 hours per week or less than nine months per year.)

1992 Part-time/Seasonal Employees _____
1993 Part-time/Seasonal Employees _____
1994 Part-time/Seasonal Employees _____

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

21. Did you employ more, less, or the same number of part-time/seasonal employees in 1993 as in 1992?

(Circle one)
More 01
Less 02
Same 03

22. What do you believe to be the primary reason for the change in employment between 1992 and 1993 you indicated above?

23. Will you employ more, less, or the same number of part-time/seasonal employees in 1994 as in 1993?

(Circle one)
More 01
Less 02
Same 03

24. What do you believe to be the primary reason for the expected change in employment between 1993 and 1994 you indicated above?

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

ABOUT THE LAND FALLOWING PROGRAM

25. We'd like to know if you think the Land Fallowing Program had any effect on the local economy. If there were any positive or negative effects, please briefly describe. (Attach additional pages as necessary.)

26. Do you know of any businesses in the area that you think were negatively affected by the Land Fallowing Program? If yes, please list their names and addresses:

Name: _____	Name: _____
Address: _____	Address: _____
_____	_____
Name: _____	Name: _____
Address: _____	Address: _____
_____	_____

27. Do you know of any businesses in the area that you think were positively affected by the Land Fallowing Program? If yes, please list their names and addresses:

Name: _____	Name: _____
Address: _____	Address: _____
_____	_____
Name: _____	Name: _____
Address: _____	Address: _____
_____	_____

28. Do you know of any Community Organizations in the area that you think were positively or negatively affected by the Land Fallowing Program? If yes, please list their names and addresses. (By community organizations we mean government social service agencies, churches, charities, and volunteer organizations.)

Name: _____	Name: _____
Address: _____	Address: _____
_____	_____
Positively affected _____	Positively affected _____
Negatively affected _____	Negatively affected _____

29. Do you have suggestions for how the Land Fallowing Program might have been managed differently? (Attach additional pages as necessary.)

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

30. What do you think could have been done to increase the positive effects or lessen the negative effects of the Land Fallowing Program? (Attach additional pages as necessary.)

Please indicate if you would like to receive a copy of the study results.

Yes _____
No _____

THANK YOU FOR COMPLETING THE SURVEY

Questions about this survey?
Call David Mitchell: 510/547-4369

APPENDIX B

CROP BUDGET ANALYSIS

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

Table B1

Crop: Sudangrass

Estimated Acreage Displaced by Program

2,413

Estimated Reduction in Gross Revenue

1,628,775

Purchased inputs 1/
Labor

Task	Quantity	Units	Unit Cost	Expenditures per acre	Expenditures reduced by fallowed acreage 2/
Irrigate	4	hrs	5.75	23.00	55,499.00
Total purchased labor				\$23.00	\$55,499.00

Materials

Type	Quantity	Units	Unit Cost	Expenditures per acre	Expenditures reduced by fallowed acreage
Seed	85	lbs.	0.6	51.00	123,063.00
NH3 fert.	200	lbs.	0.15	30.00	72,390.00
Fuel and Oil					27,689.18
Repair and Maintenance					40,719.38
Total purchased materials				\$19.00	\$263,861.55

Custom Hire

Type	Quantity	Units	Unit Cost	Expenditures per acre	Expenditures reduced by fallowed acreage
Seed				8.50	20,510.50
Fertilize				10.50	25,336.50
Total custom hire				\$19.00	\$45,847.00

Notes:

1/ Production cost estimates from UC Cooperative Extension Imperial County Crop Budget for Sudangrass Hay, 1991-92.

2/ Estimates do not account for more intensive use of inputs on remaining cultivated acreage. Labor and material usage and cost for actual operations within PVID may differ from those reported here.

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

Table B2

Crop: Wheat

Estimated Acreage Displaced by Program

1,520

Estimated Reduction in Gross Revenue

\$65,440

Purchased inputs 1/
Labor

Task	Quantity	Units	Unit Cost	Expenditures per acre	Expenditures reduced by fallowed acreage 2/
all tasks	1.8	hrs	5.75	10.35	15,732.00
Total purchased labor				\$10.35	\$15,732.00

Materials

Type	Quantity	Units	Unit Cost	Expenditures per acre	Expenditures reduced by fallowed acreage
Seed				19.50	29,640.00
Fert.				45.90	69,768.00
Pest.				4.08	6,201.60
Herb.				2.66	4,043.20
Fuel and Oil					9,612.48
Repair and Maintenance					14,136.00
Total purchased materials					\$133,401.28

Custom Hire

Type	Quantity	Units	Unit Cost	Expenditures per acre	Expenditures reduced by fallowed acreage
Pre plant fert				5.16	7,843.20
Fertilize				5.16	7,843.20
Insecticide				5.00	7,600.00
Herbicide				5.00	7,600.00
Total custom hire				\$10.32	\$30,886.40

Notes:

1/ Production cost estimates from UC Cooperative Extension San Joaquin Valley Crop Budget for Double Cropped Wheat, 1990.

2/ Estimates do not account for more intensive use of inputs on remaining cultivated acreage. Labor and material usage and cost for actual operations within PVID may differ from those reported here.

Regional Economic Impacts of the Palo Verde Valley Test Land Following Program

Table B3

Crop: Alfalfa

Estimated Acreage Displaced by Program

16,282

Estimated Reduction in Gross Revenue

14,653,800

Purchased inputs 1/
Labor

Task	Quantity	Units	Unit Cost	Expenditures per acre 2/	Expenditures reduced by fallowed acreage 3/
Irrigate to establish	2	hrs	5.75	3.83	62,414.33
Irrigate	9	hrs	5.75	51.75	842,593.50
Total purchased labor				\$51.75	\$905,007.83

Materials

Type	Quantity	Units	Unit Cost	Expenditures per acre	Expenditures reduced by fallowed acreage
Fert to establish	260	lbs.	0.15	13.00	211,666.00
P205 fert.	90	lbs.	0.12	10.80	175,845.60
Seed to establish	20	lbs.	1.45	9.67	157,392.67
Insect. to establish				2.33	37,991.33
Insect.				46.00	748,972.00
Herb. to establish				4.33	70,555.33
Herb.				24.00	390,768.00
Fuel and Oil					249,114.60
Repair and Maintenance					366,345.00
Total purchased materials				\$97.13	\$2,408,650.53

Custom Hire

Type	Quantity	Units	Unit Cost	Expenditures per acre	Expenditures reduced by fallowed acreage
Pre plant fert				2.67	43,418.67
Seed to Establish				3.50	56,987.00
Insect. to Establish				1.63	26,593.93
Insect.				19.60	319,127.20
Herb. to Establish				2.92	47,489.17
Herb.				4.90	79,781.80
Total custom hire				\$6.17	\$573,397.77

Notes:

1/ Production cost estimates from UC Cooperative Extension Imperial County Crop Budget for Alfalfa, 1991-92.

2/ Per acre expenditures for establishment costs divided by 1/3 to reflect 3-year field life.

3/ Estimates do not account for more intensive use of inputs on remaining cultivated acreage. Labor and material usage and cost for actual operations within PVID may differ from those reported here.

Regional Economic Impacts of the Palo Verde Valley Test Land Fallowing Program

Table B4

Crop: Lettuce

Estimated Reduction in Acreage: 1988-91

15,035

Estimated Reduction in Gross Revenue

35,708,125

Purchased inputs 1/

Labor

Task	Quantity	Units	Unit Cost	Expenditures per acre	Reduction in expenditures due to decreased production 2/
Irrigate	8	hrs	5.75	46.00	691,610.00
Weed	12	hrs	5.75	69.00	1,037,415.00
Thin	17	hrs	5.75	97.75	1,469,671.25

Total purchased labor	\$46.00	\$3,198,696.25
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Materials

Type	Quantity	Units	Unit Cost	Expenditures per acre	Reduction in expenditures due to decreased production 2/
Seed				92.00	1,383,220.00
11-52-0 fert	500	lbs.	0.14	67.75	1,018,621.25
N fert	180	lbs.	0.31	55.80	838,953.00
Insecticide				113.00	1,698,955.00
Herbicide				11.40	171,399.00
Fuel and Oil					0.00
Repair and Maintenance					0.00

Total purchased materials		\$5,111,148.25
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Custom Hire

Type	Quantity	Units	Unit Cost	Expenditures per acre	Reduction in expenditures due to decreased production 2/
Seed				15.25	229,283.75
Insect Control				45.00	676,575.00
Weed Control				17.00	255,595.00
Fertilize				27.00	405,945.00
Cut and Pack				1,280.00	19,244,800.00

Total custom hire	\$1,384.25	\$20,812,198.75
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Notes:

1/ Production cost estimates from UC Cooperative Extension Imperial County Crop Budget for Iceberg Lettuce, 1992-93.

2/ The data in this table reflect the decrease in lettuce production that has occurred between 1988 and 1991, and are for comparison purposes only. This study found no relationship between the fallowing program and changes in lettuce acreage.

Declaration of Vernice Rae Hartman

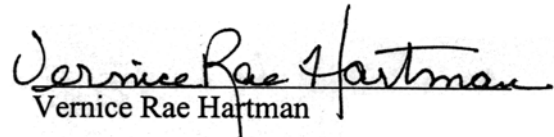
I, Vernice Rae Hartman, declare that:

1. I am the Clerk of the Board for the San Diego County Water Authority, in San Diego, California. I hereby make this declaration in my official capacity on behalf of the San Diego County Water Authority.

2. I declare that the attached exhibit dated April 25, 2002, titled "SDCWA Comment Letter re: Draft Environmental Impact Report (EIR) Environmental Impact Statement (EIS) for the Imperial Irrigation District Water Conservation and Transfer Project and Draft Habitat Conservation Plan (SCH No. 99091142), including attachments" is a true and accurate copy which is retained in the files of the San Diego County Water Authority, in San Diego, California.

I certify under penalty of perjury under the laws of the State of California that the above statements are true.

Dated: This 22 day of May, 2002.


Vernice Rae Hartman