



Imperial Valley Agriculture and Water: A Regional Economic Analysis

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The objective of this research is to evaluate issues associated with potential reductions in the quantity or quality of drainage water entering the Salton Sea from agriculture in the Imperial Valley. This evaluation will be done by building a regional agricultural production model that accurately represents regional cropping activities, irrigation choices, and water issues. By developing a detailed regional mathematical programming model of Imperial Valley agricultural production, we can evaluate the impacts associated with alternative strategies that meet these commitments on agricultural productivity and sustainability. Furthermore, by linking this agricultural production model to a comprehensive regional model of economic activity (using what is referred to as social accounting matrix multiplier analysis, or SAM), the impacts on regional economic activity can also be explored and highlighted. Given that agriculture is the largest industry within the region, including the impacts of alternative agricultural management strategies on the region as a whole can provide a more comprehensive analysis than agricultural production models alone, and can better identify more efficient alternatives and their distributional consequences. Finally, through establishing a relationship between agricultural runoff from the Valley and inflows into the Salton Sea,

the implications of these various strategies on characteristics of the Salton Sea can be explored.

The regional agricultural model is up and running. The model can estimate the regional agricultural impacts of different constraints on the input of water, restriction on irrigation efficiency, and the introduction of a water market (transfer) to the San Diego County Water Control Board. The outputs from this model, income, agricultural profits, and labor, can be input to the SAM to investigate the regional impacts on regional employment, income, and tax revenue in the aggregate or by industry.

We are finishing up validating the results of the base model with what we observe currently in the Imperial Valley. We have finished some sensitivity analysis of the model to ensure that the results correspond with economic theory. That is, when you increase the price of irrigation water, the model responds in the correct direction and magnitude.

We are currently working to ensure that we have a very complete grasp of the policy options confronting the Imperial Irrigation District and the State of California regarding the water transfer under the Quantification Settlement Agreement. The transfer consists of commitments associated with water

conservation measures, water transfers, and groundwater banking and conjunctive use measures. The state of California was given 15 years to achieve these commitments, many of which rely upon agricultural growers in the region reducing their long-term historical average water use by nearly 30% (Western Water 2001, p. 8), and one that includes a controversial 200,000 ac-ft transfer of water from the Imperial Irrigation District to the San Diego County Water Authority. Once we fully grasp the relative magnitudes of the transfers and options, we incorporate these into our model and compare the results with our baseline solution, as well as with what would be likely be called the economically efficient solution. For instance, as the plan stands currently, water from IID that can be sold to San Diego County may come from water savings from growers through fallowing crop land. Yet, a potentially more efficient solution might be, or include, some water reduction strategies through either reducing the amount water growers apply by increasing the irrigation efficiency of water applications, or through changing the crop mix that they cultivate. These strategies can be compared to what is currently being mandated by the authorities.

In summary, we are in the final stages of this project. Results are currently being generated investigating a wide variety of

policy scenarios. The results will provide information on the impacts of these policies on agricultural production, drainage water generation (which is important to the inflows to the Salton Sea), agricultural labor, income, and water demand. These results can then subsequently be fed into the SAM model to get an estimate of the regional effects on income and labor.

Collaborative Efforts

We have been in direct contact with the Salton Sea Authority about investigating the impacts of the QSA on the viability of the Salton Sea Restoration alternatives and the benefits and costs of those alternative strategies. Clearly, to completely understand the benefits and costs of any restoration strategy, such an economic exercise needs to be performed. Hence, we will make our results available to this agency.

For further information please contact:

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