

8.0 Socioeconomic Analyses

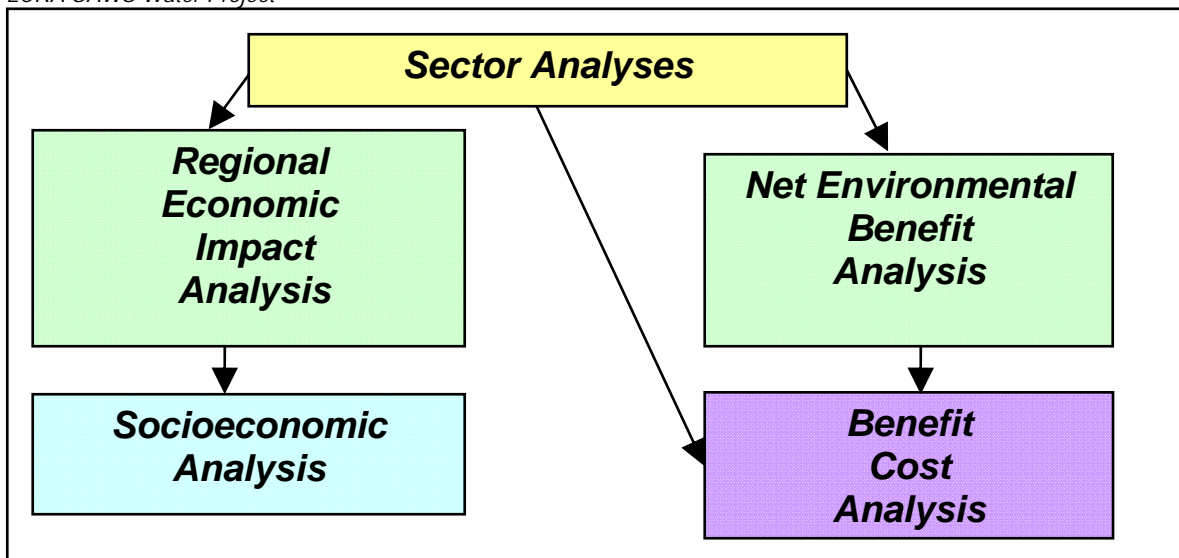
The LSWP potentially has significant and direct economic benefits and costs for municipal sectors in the SAWS service area as well as multiple sectors within Region K. This is particularly the case for the agricultural sector in Colorado, Wharton, and Matagorda counties. These direct effects are expected to indirectly affect the local economy as well as the social resources tied to population growth and employment. In addition, the potential environmental effects to wildlife, aquatic, and bay habitats are of special concern to recreational, environmental, and regulatory interests.

The comprehensive socioeconomic analysis is designed to help address the overarching questions regarding the social and economic benefits and costs of the project. The analysis also addresses the distribution of those benefits and costs among the regions and sub-groups within the regions affected by the project. This study will support permitting efforts at both the state and federal levels. Because the study relies heavily on the results of the other project studies, a majority of the social and economic analyses are scheduled for 2008 with completion in 2009.

Socioeconomic Study Framework

The study plan for the socioeconomic analyses includes five components that fit together and complement each other (Figure 8-1). Each analysis looks at a slightly different element of possible effects of the project on the economy and society. Together, they are designed to address the agreement between LCRA and SAWS, issues raised through the public involvement process, and state and federal permitting requirements.

FIGURE 8-1
Socioeconomic Study Analyses
LCRA-SAWS Water Project



Study Components and Interactions with Other Study Teams

Sector Analyses

The socioeconomic studies examine conditions within various economic sectors including agricultural, municipal and industrial, recreation, and construction. The sector analyses document the economic conditions and forecast potential effects, both positive and negative, of the project within the various sectors. In addition, these evaluations support the regional economic impact analysis and the benefit cost analysis. Baseline data on existing conditions were collected and a model to forecast potential future conditions has been developed for many of the sectors. The analyses, however, cannot be finalized until other studies are near completion. These analyses are scheduled for completion in 2009. Information included herein is not intended to be an exhaustive summary of the preliminary findings. Only a portion of the sectors are addressed. More sectors will be addressed as the socioeconomic study progresses. The purpose of this summary is to illustrate some of the data and preliminary results as well as methods for conducting the analyses.

Agricultural Sector: This analysis will address the question “What effect is the project expected to have on agricultural water users (producers) served by LCRA in the lower three counties of Region K in terms of acres in rice production, crop yield, net income from farming rice, and on-farm labor as compared to the “without project” condition?” These measures of farm activity and net farm income serve to quantify the nature and extent of improvement in the condition of the rice agriculture sector due to the project. The study will also estimate potential future conditions with and without the project on other businesses that are directly or indirectly dependent upon rice agriculture in the region.

Municipal and Industrial Sector in Region K: This analysis is focused on municipal and industrial water users within the lower Colorado River basin. The analysis examines the expected benefits and costs, if any, to cities and industries as a result of the project. One possible way that entities within this sector could be affected would be if changes in the river flow patterns or water quality led to higher treatment costs for wastewater discharges, particularly in the upper reaches of the river where wastewater discharges comprise a larger volume of current river flows. Using results produced by the water quality team to simulate possible future conditions including expected increased volumes of wastewater discharges from the City of Austin, the preliminary findings indicate that while more robust wastewater treatment would be expected as discharge volumes increase over time, minimal impacts from the project are anticipated for major wastewater dischargers in the region.

Recreation Sector in Region K: The potential effect of the project on recreational interests within four geographic sub-regions in the lower Colorado River basin will be studied. Using information from the Matagorda Bay health evaluation, the analysis will address the question, “What effect (if any) is the project expected to have on the recreational fishing industry in the bay area?”

Information from the project’s river habitat study on potential future conditions with and without the project will be used in the analysis of recreation in or on the Lower Colorado River from below Longhorn Dam to the bay. The study will explore whether or not the project would be expected to affect recreation suitability, especially as it relates to instream flow.

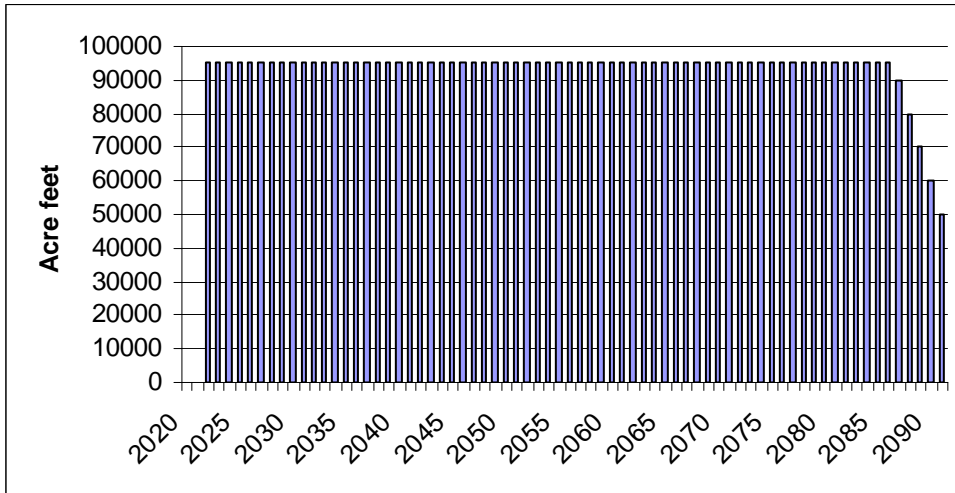
The third geographic sub-region includes the lower three counties. Waterfowl habitat and abundance and, thus, recreation opportunities potentially could be affected either by siting facilities in this region, by changes in agricultural practices, or both. The wildlife and waterfowl study is investigating such potential linkages between the project and waterfowl.

Finally, the recreational industry around and on the Highland Lakes represents a distinct economic sector from the recreational industry in the lower basin. Consequently, the potential effects of the project on recreational interests in that area will be separately evaluated. The primary changes in this area with and without the project are expected to be increased lake levels during dry and drought conditions. This anticipated effect will be qualitatively evaluated.

Municipal and Industrial Sector served by SAWS: One of the primary drivers for the project is to meet the future need for municipal water in the San Antonio and greater Bexar County region as described in SAWS' 2005 Water Resources Plan (SAWS, 2005). Furthermore, this is to be accomplished while simultaneously decreasing reliance on the Edwards aquifer and moving in the direction of meeting projected water shortages in Region K while being protective of environmental flows. In order to value the economic benefit to SAWS' customers of the water provided by the LSWP, economists ask the question, "What quantity of water would be obtainable for the typical SAWS customer if the water from the LSWP were not available and how does this compare to their desired quantity?" Absent the LSWP, there is expected to be a shortage because the quantity demanded would be greater than the quantity available. This shortage would be larger during the very hot and dry years because water demands go up when temperatures are relatively high and precipitation is relatively low. In economics, the concept of a benefit is the amount the rational consumer is willing to give up rather than forego consumption. Usually, this "willingness to pay" is measured in dollars. Many factors are considered in such an analysis including project yield, consumption patterns, and expected population.

The project team has performed preliminary calculations that will change as the project yield and delivery schedule is refined. Some of the variables included in the analysis include the delivery schedule for water, projected population and water use, and the discount rate. Figure 8-2 assumes the LSWP commences production in 2022 with 95,000 acre-feet per year and continues at 95,000 acre-feet per year until 2086, whereupon it declines to 50,000 acre-feet by 2091 and zero acre-feet thereafter.

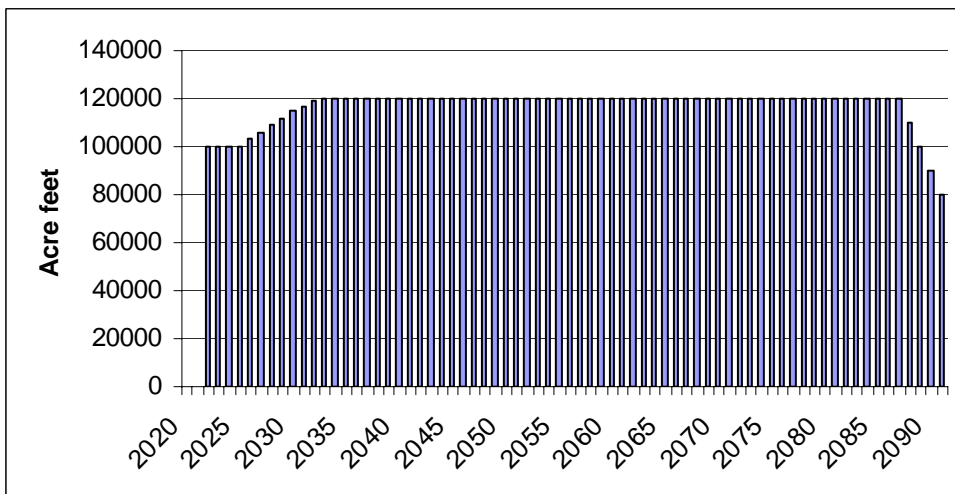
FIGURE 8-2
 LSWP Water Delivery to SAWS of 95,000 acre-feet per year
 LCRA-SAWS Water Project



The estimated benefit for the project life is measured as the net present value of willingness to pay by SAWS customers using a 4.875 percent annual discount rate. The analysis will use SAWS' population estimates and a repeat of the 1940-1998 monthly weather record with January 1940 starting in January 2005.

Figure 8-3 illustrates another scenario that assumes the LSWP commences production in 2022 with 100,000 acre feet per year and increases to 120,000 acre-feet per year by 2033 until 2087, whereupon it declines to 50,000 acre-feet by 2091.

FIGURE 8-3
 LSWP Water Delivery to SAWS of 120,000 acre-feet per year
 LCRA-SAWS Water Project



Other variables such as the discount rate, water use and projected population would be held constant to calculate the present value of willingness to pay by SAWS customers.

As noted previously, the willingness to pay value will be recalculated as the project information is refined. Projected costs to this sector will be similarly calculated for comparison with the potential benefits.

Other Socioeconomic Study Components

Regional Economic Impact Analysis: This analysis will translate the potential economic effects of the project on affected communities and economic sectors into their regional consequences. That is, it will quantify the net changes in employment, earnings, and tax revenues from each sector on a region-wide scale. Bexar County, Region L, Region K, and the three rice producing counties within Region K are the four regions anticipated to be studied in detail in this analysis. The counties bordering Lake Travis and Lake Buchanan comprise an additional region due to the benefit of higher lake elevations during dry and drought conditions. However, this region's economy is dominated by the City of Austin, which would likely dwarf any potential project-induced impacts. The 2006 Project Viability Assessment provides more detailed questions to be addressed in the regional economic impact analysis.

Socioeconomic Analysis: Socioeconomic analysis relates to the study of impacts of an action or project to society. Its purpose is to provide evaluations of the project's potential affects on population growth and social and cultural services for communities near the project. In some evaluations, the impacts to the local economy are included under the socioeconomic analyses, but for clarity, these analyses are covered under a separate heading (i.e., regional economic impact analysis) in this study.

Some of the questions that the socioeconomic analysis will address include the following:

- Will the project impact (and if so, how and to what extent) social systems including population, housing, business, and public services such as police, fire, schools?
- Are any minority or economically disadvantaged communities expected to be disproportionately affected by the project?

Net Environmental Benefit Analysis: The net environmental benefit analysis quantifies the significant ecological benefits and costs of the project using an ecological rather than a dollar metric. This analysis will evaluate the environmental effects of the project and will, therefore, rely heavily on the Matagorda Bay health evaluation, aquatic habitat, and facility siting studies for information relating to impacts on the affected resources. This analysis will include the evaluation of ecological services, such as ecosystem support services and habitat for fish and wildlife, which are not easily measured in monetary terms. Results of the analysis will contribute to the benefit-cost analysis. For a more detailed discussion, please refer to Section 6.5 of this assessment.

Benefit-Cost Analysis: Benefit-cost analysis is an accounting framework and tool for measuring the economic gains (benefits) and losses (costs) due to an action. Its purpose is to identify and evaluate the benefits and costs related to the project – direct, indirect, and cumulative. The benefit-cost analysis is primarily designed to measure the economic efficiency of the project. This analysis summarizes three benefits and costs – market; monetary non-market, such as recreation; and non-monetary non-market, such as ecological services of the bay and terrestrial habitats. The sector analysis and the estimates of direct

project implementation costs obtained from each of the other study plans are the primary sources for information on the market and the monetary non-market benefits and costs. The net environmental benefit analysis will quantify the significant ecological benefits and costs of the project using an ecological rather than a dollar metric. These analyses stand alone, but will also roll up to the benefit-cost analysis.

Economic Modeling for Evaluating Agricultural Conservation

One approach to examine the agricultural conservation component of the project is through the use of econometric models that simulate potential economically-driven decisions by individual producers (rice farmers). The team developed a model of irrigated rice agriculture for the Texas Gulf Coast region that predicts irrigated acreage, farm income, adoption of water-conservation measures, and the demand for irrigation water. The model uses information on costs to farmers, revenues and expected future conditions as a basis to predict the likelihood that one or more on-farm conservation measures identified by the project's agricultural conservation team will be adopted. As they do each year, farmers in the model choose the number of acres in first or second crop of rice production, the number of inactive acres, and conservation measures implemented. The model simulates choices that would be expected by individual producers who wish to maximize the net present value of their income; hence, it is called the farm income maximization model (FIMM). The model will be applied to addressing a range of issues including the range of water conservation measure subsidy amounts and curtailment strategies on farm income and acres in production with and without the project. The farm income maximization model is the primary tool for assessing the extent to which the project benefits the agricultural sector and through the agricultural sector, the economy of Matagorda, Wharton, and Colorado counties. The interim results of this effort are described in more complete detail in Section 4.3 of this assessment.

The team developed "enterprise budgets" applicable to farms within each irrigation division - Lakeside, Garwood, Gulf Coast, and Pierce Ranch. These enterprise budgets capture information that is relevant to the economic conditions in affected irrigation divisions. This technique, known as enterprise budgeting, is a well-established way to develop and analyze farm management alternatives and to identify potential economic impacts of policies that affect those alternatives. When used correctly, enterprise budgeting is a management tool that can provide information to answer numerous management and policy questions. Transforming inputs into outputs, selecting mixes of products (i.e., first crop conventional rice, first and second crop conventional rice, high yield varieties), and predicting the impacts of policy changes on each of those are important choices. Outcomes of these choices have consequences that can be analyzed systematically through the use of budgeting.

Farm enterprise budgets represent actual costs of production (water, labor, seed, etc.) and revenues from sales, subsidies, and other income (e.g., hunting leases). Using the regional enterprise budgets published by Texas A&M University as the basis, representative budgets were developed for each irrigation division. A series of discussions with small groups of rice farmers (called "producer panels") from each irrigation division were held to collect and confirm cost and revenue data for each irrigation division. The results provided "consensus" data on input-output relationships as well as input and output prices for the various irrigation divisions. These data are the foundation of the refined model enterprise

budget for a well-defined hypothetical enterprise. Such enterprise budgets do not necessarily represent the most efficient or profitable scale, technology, and combination of inputs for growing the crop. They also do not typically represent actual inputs and outputs used by a single particular farm, but rather generalized decisions by those within the irrigation divisions.

The first set of expert panels conducted in September 2006 consisted of 4 to 8 rice growers for each of two meetings in the Texas Gulf Coast region. Growers were selected based on their experience in producing rice in the Texas Gulf Coast areas for which farm enterprise budgets were developed. All the growers were judged to be above average with respect to their technical knowledge of the crop and its culture and attention to costs and returns.

A follow-up set of four panels was scheduled during the first quarter of 2007, to secure more focused data and to fill gaps incurred in the earlier panels. In using the producer panel approach, the resulting enterprise budgets represent production practices, input combinations, costs, and production levels for a well-defined rice farming operation for experienced growers.

Status of Socioeconomic Studies

As noted previously, much of the data on existing, or baseline, conditions has been gathered. Additionally, models to evaluate potential affects of the project on various sectors, to estimate adoption rates of agricultural conservation measures, and to conduct various other components of the socioeconomic analysis have been developed. It is anticipated that the majority of the remaining analyses will be conducted in 2008 and early 2009 to support the overall project schedule.