

# 12.0 Conclusions

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The 2007 Project Viability Assessment (PVA) represents the current view of the project's feasibility based on results of various yield, engineering, environmental, and cost analyses through 2007. The studies are designed to address the seven LCRA Board findings required for the project to be implemented; local, state and federal permitting requirements; issues raised by stakeholders, other members of the public and the science review panel; and technical feasibility.

Following are the key findings and conclusions of the studies to date:

### *General Findings:*

- While the analyses are not complete, indications are that the project can supply a reliable, firm water supply for SAWS and meet the legislative criteria; however, the studies are based on assumptions. As assumptions are refined, the results of the analyses could change and may affect costs or yield of the project.
- A variety of scenarios are being explored that could supply a firm yield of surface water to SAWS between 50,000 and 150,000 acre-feet per year. The 2007 PVA provides results for example scenarios of 95,000 and 120,000 acre-feet per year for comparison. The final yield of the project has not been determined.
- The project would provide more reliable water sources for agricultural users served by LCRA in Colorado, Wharton, and Matagorda counties in all of the scenarios studied.
- During 2007, Pierce Ranch in Wharton County was selected as the preferred location for the off-channel storage facility after consideration of various sites. Selection of the off-channel storage location represents a pivotal decision for the project; the site will be studied further. Several of the studies hinged on data related to facility locations; thus, the overall study schedule was extended to allow sufficient time for making this decision.
- Some additional technical work is proposed for the study period based on comments and suggestions received during the public involvement and science review panel processes that may affect the overall cost of the studies.

### *Specific Findings:*

- Using the state's regional planning cost methodology (annualized cost model) and second quarter 2007 prices, **the current project cost estimates to deliver treated water to the SAWS system range from \$1,957 to \$1,876 per acre-foot per year, for 95,000 and 120,000 acre-feet, respectively.** When the estimated costs of integrating the water into SAWS distribution system are included, the annual costs are projected to range from \$2,253 to \$2,161 per acre-foot per year.
- Model simulations for groundwater and river water availability indicate that the **yield from conjunctive use of those sources plus agricultural conservation will be sufficient** to meet agricultural needs within the lower Colorado River basin more reliably while still providing a firm supply of water for the San Antonio area. Operating the LCRA system to meet the lower Colorado River basin demands, project yield, lake levels, and

environmental flow needs will be challenging; additional modeling will be performed to refine options.

- For purposes of this PVA, **surface water availability modeling was conducted that would provide a firm yield to SAWS of 95,000 acre-feet per year using specific assumptions.** With this set of assumptions, **LCRA irrigation demands with the project in operation would be fully satisfied** with a combination of surface water, groundwater and agricultural conservation. The proposed yield of the project has not yet been determined.
- A second simulation for 2080 conditions was performed with the firm supply of surface water delivered to SAWS of **120,000 acre-feet per year.** As a result, the available supplies for the LCRA irrigation operations with the project implemented were curtailed by an average of 7.5 percent over the entire period of record (1940-1998) and 20.3 percent during the drought-of-record period (1947-1957). These available supplies for agriculture with the project compare to curtailments without the project of 23.7 percent over the period of record and 54.6 percent during the drought-of-record.
- Analysis of the irrigation delivery systems and on-farm conservation strategies continue to indicate that irrigation demand will be reduced sufficiently so that, with conjunctive use of groundwater, **water supplies for agriculture will be more reliable with the project** than without.
- Preliminary results indicate that an average of 106,000 acre-feet per year of irrigation water can be conserved during average conditions and approximately 123,000 during peak demand (dry) periods. Technical and economic analyses suggest that additional demand reductions are feasible and economically efficient for irrigators to implement. **Reducing irrigation water demand through these methods appears feasible; pilot testing could help verify actual water savings compared to projections.**
- In keeping with the legislation that allows LCRA to consider this project, the **average lake levels are projected to be higher over the life of the project compared to corresponding future conditions without the project.** Further evaluation of this issue will continue and an implementation plan consistent with the legislative requirements will be developed.
- Current groundwater production simulations (approximately 25,000 acre-feet per year during the period of record and 62,000 acre-feet per year during drought of record conditions) indicate that the average net, or incremental, water level drawdown at the end of the year could range from less than one foot up to approximately 14 feet within the irrigation divisions. Average drawdowns outside the divisions are less than those expected within the irrigation divisions. Because pumping would vary over the life of the project, with virtually no pumping expected in some years, water level drawdowns are also expected to be temporary. Modeling of the aquifer indicates a short “recovery” period during which water levels rebound quickly after pumping is reduced. These estimated drawdowns should be considered preliminary, but suggest that the **use of groundwater to help meet agricultural needs is feasible with minimal long-term effects on nearby wells.**
- The facility siting identification and evaluation process conducted in 2007 explored numerous conceptual project alternatives and confirmed that potential locations for

proposed project components such as intake structures, pipelines, and off-channel storage facilities (constructed holding basins for surface water) exist. **A preferred location for the off-channel storage facility was selected; field data collection began in 2007.**

- The final results of the environmental studies (water quality, river habitat, and bay health) are not yet complete, but have not revealed any effects to date that would preclude the project from being implemented.
- The river water quality modeling to date indicates that **dissolved oxygen will be within acceptable ranges after anticipated changes to the flow regime** associated with the project. Additional preliminary water quality modeling of other constituents (for example, nutrients) during 2007 also indicated **water quality will be within acceptable ranges.**
- The aquatic habitat studies have documented additional information on the blue sucker and other species including migration habits during spawning season and specific habitat preferences. This information will be useful for developing site plans and operating procedures sensitive to these species. Habitat models of the river have been developed in prior years and utilized to develop segment specific stream flow criteria. **Surface water availability modeling was conducted during 2007 using the proposed instream flow criteria resulting from these studies.**
- Building on the efforts of previous years, significant strides were made during 2007 in developing measures to benchmark bay health and productivity. **The approach to this study looks at bay health from several perspectives (inflow, habitat, and biology) and seeks to link freshwater inflow changes to habitat changes that could affect the biological systems or productivity of the bay.** Using these benchmarks, the team has developed proposed freshwater inflow criteria will be used to develop proposed operational and permitting approaches. These are currently being discussed and reviewed by state resource agencies and other stakeholders.
- The study **activities planned for 2008 will support submittal of permit applications in late 2009**, as well as address key feasibility, legislative, and contractual requirements.