

Executive Summary

Daniel B. Stephens & Associates, Inc. (DBS&A) has prepared this engineering feasibility report (EFR) on behalf of the City of Carrizo Springs (the City) to support funding applications for water system improvements. Financial assistance, including loans and grants, is being sought from various agencies, such as North American Development Bank (NADBank) and the Texas Water Development Board (TWDB). The U.S. Environmental Protection Agency's (EPA's) U.S.-Mexico Border Water Infrastructure Program (BWIP) has the goal of improving human health and the environment along the U.S.-Mexico border. As discussed in the EFR, reducing water waste and improving water system efficiencies is an essential component of achieving that goal.

The Carrizo Springs water infrastructure includes over 60 miles of piping, six water storage tanks, and three booster stations. Four supply wells screened in the Carrizo-Wilcox Aquifer supply drinking water to the City. The City's water system contains components that require replacement or refurbishment due to age. The fiscal year (FY) 2019 water audit performed by DBS&A showed that real losses are 71.367 million gallons per year, which is 18.7 percent of production. Most of the real loss volume is associated with the piping network. DBS&A also identified hydraulic design issues associated with two existing elevated storage tanks that, if corrected, will reduce pump operation costs and eliminate the need for one of the existing booster stations. The rest of the booster stations need to be replaced and upgraded to extend operational lifecycle, including provision of new enclosures and emergency generators to protect equipment from ambient weather conditions.

The EFR is structured to explain the various design alternatives that were evaluated to address deficiencies in the existing water system. Recommended improvements include replacement of the entire water system piping network, replacement of two existing booster stations, maintenance on existing storage tanks, a new supply well, and demolition of water system infrastructure that is no longer needed. A proposed project has been developed that includes recommended improvements that fall within a defined project area and are fundable through NADBank. The proposed project includes pipeline replacements, booster pump station replacements, and tank improvements.

The EFR includes a detailed engineer's opinion of probable construction costs (EOPC) for all of the components of both the recommended improvements and the proposed project. The EFR also includes a schedule that separates the components of the proposed project into phases over a 20-year period based on urgency and total cost for each project component. Repairing

pipeline leaks and replacing infrastructure that could generate water system outages have been prioritized in the first five years of the project schedule. The total estimated capital cost for the proposed project is more than \$25 million, or almost \$32 million including general and administrative costs, such as engineering design and construction observation services. The first phase of the proposed project is expected to require 40 to 50 percent of that cost to complete over a 5-year time period.