

# Border Environment Cooperation Commission Sanderson Sewer System Project Sanderson, Texas

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### **I. General Criteria**

#### **1. Type of Project.**

*The project consists of the construction of the wastewater treatment plant (WWTP) and collection system for the Community of Sanderson, Terrell County, Texas.*



#### **2. Project Location.**

*The Community of Sanderson, and the Terrell County Water Control and Improvement District No. 1 (District), the project sponsor, are located in Terrell County in the state of Texas, approximately 20 miles north of the U.S./Mexico border, and is entirely located inside the 62-mile border zone. The service population of the community of Sanderson was approximately 1,143 in 1995, and the population is expected to reach 1,379 in the year 2020.*

### **3. Project Description and Work Tasks**

*The project consists of the construction of the wastewater treatment plant and the wastewater collection system. The system will serve 100% of the existing population. The Texas Water Development Board (TWDB) has approved \$3,602,935 as a grant/loan package to the District, which is seeking transition funds to ease the financial impact for the residents of the community. Described below are the project components:*

#### **Wastewater Treatment Plant**

*This part of the project entails the construction of a wastewater treatment plant with an average daily flow (ADF) capacity of 0.200 million gallons per day (mgd). This capacity will satisfy wastewater treatment needs through the year 2020, which is the design life of the WWTP. The proposed treatment facilities will consist of a two stage settling process with capacity of 0.200 mgd average daily flow and peak flow of 0.700 mgd. Effluent will meet a standard of 30mg/l BOD5, 90 mg/l TSS and 4 mg/l dissolved oxygen and will be discharged into Sanderson Creek.*

*The need for the project stems from the fact that Sanderson has no public sanitary sewer system. The community currently uses septic tanks and cesspools as the means of sanitary waste disposal. The Texas Department of Health (TDH) and the Texas Natural Resources Conservation Commission (TNRCC) in the past few years have responded to numerous complaints regarding the improper disposal of domestic waste in the community, including the contamination of some of Sanderson's water wells by the Railroad Company.*

*The Community of Sanderson was developed with residential lots varying in size from 7,500 S.F. to 10,000 S.F. These lots do not comply with the current TNRCC on-site disposal regulations and are too small to provide alternative disposal systems. The current regulations prevent new construction of septic tank systems with the current lot sizes.*

#### **Wastewater Collection System**

*The improvement plan includes the construction of nearly 100,00 linear feet of new lines to serve the entire community's needs over the next twenty years. The collection system will consist of 4-inch (hook up lines), 6-inch, 8-inch and 10-inch PVC (SDR 35) sewer lines installed in existing alleys (platted and unplatted), along street Rights of Way (ROW) and also in the abandoned Railroad ROW. Some easements for pipe installation will have to be acquired along the route.*

*Most of the installation of the sewer piping will be 4 to 8 foot depth range, although the trunk line along the south edge of town, near the railroad ROW at the creek crossing will reach depths of nearly 20 feet.*

4. **Compliance with International Treaties and Agreements.** *The project will not have any international impact, as all discharges will be maintained within the U.S. territory.*

## **II. Human Health and Environment**

1. **Human Health/Environmental Need.** *The project will address human health and environmental concerns by providing adequate wastewater collection and treatment for the residents of the community of Sanderson.*

*All of the community of Sanderson is served by on-site wastewater systems, most of which are septic systems. Most systems do not meet state (TNRCC OSSF regulations chapter 285) or county design standards due to small lot size and density of development. Some residents still have water wells located within their small lots near the septic system. The Texas Department of Health has noted a threat to public health due to lack of adequate sanitation facilities, with surfacing of raw sewage compounded by poor drainage situation.*

*Provision of a centralized wastewater collection and treatment system will reduce the potential for raw wastewater leakage to the environment and the likelihood of disease transmission through contact with raw wastewater by providing adequate disposal. The improvements were recommended and supported by the Texas Department of Health and Texas Natural Resources Conservation Commission based on the results of an environmental assessment that identified potential health problems throughout the community.*

2. **Environmental Assessment.** *Environmental Assessments (EA) are necessary to meet the requirements established by the National Environmental Policy Act (NEPA) at the federal level, through the Environmental Protection Agency (EPA). Additionally, the Texas Water Development Board (TWDB) requires a Finding Of No Significant Impact (FONSI) be issued in order to approve and release construction funds for the project.*

*An Environmental Assessment document was prepared by Gutierrez, Smouse, Wilmut & Associates and submitted to TWDB and EPA for review. The TWDB reviewed the document and issued some comments that were incorporated into a final version. TWDB issued a Finding of No Significant Impact (FONSI) on April 15<sup>th</sup>, 1997, which did undergo a 30-day public review period through May 15<sup>th</sup>.*

*The EA document was also submitted to the EPA to undergo a review and a public comment period. This process is underway and it is expected to complete within a few days.*

*The TWDB's FONSI document recommends the following mitigation measures: a survey by a qualified botanist, of the construction area, to determine the presence or absence of the Bunched Corey cactus during the bloom period of between April and June; the Texas Historical Commission has stipulated that although no significant archaeological were found, the grant shall be conditioned to require that if any historic or prehistoric archaeological sites are discovered during construction, work will cease immediately in that area, the site will be protected and EPA, TWDB and the State Historic Preservation Officer will be notified for further instructions; dust control measures are required during construction activities, and; noise reduction measures are recommended, such as*

*selecting the most quiet type of equipment, turning off idling equipment, and scheduling the noisiest operations to coincide with the time of highest ambient noise level.*

*No potential significant negative transboundary effects have been identified. The system will continue discharging exclusively in U.S. waters. As previously indicated, the direct point of discharge is into Sanderson Creek, a tributary to the Rio Grande.*

### **3. Compliance with Environmental and Cultural Resource Laws and Regulations.**

*As part of the EA, a Cultural Resources Survey and a Biological Report were conducted to ensure that the proposed project does not have significant impacts on the areas that may be affected by the proposed project. The Sanderson Sewer System Project complies with all the applicable environmental and cultural regulations.*

## **III. Technical Feasibility**

- 1. Appropriate Technology.** *A wastewater treatment and wastewater collection facility plan was developed by GSW & Assoc., Inc. for the Community of Sanderson utilizing TWDB funds. The description of the proposed alternatives for these components is provided below.*

### **Wastewater Treatment Plant**

*The wastewater treatment facility plan evaluated the following treatment alternatives.*

**Alternative 1 - No action.** *Under this alternative no new treatment will be provided and the existing septic tanks and cesspools will continue to operate. However, no new septic tanks will be permitted unless they meet the current TNRCC regulations. Under current lot size conditions, no new permits will be approved. The excessive flow in some of the septic tanks may result in overflows which would result in a Notice of Non-Compliance issued to the residents by the TNRCC. In such a case, the residents would be required to take corrective action or could be fined by the TNRCC for violation. This alternative was determined unfeasible.*

**Alternative 2 - Irrigation or Slow Infiltration.** *This process has a major disadvantage since it entails the irrigation or slow infiltration of wastewater and it requires the long-term commitment of a large area of land (280-560 acres/mgd) for frequent irrigation. Since the project is located in an arid environment containing plants and animals adapted to xeric conditions, frequent irrigation could adversely impact the plant and animal species located in the irrigation area, and could require knowledgeable design and operation to prevent the spread of pathogens and the increase of vectors.*

**Alternative 3 - Rapid Infiltration Systems.** *This alternative entails the construction of basins to apply the wastewater to the soil. During resting periods, tilling the soil restores its filtration capacity. Like slow infiltration, rapid infiltration requires the long-term commitment of a large area of land (62-280 acres/mgd). Plant and animal species located in the infiltration basins would have to be removed. In addition, there is the potential to contaminate the groundwater with nitrates.*

**Alternative 4 - Facultative Lagoon.** *This alternative consists of a primary system using a facultative lagoon treatment system composed of a headworks and one or more lagoons in parallel. Facultative lagoons may be used as a preapplication treatment in combination with land treatment, oxidation ditches, and other forms of extended aeration and stabilization ponds. Facultative lagoons by themselves have a low potential to adversely impact the environment because they do not use a*

large amount of land and are used in conjunction with a secondary treatment process. The total amount of land required by the project using a facultative lagoon with secondary treatment process (other than land application) is approximately 50 acres.

**Alternative 5 – Oxidation Ditch.** *An oxidation ditch provides secondary treatment for wastewater. The process employs a closed channel that is 4 to 8 feet deep. Excess solids must be removed from the final clarifier and disposed of using land application of the dilute solids or dewatering the solids and disposing of them in an approved landfill. Oxidation ditches by themselves have a low potential to adversely affect the environment because they do not use a large amount of land; however, periodic land application of dilute solids or land fill disposal of dewatered solids may have the potential to adversely impact the xeric plant and animal species located in the disposal areas.*

**Alternative 6 – Facultative Lagoons with Stabilization Ponds (the selected alternative).** *Facultative lagoons serve as the primary treatment unit and stabilization ponds are the secondary treatment unit. All sludge generated by these treatment methods would be stored in the facultative lagoon for the 20-year life of the project. Effluent would be discharged into Sanderson Creek. These treatment methods have low potential to adversely impact the environment because they do not use as much land as other treatment processes, do not discharge effluent onto large land areas, and sludge disposal will not occur for 20 years. This is the selected alternative.*

#### **Wastewater Treatment System Project**

DESCRIPTION	COST (USD)
Collection System	• \$2,460,000
Treatment System	• \$ 686,435
Professional Services	• \$ 456,500
Total Cost	• \$3,602,935

*This alternative utilizes appropriate technology for the capabilities and conditions of Sanderson. The technology being proposed has been in used widely at other small communities for several years and the District has indicated its ability to operate and maintain it.*

#### **Wastewater Collection System**

*The proposed wastewater collection technology (i.e. gravity PVC pipe) is appropriate for the conditions of Sanderson and it will reduce overflow conditions of the existing septic systems. The installation methods proposed are also of an appropriate technology level and cost effective.*

1. **Operation and Maintenance Plan.** *A preliminary operation and maintenance plan is included in the facility plan. A final operation and maintenance plant must be prepared during final design and completed prior to start-up of the plant.*
2. **Compliance with Applicable Design Standards and Regulations.** *The proposed capital improvements plan was developed to a conceptual design level. Final design will be developed after certification. The final design must be submitted to the Texas Water Development Board for review and comments, and approval.*

#### **IV. Financial Feasibility and Project Mangement**

1. **Financial Feasibility.** *The NADB is currently performing a financial evaluation to determine the financial feasibility of the project. This analysis will determine what level of grant the district can receive from this institution and what the impact of the proposed project on user fees would be under different grant/loan arrangements, as described below. The findings of the analysis will be presented to the community during the second public participation meeting, which has been scheduled for the first week of February.*

*The following table summarizes the estimated construction cost of the proposed project.*

**Estimated Capital Cost**

ITEM	USD
Wastewater Treatment Plant	\$ 686,435
Wastewater Collection System	\$2,460,000
Professional Services	\$ 456,500
<b>TOTAL</b>	<b>\$3,602,935</b>

*To this date, the Community of Sanderson has secured funds from the Texas Water Development Board from the Economically Distressed Area Program (EDAP). However, of these funds, \$3,270,935 is a grant and \$332,000 is a loan, for this reason the Water District is seeking a 7-year transition funds assistance from the NADB, to ease the financial impact to the residents in the community of the Sanderson. The assistance is necessary so that the user fees may be gradually raised to the level required to ensure operation and maintenance of the system as well as meet the District's debt obligations.*

*The NADB is currently completing the financial evaluation of the project. Upon completion, the NADB will recommend the amount of transition funds the Community can receive. The results of the financial analysis will be presented to the Community of Sanderson once the NADB completes the analysis.*

2. **Fee Rate Model:** *A fee rate model is being prepared by the NADB as part of the financial analysis. This model will be utilized to determine the impact on user fees of the proposed project under several combinations of grants and loans.*

*It is important to point out that NADB has procured the service of a consulting firm to develop a detailed rate study. This study will recommend improvements to the rate structure of the district.*

3. **Project Management.** *The project will be managed by the Terrell County Water Control and Improvements District No. 1, which has been managing successfully the operation of the existing water distribution system during several years. The District has the authority to adopt utility rate adjustments by resolution, thus giving itself the authority to impose rates, fees and charges. The operation of the system is to be self-supporting from the fees and charges levied against their users.*

## **V. Community Participation**

**Comprehensive Public Participation Plan.** *The Terrell County Water Control and Improvement District #1 of Sanderson, Texas (TCWC&ID), with contributions from the steering committee, submitted a public participation plan on October 18, 1999, which modified an earlier public participation plan submitted in June 1998.*

**Steering Committee:** *A steering committee was formed on September 8, 1999. Its members include: Darrel Seidel (USDA-Natural Resource Conservation Service); Ken Norris (businessman); Luis Villarreal (Terrell County Independent School District); Robert Weyerts (banker); Sandra Martinez (Terrell County Independent School District); Martha Allen (county clerk); and Blain Chriesman (tax assessor). Hudson Kerr, P.E., provided technical advice and Tom Lowrance of the TCWC&ID was the committee facilitator. The committee was responsible for developing outreach activities soliciting public support for the project. The Steering Committee met on December 16, 1998; September 7, 8, 14, and 28, 1999; December 21, 1999; and January 26, 2000 to follow-up on the public process.*

**Local Organizations:** *The City and the steering committee met with business, community and County representatives to present the project and request and support for the project. These organizations include Sanderson Masonic Lodge, Sanderson Culture Club, American Legion Auxillary, Terrell County Commissioners, Terrell County Independent School District Board, and the Sanderson Chamber of Commerce. There was also a presentation during a Town Meeting on Economic Development. One hundred and eighty people attended these meetings.*

**Public Information:** *The TCWC&ID has made available to the public the project proposal to the BECC 30 days before the public meetings. This information has been available at the TCWC&ID offices. Bilingual newsletters were sent to every mailbox holder with information on the project and nine articles about the project were published in the local Sanderson Times newspaper. A survey was mailed to the 495 water district customers presenting the maximum worst case residential and commercial wastewater rates (\$20 and \$25 respectively), and requesting their support for the project. Surveys were returned to the TCWC&ID, County Clerk Office, County Independent School District, Sanderson State Bank, and Public Library. Final results show that out of 213 surveys returned, 203 are in favor of the project and 10 against.*

**Public Meetings:** *Two public meeting were held per BECC requirements. The first one was held on July 28, 1998, advertised 30-days in advance in which the president of the Board of Directors of the TCWC&ID and BECC staff presented the sewer project to about 51 people who attended the meeting.*



*The second meeting was held on February 4, 2000 where the financial and rate increase information was presented to 16 residents. The public was informed that the wastewater system was a gravity flow system, and the plant will be built first in the southeast and lower side of town, sewerline will be laid and then the project will move to the west and cover the entire area. Hook-ups will follow after construction. Residents were told that the wastewater plant will be away from the flood plain and the sewer lines will go under Sanderson Creek, thereby not being impacted by floods. Rate information presented gave the worst case scenario for residential and commercial wastewater bills. The proposed residential wastewater bill would be \$18.27 per month and commercial rates at \$24.60. In addition, the public was informed that this project was mostly a grant-funded project, with an approximate loan in the amount of \$300,000 to be paid back by the community. The NADB will provide transition assistance for seven years after which the community will assume the rate administration to meet the debt obligations.*

## **VI. Sustainable Development**

### **a. Definition and Principles**

*The project is consistent with BECC's definition of sustainable development: "conservation oriented social and economic development that emphasizes the protection and sustainable use of resources, while addressing both current and future needs, and present and future impacts of human actions" and with the four principles:*

- 1) "human beings are at the center...they are entitled to a healthy and productive life in harmony with nature". This principle is addressed by the purpose of the project, which is to address health risks associated with the present inadequate capacity of the existing septic systems. Healthier lives and better living conditions will result from this project.*
- 2) "The right to development...equitably meet...needs of present and future generations." The construction of the wastewater system will accommodate growth projected through the year 2020, while addressing an critical need today.*
- 3) "...environmental protection shall constitute an integral part of the development process..." All environmental parameters have been met. The community of Sanderson has been careful to ensure that natural resources are protected, plant and animal species of concern are not impacted, and cultural heritage issues are recognized.*
- 4) "The stakeholders...must be part of any related activity." Stakeholders have been a part of the process since the early part of the project development. Public participation and outreach programs have ensured that public input has been received, considered and employed.*

### **b. Institutional and Capacity Building**

*The new wastewater system will increase the capacity of the District to provide necessary quality of life services for its customers. In order to minimize the additional operational burden to the District, the technology chosen is the simplest of the typical systems in use today. The project will allow the Community to meet all regulatory requirements relative to wastewater collection and disposal.*



**c. Conformance with Applicable Local and Regional Conservation and Development Plans**

*A water conservation plan that identified sources of water pollution, quantification of sources, streams wasteloading allocations and corrections for compliance was prepared and adopted. The local Council of Governments, the TNRCC and the EPA have regional, state and federal oversight, respectively.*

*State legislation and rules from the TWDB require development of a Water Conservation and Emergency Demand Management Plan for projects receiving \$500,000 or more in TWDB funds. This project meets all the requirements of the approval process.*

**d. Natural Resource Conservation**

*As mentioned above, the Water Conservation and Emergency Demand Management Plan requires a review of the community water consumption, comparison of water pumpage and determination of system leakage. The plan also describes corrective actions to reduce system leakage, and the institution of plumbing code revisions for installation of water saving fixtures, and recommends increased water user rates to encourage water conservation.*

**e. Community development.**

*The construction of the wastewater facilities will comply with state water quality and health regulations, and is beneficial to the community. Other aspects of the project will specifically enhance the quality of life, such as improving the reliability of the wastewater treatment and wastewater collection systems. Furthermore, the new facilities will further reduce the risk of public exposure to biological pathogens.*