Board Document BD XXXX

Border Environment Cooperation Commission

Wastewater Collection System Improvements in Pharr, Texas

1. General Criteria

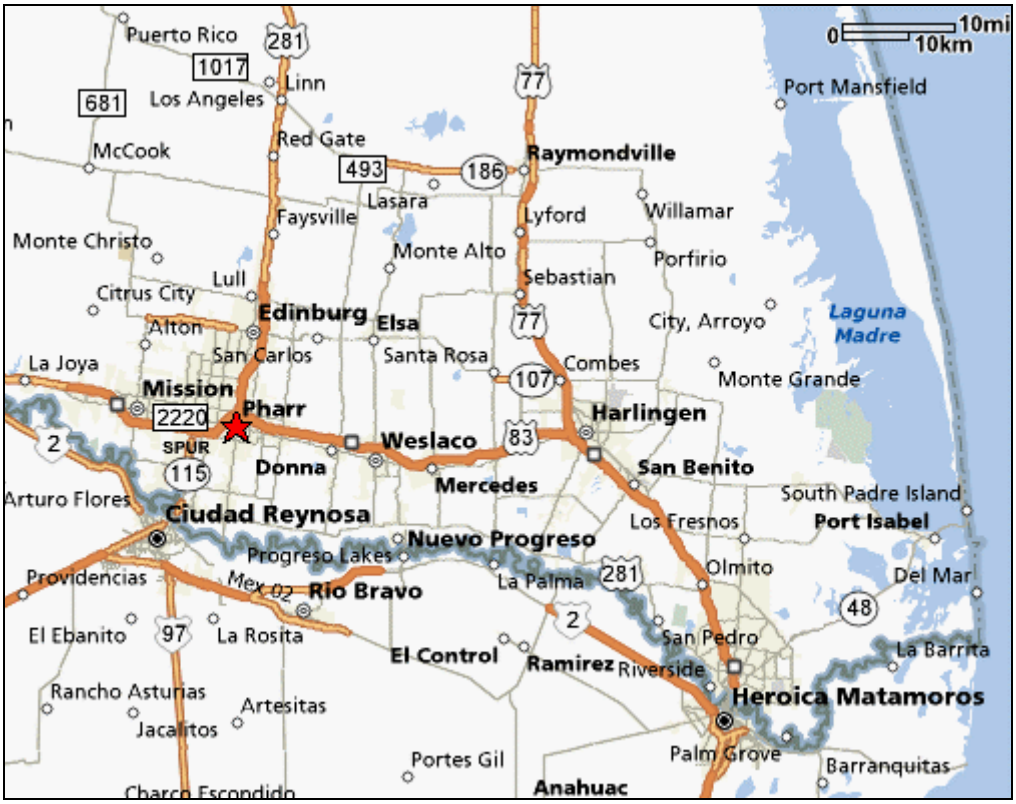
1.1 Project Type

The City of Pharr proposes to improve its wastewater collection system in order to eliminate sewer overflows in several areas of the city. The project includes the construction of new sanitary sewers and lift stations, and decommissioning of some existing lift stations. The project falls under Border Environment Cooperation Commission (BECC) priority area of wastewater collections systems. The project sponsor is the City of Pharr. The certification is for Phase I of this project.

1.2 Project Location

The project will be developed in the City of Pharr, Hidalgo County, Texas. Pharr is bounded by the cities of McAllen to the west, Edinburg to the north, San Juan to the east, and the border of Mexico to the south. The City is located near the border with Reynosa, Tamaulipas, Mexico. The City of Pharr is within the 62.5 mile border area.

The following map shows the geographic location of Pharr.



1.3 Project Description and Work Tasks

Project Description

The City's wastewater collection and treatment system is comprised of about 170 miles of sanitary sewer lines, 39 lift stations and a wastewater treatment plant. These facilities serve approximately 98% of the population.

The City of Pharr intends to solve the sewer system overflows in the City by improving its wastewater collection system in the North, Central and South regions of the City. The proposed improvements are based on the Master Plan and subsequent Value Engineering (VE) recommendations for Phase I. The improvements consist of decommissioning 9 existing lift stations, construction of 3 new lift stations, and installation of 8 miles of 12 to 36 inch gravity sewers and 3 miles of 16 inch to 20 inch force mains. No new wastewater flows are expected at the existing wastewater treatment plant, which has a capacity of the 5 MGD. The project cost is approximately $44 million dollars.

The City of Pharr experienced a 54% population growth increase between 1980 and 1990, and a 27% increase between 1990 and 2000. The existing system was not designed for these types of population increases. The City's Wastewater System Master Plan (2002) summarizes the lift station capacity deficiencies and indicates that 18 of 39 lift stations need to be replaced and sewer main replacements are recommended due to insufficient capacity.

The following is the implementation approach to Phase I:

- All new improvements, including 3 new lift stations and 11 miles of new gravity sewers and force mains, will be installed by the contractor.
- These components will be installed and tested; pipelines will be temporarily plugged at the ends until interconnection with the existing system. Tie-in points include the WWTP and existing lift stations.
- Prior to tie-in, temporary wastewater bypass pumps and force mains will be placed by the contractor.
- The north and central must be completed at the same time, since the systems are interconnected, and the south system can be completed independently.
- For each system, the contractor can begin interconnections with the existing system at the farthest downstream point, at the wastewater treatment plant, and proceed upstream.
- Prior to tie-ins at the existing lift stations and after bypass operations begin, each lift station will be decommissioned, which will include rehabilitation of the wet well for use as a man hole, and removal of existing piping, pumps, electrical, etc.
- Interconnection will consist of connecting the new gravity pipes to the existing wet wells, which will now serve as junction structures.

Phase II will consist of decommissioning 10 lift stations; leaving 20 lift stations on line; and building 11 miles (4 miles in the north region and 7 miles in the south region) of 15 inch to 36 inch gravity sewers. No new lift stations and no new force mains are part if this phase. The estimated cost for Phase II is $26.9 million.

Program of Project Tasks

The entire wastewater collection system project will be constructed in two phases. Certification is considered only for Phase I. The construction of this phase is expected to be completed by 2010. The tasks for this phase as presented in the VE will address the sewer system overflows and

include new collection system, and rehabilitated and new force mains and lift stations in the North, Central and South areas of the City. The project tasks are as follows:

- **North Region Construction:** The City of Pharr decided that the following work would be done in this region, listed in the order of importance.

  In this region, three (3) existing lift stations would be decommissioned, and one (1) new lift station would be constructed.
  - Decommission Lift Station (LS) #9, and construct gravity sewers to new LS #7.
  - Decommission existing LS #7, and construct new LS #7.
  - Decommission existing LS #11, and construct new gravity sewer.
  - Extend new 16" force main to existing LS #5.
  - Construct gravity line on easements parallel to Sioux Road.
  - Construct new force main to Sioux Road and rehabilitate LS #13 at a later date.
  - New LS #7 will have a capacity of 5 MGD.

- **Central Region Construction:** The City of Pharr decided that the following work would be done in this region, listed in the order of importance.

In this region, three (3) existing lift stations would be decommissioned, and one (1) new lift station would be constructed.
- LS #1 to be decommissioned in the future.
- Construct a new gravity sewer from existing LS #5 to the new LS #6, and decommission existing LS #6.
- Construct a new 20" force main from new LS #6 to the wastewater treatment plant.
- Existing LS #2 would be decommissioned, after a new gravity sewer constructed.
- New LS #6 would have a capacity of 7.6 MGD.

- **South Region Construction:** The City of Pharr decided that the following work would be done in this region, listed in the order of importance.

In this region, three (3) existing lift stations would be decommissioned, and one (1) new lift station would be constructed.

- Construct new gravity sewer along I-Road from Dicker Road to Thomas Road.
- Existing LS #32 should be decommissioned.
- New LS #50 should be constructed and existing LS #50 should be decommissioned; existing 16" force main will be reused.
- Existing LS #24 should be decommissioned.
- New gravity sewer constructed along Thomas Road.
- New LS #50 will have a capacity of 4 MGD

Description of the Community

The City of Pharr Comprehensive Plan projected growth in the City up to the year 2020. The City has a population of about 54,619 and is expected to increase to more than 82,000 by the year 2020. The median household income is $24,333.

The economy of the Lower Rio Grande Valley is primarily agricultural, including: both intensive irrigation farming and ranching. The area is a leader in the State in the production of citrus fruit,

vegetables, and cotton. Oil and gas production is a secondary, but locally important industry in Hidalgo, and the neighboring counties of Starr and Willacy.

Tourism is also an important but minor industry for Hidalgo and the Lower Rio Grande Valley. Most of the tourists are known as "winter Texans", who usually arrive in October and return to their home states in April.

Local Environmental Services

Prior to a 2002 Master Plan study, the City's wastewater collection system had evolved without the aid of an organized master plan resulting in a proliferation of lift stations throughout the City and limited use of trunk sewers.

The City's wastewater collection system includes 39 lift stations, a WWTP, and approximately 70 miles of 6-inch, 65 miles of 8-inch, 14 miles of 10-inch, 9 miles of 12-inch, and 12 miles of 15-, 18-, 21-, and 24-inch sewers. The total gravity collection system includes a single regional service area and 39 sewer sheds. There are approximately 15,454 sewer connections. The City of Pharr owns its water and wastewater treatment facilities that service the entire community. The City's solid waste is hauled to the Edinburg landfill.

Project Alternatives

One of the deficiencies according to the Master Plan study was the lack of interceptors within the wastewater collection system and the large number of lift stations and force mains that are used to transport the wastewater to the WWTP. This causes significant operation and maintenance problems, including wastewater overflows, as well as significant cost for pumping. Another major problem is that many of these force mains are reaching capacity. The following criteria were used to evaluate the several wastewater collection system alternatives:

- The collection system must collect wastewater and transport it to the WWTP
- It must also function economically
- Have low maintenance
- Be designed to serve the existing wastewater collection system needs of Pharr
- It must assure that the public health is adequately protected

Four project alternatives were considered to address the sewer system overflows in Pharr.

1- <u>Conventional Gravity (CG) Sewer System</u>. This alternative is to construct the CG sewer system which was determined to be the most cost effective and easiest to operate and maintain. CG sewers are normally used for domestic wastewater collection and transportation in urban areas. These systems require a minimum slope to keep wastewater movement at or above two feet per second without surcharging manholes or pressuring the pipe to avoid the deposition of solids.

<u>2- Pressure Sewer System Alternative</u>. Pressure sewers are used in sparsely populated or suburban areas where conventional collection systems would be expensive. These systems generally use smaller diameter pipes with a slight slope, or follow the surface contour of the land, reducing excavation and construction costs. They can be cost effective even in densely populated areas where difficult construction or right-of-way (ROW) conditions exist, or where the terrain could not accommodate gravity sewers. Two major types of pressure sewer systems are the Septic Tank Effluent Pump system and the Grinder Pump system. Neither requires any modification to plumbing inside the house.

3- Small Diameter Gravity (SDG) Sewer System Alternative. Small diameter gravity (SDG) systems use gravity to transport sewage, and include a septic tank to remove solids from the wastewater. SDG sewer systems are well suited for communities where the houses are far apart and not for areas with a high housing density or with extremely hilly terrain.

4- Vacuum Sewer System (VSS) Alternative. Vacuum sewer systems (VSS) are best suited for areas with flat or gently rolling terrain because of the limited capability for transporting wastewater upgrade, usually a maximum of 15 to 20 feet. VSS use a central pumping station to create suction to transport the sewage from the central vacuum station to the treatment plant.

The preferred alternative is the conventional gravity (CG) sewer system given that it meets the economic, low maintenance, long term collection needs and public health protection criteria described above.

Project Justification

The current system is old and some sections of the collection system are at least 80 years old. The network grew in a disorderly manner with no planning for future growth, and the sewer system was not designed to handle the population increases experienced in the last decades.

The people of Pharr throughout the years have endured the problems associated with year round sewer overflows in the streets, in front yards and in homes, in addition to the foul odor emanating from the overworked and inefficient lift stations that dot the city. Thousands of complaints are logged every year by the Public Utility Department, overburdening the City with high costs to simply maintain a system that is environmentally unsustainable and a clear threat to public health.

1.4 Compliance with International Treaties and Agreements

The project complies with international agreements between Mexico and the United States, targeted at improving the environment and the quality of life of border residents. These agreements include the La Paz Agreement, the Comprehensive Border Environment Plan, the Environmental Side Agreement of the NAFTA and the Border 2012 Program. The guiding principles of the program are to reduce the highest public health risks, and preserve and restore the natural environment, adopt a bottom-up approach for setting priorities and making decisions through partnerships with state, local and U.S. tribal governments, and address disproportionate environmental impacts in border communities in areas of water and wastewater.

2. Human Health and the Environment

2.1 Human Health and Environmental Need

Specific waterborne health data for Pharr is unavailable. Health data for Hidalgo County, a designated Health Professional Shortage Area and a Medically Underserved Area, is available through the County Health Department. This County is a region of more than two million people where illness rates are significantly higher than the rest of Texas and of the nation.

According to the Center for Disease Control in Atlanta, Hidalgo County has a high occurrence of Hepatitis A in comparison with most counties of the state. Thirty-one cases of Hepatitis A were reported for every 100,000 people in Hidalgo County while nearby Cameron County had a rate of 36 cases per 100,000 people.

Data from the Hidalgo County Health Department for 2005 and 2006 show an overall decrease in reported waterborne diseases, but a slight increase in diseases such as Cryptosporidiosis, Campylobacteriosis, Giardiasis and Amebiasis.

Health Statistics in Hidalgo County

Year	Shigellosis	Amebiasis	Campylo-bacteriosis	Crypto-sporidiosis	Giardiasis
2005	**315**	**7**	**54**	**4**	**0**
2006	**60**	**8**	**58**	**22**	**3**
Total	**375**	**15**	**112**	**26**	**3**

Without the proposed improvements, raw sewer would continue discharging into the overloaded and inefficient collection system, into the streets and people's homes. Continued population growth increases the health risk of waterborne diseases in the project area especially in the rainy season which tends to cause back-ups in the collection system, which coupled with periodic collapsed lines and infiltration, aggravates the problem. This is likely to result in an increase in complaints by residents of Pharr over sewer overflows and investigations of complaints and notices of violations issued by TCEQ. Statistics from January 2003 to March 2005 show that the Public Utility Department of Pharr received over 2400 complaints over sewer related problems.

Year	Complaints
2003	987
2004	1043
2005 (January-March)	379
Total	2409

Approximately 8,349 linear feet (12.6 miles) of sewer lines are undersized, and the average overflow duration recorded was 5 hours. Reported overflows City-wide occur on the average 17 days per-month. Phase I is expected to solve these sanitary sewer overflows in the City.

Sanitary sewer overflows in residential areas and streets of the City

2.2 Environmental Assessment

An environmental information document (EID) was developed and reviewed by the U.S. Environmental Protection Agency (EPA). A preliminary Finding of No Significant Impact (FNSI) was issued in April 12, 2004 for the 30-day comment period. The EPA issued the Final FNSI on May 12, 2004.

2.3 Compliance with Applicable to Environmental and Cultural Resource Laws and Regulations

Based on the review of the EID by the EPA of the proposed wastewater collection and treatment system improvements, no significant adverse impacts to the environment or cultural resources were identified. The EPA reviewed the potential direct, indirect, and cumulative environmental impacts to the immediate and adjacent areas, which could result from the implementation of the proposed action. Responses obtained from the appropriate agencies indicated no environmental concerns needing further study. Regarding cultural-historical resources, the Texas Historical Commission noted the existence of 8 structures registered in the National Register of Historic Places in the City of Pharr, and concluded in August 2003 that they will not be disturbed by the proposed project. The proposed project is considered to be environmentally sound, and furthermore it complies with all applicable state and federal environmental and cultural resource laws and regulations.

3. Technical Feasibility

3.1 Appropriate Technology

The project will implement appropriate technology which matches the ability of the city to operate and maintain, and was designed to be constructed, operated and maintained in a cost effective manner to achieve the main goal of eliminating the sanitary sewer overflows. The project's Facility Plan and Final Design were completed with this in mind.

Value Engineering

Value Engineering (VE) was carried out during the 60% Final Design level to identify ways to improve the project, reduce overall cost and operation and maintenance costs, and reduce the sewer overflows. The Master Plan identified a collection system of primarily gravity flow with a total of 39 lift stations and 170 miles of sanitary sewer lines. It recommended reducing the lift stations from 39 to 18 and repair and up-grade the remaining stations. VE developed recommendations to refurbish / replace selected lift stations and still correct the sanitary sewer overflow problems. It proposed decommissioning 9 existing lift stations and conversion of pipeline segments to gravity sewers, construction of 3 new lift stations, and installation of 11 miles of 12 to 36 inch gravity sewers and 16 inch to 20 inch force mains. The process determined that the project should be divided in two phases covering the North, Central and South regions of the City.

Phase I, proposed for certification, would correct the sanitary sewer overflows prioritized in FY 05/06 Prioritization Process. This process defined the problems in Pharr as a Category 1 Project which demonstrated and/or documented evidence of continuous wastewater surface pooling, resulting in direct human contact associated with a deteriorated wastewater collection system that poses an immediate, acute health threat due to regular occurrence and extended duration of discharge. The total cost of this Phase is $ 44 million dollars.

The Pharr wastewater treatment plant (WWTP) has a design capacity of 5 million gallons per day (MGD). Since it will not receive any additional wastewater flow by this project, it is not required a WWTP expansion as a result of this project.

Alternatives

Four alternatives were considered for the collection system. The preferred alternative is a conventional gravity sewer system chosen due to its cost effectiveness and ease of operation and maintenance. The analysis is described in chapter 1.

Technical Process

The design criteria used for the sewer system followed Texas Commission of Environmental Quality (TCEQ) Texas Administrative Code Chapter 317, Design Criteria for Sewerage Systems. These include lift station design criteria, such as site selection, pumps, emergency provisions, pump capacity, force main capacity requirements, safety, etc.; pipe design for gravity and pressure systems, including pipe selection, pipe capacity and velocity, slope, pipe structural design, etc.; jointing material; testing; bedding: trenching, bedding, and backfill; protection of water supply; and erosion control.

Conventional Gravity (CG) Sewer System. The preferred alternative is to construct the CG sewer system, which was determined to be the most cost effective and easiest to operate and maintain. CG sewers are normally used for domestic wastewater collection and transportation in

urban areas. These systems require a minimum slope to keep wastewater movement at or above two feet per second without surcharging manholes or pressuring the pipe to avoid the deposition of solids.

Conventional Gravity sewer systems include the need to maintain the gravity flow velocity, which can require deep excavations in hilly or flat terrain, the collection of sewage at low spots, making sewage pumping or lift stations necessary, and manhole inflow and infiltration, increasing the volume of wastewater carried, increasing the costs of construction. Properly designed and constructed, CG sewers can handle grit and solids in sanitary sewage and can maintain a minimum velocity, reducing the production of hydrogen sulfide and methane. This in turn reduces odors, blockages, pipe corrosion, and the potential for explosion.

Final design was completed in August 2006 and reviewed by EPA, the North American Development Bank (NADB) and BECC and found to comply with requirements of the 05/06 Prioritization Process

3.2 Operation and Maintenance Plan

Based on the estimated cost for treatment, the operations and maintenance cost for wastewater system operation is expected to increase approximately 6% in 2007, 7% in 2008 and 6% in 2009. Beginning in 2010 and onward the increases should be an average of 6% per year and increase only due to inflation. The City of Pharr will allocate the necessary budget for the operation and maintenance of the project and the construction contractor will be required to provide an operation manual and training associated with the wastewater collection system. Currently, the city has 40 employees in the water and wastewater utility. Certified operators for the collection system include three operators, two with Class II Licenses and one with Class III License. Certified Operators for the wastewater treatment plant include eleven with certifications. Of this total, two have A Certifications, four with B Licenses, three with C Licenses, two with D Licenses, one with an A Lab Certification and one with the B Lab Certification. Under the current structure, the City meets the TCEQ criteria for certification of operators.

3.3 Compliance with Applicable Design Regulations and Standards

Final design for the wastewater collection system was developed according to standard engineering practices such as TCEQ Texas Administrative Code Chapter 317, Design Criteria for Sewerage Systems and the EPA Design Manual for Odor and Corrosion Control in Sanitary Sewerage Systems and Treatment Plants. Also, structural design for manholes, wet wells, and other structures was in accordance with the *International Building Code*, 2003, and electrical design was in accordance with the *National Electric Code*, 2005.

4. Financial Feasibility and Project Administration

1. Financial Feasibility

The NADB has reviewed the financial information presented by the Project Sponsor and, based on it, determined that the financial and structural capacity proposed by the City of Pharr is adequate. The information presented and the financial analysis includes, among other items:

Historic Financial Statements;
Financial structure of the project;
Investment budget;
Budget for operation and maintenance, historic and pro forma; and
Economic and demographic information of the project area.

The detailed analysis of the financial information of the project can be found in the credit proposal that will be presented to acquire the authorization of the NADB Council. This is the financial analysis summary.

The total cost of the project is estimated at $44.00 million dollars, including the costs for construction and supervision.

Item	Quantity (Millions of Dollars)
Construction	40.74
Supervision	3.26
TOTAL	44.00

The City proposes a financial structure that will allow the implementation of the project, as further indicated:

Financial Source	Amount (Millions of Dollars)	%
Loan*	27.00	61.36
NADB-BEIF Construction Assistance	17.00	38.64
TOTAL	44.00	100.00

*The City has a commitment from the Texas Water Development Board for the loan. Pharr is analyzing other loan sources, of which NADB is among them.

Additionally, the NADB will award $2 million dollars in grants from the Border Environmental Infrastructure Fund (BEIF) Transition Assistance Fund.

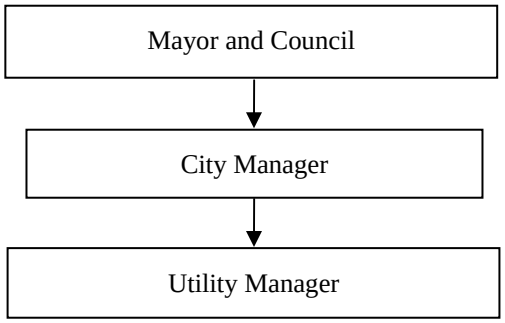
2. Fee/Rate Model

The revenues from the utility will cover the operation and maintenance expenses, such as drinking water treatment and conveyance, wastewater collection and treatment, as well as debt service and funding of reserves.

3. Project Management

The project is managed by a Public Utility Department of Pharr. This Utility has adequate personnel to manage the proposed infrastructure and the capacity to solve any potential emergency in relation to the operation and maintenance of the works.

This is the organizational chart for the operation of the City of Pharr's project:



5. Public Participation

5.1 Public Participation Plan

To comply with the BECC public participation objectives, a Public Participation Plan (Plan) was submitted by Pharr and approved by BECC in October 2003. The Plan includes the development of a steering committee, a list of local organizations to contact to present the project and solicit support for it, provide public access to project information and hold public meetings. A summary of the activities held in each category is presented below.

Local Steering Committee

The Local Steering Committee was formed in June 2003 and its members are: Victor Carrillo, Steering Committee President and a business owner; Jose Anaya, WWTP supervisor; Elida Newell, educator; Oscar Elizondo, small business owner; Bobby Vecchio, small business owner; and Rene Garza, Texas Department of Transportation engineer.

The committee had a technical work group, whose primary responsibilities were to advise the committee about the project, present the technical and financial aspect of the project at the public meetings and the media, and provide support to the committee during outreach to local organizations presentations. The members of this group include: David Garza, Utilities Director, Carlos Mondragon, City Consultant, and Stephen Bianchetta, Sam Maldonado and Anna Smith, Consulting Engineers.

Meetings with Local Organizations

Presentations were made to the Lions Club, City Council, several Head Start Programs parents meetings, Valley Interfaith, at twelve elementary schools PTA (parents-teacher) meetings, the Board of Directors of the Boys and Girls Club of Pharr, and the Pharr Chamber of Commerce. Approximately 1,400 residents attended the local organizational meetings, and over 3,500 letters of support have been provided from individuals and local organizations.

Public Access to Project Information

The Facility Plan and Environmental Information Document were available at the Pharr City Hall and the City Library thirty days prior to the first public meeting. The public meetings were advertised in the local newspapers according to the requirements. The first meeting was posted with a 30-day notice. Approximately 3000 fliers were distributed in City Hall. Fliers with basic technical information were distributed at the meetings. A display of the proposed improvements was available at City Hall and at the Pharr Public Library. Several articles on the project appeared in the McAllen Monitor.

Public Meetings

Three public meeting have been held for the project. The first meeting took place on October 22, 2003. The meeting had over 150 people in attendance. The second public meeting was held on September 6, 2006 with approximately 20 people in attendance. A third and final public meeting was held on February 28, 2007 to present the financial funding package to the public of Pharr.

5.2 Final Public Participation Report

The Final Public Participation Report was submitted to BECC per certification requirements on March 2, 2007.

6. Sustainable Development

6.1 Definition and Principles

According to the sustainable development definition, the wastewater collection system must comply with an economic and social development principle based on the conservation and protection of the environment and rational use of the natural resources, always considering the present needs without compromising the possibilities for future generations to satisfy their own needs.

The first principle of the sustainable development criterion states that the project must produce human health benefit based in the right to a healthy and productive life in harmony with nature. This project will improve the quality of health of the people of Pharr by eliminating the sewer overflows and exposure of these overflows to the people of Pharr.

The second principle states the right to development as long as the development needs and the environment of present and future generations can be accomplished. This project satisfies this principle as it will enable the city to provide wastewater services to present and future populations.

The third principle establishes that in order to accomplish sustainable development, environmental protection should be an essential component of the project. The project has met all federal and state environmental protection regulations. The environmental document showed no adverse impacts to the areas biological and cultural resources as a result of this project.

The fourth principle states that groups directly affected by the implementation of an environmental infrastructure project must be given the opportunity to participate in the decision-making process. The City of Pharr developed a Public Participation Plan that includes a citizens steering committee be formed to promote the project and gather public support for it. Chapter 5 provides more detailed information on how the citizens and the project sponsor were involved in the public participation process.

6.2 Institutional and Human Capacity Building

The activities that contribute to the strengthening of the institutional and human capacity of the Pharr Utilities Department are the following:

- Improve the Utility's infrastructure in the areas of wastewater collection management (lift stations and collection system)
- Improve the wastewater collection system
- Operate a collection system that complies with the state and federal regulations
- Provide technical training the city's wastewater system operators and support staff.

6.3 Conformance with Applicable Local and Regional Conservation and Development Plans

The proposed project complies with all local and regional conservation and development plans, such as the Area-wide Wastewater Management Plan approved by the Lower Rio Grande Development Council, the Texas Council on Environmental Quality, and the Environmental Protection Agency. The LRGVDC serves as the area-wide wastewater management planning agency as designated by the Governor of Texas.

6.4 Natural Resource Conservation

The proposed improvements will conserve community resources by reducing the potential contamination of groundwater and public exposure to sewer overflows. Maintenance requirements will be reduced with a more efficient collection system, and the project will also conserve energy by eliminating inefficient lift stations.

6.5 Community Development

The completion of this project is essential for community development. The existing wastewater collection system is not adequate for the existing needs of the people of Pharr and a financial burden for the City. Installation of an adequate collection system promotes community development, as it reduces pollution in the streets of the city and financial savings to the City from reduced operation and maintenance expenses and pumping costs.

Project Documents Available

Final Public Participation Report of the Pharr, Texas Wastewater Collection System Project. Prepared by Carlos Mondragon, Businesses Services Company. February 2007

Final Value Engineering Report, Pharr Wastewater Collection System and Lift Station Improvements, City of Pharr, Texas. Prepared by Richard Steele, P.E., CDM. July 2006.

Water and Wastewater Rate Analysis. Prepared for the City of Pharr, Texas. Prepared by Naismith Engineering, Inc. July 2004

BECC Step II Certification Document, Wastewater Collection Facilities Improvements for the City of Pharr, Texas. Prepared by Huitt Zollers, Inc. September 2003.

City of Pharr Wastewater System Improvement Project Engineering Feasibility Report. Prepared for the City of Pharr, Texas. Prepared by CH2mHill, Inc. September 2003.

Wastewater System Master Plan Capital Improvement Project, for the City of Pharr, Texas. Prepared by Naismith Engineering, Inc. In association with CH2MHill and J. E. Saenz & Associates, Inc. September 2003.

Environmental Assessment, Wastewater Collection System Improvements for the City of Pharr, Hidalgo County, Texas. Prepared by Huitt Zollers, Inc. August 2003.

Wastewater System Master Plan. Submitted to the City of Pharr. Prepared by Naismith Engineering, Inc. In association with CH2MHill and J. E. Saenz & Associates, Inc. July 2002.

Water System Master Plan. Submitted to the City of Pharr. Prepared by Naismith Engineering, Inc. In association with CH2MHill and J. E. Saenz & Associates, Inc. July 2002.

Finding of No Significant Impact. United States Environmental Protection Agency, 2004