

## Border Environment Cooperation Commission

# Wastewater Collection and Treatment Project in El Porvenir, Chihuahua

## 1. General Criteria

### 1.a Project Type

The project consists of the expansion and rehabilitation of the wastewater collection system (WWCS) and the construction of a wastewater treatment plant (WWTP) based on oxidation lagoons, for the community of El Porvenir, Municipality of Praxedis G. Guerrero, Chihuahua.

This project belongs to BECC's *Wastewater Treatment Sector* as well as in the *Domestic Water and Wastewater Hookups Sector*.

### 1.b Project Categories

The project category corresponds to *Community Environmental Infrastructure Projects – Community-wide Impacts*. The project will improve the wastewater collection and treatment quality services of El Porvenir, resulting in a positive impact on this community.

### 1.c Project Location and Community Profile

The State of Chihuahua is located in the northern part of the Republic of Mexico, neighboring the United States of America (USA). El Porvenir is located in the northeastern end of the state of Chihuahua in the Municipality of Praxedis G. Guerrero. It is one of the 23 communities found in the area known as the Juarez Valley. It is a traditionally agricultural community, although, due to its proximity with Ciudad Juarez, a significant portion of its residents are currently employed at *maquiladoras* established in that city.

Figure 1 shows the location of El Porvenir, Municipality of Praxedis G. Guerrero, in the northern end of the state of Chihuahua.



Figure 1. Location of El Porvenir, Municipality of Praxedis G. Guerrero

## **Demographics**

Population projections prepared for the development of the Final Design for the Improvements to the Wastewater Collection and Treatment Systems in El Porvenir, Municipality of Praxedis G. Guerrero, Chihuahua, were based on *National Institute of Statistics, Geography, and Informatics* (INEGI, for its initial in Spanish) Census and data from the *National Population Council* (CONAPO, for its initial in Spanish). The current population (2007) has been estimated to be 4,481 inhabitants, with an average 1.0 % annual growth rate. The monthly median per-capita household income is \$3,252 Mexican pesos. <sup>1</sup>

## **Environmental Services**

### **Existing Drinking Water System**

The drinking water system is supplied by two wells: San Ignacio, which is 262.4 ft deep and a 12 in casing, and San Jose de Paredes, 380.5 ft deep and a 6 in casing. It is a direct pumping system with excess flowing to storage tanks. It was estimated the drinking water service reaches 92% of the community. Macro-metering is existent for one of the wells and the percentage of micro-metering is minimal. There are two superficial storage tanks, which are 17,657 and 3,531.5 ft<sup>3</sup>. The total number of users in the community is 1,296 of which 826 are domestic and 381 are commercial.

### **Existing Wastewater Collection and Treatment System**

El Porvenir has approximately 15% wastewater collection coverage. The system consists of sewer lines, manholes, and mains; wastewater is discharged to the "*Interceptor Drain*" which runs parallel to the Rio Grande and discharges southeast of the community at a point known as "*El Guayuco*," approximately 17 mi from the community. Residents who are not connected to the wastewater collection system dispose of their wastewater in latrines and septic tanks, with the associated public health and groundwater contamination risks.

The wastewater collection system needs to be modified so that all wastewater can be conveyed by gravity to a single lift station, from which it may be transferred to the proposed wastewater treatment plant.

### **Wastewater Treatment**

Wastewater treatment is non existent.

## **1.d Legal Authority**

The project sponsor is the state utility, *Junta Central de Agua y Saneamiento del Estado de Chihuahua*<sup>2</sup> (JCAS), in coordination with the local utility, *Junta Municipal de Agua y Saneamiento de El Porvenir, Municipio de Praxedis G. Guerrero* (JMAS). The legal authority of the JMAS is established in the 1564 Administrative Code of Chihuahua. The JMAS has the jurisdiction to provide drinking water and collection services to the municipality, while the JCAS is the regulatory entity in charge of developing projects related to improving the infrastructure of these services for El Porvenir.

The project falls within the scope of agreements targeted at improving the environment and the quality of life of border residents, which have been signed by Mexico and the United States. The United States and Mexico have signed six major bilateral agreements related to air, water, land protection, and pollution control issues. These include:

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<sup>1</sup> Source: NADB estimation based on statistics by INEGI and the National Commission of Minimum Wages.

<sup>2</sup> <http://info4.juridicas.unam.mx/adproju/leg/9/174/default.htm?s=>

- 1889 International Boundary Convention
- 1944 Water Treaty
- 1983 La Paz Agreement, or Border Environment Agreement
- 1990 Integrated Border Environmental Plan (IBEP)
- 1994 North American Free Trade Agreement (NAFTA)
- Border 2012 Program

The project complies with the spirit of all these agreements, and all of them have been considered since the onset of the project.

## 1.e Project Summary

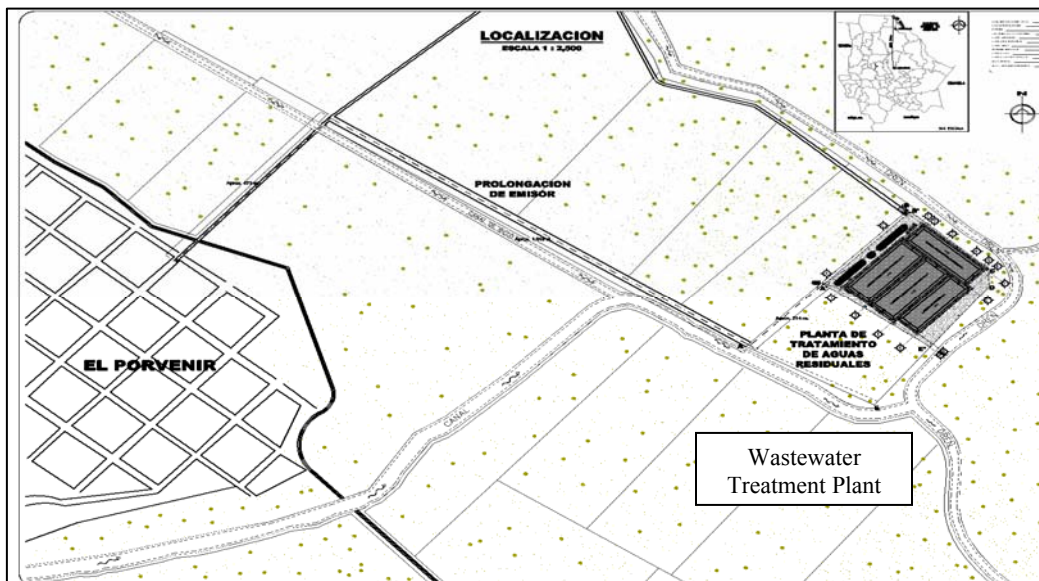
### Project Description

The project consists of the expansion and rehabilitation of the wastewater collection system and the construction of a lagoon-based wastewater treatment plant for the community of El Porvenir.

The proposed project includes the following components:

- Expansion of the wastewater collection system to increase coverage from 15 % to 100 %.
- 85,564.3 ft. of 8 in. diameter wastewater collection lines.
- 4,914.7 ft. of 15 in. diameter wastewater collection lines.
- 166 manholes
- 1,136 household connections
- Construction of gravity sewer main to convey wastewater to the proposed WWTP construction site.
- Construction of a 0.34 MGD Wastewater Treatment Plant for the community of El Porvenir.

The cost of the wastewater collection and treatment project is \$2.27 million dollars. Figure 2 presents a sketch of the proposed wastewater treatment plant with pretreatment.



**Figure 2.** Location of the wastewater treatment facility and lift station with pretreatment.

**Project Justification**

For decades, the community of El Porvenir has suffered from the lack of an appropriate wastewater collection and treatment system. The city discharges wastewater into agricultural canals that eventually flow into the "Interceptor Drain", which carries wastewater from Ciudad Juarez, storm water, and agricultural drain water. This drain runs parallel to the Rio Grande and is adjacent to the city, which creates a risk for the dissemination of water borne diseases.

The lack of wastewater collection in some areas of the community forces residents to dispose of wastewater by using latrines and cesspools which, due to the relatively shallow water tables and the type of soil, result in wastewater overflows and cause health and aquifer contamination risks.

The proposed wastewater collection project will help collect wastewater from sectors that currently lack this service, reducing thus the potential for human contact with raw wastewater and organisms that are vectors for diseases. In addition, the project will reduce the potential for groundwater and surface water contamination by eliminating the use of latrines, septic tanks, and wastewater discharges to open-air drains. The effluent from the proposed wastewater treatment plant will be discharged into agricultural drains and eventually into the Rio Grande, creating an environmental and human health benefit for residents of the Juarez Valley and adjacent areas in the United States.

The project was evaluated as Category 1 during the U.S. Environmental Protection Agency (EPA) Funding Prioritization Process 2005/06 due to the lack of wastewater collection and treatment infrastructure.

**Important issues for Certification:**

The Project falls within the BECC's priority sectors and complies with General Criteria.

**Pending issues:**

None.

## 2. Human Health and Environment

### **2.a Compliance with Applicable Environmental Laws and Regulations**

The WWTP's final design was developed considering the need to generate an effluent that provides adequate quality for wastewater reuse and eliminates health risks for residents who may have contact with treated water. Final design complied with applicable environmental regulations contained in Official Mexican Standard NOM-001-SEMARNAT-1996, which establishes the maximum permissible levels of contaminants for wastewater discharges to national waters and properties.

The proposed projects will follow the guidelines established by National Water Commission (CONAGUA for its initials in Spanish) for the construction of this type of infrastructure. Additionally, the tasks to be developed are not expected to impact protected areas or ecological reserves. During the implementation of the project, the JCAS will oversee the tasks for conformance with the aforesaid guidelines.

The National Institute of Anthropology and History (INAH, for its initials in Spanish), through Official Communication No. E/117-D/2006 dated September 26, 2006, established no objection to the development of this project in El Porvenir, inasmuch as there is no evidence of archeological or historical settlements in the area. Based on the above, no impacts to cultural resources are anticipated as a result of the project's implementation.

### **2.b Human Health and Environmental Impacts**

#### **Human Health Impacts**

The community of El Porvenir located within the area known as the Juarez Valley, southeast of Ciudad Juarez, and adjacent to the Rio Grande. 85% of the population lacks wastewater collection services, and wastewater treatment is non-existent, which represents a condition that poses human health and environmental risks. Residents who lack wastewater collection dispose of their wastewater using latrines and cesspools. The rest of the wastewater is discharged into the "Interceptor Drain" to ultimately flow into the Rio Grande, after traveling 31 miles when water conveyed by the drain is not used for agricultural irrigation.

The lack of wastewater collection for 85% of the population, in addition to the existence of clay soil and shallow water tables, has resulted in wastewater overflows and runoffs throughout the community, creating a risk for the transmission of diseases due to the residents' contact with these unhealthy wastewaters. The purpose of this project is to address the existing public health and groundwater contamination risks and to prevent these threats.

The development of this project will help address the aforementioned issues, and will improve public health conditions for local residents as follows:

- Human health conditions will be improved by reducing or eliminating wastewater overflows as a result of an improved wastewater collection system; the risk of the residents' contact with wastewater will also be reduced.
- Reduced potential for soil and aquifer contamination that may result from the inadequate use of latrines and septic tanks in areas that lack wastewater collection service, as well as

from the use of poorly maintained lines and the discharge of raw wastewater to agricultural canals.

- The construction and operation of the proposed WWTP, the construction of new lines, and the improvements to existing wastewater collection lines, will reduce groundwater, surface water, and soil contamination.

Human health statistics for El Porvenir are limited, but there is information regarding a high incidence of diseases that include hepatitis A, measles, shigellosis, and tuberculosis.

Table 1 shows information about contagious diseases in the 80 communities in the U.S.-Mexico border and the 44 U.S. border counties.

**Table 1**  
Contagious diseases, Number of cases, and Occurrence Rates in the U.S.-Mexico Border, 2000  
Mexican Border Communities, U.S. Border Counties.

Disease	Number of Cases			
	Mexican Border Communities		U.S. Border Counties	
	Cases	Rate*	Cases	Rate*
Dengue	173	2.7	6	0.1
Hepatitis A	1526	24.0	722	11.0
Hepatitis B	71	1.1	410	6.3
Malaria	784***	4.7***	15	0.2
Salmonellosis/Shigellosis	582	9.2	1880	28.7
Tuberculosis	2124	33.4	653	10.0

Source: Mexico: Surveillance Unit, General Directorate of Epidemiology, SSA; United States: State Health Departments of Arizona, California, New Mexico, Texas.

\* Cases for each 100,000 residents.

\*\* Border counties in Arizona, New Mexico, and Texas only.

\*\*\* Includes data only about border states.

The high level of border crossings between the United States and Mexico complicates epidemiological surveillance and the development of strategies to address the spread of infectious diseases. The thousands of border crossings each day underline the potential for the spread of diseases in both directions. Under these circumstances, the United States and Mexico must coordinate their strategies by developing a binational response to the spread of infectious diseases.<sup>3</sup>

### **Environmental Impacts**

Overall, the environmental impact resulted by the implementation of the project will be positive. Sewer service will be provided to 100% of the population while reducing the risk of wastewater infiltration by the use of latrines and cesspools. On the other hand, all construction tasks will take place in city areas that have been previously disturbed.

During the construction phases, minor impacts to the environment will be generated by the excavation tasks required for the installation of sewer and drinking water piping system. These impacts include particulate matter emissions, gases generated by the construction equipment,

<sup>3</sup> Healthy Border 2010: An Agenda for improving Health on the United States-Mexico Border (October, 2003).

temporary obstruction of streets, and presence of workers in the areas and risk conditions for people and vehicles.

To reduce the environmental impacts during the construction phase, mitigation measurements will be taken similar to watering roads to reduce dust, maintaining vehicles to reduce emissions, setting up prevention signs to avoid risk situations, installing portable restrooms, etc.

In relation to the phase of operation activities, negative impacts are not anticipated, provided that the project tasks are carried out according to specifications, pursuant to timing and development conditions in the final design and complying with the Environmental Impact Ruling as established.

### **Transboundary Impacts**

Negative impacts are not anticipated by the implementation of wastewater collection and treatment system. In addition, a beneficial effect is expected on the U.S. side given that water that enters the Rio Grande via the " *Interceptor Drain* " will have a better quality now that the raw sewage will be treated.

### **Formal Environmental Clearance**

Pursuant to the provisions of the General Law on Ecological Balance and Environmental Protection as to Environmental Assessments (EA), the Secretariat of the Environment and Natural Resources (SEMARNAT) determined through official communication SG.IR 08-2006/093 that the project required the development of a private Environmental Impact Statement. An EIA was prepared and submitted to the SEMARNAT for review on April 20, 2007, and a finding was issued through official communication SG.IR 08-2007/174, after determining that the project complied with all requirements within Mexican process.

As for the U.S. environmental assessment process (NEPA), a transboundary impact study was developed and submitted for consideration to the U.S. Environmental Protection Agency (EPA) and is currently under signatures and authorization and it will be published soon for public comments

As part of the environmental assessment process, the final design was submitted to the International Boundary and Water Commission (IBWC) in the United States and its corresponding commission in Mexico (CILA, for its initials in Spanish). No negative comments were received from neither of the regulatory entities.

#### **Important issues for Certification:**

The project resolves a significant human health and environmental problem.

#### **Pending issues:**

None.

## 3. Technical Feasibility

### 3.a Technical Aspects

#### Project Development Requirements

The final designs of the wastewater collection and treatment systems were developed pursuant to technical specifications contained in the Wastewater Collection and Treatment Manual prepared by CONAGUA's Technical Directorate and Official Mexican Standard NOM-001-CNA-1995 "Sanitary Sewerage System – Specifications for Hermeticity."

The development of the Final Design for the wastewater collection project was based on the review of alternatives and the preferred option; i.e., it included the design of a gravity collection system with conveyance to a single lift station and a discharge point.

Table 2 shows the lengths and sizes of proposed wastewater collection lines.

**Table 2**  
Sizes of PVC wastewater collection pipes.

PVC Wastewater Collection lines	
Diameter (in.)	Linear Feet
8	85,564.3
15	4,914.7

Additionally, the system includes 166 manholes and 1,136 household connections.

In March 2007, the JCAS completed the "Final Design for the Construction of the El Porvenir Wastewater Treatment Plant." The facility will have a 0.34 MGD design flow rate; the system's total wastewater retention time will be 29.5 days.

In order to prevent potential seepage through the lagoons' fore slopes and to provide slope stability, the project considers the installation of a 0.05 in. thick high-density (HD) polyethylene geo-membrane placed over a 200 gr/m<sup>2</sup> geo-textile to prevent potential damage to the geo-membrane.

#### Pretreatment

It includes two parallel systems with a 45° manual bar screening, sand trap, and reinforced concrete flow meter with the following dimensions:

- 32.5 ft x 8.2 ft primary treatment
- 1.64 ft x 3.8 ft screens with 0.08 ft. separation
- A 1.64 ft x 9.8 ft and 0.5 ft deep sand trap will be built for removal of wastewater grit

#### Primary Treatment

It consists of two facultative lagoons that will be built using excavation and quarry materials, with the following dimensions: 164 ft short interior side, 492 ft long interior side, and 5 ft normal operational depth.



### Secondary Treatment

The facultative lagoon for secondary treatment will have similar characteristics to the primary lagoons, i.e., their berms will be built using excavation and quarry materials, and will have the following dimensions: 492 ft long interior side, 131.2 ft short interior side, and 4.6 ft normal operational depth. The maturation lagoon will have characteristics similar to the above lagoons, with the following dimensions: 459 ft long interior side, 131.2 ft short interior side, and 3.6 ft normal operational depth. Figure 3 shows the WWTP's layout.

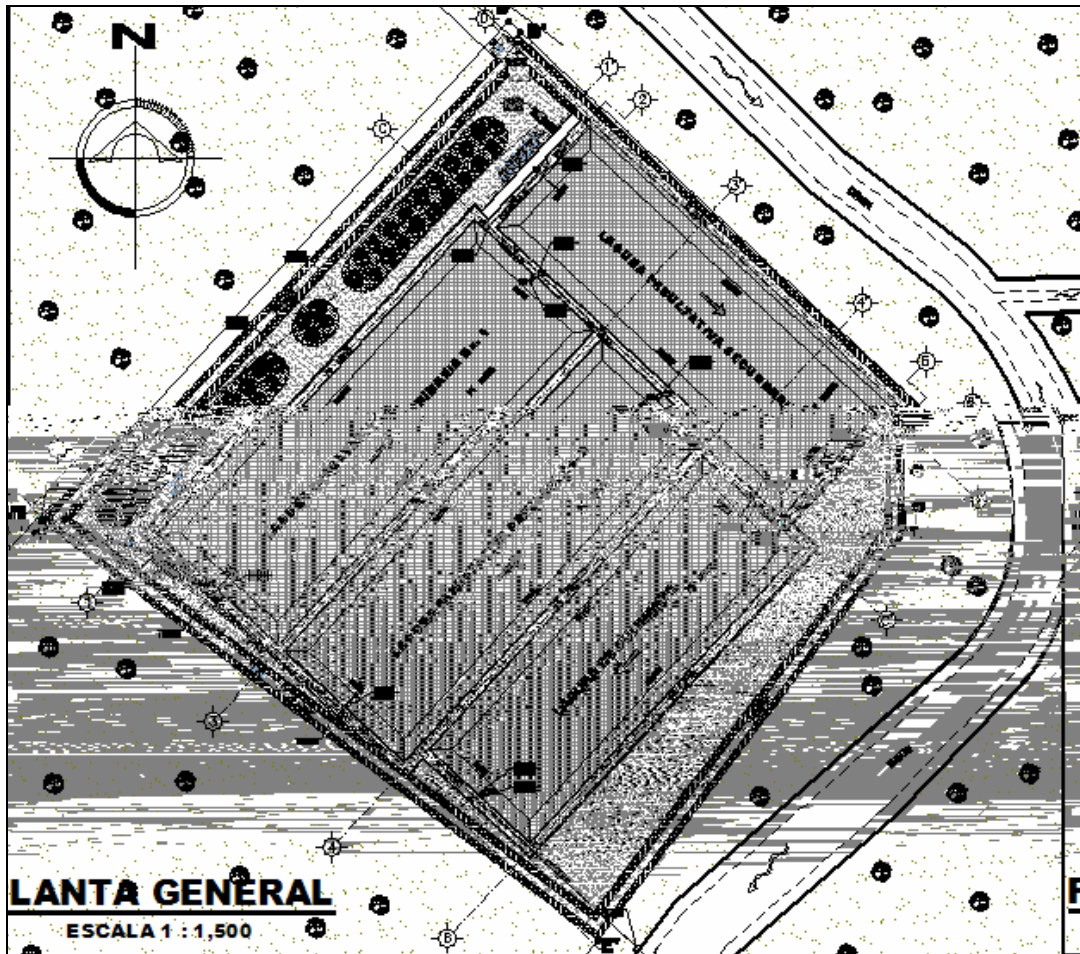


Figure 3. Wastewater Treatment Plant Layout

### Appropriate Technology

#### Wastewater Collection System

In order to count with an adequate and efficient system, a preliminary engineering analysis was developed considering different technical alternatives. The project alternatives reviewed consisted basically of the following scenarios:

- a) **No-action Alternative.** Under this scenario, the community of El Porvenir would not be able to merge its wastewaters into a single location and send it off to the wastewater treatment facility. Residents who lack wastewater collection service would continue to

- discharge their wastewater into latrines and septic tanks, with the resulting risks for aquifer contamination and transmission of water borne diseases. In sum, this alternative presents environmental, human health, social, and political implications that render it unviable.
- b) **Expand the wastewater collection system to 100% of the population and make it converge into a single location and use gravity to convey it to a wastewater treatment plant.** This alternative was reviewed and considered to be the preferred alternative, inasmuch as it allows for the entire population of El Porvenir to have wastewater collection service at a reasonable initial cost, with adequate subsequent operation and maintenance costs.
  - c) **Expand the wastewater collection system to 100% of the population of El Porvenir, and make it converge into a single location for pumping to a wastewater treatment plant.** This alternative was reviewed but considered unviable due to higher initial and operation and maintenance costs.

### **Wastewater Treatment System**

The review of alternatives for wastewater treatment included the following options:

- a) **No-Action Alternative.** The El Porvenir community does not have a wastewater treatment system. Under this scenario, the population would continue discharging raw wastewater to the “Interceptor Drain”, which is unlined and presents a risk for aquifer contamination; in addition, there would be a continued risk of human contact with untreated wastewater, either directly or derived from the consumption of vegetables that have been in contact with wastewater, which represents a potential risk for the transmission of water borne diseases. After review, this alternative was ruled out, as it results in major human health and environmental risks.
- b) **Construction of a wastewater treatment system based on facultative and polishing lagoons.** This option was reviewed, and although it requires a larger area for the construction of the system than alternative (d), it was determined to be the preferred alternative, as it has the lowest cost at present value.
- c) **Construction of a wastewater treatment system based on an Imhoff tank, and facultative and polishing lagoons.** Although this is the option that requires the least surface area for its construction, it also requires the highest initial investment. The previous statement makes this option unacceptable.
- d) **Construction of a wastewater treatment plant based on anaerobic, facultative, and maturation lagoons.** This fourth option requires a smaller surface area and has similar costs to alternative (b), but the initial capital investment at present value is higher. Thus, this option was determined to be inappropriate.

The treatment process is sufficient to generate treated wastewater that provides adequate quality for wastewater reuse and eliminates health risks for residents who may have contact with treated water, pursuant to the applicable environmental regulations contained in Official Mexican Standard NOM-001-SEMARNAT-1996, which establishes the maximum permissible levels of contaminants for wastewater discharges to national waters and properties.

The technology to be used for the wastewater treatment process is a technology that has been widely employed as a solution for wastewater sanitation in small and medium-size communities. The treatment system will generate treated wastewater with sufficient quality to be used for urban public uses or agricultural irrigation.

**Land Acquisition and Right-of-way Requirements**

The wastewater collection lines will be installed within the right of ways and municipal traffic areas, additional land acquisition will not be required. In reference to the land required for the construction of the WWTP in El Porvenir, the JCAS acquired a property with a surface of 645,835 ft<sup>2</sup>. BECC has received copies of the corresponding approval documentation.

**Work Tasks and Schedule**

The project is proposed to be developed in three phases during the 2007-2009 period. The first phase includes construction of a first section of sewers and household hookups; the second phase consists of the construction of the pretreatment section, the wastewater treatment plant, and the force main. The construction of the sewer network and household connections will be completed during the project's third phase. Figure 4 shows the proposed project timeline.

ITEM		PROPOSED TASK COMPLETION TIME (IN MONTHS)																									
		2007			2008												2009										
		O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N
1	SEWER NETWORK	█	█	█	█	█	█	█	█	█	█																
2	PRETREATMENT																										
3	FORCE MAIN LINE																										
4	WASTEWATER TREATMENT PLANT																										

Figure 4. Project Construction Schedule

**Technical Process**

The treatment process is sufficient to generate treated wastewater that provides adequate quality for wastewater reuse and eliminates health risks for residents who may have contact with treated water, pursuant to the applicable environmental regulations contained in Official Mexican Standard NOM-001-SEMARNAT-1996, which establishes the maximum permissible levels of contaminants for wastewater discharges to national waters and properties.

The technology to be used for the wastewater treatment process is a technology that has been widely employed as a solution for wastewater sanitation in small and medium-size communities. The treatment system will generate treated wastewater with sufficient quality to be used for urban public uses. (BOD of 75 mg/l, TSS of 75 mg/l).

The results acquired from the mathematical model indicated that biochemical oxygen demand (BOD) values from the convergence of the Rio Grande and the “Interception Drain” range from 20 to 30 mg/l, with dissolved oxygen concentrations (DOC) from 5.6 to 6.4 mg/l. These values comply with quality standards required by the Texas Commission on Environmental Quality (TCEQ).

In order to evaluate the potential impacts on water quality at the discharge point between the “*Interceptor Drain*” and the Rio Grande, the BECC developed a study named “Preliminary Study on Self-Depuration of WWTPs’ Effluent from Ciudad Juarez, Chihuahua and the Merging Flows from Communities at Guadalupe and Praxedis G. Guerrero, Chihuahua.

The sludge generated by the wastewater treatment process will be extracted from the lagoons in periods of approximately every five years and hauled away to the landfill for disposition.

### **3.b Management and Operation**

#### **Project Management**

The treatment system's operation and maintenance will be the responsibility of the JMAS of El Porvenir, under supervision of JCAS technical staff.

#### **Operation and Maintenance**

##### **Organization**

The JMAS of El Porvenir counts with a president, secretary, treasurer, three alternates, operation and maintenance assistants, the support from the JCAS, which counts with the specialized personnel on drinking water and wastewater collection operation and maintenance.

##### **Operations and Maintenance Plan**

The Operation and Maintenance Plan presented as part of the project's final design includes the main activities needed to provide preventive maintenance to the proposed wastewater collection and treatment system. The treatment system's operation and maintenance will be the responsibility of the JMAS, under supervision of JCAS technical staff.

The purpose of the infrastructure's Preventive Maintenance Plan is to make available a tool to help carry out the activities related to effluent quality control, facility operation, and prevention of system breakdowns. Ensuring the proper operation of treatment units will generate a good effluent quality. The conservation of treatment unit components, including pumps, screens, gates, valves, as well as structures such as berms, slopes, etc., which must be a scheduled and consistent task.

##### **Pretreatment Program**

By virtue of the project area only comprises domestic users; the JCAS has dictated that Official Mexican Norm NOM-002-ECOL-1996 needs to be complied as part of the treatment process. The norm establishes the permissible maximum contaminant levels of wastewater discharge to the urban or local wastewater collection systems. The JMAS will ensure that norm is being followed with the support of the JCAS.

##### **Permits, Licenses, and Other Regulatory Licenses**

The municipality of El Porvenir counts with permits provided by the CONAGUA for drinking water extraction and wastewater discharge, including environmental authorizations for project development of this kind. The wastewater collection and treatment projects have been reviewed by the EPA and validated by the CONAGUA, the BECC and the North American Development Bank (NADB).

**Important issues for Certification:**

Final Design was reviewed by the EPA, JMAS, BECC and NADB and was validated by the CONAGUA.

**Pending issues:**

None.

## 4. Financial Feasibility

### 4.a Financial Feasibility

The North American Development Bank, after reviewing the financial information submitted by the project sponsor (JMAS of El Porvenir) determined that the financial capacity and structure proposed by the JCAS are adequate. The information submitted and the financial analysis includes but is not limited to:

- i) Historical and pro forma financial statements
- ii) Project's financial structure;
- iii) Investment budget
- iv) Historical and pro forma operating and maintenance budget
- v) Economic and demographic information on the project area

A detailed analysis of the project's financial information is contained in the loan proposal that will be submitted to the NADB Financial Committee for authorization. Following is a summary of the financial analysis.

The total cost of the project is estimated at \$2.27 million dollars, including loan closing costs, design, supervision, construction, value-added- tax, and contingencies.

Item	Amount (Dollars)
Wastewater Collection and Treatment System	2,269,188
TOTAL	\$2,269,188

JMAS, JCAS, CONAGUA, EPA, and NADB have proposed a financial structure that will allow for the implementation of the project. The table below summarizes the proposed structure:

Funding Source	Type	Amount (Dollars)	%
NADB-BEIF	Grant	780,000	34.37%
Local/State/Federal	Grant	1,352,824	59.62%
NADB	Loan	136,364	6.01%
TOTAL		\$2,269,188	100.00

JMAS exhibits a solid financial situation as reflected by their level of revenue and expenditure control. JCAS will earmark part of their revenues to service the debt. JCAS has efficient finance management practices. Their sensible use of resources and financial discipline has translated into an operational surplus. The NADB loan will not affect the utility's financial situation, so JCAS will be able to continue addressing future infrastructure needs.

### 4.b Rate/Fee Model

Due to the characteristics of the project, the JMAS will not require the implementation of a rate scheme for the project. Currently, the JMAS has an adequate rate scheme, which will permit the support of operation and maintenance necessities, as well as the service debt with a feasible

range. It is noteworthy to mention that for the fiscal year 2007, the JMAS increased its rates up to 10.00%.

#### **4.c Project Management**

The project will be managed by JMAS. The utility has adequate personnel to manage the proposed infrastructure and address any potential emergency related to the project's operation and maintenance.

**Important issues for Certification:**

The project was analyzed and determined to be viable.

**Pending issues:**

None.

## 5. Public Participation

### **Comprehensive Public Participation Plan**

The Comprehensive Public Participation Plan developed by the Steering Committee was approved by the BECC on March 15, 2007. The Steering Committee set to the task of preparing an outreach program, including the benefits resulting from the project, as well as the associated costs and economic impacts for the community.

### **Local Steering Committee**

The Steering Committee was formally installed on February 2, 2007, at a meeting held at the City Hall in Praxedis G. Guerrero, Chihuahua. The meeting was attended by special guests, including the Mayor of Praxedis G. Guerrero, Juvenal Rodela Campos.



A Board of Directors was elected, comprised of the following individuals:

Steering Committee Chairman: Ernesto Gonzalez Camacho, local resident.

Steering Committee Vice-Chairwoman: Dora Alicia Acosta Jimenez, local resident.

#### Alternates:

- Guadalupe Perez, resident
- Maria Hermila Solis Canales, resident
- Graciela Sanchez Perea, resident

### **Public Access to Project Information**

The Steering Committee, with assistance from JCAS, prepared written information about the project and designed flyers and brochures that were distributed at public meetings.

### **Additional Outreach Activities**

Information meetings were held with local residents in anticipation of BECC public meetings.



## **Public Meetings**

### **First Public Meeting**

An invitation to the First Public Meeting, scheduled to be held on Sunday, April 29, 2007, was published on April 1<sup>st</sup> in the "Diario de Juarez." The meeting started at 4:30 P.M. at the local hall "Ejidal" No. 1. The meeting was attended by the Mayor of Praxedis G. Guerrero, *Juvenal Rodela Campos*, and members of the Steering Committee. There were 86 attendees to the meeting. Additionally, 78 surveys were administered during the meeting, and 97% of those surveyed expressed explicit support for the project.

### **Second Public Meeting**

The second public meeting will be held on July 14, 2007.

### **Final Public Participation Report**

The Steering Committee and the sponsor will prepare the "Final Public Participation Report" to demonstrate that the proposed objectives were fully met to BECC's satisfaction. This document will be submitted once the second public meeting has been held.

#### **Important issues for Certification:**

The project is strongly supported by the community.  
Corresponding approval documentation has been received.

#### **Pending issues:**

Hold 2<sup>nd</sup> public meeting and complete final public participation report.

## 6. Sustainable Development

### 6.a Institutional and Human Capacity Building

Actions within the scope of the project that contribute to institutional and human capacity building at the JMAS in El Porvenir include the following:

- Improve the utility's necessary wastewater collection infrastructure (wastewater collection lines)
- Building a wastewater treatment system
- Operating a wastewater collection system that meets applicable state and federal regulations
- Training operating staff

JCAS will provide basic technical training to JMAS staff for the operation and maintenance of the new infrastructure that will be built as a result of the project's implementation. The staff will be provided operation and maintenance training prior to the commencement of WWTP operations. JCAS technical staff will provide guidance to JMAS as needed.

### 6.b Conformance to Applicable Local, State, and Regional Laws Conservation and Development Plans

This project supplements the actions set forth in the Master Plan for Improvements to Water, Wastewater and Collection Services in Riparian Communities in the Upper Rio Grande, Juarez Valley (*Plan Maestro para el Mejoramiento de los Servicios de Agua Potable, Alcantarillado y Saneamiento en Poblaciones Ribereñas del Alto Bravo, Valle de Juárez*), which include the need to develop basic sanitary infrastructure works for in the Juarez Valley. The implementation of the project will help eliminate risks associated to the inadequate management of wastewater, and will provide treated wastewater for other uses.

The project adheres to the U.S.-Mexico Border 2012 Environmental Program by meeting Goal 1 (Reducing water contamination) and Objectives 1 (promoting an increase in the number of household connections to wastewater collection and treatment services) and 4 (promoting improve water utility efficiency). One of the program's guiding principles is reducing major risks to public health and conserving and restoring the natural environment.

### 6.c Natural Resource Conservation

The project contributes to reduce environmental deterioration by expanding existing wastewater collection lines and providing household connections to 100% of residents. Wastewater will be collected and conveyed to the WWTP to improve their quality, thus reducing aquifer contamination and human health risks resulting from raw wastewater discharges to streams or agricultural drains. The project also includes the application of sustainable building practices that will be part of the specifications of the construction process.

### 6.d Community Development

The completion of this project is crucial to the development of the community. The tasks proposed by the project will contribute to reduce the conditions that favor the proliferation of water borne and arboviral diseases related to inadequate wastewater disposal.

The implementation of an appropriate wastewater collection system promotes the development of the community, as it will help reduce contamination in local areas and to improve the quality of life of El Porvenir residents. Treated wastewater will be able to be diverted to other purposes, such as urban and agricultural uses.

**Important issues for Certification:**

The project complies with all sustainable development principles

**Pending issues:**

None.

### Available Project Documentation.

- *"Estrategia de Gran Visión para el Abastecimiento y Manejo del Agua en las ciudades y Cuencas de la Frontera Norte en el Período 1999-2025"* [Global Vision Strategy for Water Supply and Management in Northern Border Cities and Basins during the 1999-2025 Period], CONAGUA, December 1999.
- Official Communication DT-922/2006 requesting a finding by INAH regarding the existence of archeological sites in the Praxedis G. Guerrero, Colonia Esperanza, and El Porvenir areas.
- Official Communication No. E/117-D/2006, in which INAH finds no objection for the development of this project in the El Porvenir area, inasmuch as no archeological settlements exist in the area
- EPA's "Finding of no significant impact" (FONSI) dated June XXX, 2007.
- Consultation with SEMARNAT to determine jurisdiction and environmental assessment modality, Official Communication DT-374/2006, Junta Central de Agua y Saneamiento del Estado de Chihuahua, April 25, 2007.
- SEMARNAT's response regarding Environmental Impact Statement modality. Official Communication No. SG.IR. 08-2007/130, Chihuahua Federal Delegation, Subdivision of Environmental Protection and Natural Resource Management. May 2, 2007.
- Preliminary Wastewater Collection and Treatment project for Colonia Esperanza and Praxedis G. Guerrero, Municipality of Praxedis G. Guerrero, Chihuahua. Developed by Consultores Mexicanos en Proyectos de Ingeniería, S.C. (BECC, March 2006).
- Final Design for a Wastewater Treatment Plant for El Porvenir, Municipality of Praxedis G. Guerrero, Chihuahua. Developed by Construnaja S. A. de C.V. (JCAS, March 2007).
- Final Design for Wastewater Collection Project for El Porvenir, municipality of Praxedis G. Guerrero, Chih. Developed by JCAS (March, 2007).
- Project's Environmental Impact Statement, SEMARNAT State Delegation in Chihuahua, through official communication SG.IR 08-2007/174.
- Master Plan for Improvements to Water, Wastewater and Collection Services in Riparian Communities in the Upper Rio Grande, Juarez Valley. Developed by ICISA, (BECC, December 2000).