



CERTIFICATION PROPOSAL

WASTEWATER COLLECTION AND TREATMENT SYSTEM IMPROVEMENTS IN NUEVA CIUDAD GUERRERO, TAMAULIPAS

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EXECUTIVE SUMMARY

WASTEWATER COLLECTION AND TREATMENT SYSTEM IMPROVEMENTS IN NUEVA CIUDAD GUERRERO, TAMAULIPAS

Project:	The proposed project consists of the expansion and rehabilitation of the wastewater collection and treatment system in Nueva Ciudad Guerrero, Tamaulipas (the “Project”). The main components of the Project include the rehabilitation of the existing wastewater collection system; expansion of the wastewater system to currently unserved areas, including the installation of residential connections and the decommissioning of existing on-site wastewater disposal systems; the construction of a gravity sewer main and a wastewater treatment plant (WWTP) with a capacity of 12 liters per second (lps) or 0.27 million gallons per day (mgd); and the closure of the existing treatment system.
Project Objective:	The purpose of the project is to reduce the human health risks associated with waterborne diseases and the potential for surface and groundwater contamination related to exposure to untreated wastewater by providing first-time access and connecting households in unserved areas to the wastewater system, eliminating untreated or inadequately treated wastewater discharges, and improving the quality of the effluent discharged to receiving water bodies.
Expected Project Outcomes:	<p>The Project is expected to generate environmental and human health benefits related to the following outcomes:</p> <ul style="list-style-type: none">• Provide first-time access to wastewater collection for 244 existing homes in currently unserved areas, including the installation of residential connections;¹• Prevent the risk of groundwater contamination by decommissioning 244 on-site wastewater disposal systems;• Improve wastewater collection services for 1,047 existing homes;• Provide access to wastewater treatment services for 100% of the community or 1,291 homes;²• Provide capacity to treat 12 lps (0.27 mgd) of wastewater, including a methane capture and conversion system; and

¹ A residential connection is the yard-line extending from the sewer collection infrastructure to the home.

² Source: Number of water connections reported by the local water utility, COMAPA.

- Eliminate approximately 11 lps (0.25 mgd) of untreated or inadequately treated wastewater discharges.

Population to Benefit: 5,209 residents of Nueva Ciudad Guerrero, Tamaulipas.³

Project Sponsor: The local water utility, *Comisión Municipal de Agua Potable y Alcantarillado de Nueva Ciudad Guerrero (COMAPA)*.

Estimated Construction Cost: US\$4,332,000.

NADB Grant: US\$2,056,000 grant from the Border Environment Infrastructure Fund (BEIF) funded by contributions from the U.S. Environmental Protection Agency (EPA).

Uses and Sources of Funds:
(US\$)

Uses	Amount	%
Construction*	\$ 4,332,000	100.00
TOTAL	\$ 4,332,000	100.00
Sources	Amount	%
Mexican federal funds	\$ 1,138,000	26.27
Mexican state and local funds	1,138,000	26.27
NADB-BEIF (EPA grant)	2,056,000	47.46
TOTAL	\$ 4,332,000	100.00

* Estimated Project costs include a 16% value-added tax (VAT), plus supervision, and contingencies.

Project Status:

Key milestones	Status
Environmental clearance – U.S.	Completed
Environmental clearance – Mexico	Completed
Final design	Completed
Procurement	Anticipated in 2 nd quarter of 2020
Construction period	Estimated period of 36 months
Wastewater discharge permit	Pending – prior to operation

³ Source: Mexican national population council, *Consejo Nacional de Población (CONAPO)*, Projections for Nueva Ciudad Guerrero.

CERTIFICATION PROPOSAL

WASTEWATER COLLECTION AND TREATMENT SYSTEM IMPROVEMENTS IN NUEVA CIUDAD GUERRERO, TAMAULIPAS

1. PROJECT OBJECTIVE AND EXPECTED OUTCOMES

The proposed project consists of the expansion and rehabilitation of the wastewater collection and treatment system in Nueva Ciudad Guerrero, Tamaulipas (the “Project”). The purpose of the Project is to reduce the human health risks associated with waterborne diseases and the potential for surface and groundwater contamination related to exposure to untreated wastewater by providing first-time access to wastewater collection and treatment services for 244 existing homes in currently unserved areas and improving those services for the 1,047 homes already connected to the wastewater collection system. Additionally, the new infrastructure will provide capacity to treat 12 liters per second (lps) or 0.27 million gallons a day (mgd) of wastewater and will improve the quality of the effluent discharged to receiving water bodies.

2. ELIGIBILITY

2.1. Project Type and Description

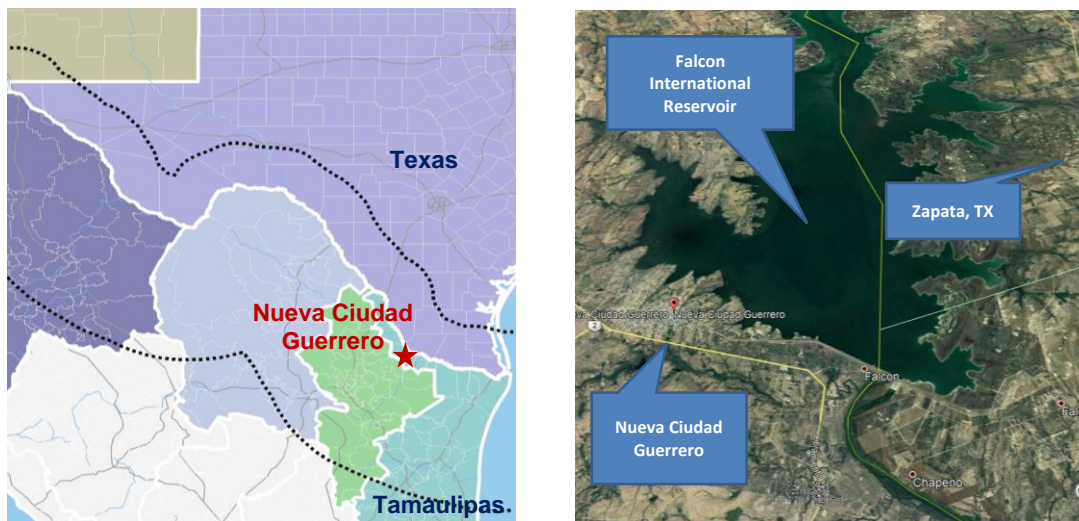
The Project falls within the eligible category of wastewater collection and treatment.

2.2. Project Location

The Project is located in Nueva Ciudad Guerrero, the seat of the municipality of Guerrero, in the northwestern region of the state of Tamaulipas. The city is adjacent to the U.S.-Mexico border and Falcon International Reservoir. It is situated halfway between Nuevo Laredo (66 miles to the north) and Reynosa (67 miles to the southeast) on Federal Highway 2. It is approximately 24 miles south of the community of Zapata, Texas. Its geographical coordinates are: Latitude 26° 33' 58"N and longitude 99° 13' 38"W, at 358 ft above sea level.⁴ Figure 1 shows the approximate location of the Project.

⁴ Source: Updated Final Design for the Wastewater Collection and Treatment Project in Nueva Ciudad Guerrero, Tamps., January 2018.

Figure 1
PROJECT LOCATION MAP



2.3. Project Sponsor and Legal Authority

The public-sector project sponsor is the local utility, *Comisión de Agua Potable y Alcantarillado de Nueva Ciudad Guerrero* (COMAPA or the “Sponsor”). The legal authority of COMAPA was established by Decree No. 251 of the 58th Constitutional Legislature of the Free and Sovereign State of Tamaulipas, published on March 26, 2003, which provides for the establishment of a municipal public utility with legal authority and capital assets, for the purpose of providing water and wastewater services to the municipality of Guerrero, Tamaulipas.

3. CERTIFICATION CRITERIA

3.1. Technical Criteria

3.1.1. General Community Profile

The economy of the municipality of Guerrero is primarily based on agricultural and livestock activities. However, Nueva Ciudad Guerrero has experienced some economic development activities associated with tourism because of its proximity to the Falcon International Reservoir, which provides both commercial and recreational fishing activities. Due to its geographic location, the city also has a border crossing to the U.S., which is frequently used for cross-border trade activities.

According to data from the 2010 Population and Housing Census published by the Mexican National Institute of Statistics and Geography (INEGI), in 2010, Nueva Ciudad Guerrero had 4,312 residents. Based on population projections developed by the National Population Council

(CONAPO), in 2019, the population of the municipality was estimated at 5,209 residents.⁵ In 2015, 61.0% of residents in Nueva Ciudad Guerrero were living below the poverty level, compared to 38.9% of the state population.⁶

The following table summarizes the status of public services and infrastructure in Nueva Ciudad Guerrero.

Table 1
BASIC PUBLIC SERVICES AND INFRASTRUCTURE IN NUEVA CIUDAD GUERRERO

Water	
Coverage:	98%
Water supply source:	Rio Grande
Number of hookups:	1,291
Wastewater Collection	
Coverage:	79%
Number of residential connections:	1,047
Wastewater Treatment	
Coverage:*	0% (once the Project is operational, coverage will be 100% of the wastewater collected).
Treatment facilities:**	None

* Wastewater treatment coverage equals the percentage of discharges collected through the centralized collection system and treated by a wastewater treatment facility.

** The city does not currently have a functioning wastewater treatment system. Untreated wastewater is discharged to the Arroyo El Coronel.

Local Water and Wastewater Systems

COMAPA provides drinking water service to approximately 98% of the homes in Nueva Ciudad Guerrero, through 1,291 residential connections. The drinking water system provides adequate disinfection and the distributed water meets the quality requirements established in Official Mexican Standard NOM-127-SSA-1994.

Wastewater collection services are currently only available to about 79% of households in Nueva Ciudad Guerrero. However, a good part of the existing sewer system has exceeded its useful life and is showing signs of deterioration throughout its entire length, resulting in leaks and overflows from various manholes that eventually flow into the Rio Grande.

Moreover, the wastewater treatment system in Nueva Ciudad Guerrero, which consists of an Imhoff Tank built in the 1970's, does not currently provide any treatment and operates simply as

⁵ Source: Updated Final Design for the Wastewater Collection and Treatment Project in Nueva Ciudad Guerrero, Tamps., January 2018.

⁶ Source: National Council for Evaluation of Social Development Policy [*Consejo Nacional de Evaluación de la Política de Desarrollo Social*, CONEVAL], https://www.coneval.org.mx/coordinacion/entidades/Tamaulipas/Paginas/pobreza_municipal2015.aspx.

a passageway for wastewater discharges.⁷ The city currently generates approximately 11 lps (0.25 mgd) of wastewater, which are discharged to open-air drains that flow into the Arroyo El Coronel, a tributary of the Rio Grande, thus impacting the quality of the river water and posing a risk for groundwater contamination. In fact, monitoring of the Rio Grande has shown that the segment of river adjacent to the community is currently impaired for bacteria and has a water quality concern for ammonia, pollutants that are most likely related to raw wastewater discharges to the river.

Because of these conditions, coupled with the risk to residents of direct contact with raw sewage resulting from sewer system failures, the Project was selected to receive grant funding from the Project Development Assistance Program (PDAP) and Border Environmental Infrastructure Fund (BEIF), which are both funded by the U.S. Environmental Protection Agency (EPA) and managed by NADB.

The proposed Project will extend wastewater collection and treatment services to unserved areas of the city and includes the construction of a sewer main to convey the wastewater to the proposed treatment facility. The new wastewater treatment plant will be built on property located in the southwest area of the city and will produce effluent consistent with the requirements of Official Mexican Standard NOM-001-SEMARNAT-1996, which will prevent contamination of the Rio Grande. As part of the Project, COMAPA began implementing improvements to the wastewater collection system in 2016 and has already installed 4,872 feet of sewer main using 12-inch polyvinyl chloride (PVC) pipe.

3.1.2. Project Scope

The Project consists of improvements to the wastewater collection and treatment infrastructure in Nueva Ciudad Guerrero and will result in 100% wastewater treatment coverage for the Project area. The Project includes the following components:

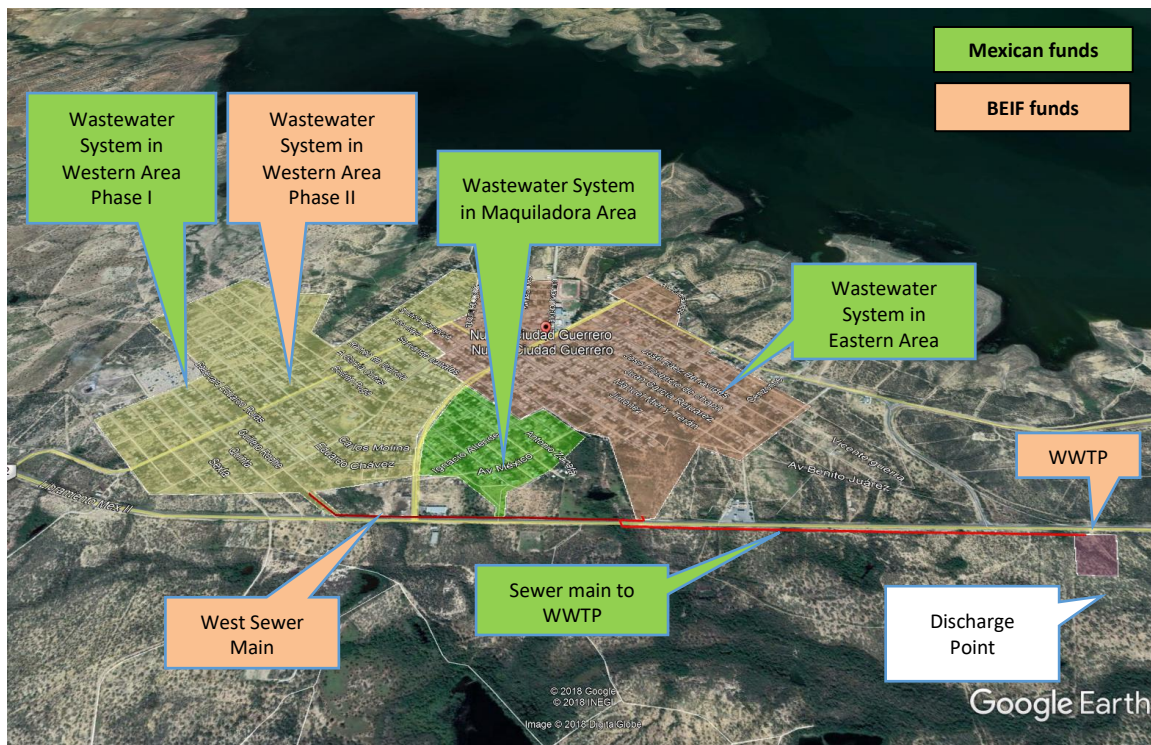
- Wastewater collection lines in the western area of the city. Installation of approximately 43,865 ft of 8-inch PVC pipe and 1,640 ft of 12-inch PVC pipe, 158 manholes and 95 new residential connections, including the decommissioning of existing on-site wastewater disposal systems.
- Wastewater collection lines in the “maquiladora” area of the city. Installation of approximately 7,592 ft of 8-inch PVC pipe and 1,050 ft of 12-inch PVC pipe, 25 manholes and 18 new residential connections, including the decommissioning of existing on-site wastewater disposal systems.
- Wastewater collection lines in the eastern area of the city. Installation of approximately 59,055 ft of 8-inch PVC pipe and 4,101 ft of 12-inch PVC pipe, 205 manholes and 131 new residential connections, including the decommissioning of existing on-site wastewater disposal systems.

⁷ An Imhoff tank is a chamber suitable for processing sewage. It may be used for the clarification of sewage by simple settling and sedimentation, along with anaerobic digestion of the extracted sludge.

- Gravity sewer main to the wastewater treatment plant, consisting of 4,872 ft of 12" PVC pipe.⁸
- Wastewater Treatment Plant (WWTP). Construction of a lagoon system with two anaerobic ponds, two facultative ponds and two maturation ponds that will have the capacity to treat 12 lps (0.27 mgd). The facility will include a system to capture methane emissions and convey them to a burner for conversion to carbon dioxide.

Figure 2 shows the Project components.

Figure 2
WASTEWATER COLLECTION AND TREATMENT PROJECT IN NUEVA CIUDAD GUERRERO



WWTP = Wastewater Treatment Plant

The Project Sponsor proposes using BEIF funds to complete the construction of the WWTP, the west sewer main, wastewater collection lines in the western area (Phase II) and approximately 244 residential connections in the Project area, including the decommissioning of existing septic tanks.

The final design for the construction of the WWTP has been completed. The plant will consist of the following components:

- A grit removal and screening pretreatment system;

⁸ This component was completed using Mexican funds.

- Two 75 ft x 49 ft x 15 ft anaerobic lagoons, lined and covered with high density polyethylene (HDPE) geomembranes, with the cover serving to contain methane emissions, which will be conveyed to a burner for conversion to carbon dioxide;
- Two 475 ft x 118 ft x 7 ft facultative ponds, lined with an HDPE geomembrane;
- Two 475 ft x 75 ft x 5 ft maturation ponds, lined with an HDPE geomembrane; and
- An outfall to Arroyo El Coronel.

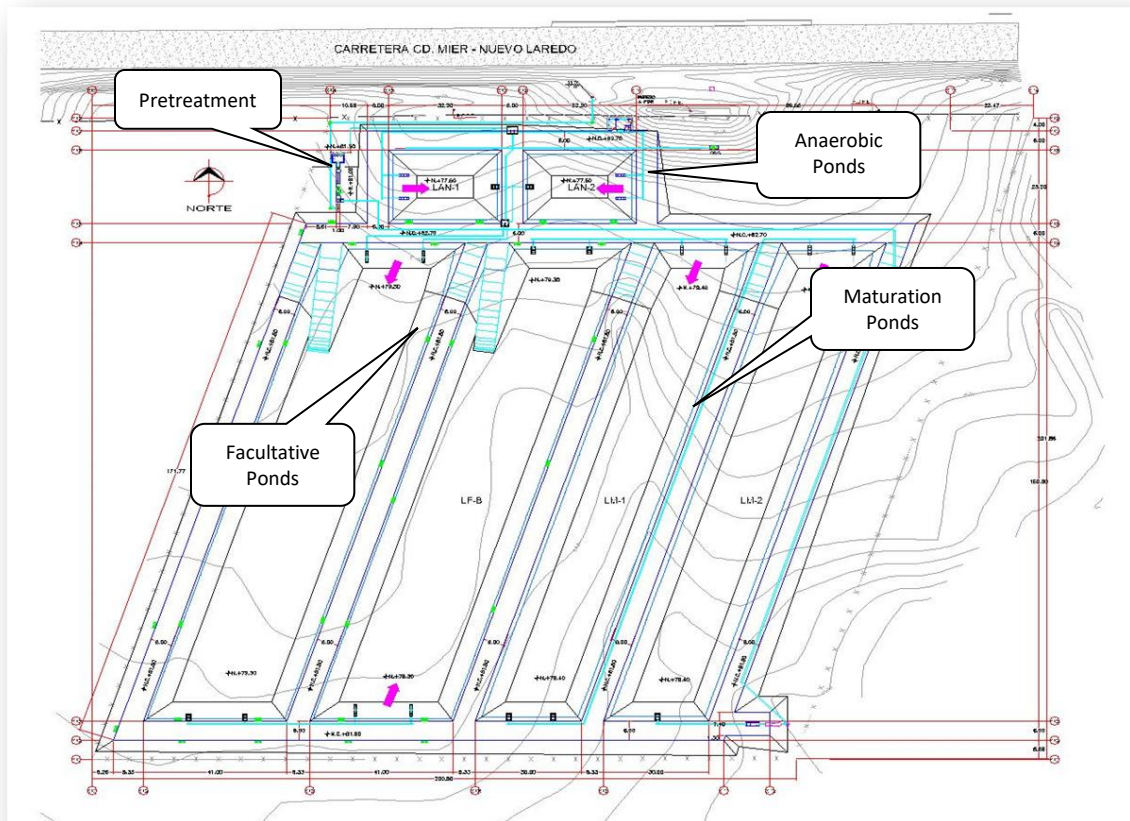
The bottom of the treatment units will be lined with a high-density polyethylene membrane to prevent seepage to the groundwater. In addition, a methane conversion system has been included in the Project because carbon dioxide is 21 times less polluting than methane with respect to its impact as a greenhouse gas. Once the WWTP is fully operational, Nueva Ciudad Guerrero will have 12 lps (0.27 mgd) of treatment capacity, sufficient to treat 100% of the wastewater flows collected by the sewer system, which are estimated to be 11 lps (0.25 mgd).⁹ CONAPO projects only minimal growth for Nueva Ciudad Guerrero over the next 20 years, so the capacity of the WWTP will be adequate to handle future flows.

The treated effluent of the WWTP will be discharged to the Arroyo El Coronel, which empties into the Rio Grande in front of the Falcon Dam gates. In November 2019, COMAPA submitted a formal request to the Mexican National Water Commission (CONAGUA) to establish the WWTP discharge parameters for biochemical oxygen demand (BOD₅) at 75 milligrams per liter (mg/l) and for total suspended solids (TSS) at 75 mg/l, which was determined, through a model process, to be sufficient to maintain the desired quality of the water in the Rio Grande at the section where the discharge occurs. CONAGUA is expected to issue a resolution before the startup of WWTP operations.

The sludge generated by the WWTP will be stored and stabilized within the ponds. Under normal circumstances, the lagoon system is designed to manage sludge storage for the life of the facility or approximately 20 years. The sludge typically remains at the bottom of the ponds, where it will break down over time and eventually mineralize. Additionally, the silt removal and pretreatment system is expected to prevent silt and other non-decomposable elements from affecting the lagoons. If the removal of sludge or other materials becomes necessary, final disposal would be at the municipal landfill. However, if the applicable analyses are favorable, the sludge could be used as an agricultural soil enhancer. Figure 3 shows the general layout of the WWTP.

⁹ Source: Updated Final Design of the Wastewater Collection and Treatment Project for Nueva Ciudad Guerrero, Tamaulipas, January 2018.

Figure 3
GENERAL LAYOUT OF THE WWTP



3.1.3. Technical Feasibility

As part of the development of the Project, facility plans were completed during the planning phase, which included an analysis of alternatives in order to select the appropriate technology, process and materials for the Project components. The analysis considered the no-action alternative, two wastewater treatment alternatives and two alternatives related to the selection of materials for the wastewater collection system and the construction of a pump station.

The no-action alternative was rejected, because without improvements to the wastewater collection and treatment system, COMAPA would continue to operate in violation of existing regulations regarding wastewater discharges into receiving water bodies and the discharge of untreated or inadequately treated wastewater would continue to have a negative effect on water quality and public health.

Once the no-action alternative was eliminated, wastewater treatment and collection system alternatives were evaluated taking into consideration the following factors:

- Constructability;
- Capital cost;

- Operation and maintenance (O&M) cost;
- Material and equipment reliability;
- Environmental impact;
- Social/community acceptance;
- Topography;
- System reliability;
- Right-of-way and easement requirements;
- Pavement removal and replacement; and
- Technology and sustainable practices.

To reduce costs and energy consumption, the shortest possible routes were reviewed for installing the sewer main to the WWTP, and the possible elimination of a pump station in the western area of the system was also analyzed. Sewer pipe diameters were calculated using slopes and velocities aimed at preventing silting, septic conditions and over-excavation, as well as to minimize the use of lift stations that might increase Project costs. The maximum flow rate, full build-out in the Project Area and treatment capacity were also taken into consideration to determine pipe diameter requirements. The pipe material options reviewed included HDPE, PVC and reinforced concrete. PVC was selected as the most suitable material for the wastewater collection lines.

With respect to the WWTP, based on the expected effluent quality requirements for the receiving river segment, land availability, capital costs, and operation and maintenance needs, the alternative of using a mechanical system was eliminated. The alternatives using lagoon-based natural systems were reviewed in more detail:

- Alternative 1 – Anaerobic lagoons followed by two facultative ponds and finally two maturation ponds in the eastern part of the city; and
- Alternative 2 – Anaerobic lagoons followed by a wetland in the southern part of the city.

Alternative 1 was selected as the preferred option due to the reliability of its operation, ease of maintenance and lower operating cost compared to Alternative 2. Moreover, COMAPA has suitable land available for this type of facility in the eastern part of the city. Its effluent quality and flows were evaluated in a discharge model for the Rio Grande. The results corroborated that the effluent will not have a significant impact on the water quality of this shared water body.

Final designs for the wastewater collection system and the WWTP were completed in accordance with the technical specifications established in the Water and Wastewater Manuals developed by CONAGUA and include green building practices as part of the construction specifications, described below in the Project Impacts section. Significant efforts were made to achieve optimal energy efficiency and operational performance.

The final designs were reviewed by CONAGUA, NADB and Tamaulipas State Water Commission (CEAT). CONAGUA issued the following technical validation memoranda for the various Project components:

- Validation of the design criteria for the Nueva Ciudad Guerrero wastewater collection and treatment infrastructure through Memorandum BOO.7.04-188, dated October 29, 2015;
- Validation of the technical report for the rehabilitation of the sewer system in the eastern area of Nueva Ciudad Guerrero through Memorandum BOO.811.06.02-0551 (17), dated October 6, 2017;
- Validation of the technical report for the rehabilitation of the sewer system in the western area of Nueva Ciudad Guerrero through Memorandum BOO.811.06.02-0552 (17), dated October 6, 2017; and
- Validation of the technical report for the rehabilitation of the sewer system in the *maquiladora* area of Nueva Ciudad Guerrero through Memorandum BOO.811.06.02-0553 (17), dated October 6, 2017.

3.1.4. Land Acquisition and Right-of-Way Requirements

COMAPA acquired the proposed site for the WWTP by purchasing it from a private landowner. The corresponding property titles have been duly authenticated, and all properties have been legally recorded in the Public Registry of Property.

All sewer mains and conveyance systems included in the Project will be installed within existing municipal easements and rights of way. The sewer main to the WWTP will be located in the right of way of the Mexico II Beltway, from Mier to Nuevo Laredo.

No additional land or rights of way need to be acquired for the Project.

3.1.5. Project Milestones

The development of the Project took just over five years. This extended period was influenced by several factors, including the need to formalize ownership of the proposed site for construction of the WWTP. Since the property was purchased by the Municipality and subsequently donated to COMAPA, the action required the approval of the State Congress. Another process that took more time than expected was the approval of the Environmental Impact and Technical Support Study by the Mexican Ministry of Environment and Natural Resources (SEMARNAT). Other factors included issues with security for field activities, such as water sampling and surveying; the need to register acquired land titles properly; and the payment of debts by COMAPA to CONAGUA to make the utility eligible to receive federal funding for this Project.

Finally, negotiation of the discharge permit requirements was carried out over the past year with the expectation that the permit will be received in time to initiate operations once the construction of the WWTP has been completed.

Bidding for construction of the collection system is expected to begin in the second quarter of 2020. Construction of the wastewater treatment plant, expansion and rehabilitation of the wastewater collection system and installation of residential connections will take approximately 36 months to complete. Potential factors affecting the Project completion timeline, such as issues with the weather or the delivery of the materials, as well as the availability of Mexican funding, were considered in estimating construction duration. Table 2 provides a summary of the Project milestones and their respective status.

Table 2
PROJECT MILESTONES

Key Milestones	Status
Environmental clearance – U.S.	Completed
Environmental clearance – Mexico	Completed
Final design	Completed
Procurement	Anticipated in 2nd quarter of 2020
Construction period	Estimated period of 36 months.
Wastewater discharge permit	Pending update – prior to operation

3.1.6. Management and Operation

The management and operation of the proposed Project will be the responsibility of COMAPA, which currently serves a total of 1,291 water hookups and 1,047 wastewater connections within the city. Utility staff have worked through the transition of the last two administrations, and the current general manager was promoted from within the utility.

COMAPA has an Operation and Maintenance (O&M) Manual that includes routine tasks, as well as procedures to address unexpected conditions and ensure the proper operation of the system. The manual will be updated to include new system components and delivered to the utility upon completion of the Project. COMAPA staff have sufficient experience and will also receive training related to the processes of the new WWTP to ensure its correct operation and maintenance.

Additionally, COMAPA will ensure that wastewater discharges to the collection system comply with Official Mexican Standard NOM-002-SEMARNAT-1996, which regulates the quality of the wastewater that enters the collection system and is conveyed to the WWTP.

The impact of the proposed Project on the O&M budget and procedures was reviewed and, based on the results of the review, the budget appears to be financially viable. O&M and equipment repair/replacement reserves will also be established for the infrastructure that will be built as part of the Project.

3.2. Environmental Criteria

3.2.1. Environmental and Health Effects/Impacts

A. Existing Conditions

Wastewater collection coverage in the municipality of Nueva Ciudad Guerrero is approximately 79%. However, a good part of the wastewater collection system has exceeded its useful life and is showing signs of deterioration throughout its entire length, resulting in leaks and overflows at several manholes. Residents without service dispose of their wastewater in substandard septic tanks, latrines and cesspools.

At present, Nueva Ciudad Guerrero does not have adequate infrastructure to collect and treat the wastewater flows generated by its residents. Wastewater flows collected from areas currently connected to the sewage system are discharged without treatment to the Arroyo El Coronel, which eventually discharges into the Rio Grande. As a result, Nueva Ciudad Guerrero does not comply with Official Mexican Standard NOM-001-SEMARNAT-1996, which establishes the maximum permissible levels of contaminants for wastewater discharges into national waters and territories.

The poor condition of the existing wastewater collection infrastructure and the lack of wastewater treatment could result in significant health and safety hazards for the public. Waterborne diseases are caused by pathogenic microorganisms that are transmitted because of inadequate wastewater disposal practices and unsafe water supplies. An individual may become ill after drinking water that has been contaminated with these organisms; eating uncooked foods that have been in contact with contaminated water; or through poor hygiene habits that contribute to the dissemination of diseases by direct or indirect human contact. Table 3 shows waterborne disease statistics for Nueva Ciudad Guerrero, Tamaulipas.

Table 3
WATERBORNE DISEASE STATISTICS FOR NUEVA CIUDAD GUERRERO, TAMAULIPAS

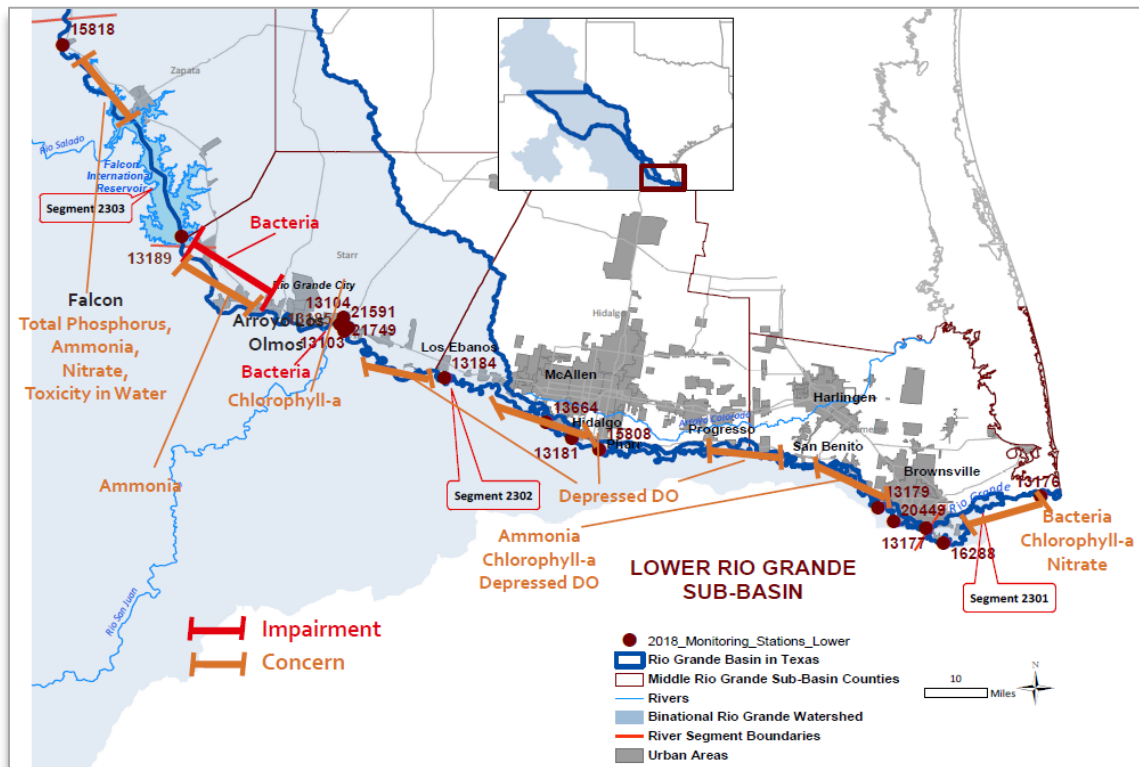
Disease	Number of cases/years			
	2014	2015	2016	2017
Intestinal infections by other organisms	352	207	128	119
Other helminthiasis	1	0	0	0
Intestinal amoebiasis	10	6	0	5
Other salmonellosis	9	13	1	1
Typhoid fever	22	39	66	27

Source: Mexican Automated Epidemiological Monitoring System, 2018.

According to Texas Surface Water Quality Standards for the Rio Grande Basin, Segment 2302 RG Below Falcon Reservoir is classified as use for primary contact recreation, high aquatic life and sole source surface drinking water supply. As reported in the 2018 Rio Grande Basin Summary Report in Texas, Assessment Unit (AU) 2302_07, the segment from the Arroyo Los Olmos confluence upstream to Falcon Dam is currently impaired for bacteria, and there is also a water

quality concern for ammonia. The AU 2302_07 is monitored by Stations 13185, 13186, and 13188, as shown in the Figure 4.

Figure 4
WATER QUALITY IMPAIRMENTS AND CONCERNS IN THE LOWER RIO GRANDE SUB-BASIN



The effects of the quality parameters mentioned above on a water body are the following.

- Fecal bacteria, such as *Escherichia coli*, are used as an indicator of possible sewage contamination because they are commonly found in human and animal feces. Although they are not generally harmful themselves, they indicate the possible presence of pathogenic bacteria, viruses and protozoans that also live in human and animal digestive systems. Therefore, their presence in streams suggests that pathogenic microorganisms might also be present and that swimming and eating shellfish might be a health risk. Sources of fecal contamination in surface water include substandard wastewater treatment plants and on-site septic systems, domestic and wild animal manure and storm runoff.
- Nutrients include nitrogen compounds, ammonia and phosphorus. High levels of nutrients can cause excessive plant growth, which can lead to reduced dissolved oxygen killing fish, reduced stream flow and reduced navigability of the waters. Elevated ammonia can also be toxic to aquatic life.

B. Project Impacts

The Project will prevent environmental deterioration by providing wastewater collection and treatment services in compliance with current regulations regarding discharges to receiving water bodies. Wastewater will be collected and conveyed to the WWTP, where its quality will be improved to reduce the risk of groundwater contamination and the health hazards resulting from the discharge of raw wastewater into local bodies of water. Using a high-density polyethylene membrane to line the lagoons will prevent seepage into the ground and aquifer.

The Project is expected to generate environmental and human health benefits related to the following outcomes:

- Provide first-time access to wastewater collection for 244 existing homes in currently unserved areas, including the installation of residential connections;
- Prevent the risk of groundwater contamination by decommissioning 244 on-site wastewater disposal systems;
- Improve wastewater collection services for 1,047 existing homes;
- Provide access to wastewater treatment services for 100% of the community or 1,291 homes;
- Provide capacity to treat 12 lps (0.27 mgd) of wastewater, including a system for methane capture and conversion; and
- Eliminate approximately 11 lps (0.25 mgd) of untreated or inadequately treated wastewater discharges.

To enhance the benefits of the Project, the final designs include the implementation of green building practices as part of the construction specifications. For example, sewer pipe diameters were calculated using slopes and velocities aimed at preventing silting, septic conditions and over-excavation, ensuring that the wastewater collection system in the Project area remains a gravity-based system and avoids increased energy requirements. The need to construct a new pump station was also eliminated by changing the alignment of the west sewer main, taking advantage of the local topography to meet adequate slope requirements. Additionally, to reduce harmful emissions from the operation of the WWTP, methane gas generated by the anaerobic process will be captured and burned, converting it to carbon dioxide, which has a less potent greenhouse effect.

C. Transboundary Impacts

As reported in Section 3.2.1. A above, the segment of the Rio Grande adjacent to Nueva Ciudad Guerrero is currently impaired for bacteria, and there is also a water quality concern for ammonia, which is most likely a result of raw wastewater discharges to the river. The implementation of the Project will help improve the water quality of this segment of the Rio Grande, which is a shared water body that serves as a source of drinking water for communities on both sides of the U.S.-Mexico border.

3.2.2. Compliance with Applicable Environmental Laws and Regulations

The Project will comply with the following official Mexican standards and regulations:

- Official Mexican Standard NOM-002-SEMARNAT-1996, which establishes the maximum permissible levels of contaminants for wastewater discharges into urban or municipal wastewater collection systems;
- Official Mexican Standard NOM-001-CNA-1995, which establishes specifications for hermeticity in wastewater collection systems;
- Official Mexican Standard NOM-001-SEMARNAT-1996, which establishes the maximum permissible levels of contaminants for wastewater discharges into national waters and territories; and
- Official Mexican Standard NOM-004-SEMARNAT-2002, which establishes the maximum permissible levels of contaminants for the reuse and final disposal of biosolids.

To be eligible for funding from the U.S.-Mexico Border Water Infrastructure Program, all projects must complete a federal environmental clearance process pursuant to the U.S. National Environmental Policy Act (NEPA), which includes compliance with the regulations of the NEPA Council on Environmental Quality (Title 40 CFR §§1500.1-1508.28) and with EPA NEPA regulations (40 C.F.R. Part 6).

A. Environmental Clearance

Pursuant to the provisions of Mexican General Law of Ecological Balance and Environmental Protection, SEMARNAT issued Official Letter No. SGPA/DGIRA/DG/00725 on January 30, 2018, stating that the Project required an Environmental Impact Statement and a Technical Support Study for the land use change. The corresponding environmental impact documents were submitted to SEMARNAT on April 11, 2019, and the Project was authorized by SEMARNAT through Official Letter No. SGPA/DGIRA/DG/08496 issued October 28, 2019. Additionally, the Federal Delegation of the National Institute of Anthropology and History (INAH) in Tamaulipas issued Official Letter No. 291/2016 on April 29, 2016, stating that the Project can begin construction.

Due to potential grant funding from the NADB Border Environment Infrastructure Fund (BEIF), which is funded by EPA, the transboundary impact of the Project must be assessed pursuant to NEPA. To satisfy this requirement, a Transboundary Environmental Information Document (EID) was developed and submitted to EPA for its review and ruling. The EID addresses potential environment impacts resulting from the implementation of the Project, including:

- Air quality, odors and greenhouse gas emissions;
- Noise impacts;
- Water quality, hydrology and floodplain impacts;
- Impacts to biological resources and wetlands;
- Impacts to cultural and historical resources;
- Impacts to the geology and soils;
- Impacts to municipal and public services;

- Public health, hazards and waste management;
- Socioeconomic conditions;
- Land use and planning;
- Transportation and circulation;
- Utilities and service systems; and
- Environmental justice.

The document also included a wastewater discharge model to determine the impact of the effluent of Nueva Ciudad Guerrero on the water quality of the Rio Grande. Based on the findings and conclusions of the EID, EPA Region 6 prepared an Environmental Assessment and a Finding of No Significant Impact (FONSI). On July 29, 2016, EPA issued a FONSI resolution, which indicates that no significant adverse environmental impacts are anticipated from the proposed Project that may negatively affect the U.S.-Mexico border area.

B. Mitigation Measures

Although Project implementation is not expected to have any significant negative impacts on the environment, mitigation measures have been established to address temporary and minor adverse impacts during Project construction and operation. As described in the Environmental Assessment, potential impacts include:

- The local air basin may be temporarily impacted by carbon monoxide, nitrogen oxide and sulfur dioxide emissions released by vehicles and equipment used during construction.
- Noise levels may be elevated during construction activities; however, this impact is short term and will be concentrated in the work area. Potential impacts also include temporary roadway blockages, as well as the presence of workers in the area.
- A temporary increase in soil erosion and dust emissions may be experienced due to construction.
- Surface water resources could be temporarily impacted by storm water runoff during the construction phase.
- Hazardous waste—such as used oil—may be generated during the construction and operation phases.
- Potential loss of vegetation, which may be habitats for birds during migration or nesting seasons.

Typical mitigation measures to be implemented include:

- Application of water to reduce the emission of dust particles and soil erosion;
- Construction to be scheduled between 8 a.m. and 5 p.m. to prevent extended disturbances from noise;
- Vehicle tune-ups to reduce emissions and noise;
- Placement of warning signs to prevent potentially hazardous situations;

- Installation of hay bales or silt fences along rights of way to prevent erosion and contamination of surface water resources;
- Construction that disturbs vegetation will be avoided during the general nesting period from March through August. A qualified biologist will conduct a preconstruction survey within the Project area to identify any sensitive species in the area; and
- All construction personnel will attend a briefing to familiarize workers with potential construction impacts and mitigation measures.

By following best management practices, temporary impacts due to construction will be minimized. Moreover, the long-term results from the implementation of the proposed Project will be positive overall. In addition, COMAPA will be responsible for maintaining continuous coordination with SEMARNAT and must comply with any water quality requirements, authorization procedures or recommendations that the Ministry may issue throughout the life of the Project.

C. Pending Environmental Tasks and Authorizations

There are no environmental authorizations pending.

3.3 Financial Criteria

The total estimated cost of the Project is US\$4,332,000, which includes construction, supervision, value-added tax and contingencies. The Sponsor requested a BEIF grant to support the implementation of the Project. Based on a thorough analysis of both the Project and the Sponsor, NADB has determined that the Project meets all BEIF program criteria and is recommending that the EPA approve a BEIF grant for up to US\$2,056,000 for its construction. Table 4 shows a breakdown of total Project costs, as well as the sources of funding.

Table 4
USES AND SOURCES OF FUNDS
 (US\$)

Uses	Amount	%
Construction*	\$ 4,332,000	100.00
TOTAL	\$ 4,332,000	100.00
Sources	Amount	%
Mexican federal funds	\$ 1,138,000	26.27
Mexican state and local funds	1,138,000	26.27
NADB-BEIF (EPA grant)	2,056,000	47.46
TOTAL	\$ 4,332,000	100.00

* Estimated Project costs include a 16% value-added tax (VAT), plus supervision and contingencies.

EPA requires that every BEIF grant dollar awarded to projects in Mexico be matched with funding from Mexican sources. As indicated in the above table, total funding from Mexican sources for

this Project is estimated at US\$2,276,000 or 52.5% of the Project cost. Investments in water infrastructure made by the State of Tamaulipas in partnership with the BEIF program, represent an overall match slightly greater than 1:1.

4. PUBLIC ACCESS TO INFORMATION

4.1 Public Consultation

NADB published the draft certification proposal for a 30-day public comment period beginning December 19, 2019. The following Project documentation is available upon request:

- Updated Final Design for the Wastewater Collection and Treatment Project in Nueva Ciudad Guerrero, Tamaulipas, April 2018;
- Transboundary Environmental Impact Statement for the Wastewater Collection and Treatment Project in Nueva Ciudad Guerrero, September 2015;
- Environmental Assessment and FONSI for the Wastewater Collection and Treatment Project in Nueva Ciudad Guerrero, Tamaulipas, Mexico, issued on July 29, 2016;
- Wastewater Discharge Model for Nueva Ciudad Guerrero and Gustavo Diaz Ordaz, Tamaulipas, Mexico, in the upper part of segment 2302 of the Rio Grande, January 2015;
- Official Letter No. SGPA/DGIRA/DG/00725 issued by SEMARNAT on January 30, 2018;
- Official Letter No. SGPA/DGIRA/DG/08496 issued by SEMARNAT on October 28, 2019.

The public comment period ended on January 18, 2020, with no comments received.

4.2 Outreach Activities

COMAPA conducted extensive outreach efforts to publicize the characteristics of the Project, including cost and fees, and to obtain the support of residents in the project area. In accordance with the requirements of the BEIF program, outreach activities included the establishment of a local steering committee, public meetings and access to relevant project information, as described in the Public Participation Plan.

The Local Steering Committee was formally established on April 20, 2015, and includes members of the community, civic organizations and COMAPA staff. The steering committee developed the Public Participation Plan and periodically met with the Project team to help the Sponsor disseminate information regarding the Project. The technical and financial information about the Project was made available to the public for review. The Local Steering Committee, with assistance of COMAPA staff, prepared a Project fact sheet and presentation.

The notice for the first public meeting was published on July 1, 2015, in the local newspaper, *Primera Hora de Nuevo Laredo*. The meeting was held on July 30, 2015, in the Los Presidentes

conference room in the Nueva Ciudad Guerrero City Hall. Based on the sign-in sheet, 19 people attended the meeting and showed interest in the implementation of the proposed Project. This meeting was used to inform local residents of the Project characteristics and potential funding sources. Support for the Project was documented through a survey conducted during the event, in which 100% of the attendees indicated they were in favor of the Project.

A second public meeting, held on December 10, 2019, was attended by 90 residents. During the meeting, the community was informed of the proposed funding structure and potential environmental impacts of the Project. The meeting served as a discussion forum for attendees, who showed their support of and interest in having the Project implemented. A survey conducted during the event indicated that 100% of the attendees understood the Project and were in favor of its implementation.

As part of the U.S. environmental clearance process, the Environmental Assessment and FONSI for the Project were published for a 30-day public comment period beginning October 13, 2017. No public comments were received regarding the proposed Project or its environmental impacts during this process. Additionally, an abstract of the Project was published in the “El Mañana” newspaper on April 17, 2019, to advise the community of the submittal of the MIA to SEMARNAT.

NADB conducted a media search to identify potential public opinion about the Project. References to the Project were found on the websites listed below:

- *despertar de Tamaulipas* (July 31, 2015), “*Reunión pública de la COCEF*” (BECC Public Meeting).” The article covers first public meeting for the Project and describes the its components, expected benefits and the public participation process.
<http://despertartetamaulipas.com/sitio/?q=node/12129>
- *NRG NOTICIAS RIO GRANDE* (July 30, 2015), “*Reunión pública COCEF*” (BECC Public Meeting). This article describes the proposed project, its objective and the process.
<http://www.noticiasriogrande.com/reynosa/89794>
- *BECC News* (July 31, 2015), “*La COCEF y el BDAN inician esfuerzos para avanzar la certificación de proyectos en Tamaulipas*” (BECC and NADB initiate efforts to advance the certification of projects in Tamaulipas). This article describes the wastewater problems in Nueva Ciudad Guerrero and the proposed project, as well as the BEIF and PDAP programs
<https://www.nadb.org/es/noticias/la-cocef-y-el-bdan-inician-esfuerzos-para-avanzar-la-certificacion-de-proyectos-en-tamaulipas>
- *Enlace Rio Grande Valley* (December 16, 2019) “*Productiva reunión pública para proyecto de alcantarillado y saneamiento en Guerrero*” (Productive public meeting for the wastewater collection and treatment project in Guerrero). This article reported on the second public meeting at which the outreach committee informed the public about the health and environment benefits of the project, along with its financial structure.
<http://periodicoenlacergv.com/productiva-reunion-publica-para-proyecto-de-alcantarillado-y-saneamiento-en-guerrero/>

- *El Chilito.com* (December 18, 2019) “*Impulsan en Guerrero proyecto de Saneamiento de 3.6 millones de dólares*” (US\$3.6 million wastewater project advanced in Guerrero). This article describes the content of the second public meeting for the proposed Project, its objective and the expected benefits.
<http://www.elchilito.com.mx/nota.pl?id=18578>

The articles found in the media search explained the need for wastewater collection and treatment services in the area. No negative comments were posted by readers. No opposition to the Project was identified in the media search.

The activities carried out by COMAPA and the articles identified above demonstrate that the public received periodic updates related to the Project, including its technical aspects, environmental effects, funding structure and financial impacts to residents. The Project Sponsor informed NADB that no comments expressing concern about the Project were received during the public outreach process.

5. RECOMMENDATION

Certification Criteria Compliance

The Project falls within the eligible sector of wastewater collection and treatment and is located in the border region, as required under NADB Charter. The 30-day public comment period ended on January 18, 2020, with no comments received. The project review performed by the NADB Chief Environmental Officer confirms that the Project complies with all the certification requirements, and there are no pending activities required for compliance.

Funding Criteria Compliance

The Project Sponsor applied for funding through the U.S.-Mexico Border Program FY11/12 prioritization process and was selected to receive technical assistance through the Project Development Assistance Program (PDAP) and construction assistance through the Border Environment Infrastructure Fund (BEIF). The project meets all BEIF program criteria and is expected to be approved by the U.S. Environmental Protection Agency (EPA) for a BEIF grant for up to US\$2,056,000.

Accordingly, based on the foregoing conclusions as supported and presented in detail in this certification proposal, NADB hereby recommends the certification of the Project.