



# **CERTIFICATION AND FINANCING PROPOSAL**

## **WASTEWATER COLLECTION SYSTEM EXPANSION IN CAMARGO, CHIHUAHUA**

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## EXECUTIVE SUMMARY

### WASTEWATER COLLECTION SYSTEM EXPANSION IN CAMARGO, CHIHUAHUA

- Project:** The proposed project consists of extending the wastewater collection system to provide first-time services to the Miguel Angel Niño subdivision in the city of Camargo, Chihuahua (the “Project”). The extension of the collection system includes the installation of approximately 2,900 meters (9,515 ft) of 20-centimeter (8-inch) diameter sewer lines and 131 residential connections, as well as the decommissioning of existing on-site systems.
- Objective:** The purpose of the Project is to reduce the human health risks associated with waterborne diseases caused by exposure to untreated wastewater and to eliminate potential groundwater contamination from on-site disposal systems, by providing first-time access to wastewater collection infrastructure in an unserved area.
- Expected Outcomes:** The Project is expected to generate environmental and human health benefits related to the following Project outcomes:
- Provide access to wastewater collection and treatment services for 131 homes by installing residential wastewater connections.
  - Prevent potential groundwater contamination and human health risks from untreated wastewater by decommissioning existing wastewater disposal systems.
  - Eliminate approximately 0.96 liters per second (lps) or 21,871 gallons per day (gpd) of untreated or inadequately treated wastewater.<sup>1</sup>
- Population Benefitted:** 414 residents of the city of Camargo, Chihuahua.<sup>2</sup>
- Sponsor:** The local water utility, *Junta Municipal de Agua y Saneamiento de Camargo* (JMAS).

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<sup>1</sup> Source: State water agency, JCAS, Final design of the wastewater collection system expansion project in Camargo, Chihuahua (2021). Estimate based on a population density of 3.16 persons per household, the generation of 200 liters (52.8 gallons) of wastewater per person per day and a total of 131 connections, resulting in 0.96 lps (21,871 gpd).

<sup>2</sup> Estimate based on 131 residential connections and an average of 3.16 people per household, as indicated in the Annual Report on the Status of Poverty and Unmet Social Needs prepared by the National Council for the Evaluation of Social Development Policy (CONEVAL)

([https://www.gob.mx/cms/uploads/attachment/file/610980/Informe\\_anual\\_2021\\_mun\\_08011.pdf](https://www.gob.mx/cms/uploads/attachment/file/610980/Informe_anual_2021_mun_08011.pdf)).

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**Project Cost:** US\$560,000.

**NADB Grant:** Up to US\$500,000 from the Community Assistance Program (CAP).

**Uses and Sources of Funds:**  
(US\$)

Uses	Amount	%
Construction*	\$ 500,000	89
Supervision	60,000	11
<b>TOTAL</b>	<b>\$ 560,000</b>	<b>100</b>

Sources	Amount	%
JMAS	\$ 60,000	11
NADB CAP grant	500,000	89
<b>TOTAL</b>	<b>\$ 560,000</b>	<b>100</b>

\* Includes construction, contingencies and 16% value-added tax (VAT).

**Project Status:**

Key Milestones	Status
Environmental clearance consultation/response - Mexico	Completed on February 19, 2020
Final design	Completed in February 2021
Procurement	To begin 3rd quarter of 2021
Construction period	Estimated 7 months

# CERTIFICATION AND FINANCING PROPOSAL

## WASTEWATER COLLECTION EXPANSION PROJECT CAMARGO, CHIHUAHUA

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### 1. PROJECT OBJECTIVE AND EXPECTED OUTCOMES

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The proposed project consists of extending the wastewater collection system to provide first-time services to the Miguel Angel Niño subdivision in the city of Camargo, Chihuahua (the “Project”). The purpose of the Project is to reduce the human health risks associated with waterborne diseases and the potential for groundwater contamination by providing first-time access to wastewater collection and treatment services for 131 homes and decommissioning their current on-site wastewater disposal systems, thereby eliminating approximately 0.96 liters per second (lps) or 21,871 gallons per day (gpd) of untreated or inadequately treated wastewater.

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### 2. ELIGIBILITY

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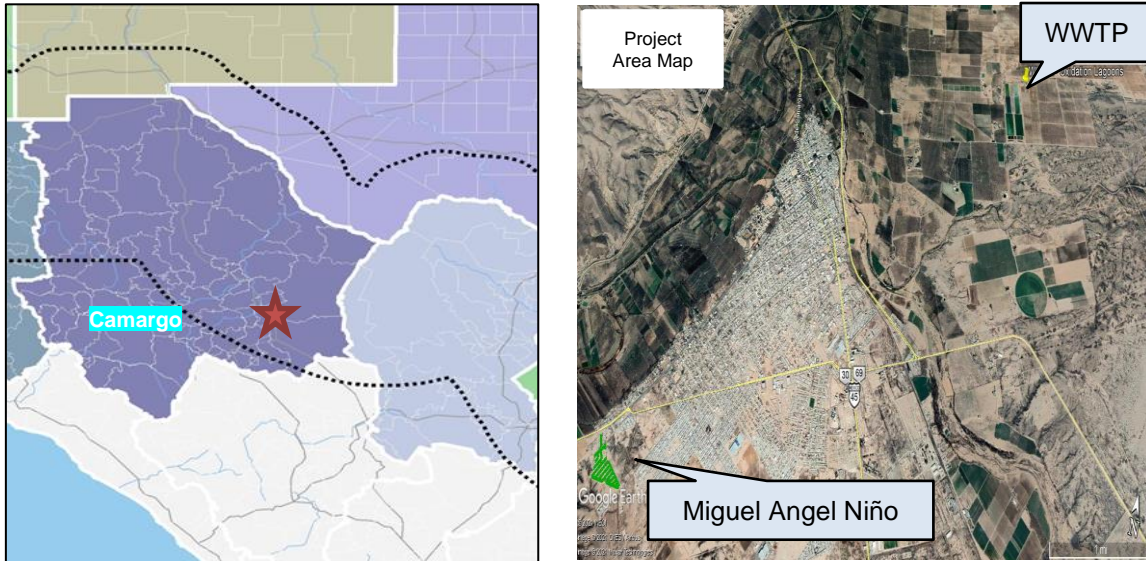
#### 2.1. Project Type

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

#### 2.2. Project Location

The Project will be built in the city of Camargo, which is located in the eastern part of the state of Chihuahua at the confluence of the Parral and Conchos Rivers in the Allende Valley. It is the seat of the municipality of Camargo and is approximately 214 km (133 miles) south of the U.S.-Mexico border. Its geographical coordinates are between 27°39'09.06"N and 105°11'36.55"W. Figure 1 shows the approximate location of the Project.

**Figure 1**  
**PROJECT LOCATION MAP**



WWTP = Wastewater treatment plant

### **2.3. Project Sponsor and Legal Authority**

The Project sponsor is the local water utility, Junta Municipal de Agua y Saneamiento de Camargo (JMAS or the “Sponsor”). JMAS was established on November 5, 1980 by a decree published in the official Mexican gazette, *Diario Oficial de la Federación*, and was ratified by the Government of the State of Chihuahua through an edict published in the official state gazette on August 11, 2018. In accordance with Article 64, section XLI, of the Political Constitution of the State of Chihuahua, JMAS is a decentralized entity of the state water agency, *Junta Central de Agua y Saneamiento* (JCAS), with legal personality and its own assets for providing water and wastewater services to the communities located within the municipality. Pursuant to the provisions of the Chihuahua State Water Law, the main objective of JMAS is to provide, conserve and manage water distribution, wastewater collection and wastewater treatment services, as well as promote the construction of related infrastructure.

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## **3. CERTIFICATION CRITERIA**

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### **3.1. Technical Criteria**

#### **3.1.1. General Community Profile**

The Project is expected to benefit the estimated 414 residents of the Miguel Angel Niño subdivision in the southeastern area of the city of Camargo. According to data in the Annual Report on the Status of Poverty and Unmet Social Needs issued by the National Council for the

Evaluation of Social Development Policy (CONEVAL), in 2021, the total population in the municipality of Camargo is 55,904.<sup>3</sup> According to CONEVAL, 38.2% of the residents in the municipality live below the poverty level, in comparison with 26.3% of the state population.<sup>4</sup> The Mexican Ministry of the Interior reported in 2015 that 56.6% of the population in Camargo was economically active.<sup>5</sup> The economy of Camargo is based primarily on agriculture and livestock.

The following table summarizes the status of basic public services and infrastructure in Camargo.

**Table 1**  
**CAMARGO BASIC PUBLIC SERVICES AND INFRASTRUCTURE**

Water System	
Coverage	100%
Water supply source	6 groundwater wells
Number of hookups	18,357
Wastewater Collection	
Coverage	96%
Number of connections	17,654
Wastewater Treatment	
Coverage	100%
Treatment facilities	Wastewater stabilization pond system with an installed capacity of 140 lps (3.2 mgd)

Source: Information provided by JMAS on March 30, 2021.

**Local Water and Wastewater Systems**

JMAS operates the water and wastewater systems serving the community of Camargo. The water supply comes from wells, and JMAS provides drinking water service to approximately 100% of the homes through 18,357 residential connections. The drinking water system has adequate disinfection, and the distributed water meets the quality requirements established in the Mexican Standard NOM-127-SSA-1994.

JMAS reports that approximately 96% of the homes in the urban area are connected to the wastewater collection system. The 131 homes in the Miguel Angel Niño subdivision have drinking water service, but there is no wastewater collection system. Some residents use substandard on-site wastewater disposal systems, such as cesspools, while many simply discharge their wastewater directly to the street.

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<sup>3</sup> Source: CONEVAL, *Informe Anual sobre la Situación de Pobreza y Rezago Social* [Annual Report on the Status of Poverty and Unmet Social Needs], 2021, accessed on March 30, 2021 at: [https://www.gob.mx/cms/uploads/attachment/file/610980/Informe\\_anual\\_2021\\_mun\\_08011.pdf](https://www.gob.mx/cms/uploads/attachment/file/610980/Informe_anual_2021_mun_08011.pdf)

<sup>4</sup> Source: CONEVAL (2018). Poverty is a condition where a person suffers at least one social deprivation and does not have sufficient income to meet his/her basic needs.

<sup>5</sup> Instituto Nacional de los Pueblos Indígenas [National Institute of Indigenous Peoples], *Actividad económica y ocupación en 2015* [Economic Activity and Occupation in 2015], <https://www.gob.mx/cms/uploads/attachment/file/239933/11-cuadro-07.pdf>

The existing connections generate approximately 80 lps (1.8 mgd) of wastewater. The local wastewater collection system operates by gravity. The wastewater is conveyed to the Camargo Wastewater Treatment Plant (WWTP) to receive treatment through a system of stabilization lagoons. The WWTP has an installed capacity of 140 lps (3.2 mgd), which is sufficient to treat current wastewater flows, as well as the additional flows from the Project area estimated at 0.96 lps (21,871 gpd).<sup>6</sup> The WWTP produces an effluent that complies with its Discharge Permit pursuant to the Mexican Federal Water Law and its Regulations.<sup>7</sup> A portion of the treated effluent is reclaimed for agricultural irrigation and the rest is discharged to the San Pedro River.

### 3.1.2. Project Scope

The Project consists of the construction of a wastewater collection system, including the installation of approximately 2,900 meters (9,515 feet) of 20-cm (8-inch) diameter polyvinyl chloride (PVC) pipe and up to 131 yard-line connections. Additionally, the current on-site systems will be decommissioned as part of the contracted work.

Decommissioning involves removing the sludge from the septic system and taking it to a facility that is permitted to receive such waste. The on-site structure is then usually crushed and filled in with sand to ground level; however, in some cases, it may be necessary to completely remove the septic tank from the property.

Figure 3 provides a schematic layout of the wastewater collection system.

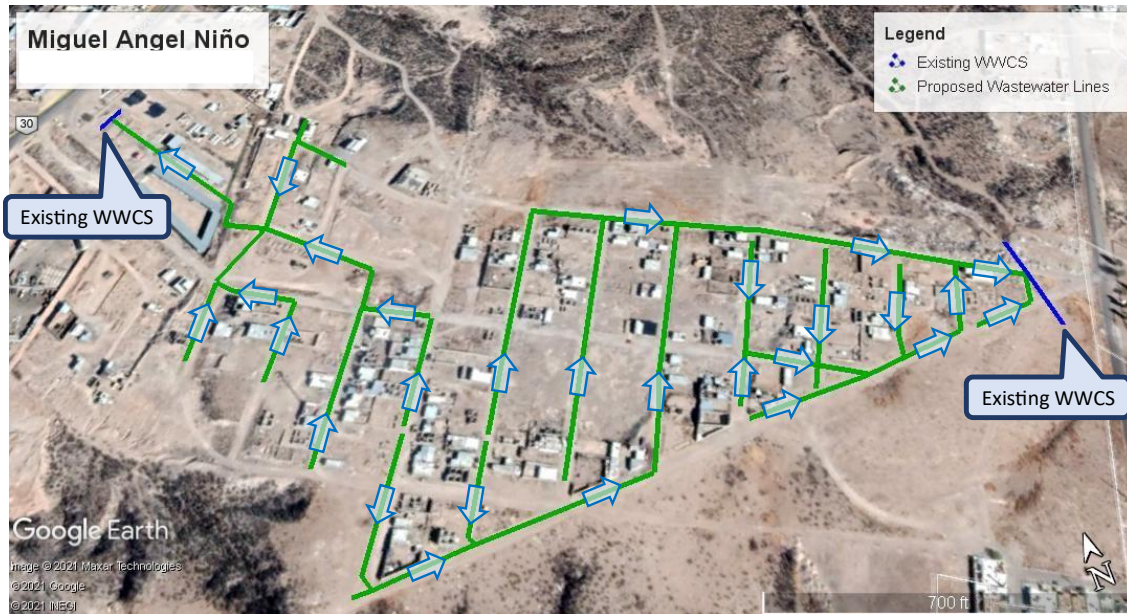
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<sup>6</sup> Source: JCAS, Final design of the Wastewater Collection Expansion System Project in Camargo, Chihuahua (2021). Estimate based on a population density of 3.16 persons per household, the generation of 200 liters (52.8 gallons) of wastewater per person per day and a total of 131 connections, resulting in 0.96 lps (21,871 gpd).

<sup>7</sup> Wastewater collected in the Project area will be treated at the Camargo WWTP, which has a current discharge permit (Concession No. 06CHI140257/24HDDL12 dated May 21, 2012, issued by Mexican National Water Commission) and sufficient installed capacity to treat the wastewater collected in the project area. Effluent quality reports dated February 15, 2021 show that the WWTP complies with applicable regulations.



**Figure 3**  
**WASTEWATER COLLECTION SYSTEM SCHEMATIC LAYOUT**



The CAP grant and local funds will be used for the installation of the wastewater collection system, as well as supervision services for all construction activities.

### 3.1.3. Technical Feasibility

The final design of the Project was developed pursuant to the technical specifications established in the Water and Wastewater Manuals developed by the Mexican National Water Commission (CONAGUA). NADB performed a technical assessment to verify compliance with applicable technical guidelines and regulations and concluded that the Project is technically feasible. CONAGUA also performed a technical review and issued its technical validation for the Project.<sup>8</sup>

Once the No Action alternative was eliminated, collection system alternatives were evaluated taking into consideration the following factors:

- Proposed layout of the sewer lines
- Required connection points for the system components.
- Investment cost
- Operation and maintenance cost
- Reliability of the materials and equipment
- Sustainable practices

<sup>8</sup> Source: Official Letter No. B00.906.03.-021, dated March 17, 2020, issued by the Deputy Department of Operational Technical Assistance at CONAGUA's local office in Chihuahua.

The pipe diameter was selected based on the design criteria of CONAGUA, using appropriate slopes and velocities to prevent silting, clogging and septic conditions in the pipes, as well as over-excavation or the need for pumping facilities that could increase Project costs. Peak and maximum instantaneous flow rates were also taken into consideration to determine necessary capacity and pipe diameter. The analysis also considered using various pipe materials in compliance with applicable standards and regulations. Polyethylene, PVC and asbestos-cement pipes were evaluated, taking into consideration their characteristics and suitability for the soil type in the Project area. For the proposed Project, PVC was the material selected, which has proven to be reliable for wastewater systems.

#### 3.1.4. Land Acquisition and Right-of-way Requirements

All work will be carried out within easements and utility rights of way and will not require the purchase of any additional land or easements. Right of entry forms will be signed by each homeowner prior to construction of the household connection to allow the contractor to have temporary easements for the works to be completed inside the property line.

#### 3.1.5. Project Milestones

Because all the work is expected to be implemented within existing rights of way, the Sponsor consulted the Ministry of Urban Development and Ecology of the State of Chihuahua, which determined that no environmental studies or clearance activities were required. Final design was completed by the Project sponsor in February 2021.

The procurement process for construction management and construction is expected to begin in the third quarter of 2021. The construction of the entire project is expected to take approximately seven months. Issues that could affect the construction schedule are related to procurement, weather and delivery of construction materials.

Table 2 provides a summary of the Project milestones and their respective status.

**Table 2**  
**PROJECT MILESTONES**

Key Milestones	Status
Environmental clearance consultation / response - Mexico	Completed on February 19, 2020
Final design	Completed in February 2021
Procurement	To begin 3rd quarter of 2021
Construction period	Estimated 7 months

### **3.1.6. Management and Operation**

The management and operation of the proposed Project will be the responsibility of JMAS Camargo; however, JCAS will assist the local utility with Project procurement and contract management, as a means of enhancing institutional capacity for these activities. JMAS currently serves 18,357 water hookups and 17,654 wastewater connections within the city. The Utility is organized in various departments, including Operation, Maintenance and Management.

The utility 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. JMAS' staff has the necessary experience to operate the wastewater collection system. The utility operates in a seven-crew structure and owns maintenance equipment, such as backhoe, vacuum truck and a truck mounted with a probing rod for sewer inspections. The utility has access to additional equipment from JCAS for maintenance purposes.

JMAS' wastewater system includes a WWTP with a capacity of 140 lps (3.2 mgd) and currently treats approximately 80 lps (1.8 mgd). Additionally, it has been successful in maintaining wastewater discharges that comply with Official Mexican Standard NOM-002-SEMARNAT-1996, which regulates the quality of non-residential wastewater that enters the collection system.

## **3.2. Environmental Criteria**

### **3.2.1. Environmental and Health Effects/Impacts**

#### **A. Existing Conditions**

Currently, residents in the Miguel Angel Niño subdivision do not have access to wastewater collection and treatment services. Some residents use substandard on-site wastewater disposal systems, such as cesspools, while many simply discharge their wastewater directly to the street. Discharges of untreated wastewater in the streets of the subdivision increase the risk of contamination of existing groundwater resources and the vulnerability of area residents to waterborne diseases.

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 Camargo, Chihuahua.

**Table 3**  
**WATERBORNE DISEASE STATISTICS FOR CAMARGO, CHIHUAHUA**

Disease	Number of Cases per Year				
	2016	2017	2018	2019	2020
Intestinal infections by other organisms	5,854	8,739	8,505	8,324	1,458
Intestinal amebiasis	23	19	40	13	6
Other helminthiasis	32	23	16	19	15
Typhoid fever	53	28	33	29	21
Paratyphoid fever & other salmonellosis	25	42	42	36	8

Source: Local epidemiologist.

## B. Project Impacts

The Project will prevent environmental deterioration and potential exposure to contaminated water by providing wastewater collection and treatment services in compliance with current wastewater regulations and properly closing any existing septic tanks, cesspools, and latrines. Specifically, the Project is expected to generate environmental and human health benefits related to the following outcomes:

- Provide access to wastewater collection and treatment services for 131 homes by installing residential wastewater connections.
- Prevent potential groundwater contamination and human health risks from untreated wastewater by decommissioning the existing on-site wastewater disposal systems.
- Eliminate approximately 0.96 liters per second (lps) or 21,871 gallons per day (gpd) of untreated or inadequately treated wastewater.<sup>9</sup>

To enhance the benefits of the Project, the collection system laterals have been designed for gravity flow, which eliminates the need for external energy inputs. In addition, the WWTP effluent can be reused for agricultural purposes, which will reduce the demand for water in this sector.

## C. Transboundary Impacts

No negative transboundary impacts are anticipated by the implementation of this Project, as the community is located 133 miles from the U.S.-Mexico border.

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<sup>9</sup> Source: JCAS, Final design of the Wastewater Collection Expansion Project in Camargo, Chihuahua (2021). Estimate based on a population density of 3.16 persons per household, the generation of 200 liters (52.8 gallons) of wastewater per person per day and a total of 131 connections, resulting in 0.96 lps (21,871 gpd) .

### 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-CONAGUA-2011, which establishes specifications for hermeticity in water distribution systems, residential water connections and wastewater collection systems, as well as methods for testing hermeticity.
- Official Mexican Standard NOM-001-SEMARNAT-1996, which establishes the maximum permissible levels of contaminants for wastewater discharges to national waters and resources.

#### A. Environmental Clearance

Pursuant to the provisions of the General Law of Ecological Balance and Environmental Protection of the State of Chihuahua, the Project does not require the development of an environmental impact statement, as the work will be carried out in an already impacted area. This conclusion was reached by the Ministry of Urban Development and Ecology of the State of Chihuahua, which issued Official Letter No. DOEIA. 244/2020 on February 19, 2020, stating that the Project does not require any environmental authorization.

#### B. Mitigation Measures

The agency that evaluated the Project considered that its implementation will not result in any significant negative impacts to the environment; therefore, no mitigation measures were established to address the temporary negative environmental impacts that could be generated during the construction and operation of the Project. However, JMAS will require the following best management practices be applied by the contractor and supervision companies during construction:

- 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;
- Placement of warning signs to prevent potentially hazardous situations; and
- Hay bales or silt fences may be placed along rights of way to avoid contaminants to surface water resources.

By following best management practices, the temporary impacts due to construction will be minimized. In addition, JMAS will be responsible for maintaining continuous coordination with the applicable environmental protection agencies and must comply with any water quality requirements, authorization procedures or recommendations that the agencies may issue

throughout the life of the Project. Moreover, the long-term results from the implementation of the proposed Project will be positive overall.

### 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\$560,000, which includes construction, supervision, contingencies and value-added taxes (VAT). The Sponsor requested a grant from NADB through its Community Assistance Program (CAP). Table 4 presents a breakdown of the estimated Project costs, as well as the sources of funding.

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

Uses	Amount	%
Construction*	\$ 500,000	89
Supervision	60,000	11
<b>TOTAL</b>	<b>\$ 560,000</b>	<b>100</b>
Sources	Amount	%
JMAS	\$ 60,000	11
NADB CAP grant	500,000	89
<b>TOTAL</b>	<b>\$ 560,000</b>	<b>100</b>

\* Includes construction, contingencies and 16% VAT.

The proposed Project complies with all CAP criteria. It is located within the U.S.-Mexico border region served by NADB, is being sponsored by a public-sector entity and is in an environmental sector eligible for NADB financing. Additionally, as a wastewater collection project, it is considered a priority under the CAP guidelines. As shown in the above table, the Project Sponsor has agreed to contribute funding to cover at least 10% of the Project costs, as required under the program.

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## 4. PUBLIC ACCESS TO INFORMATION

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### 4.1 Public Consultation

NADB published the Draft Certification and Financing Proposal for a 14-day public comment period beginning April 21, 2021. The following Project documents are available upon request:

- Final Design for the Wastewater Collection Expansion Project in the Miguel Angel Niño Subdivision, February 2021.

- Official Letter No. DOEIA.244/2020, dated February 19, 2020, issued by the Secretary of Urban Development and Ecology of the State of Chihuahua.

## 4.2 Outreach Activities

JMAS worked closely with the media to publicize information about the Project. NADB performed a media search to identify any media coverage and to gauge public opinion about the Project. The search found three references to the Project:

- *Impacto Noticias* (March 16, 2021): “Avanzan las gestiones para implementar drenaje sanitario y alcantarillado en colonia Miguel Ángel Niño” [Progress made on implementing wastewater system for the Miguel Angel Niño subdivision], retrieved from <http://impactonoticias.com.mx/camargo/avanzan-las-gestiones-para-implementar-drenaje-sanitario-y-alcantarillado-en-colonia-miguel-angel-nino/>
- *El Diario de Delicias* (March 23, 2020): “Recibirá 10 mdp para sistema de drenaje” [\$10 million pesos to be provided for wastewater system], retrieved from <https://www.pressreader.com/mexico/el-diario-de-delicias/20200523/281736976654552>
- *Impacto Noticias* (May 22, 2020): “Colonia «Miguel Ángel Niño» a punto de contar con drenaje...Más de 10 millones el proyecto: Cesar Méndez” [Miguel Angel Niño subdivision to have sewer system soon ...Project for more than 10 million pesos: Cesar Méndez] , retrieved from <http://impactonoticias.com.mx/camargo/colonia-miguel-angel-nino-a-punto-de-contar-con-drenaje-mas-de-10-millones-el-proyecto-cesar-mendez/>

The Project Sponsor informed NADB that no comments expressing concern about the Project have been received. To date, no opposition to the Project has been identified.