CERTIFICATION AND FINANCING PROPOSAL

WASTEWATER COLLECTION SYSTEM IMPROVEMENTS IN CIUDAD JUAREZ, CHIHUAHUA

Revised: May 31, 2022

BOARD APPROVAL TIMELINE

WASTEWATER COLLECTION SYSTEM IMPROVEMENTS IN CIUDAD JUAREZ, CHIHUAHUA

Milestones	Date
Public comment period begins (30 days)	17/Dec/21
Public comment period ends	16/Jan/22
Board submittal for initial review	30/Mar/22
Initial Board review ends (21 days)*	20/Apr/22
Initial NADBank response period (10 days)	6/May/22
Additional Board review (14 days)*	20/May/22
Additional NADBank response period (7 days)*	24/May/22
Board voting period (14 days)*	7/Jun/22

* Date subject to change if prior deadline is met at an earlier date.

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EXECUTIVE SUMMARY

WASTEWATER COLLECTION SYSTEM IMPROVEMENTS FOR CIUDAD JUAREZ, CHIHUAHUA

Project: The proposed Project consists of replacing deteriorated sewer mains in the north service area of the wastewater collection system in Ciudad Juarez, Chihuahua (the "Project"). The improvements include the replacement of approximately 18,540 meters (60,827 feet) of wastewater collection lines and the construction of new sedimentation boxes.

Objective: The purpose of the Project is to reduce the human health risks associated with waterborne diseases caused by exposure to untreated wastewater and eliminate potential surface and groundwater contamination by replacing deteriorated wastewater infrastructure prone to leaks and failure.

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

- Improve wastewater collection services for approximately 73,690 existing residential connections located in the city's northwest area, benefitting about 246,860 residents.[1]
- Reduce the risk of pipeline failures resulting in untreated or inadequately treated wastewater discharges to the Rio Grande River, which would prevent:
    - Approximately 1,000 liters per second (lps) or 22.8 million gallons per day (mgd) of wastewater discharges. [2]
    - Transboundary wastewater flows to the U.S.

Population to Benefit: 246,860 residents of Ciudad Juarez, Chihuahua.

Project Sponsor: Local water utility, *Junta Municipal de Agua y Saneamiento de Ciudad Juárez* (JMAS).

Borrower: JMAS.

[1] Source: JCAS, Final Design of the Wastewater Collection System Improvements for Juarez, Chihuahua by JCAS (2021). Estimated based on a population density of 3.35 persons per household, the generation of 280 liters per capita per day (74 gpd) of wastewater and a total of 73,690 connections.
[2] Source: NADBank, Technical Memorandum compliant with the Border Environment Infrastructure Fund Requirements for a Categorical Exclusion Application, 2021.

Estimated Construction Cost:	US$26,900,000.[3]
NADBank Grant:	Up to US$11,500,000 from the Border Environment Infrastructure Fund (BEIF) funded by the U.S. Environmental Protection Agency (EPA managed by the North American Development Bank (NADBank).
Loan Contracting Process:	The loan will be contracted through a competitive bidding process in accordance with the Mexican Financial Discipline Law for States and Municipalities, the guidelines for determining the lowest borrowing costs and the competitive bidding guidelines for loans and obligations contracted by States, Municipalities and their decentralized entities. Likewise, JMAS shall obtain all legal authorizations from the Chihuahua State Congress, the JMAS governing board and the state water agency, Junta Central de Agua y Saneamiento de Chihuahua (JCAS) to contract the loan(s) and pledge revenue to a trust to serve as the source of payment for the loan(s).
Lender:[4]	Corporación Financiera de América del Norte, S.A. de C.V. SOFOM, E.N.R. (COFIDAN), with financing from the North American Development Bank (NADBank).
NADBank/COFIDAN Loan:	Up to the pesos equivalent of US$15,400,000 consisting of two components:[5] • A construction loan for the peso equivalent of US$4,500,000; and

[3] Unless otherwise indicated, all U.S. dollar figures are quoted at an exchange rate of $18.50 pesos per dollar.
[4] The purpose of the loan proposal is to request authorization from the NADBank Board of Directors to provide a loan to COFIDAN. Once this loan is approved, the COFIDAN Board of Directors will approve the JMAS loan under the same terms. This financing shall then be called the NADBank/COFIDAN loan.
[5] The first component for US$4.5 million is the amount of debt that JMAS is obligated to contract for the Project, and the second component for up to US$10.9 million is included in case the proceeds of the construction loan are insufficient to complete the Project, and this funding would be obtained to complete the productive public investment related to Project construction, with the understanding that such loan proceeds may only be used for the purposes previously stated and may not be used for the payment of current expenses or for any other purpose other than the construction and start-up of the Project. Considering its historical and current liquidity levels, JMAS will contract a construction loan for US$4.5 million.

- A contingency loan for the peso equivalent of up to US$10,900,000.[6]

Uses and Sources of Funds:
(US$)

Uses	Amount	%
Construction*	$ 26,900,000	100.0
TOTAL	**$ 26,900,000**	**100.0**
Sources	**Amount**	**%**
Mexican funds**	$ 10,900,000	40.5
NADBank-BEIF (EPA grant)	11,500,000	42.8
Loan***	4,500,000	16.7
TOTAL	**$ 26,900,000**	**100.0**

* Estimate includes supervision, contingencies, and 16 % value-added tax.
**Federal, state, and local participation will conform to the current operational guidelines of the programs that will fund the Project. JMAS may contract debt to provide a portion of these funds.
***The required construction loan and any contingency loan will comply with all requirements set forth under the Mexican Financial Discipline Law for States and Municipalities.

Repayment Period: *Construction and contingency loans*: A minimum of thirteen (13) months and a maximum two hundred four (204) months, including a twelve (12) month grace period on principal payments.

Grace Period for all Loan Components: Up to twelve (12) months on principal payments, computed as of the first disbursement date.

Interest Rate: A fixed or variable market-rate loan in Mexican pesos.

Repayment Source: *Construction and contingency loans*: JMAS service revenue.

Payment mechanism: *Construction and contingency loans*: Loan Administration and Payment Trust.

[6] The United States-Mexico Border Infrastructure Program requires that every peso received from BEIF be matched with at least one peso of Mexican federal, state or municipal funds. The funding of the Mexican match requirement has at times been delayed leaving projects inoperable. For this reason, NADBank Management has included a contingency loan for up to US$10.9 million as part of the proposal in case the proceeds of the construction loan are insufficient to complete the Project, and this funding would be obtained to complete the productive public investment related to Project construction, with the understanding that such loan proceeds may only be used for the purposes previously stated and may not be used for the payment of current expenses or for any other purpose other than the construction and start-up of the Project. If required, the loan will be contracted through a competitive bidding process in accordance with the Mexican Financial Discipline Law for States and Municipalities, the guidelines for determining the lowest borrowing costs, and the competitive bidding guidelines for loans and obligations contracted by States, Municipalities and their decentralized entities. JMAS shall obtain all legal authorizations from the Chihuahua State Congress and the JMAS governing board to contract the loan and pledge revenue to a trust to serve as the source of payment.

Debt Service Reserve (DSR) for Construction and Contingency Loans:

The DSR requirement will at all times be equal to three (3) months of principal and interest payments and shall be maintained in the Trust throughout the term of the Loan.

Debt Service Coverage Ratio (DSCR) for Construction and Contingency Loans:

A DSCR equal to or greater than 1.20 times the debt service for each fiscal year must be maintained in the Trust.

Compliance with BEIF Grant Obligations:

The Borrower will comply with all NADBank BEIF grant obligations.

Project Status:

Key Milestones	Status
Environmental clearance – U.S.	Completed
Environmental clearance - Mexico	Completed
Final design	Completed
Procurement	To begin in the second quarter of 2022
Construction period	Estimated 60 months

CERTIFICATION AND FINANCING PROPOSAL

WASTEWATER COLLECTION SYSTEM EXTENSION AND IMPROVEMENTS FOR CIUDAD JUAREZ, CHIHUAHUA

1. PROJECT OBJECTIVE AND EXPECTED OUTCOMES

The proposed Project consists of replacing approximately 18,540 meters (60,827 feet) of deteriorated sewer mains within the north service area of the wastewater collection system (WWCS) in Ciudad Juarez, Chihuahua (the "Project"), which will improve service for approximately 73,690 existing residential wastewater connections. 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 surface and groundwater contamination by reducing the risk of pipe failure and thus prevent discharges of approximately 1,000 lps or 22.8 million gallons per day (mgd) of untreated wastewater.

2. ELIGIBILITY

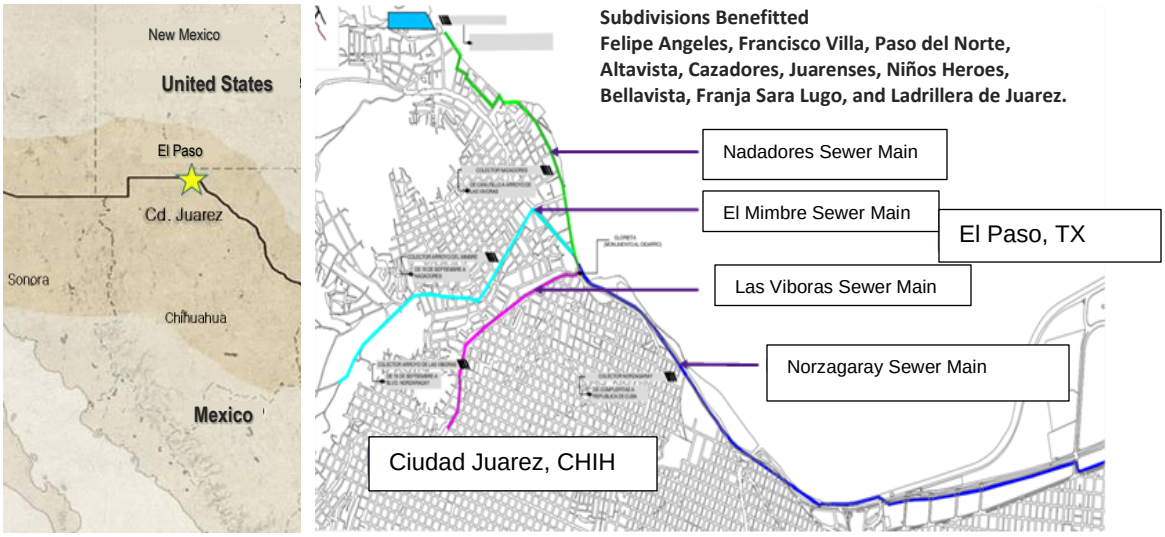
2.1. Project Type

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

2.2. Project Location

Ciudad Juarez is located in the northern region of the state of Chihuahua, adjacent to the Rio Grande and directly across the border from El Paso, Texas. The Project will be carried out in the northwestern area of the city at the following geographical coordinates: latitude 31°44'47.275" N and longitude 106°29'06.067" W, at an approximate mean elevation of 3,705 ft above sea level. Figure 1 shows the location of the community and the Project.

Figure 1
PROJECT LOCATION MAP



2.3. Project Sponsor and Legal Authority

The public-sector sponsor is the local water utility, *Junta Municipal de Agua y Saneamiento de Ciudad Juárez* (JMAS or the "Sponsor"). JMAS was established by a decree issued by the State Congress of Chihuahua and published in the Official Gazette on December 30, 2017. In accordance with Article 64, section XLI, of the Political Constitution of the State of Chihuahua, JMAS is a decentralized agency of the state water agency, *Junta Central de Agua y Saneamiento* (JCAS), and has legal authority and owns the infrastructure assets for providing water and wastewater services to the communities located within the municipality. Under the provisions of the Chihuahua State Water Law, the main objective of JMAS is to provide, conserve, and manage water and wastewater services in the municipality and promote the construction of related infrastructure.

3. CERTIFICATION CRITERIA

3.1. Technical Criteria

3.1.1. General Community Profile

The Project is expected to benefit the estimated 246,860 residents within the north wastewater service area of Ciudad Juarez. As reported by the Mexican national statistical institute, INEGI, the population of the municipality of Juarez was 1,501,551 in 2020, representing approximately 40% of the state population, making it the largest population in the state of Chihuahua. According to INEGI, the municipality of Juarez grew at an average annual rate of 1.2% from 2010 to 2020. INEGI reported that in 2020 52% of the population in Juarez was economically active.

According to data in the Annual Report on Poverty Conditions and Social Needs, issued by the National Council for Evaluation of Social Development Policy (CONEVAL), in 2015, 26.4% of the residents of the municipality of Juarez lives below the poverty level; in comparison, 26.3% of the state's population lives below the poverty level. [7]

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

Table 1
BASIC PUBLIC SERVICES AND INFRASTRUCTURE*

Water	
Coverage:	99%
Water supply source:	Groundwater wells
Number of hookups:	474,203
Wastewater Collection	
Coverage:	98%
Number of connections:	472,203
Wastewater Treatment	
Coverage:	91.5%[8]
Treatment facilities:	Five activated sludge treatment plants (Anapra, North, South, Valle de Juarez (South-South) and Laguna de Patos) with a combined capacity of 4,232 lps (96.6 mgd). Current flows total 3,264 lps (74.5 mgd).

* Source: JMAS, September 2021

Local Water and Wastewater System

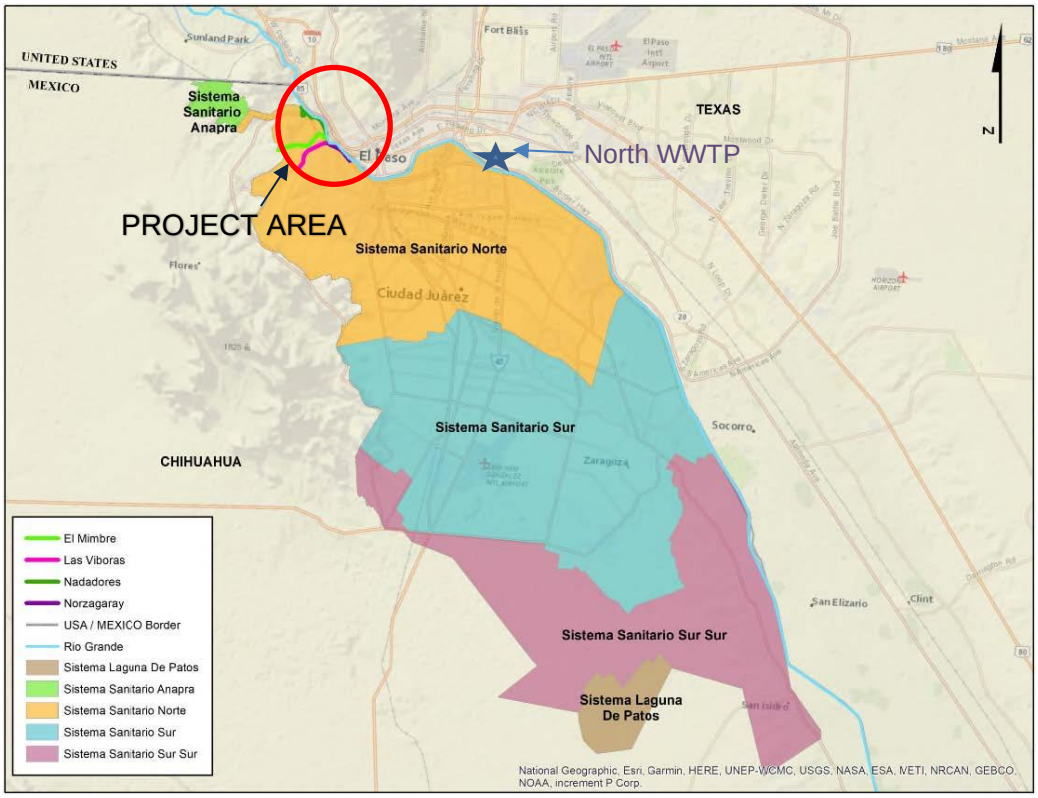
JMAS operates the water and wastewater systems serving Ciudad Juarez. The water supply for the system is extracted from 172 groundwater wells that provide drinking water service to approximately 99% of the homes or 474,203 residential connections. The installed capacity of the drinking water supply is 7,600 lps (173.4 mgd). JMAS has two sources of water supply: the Hueco and Mesilla aquifers. The drinking water system provides adequate disinfection, and the distributed water meets the quality requirements established in the Mexican Standard NOM-127-SSA-1994.

[7] Source: CONEVAL, 2018. A person is in a situation of poverty when he has at least one social deprivation and does not have enough income to meet his needs.
[8] The total Wastewater Treatment Plants (WWTP) capacity available exceeds the total current flow; however, in specific terms the Valle de Juarez (South-South) WWTP is undersized for the volume of flows received by the plant and is bypassing 276 lps (6.3 mgd).

JMAS reports that approximately 98% of homes in its service area are connected to the wastewater collection system, segmented into five main wastewater service areas: Anapra, North, South, Valle de Juarez (South-South), and Laguna de Patos.

Most of the local wastewater collection system operates by gravity; however, to provide the necessary hydraulic load for wastewater treatment, the city relies on approximately 26 lift stations to convey wastewater flows to the five available treatment facilities. The lift stations are working correctly and will not require improvements during the Project. The Valle de Juarez (South-South) WWTP is currently receiving flow volumes that exceed its hydraulic capacity, and untreated flows are being bypassed. Although not a component of this Project, the Sponsor must present a plan and timeline for addressing the treatment capacity at the Valle de Juarez (South-South) treatment facility. NADBank has provided technical assistance funds to define the needs at the WWTP. Figure 2 shows the WWCS service areas and the location of the Project.

Figure 2
PROJECT AREA MAP AND WASTEWATER SERVICE AREAS



Source: NADBank, Technical Memorandum compliant with the Border Environment Infrastructure Fund Requirements for a Categorical Exclusion Application, 2021.

The wastewater collection system in the Project area lacks the capacity to support the current wastewater collection and conveyance needs; therefore, a rehabilitation project has been proposed to upgrade the system. The Project proposes the rehabilitation of four sewer mains: Las Viboras, El Mimbre, Nadadores, and Norzagaray. These sewer mains were constructed of

reinforced concrete pipe (RCP) and have been in service for approximately 40 years, which is beyond their expected useful lives.

The four sewer mains are part of the wastewater system within the North Wastewater Service Area and discharge into the North WWTP. Due to topographic conditions in the service area, the sewer system accepts a significant amount of sediment, trash, and debris. Additionally, infiltration and inflow from rain events at rapid velocities often clog and break the pipelines within the system. These conditions have resulted in sewage overflows onto the streets of the Project area, which form streams that flow into the Rio Grande. The sedimentation problem is even worse where manhole covers have been stolen and sold as scrap metal, allowing sand and particulate matter from erosion to fill the pipelines. Debris and trash are also caught in the open manholes, becoming a hazard for vehicle traffic within the Project area.

Additionally, the WWCS within the Project area does not have a grit collection or screening system, which allows sediment to be deposited in the pipelines, reducing capacity, and clogging the system. Wastewater spills and exposure have been documented throughout the Project area for years. In 2017 and 2018, the Mexican Section of the International Boundary and Water Commission (CILA) compiled reports on incidences of raw wastewater being spilled or discharged due to pipeline failure. Frequent wastewater spills and runoff pose an immediate and dangerous environmental and public health risk, establishing a clear need for the proposed Project to prevent untreated wastewater discharges from flowing directly into the Rio Grande, a shared binational water body source of drinking water.

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), both funded by the U.S. Environmental Protection Agency (EPA) and managed by NADBank.

All components of this Project will be owned and operated by JMAS. The wastewater generated and collected is conveyed to the North WWTP for treatment through an activated sludge process. This facility has an installed capacity of 1,600 lps (36.5 mgd), which is sufficient to treat current wastewater flows and any additional flows that may result from the planned improvements. According to JMAS, the North WWTP complies with the quality standards in accordance with the discharge permit issued by the Mexican National Water Commission (CONAGUA).[9]

3.1.2. Project Scope

The Project consists of improvements to the existing wastewater collection infrastructure in the northwest area, including the total replacement of approximately 18,540 meters (60,827 feet) of wastewater collection lines and the installation of new sedimentation boxes.

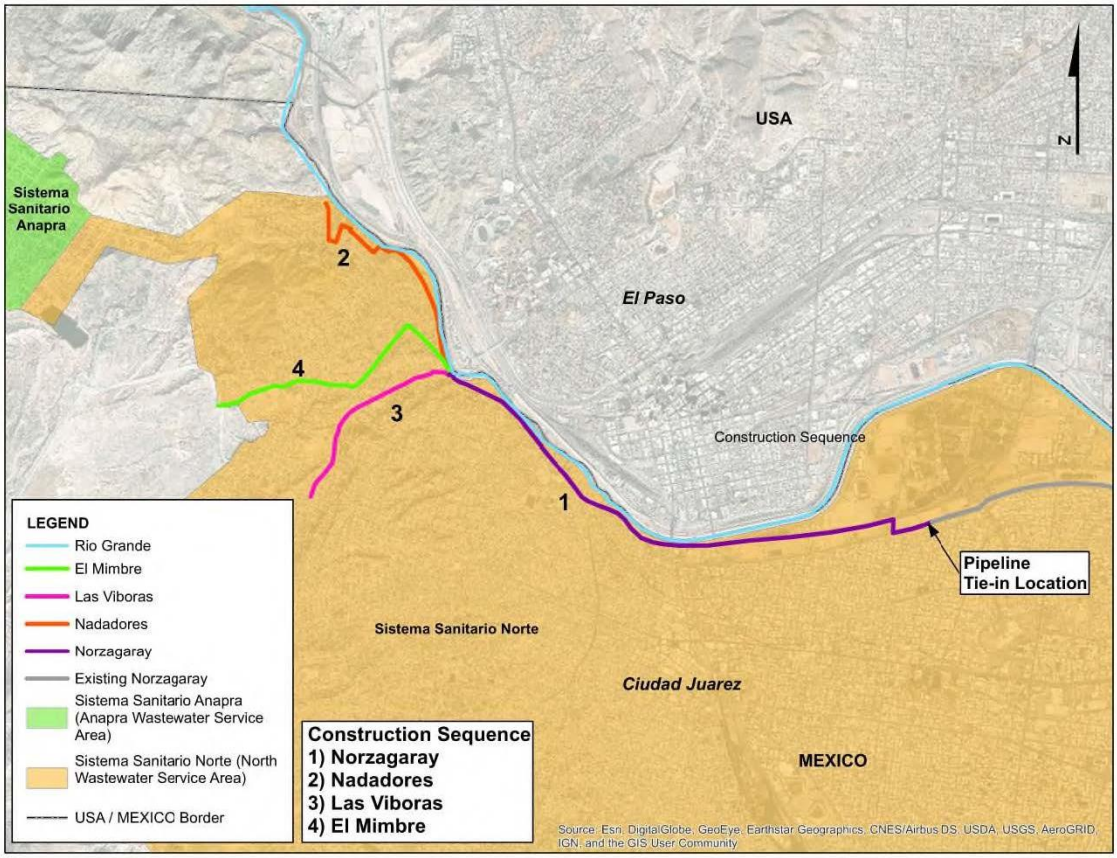
[9] Permit #06CH1100312/24HMGC07, issued on by CONAGUA

The main components are:

- *Norzagaray Sewer Main*: Replacement of 5,420 meters (17,782 feet) of polyvinyl chloride (PVC) and high-density polyethylene (HDPE) pipeline with diameters ranging from 18 to 60 inches and the construction of two sedimentation boxes.
- *Las Viboras Sewer Main*: Replacement of 3,840 meters (12,598 feet) of PVC and HDPE pipeline with diameters ranging from 8" to 48" and the construction of two sedimentation boxes.
- *El Mimbre Sewer Main:* Replacement of 4,800 meters (15,748 feet) of PVC and HDPE pipeline with diameters ranging from 8" to 42" and the construction of two sedimentation boxes.
- *Nadadores Sewer Main:* Replacement of 4,480 meters (14,698 feet) of PVC pipeline with diameters ranging from 8" to 30" and construction of two sedimentation boxes.

Figure 3 provides a schematic layout of the Project.

Figure 3
WASTEWATER COLLECTION SYSTEM IMPROVEMENTS LAYOUT



Source: Technical Memorandum Compliant with the Border Environment Infrastructure Fund Requirements of a Categorical Exclusion Application. NADBank. (2021)

While all four collectors are eligible for BEIF funds, the grant will be primarily used to rehabilitate the Norzagaray sewer main and support related supervision services. The NADBank/COFIDAN loan and/or Mexican funds will be used for similar works related to the Norzagaray sewer main, as well as for the three remaining sewer mains under the Project.

The overall construction of the Project will be segmented into five bid packages, four of which will be covered either with Mexican funds or the NADBank/COFIDAN loan. The BEIF grant will support one package. Should Mexican funding fall short in any given year, the contingency component of the proposed NADBank/COFIDAN loan could bridge or provide long-term financing for the Project, as needed. The contingency loan funding will comply with all requirements under Financial Discipline Law for States and Municipalities.

3.1.3. Technical Feasibility

As part of the development of the Project, planning documents were completed, which included an analysis of alternatives to select the appropriate materials for the Project components and determine the feasibility of the wastewater system improvements. The analysis considered the No Action alternative, and two alternatives with different pipes and diameters. The alternatives reviewed considered using the current layout of the existing lines and installing connections to the wastewater system at existing connection points.

The no-action alternative was rejected since it fails to address the contamination and health risks of aging and failing wastewater collection infrastructure.

Once the No Action alternative was eliminated, 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

Since the Project consists of rehabilitating the existing wastewater collection system and current layout of the lines will be maintained, sewer pipe diameters will be calculated using slopes and velocities aimed at preventing silting, septic conditions, and over-excavation, to ensure that the wastewater collection system in the Project area remains a gravity-based system. Additionally, current flows and estimated growth in the area were considered. Pipe material options reviewed

included HDPE and PVC. Both materials were selected as suitable materials to replace the wastewater lines.

JMAS developed the final designs for replacing the sewer mains following the technical specifications established in the Water and Wastewater Manuals developed by CONAGUA and included consideration of green building practices as part of the construction specifications. CONAGUA, JCAS, and NADBank/COFIDAN reviewed the final designs. JCAS, as the state regulatory agency for water in Chihuahua, issued its technical validation of the Project designs through official letter No. DT312/2021 dated March 9, 2021. The Regional Office of CONAGUA in Monterrey, Nuevo Leon, validated the technical documents through official letters No. BOO.811.06-470(21), BOO.811.06-471(21), BOO.811.06-472(21), and BOO.811.06-473(21) issued on November 5, 2021.

3.1.4. Land Acquisition and Right-of-Way Requirements

All the sewer mains included in the Project scope will be replaced within public easements and rights-of-way. No additional land or rights-of-way need to be acquired for the Project.

3.1.5. Project Milestones

All related Project works are expected to be implemented within existing rights of way. For the replacement of existing pipe, a consultation with the Ministry of Urban Development and Ecology of the State of Chihuahua resulted in a decision whereby additional environmental studies or clearance activities were not required.[10] The evaluation of alternatives to resolve the deteriorated pipe conditions was presented in a Technical Memorandum. Based on this report, EPA issued a Categorical Exclusion on May 25, 2021. The Project Sponsor completed the final designs in September 2021.

Bidding for construction of the Norzagaray sewer main to be implemented with the BEIF grant is expected to be procured in the second quarter of 2022. The NADBank/COFIDAN loan can be used to complete the Norzagaray collector or for any other component of the Project. Construction of the entire Project is expected to take approximately 60 months from the first procurement process. Issues that could affect the construction schedule are related to procurement, weather, delivery of construction materials and the timing of the availability of Mexican funding.

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

[10] Official Letter No DOEIA.IA.1577 / 2019 from the Ministry of Urban Development and Ecology of the State of Chihuahua, dated June 14, 2019.

Table 2
PROJECT MILESTONES

Key Milestones	Status
Environmental clearance – U.S.	Completed on May 25, 2021
Environmental clearance – Mexico	Completed on June 14, 2019
Final designs	Completed on September 2021
Procurement	To begin in the second quarter of 2022
Construction period	Estimated period of 60 months

3.1.6. Management and Operation

The management and operation of the proposed Project will be the responsibility of JMAS, which currently serves a total of 474,203 water hookups and 472,203 wastewater connections within the city. The Utility is organized in various departments, including Operation, Maintenance and Management, ensuring operations and overall performance.

As part of the Project evaluation process for BEIF funding, NADBank performed an analysis of the Sponsor's financial statements to determine its general financial health. The analysis revealed that the Sponsor managed to generate annual revenue sufficient to provide adequate cash flows for the proper operation and maintenance of its infrastructure. From 2016 through 2020, the Sponsor increased total revenues by 4.9% annually, while operating expenses increased by 4.4% annually. As a result, JMAS has seen an improvement in its liquidity ratios.

The financial impact of the proposed Project on JMAS' operations and maintenance and procedures was also reviewed. Based on the results, the current budget appears to be financially viable. The Project should decrease expenses related to the continuous maintenance currently required for the deteriorated infrastructure to be replaced by the Project. To ensure that the proposed Project does not weaken JMAS' current financial position, the Sponsor will have to fund two reserve accounts, one for operation and maintenance and the other for repair and replacement of the Project components.

JMAS has an Operation and Maintenance Manual that includes routine tasks and procedures to address unexpected conditions and ensure the proper operation of the system. Its staff has the necessary experience to operate the wastewater collection system and receives training on an annual basis. The Utility works in a four-crew structure and owns maintenance equipment, such as a backhoe, vacuum truck, and a truck mounted with a probing rod for sewer inspections. The North, South, and Valle de Juárez (South-South) treatment plants are operated through concession contracts.

The North WWTP has sufficient capacity to handle all existing and potential flows collected with the implementation of the Project. Additionally, JMAS has successfully maintained the quality of non-residential wastewater discharges to the collection system that complies with the parameters established in the Official Mexican Standard NOM-002-SEMARNAT-1996. This allows for the regular and consistent operation of the WWTP.

3.2. Environmental Criteria

3.2.1. Environmental and Health Effects/Impacts

A. Existing Conditions

In the city's northwest area, a large part of the wastewater sewer mains have exceeded their useful lives and present signs of deterioration. Current conditions result in continuous leaks or seepage, and the Utility frequently needs to address more significant pipe breaks and perform important maintenance tasks. The poor state of the existing wastewater sewer mains in the Project area could result in considerable health and safety hazards for the public.

Surface pooling and overflows of untreated wastewater create a transmission pathway for pathogenic microorganisms associated with fecal matter that causes waterborne diseases in humans. An individual may become ill after contact with the contaminated water containing pathogens, eating uncooked foods that have had 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 the Ciudad Juarez Municipality.

Table 3
WATERBORNE DISEASE STATISTICS FOR CIUDAD JUAREZ, CHIHUAHUA

Disease	Number of Cases per Year				
	2016	2017	2018	2019	2020
Intestinal infections by other organisms and the ill-defined	42,761	46,917	45,136	40,033	10,378
Helminthiasis	522	726	618	405	117
Intestinal amebiasis	224	257	205	201	132
Other salmonellosis	202	210	222	191	59
Other infections due to protozoan parasites	59	72	65	35	15
Hepatitis	42	48	15	55	-
Giardiasis	21	10	16	24	19
Paratyphoid	16	4	5	42	15
Amebic liver abscess	3	2	6	8	6
Ascariasis	2	2	13	5	4
Shigellosis	1	2	6	3	4
Enterobiasis	1	1	6	-	2
Taeniasis	1	1	-	-	-
Enteritis	1	-	18	8	6
Typhoid fever	33	44	77	45	18

Source: Local Epidemiologist.

B. Project Impacts

The Project will improve the wastewater collection system and help prevent any ground and surface water contamination by replacing wastewater sewer main lines that have exceeded their useful lives. Wastewater will be collected and conveyed for treatment to the North WWTP, a facility that complies with all regulatory requirements. Specifically, the Project is expected to generate environmental and human health benefits related to the following outcomes:

- Improve wastewater collection services for 73,690 existing residential connections located in the city's northwest area, benefitting approximately 246,860 residents. [11]
- Reduce the risk of pipeline failures resulting in untreated or inadequately treated wastewater discharges to the Rio Grande, which would prevent:
    - Approximately 1,000 liters per second (lps) or 22.8 million gallons per day (mgd) of wastewater discharges. [12]
    - Transboundary wastewater flows to the U.S.

To enhance the benefits of the Project, all reasonable applications of green building practices, as defined by the EPA Border Water Infrastructure Program, were considered during the planning and final design phases. The wastewater sewer mains have been designed for gravity flow, eliminating external energy inputs.

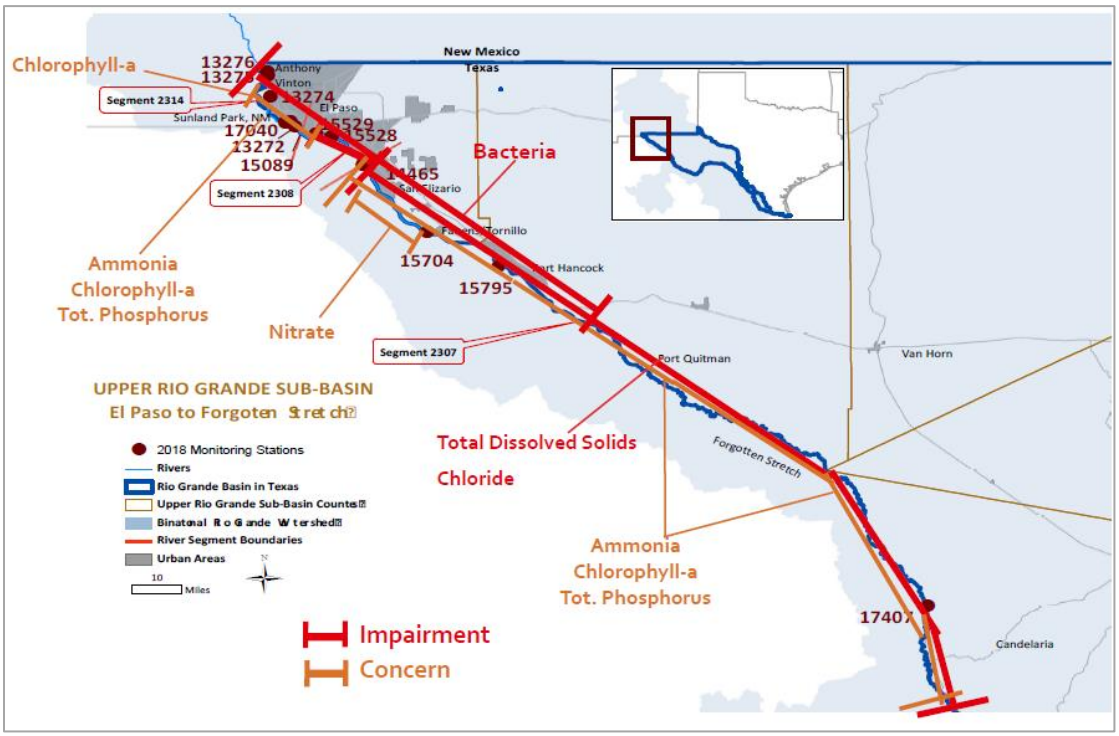
C. Transboundary Impacts

Implementation of the proposed Project will reduce the potential for contamination of shared waterbodies, including the Rio Grande. Moreover, due to the proximity of El Paso, Texas, there are frequent border crossings between these two communities. The rehabilitation of wastewater collection infrastructure will positively impact the health of residents in this neighboring city and surrounding communities since these actions will help reduce the risk for waterborne diseases deriving from exposure to untreated wastewater. Additionally, the Project will protect the Hueco and Mesilla Bolsons, thus contributing to regional efforts to protect and maintain groundwater sources.

According to the Texas Surface Water Quality Standards for the Rio Grande Basin, the segment 2308 RG extends from the Riverside Diversion Dam in El Paso County to the International Dam in El Paso County. This segment is the channelized portion of the river that runs for 12 miles through downtown El Paso. The Texas Clean Rivers Program (CRP) of the U.S. Section of the International Boundary and Water Commission (USIBWC) is studying a reclassification of the waterbody as intermittent rather than perennial. According to the 2020 Basin Summary Report for the Rio Grande Basin in Texas, Segment 2308 is impaired for bacteria.[13] There are also water quality concerns for ammonia, chlorophyll, and total phosphorus, as shown in Figure 4.

[11] Source: JCAS, Final Design of the Wastewater Collection System Improvements for Juarez, Chihuahua, 2021. Estimate based on a population density of 3.35 persons per household, the generation of 280 liters per capita per day (74 gpd) of wastewater and a total of 73,690 connections.
[12] Source: NADBank, Technical Memorandum compliant with the Border Environment Infrastructure Fund Requirements for a Categorical Exclusion Application, 2021.
[13] Source: USIBWC, 2020 Basin Summary Report for the Rio Grande Basin in Texas.

Figure 4
RIO GRANDE WATER QUALITY IN SEGMENT 2308 RG



3.2.2. Compliance with Applicable Environmental Laws and Regulations

The National Water Law is the primary law regulating water usage and public utilities. Official Mexican standards regulate wastewater systems. The Project will comply with the following official Mexican standards and regulations:

- *Official Mexican Standard NOM-002-SEMARNAT-1996* establishes the maximum permissible levels of contaminants for wastewater discharge into urban or municipal wastewater collection systems.
- *Official Mexican Standard NOM-001-CONAGUA-2011* establishes specifications for hermeticity in water distribution systems, residential water connections, wastewater collection systems, and methods for testing hermeticity.
- *Official Mexican Standard NOM-001-SEMARNAT-1996*, establishes the maximum permissible levels of contaminants for wastewater discharge to national waters and resources.

Regular monitoring and inspections should be performed at all point discharges to verify compliance with the requirements established in the Utility's permit.

A. Environmental Clearance

Pursuant to the provisions of the General Law of Ecological Balance and Environmental Protection of the State of Chihuahua, the wastewater system rehabilitation project to be implemented in the northwest area of Ciudad Juarez, Chihuahua, does not require the development of an Environmental Assessment, as the tasks will be carried out in an urban area. The foregoing was determined by the Ministry of Urban Development and Ecology of the State of Chihuahua, which issued Memorandum No. DOEIA.IA.1577/2019 on June 14, 2019, stating that the Project does not require any environmental authorization.

To be eligible for a BEIF grant supported by federal appropriations to EPA's U.S.-Mexico Border Water Infrastructure Program, the Project's transboundary impacts must be examined in compliance with the U.S. National Environmental Policy Act (NEPA). To meet this requirement, a Technical Memorandum Compliant with the Border Environment Infrastructure Fund for the Requirements of a Categorical Exclusion Application was developed and submitted to EPA for its review and ruling. The Technical Memorandum addresses the environmental impacts resulting from the implementation of the Project, including:

- Air quality;
- Biological resources;
- Socioeconomics, environmental justice, and health and safety risks;
- Hazardous materials, solid waste, and pollution prevention;
- Historical, architectural, archeological, and cultural resources
- Land use;
- Noise and noise-compatible land use;
- Rio Grande water quality information; and
- Cumulative impacts.

Based on the findings and conclusions of the Technical Memorandum and planning documents, EPA Region 6 prepared a Categorical Exclusion notice. After a 14-day public comment period, the EPA issued the Categorical Exclusion on May 25, 2021, establishing that the Project will not significantly negatively impact the environment in the U.S.-Mexico border area.

B. Mitigation Measures

The agencies that evaluated the Project determined that its implementation would not result in any significant negative impacts to the environment; therefore, no mitigation measures were established to address the negative environmental impacts that could be generated during the construction and operation of the Project. However, the Project design documents address potential temporary and minor environmental impacts that may arise, including the following:

- The local air basin may be temporarily impacted by carbon monoxide, nitrogen oxides, and sulfur dioxide emissions released by vehicles and equipment used during construction.
- A temporary increase in dust emissions may be experienced due to the construction.

- Hazardous waste—such as used oil—may be generated during the construction phase.
- Surface water resources could be temporarily impacted by storm water runoff during the construction phase.
- 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 and the presence of workers in the area.

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;
- Placement of warning signs to avoid 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 these Best Management Practices, the temporary impacts due to construction will be minimized. Consequently, the long-term results from implementing the proposed Project will be positive overall. Moreover, 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 these agencies may issue throughout the life of the Project.

C. Pending Environmental Tasks and Authorizations

No environmental authorizations are pending.

3.3. Financial Criteria

3.3.1 Sources and Uses of Funds

The total estimated cost of the Project is $26,900,000, which includes construction costs, as well as supervision and contingencies, and the value-added taxes (VAT). The Sponsor requested a BEIF grant to support the implementation of the Project and improve the affordability of the investment. BEIF program criteria require that the proposed Project:

- address priority human health and environmental issues with community water infrastructure;
- provide a U.S.-side benefit;
- consider maximum funding from other sources;
- consider adequate operation and maintenance provisions;

- target improvements to water quality; and
- be implemented only in jurisdictions that aim to prevent developments that lack access to water and wastewater infrastructure.

Based on a thorough analysis of both the Project and the Sponsor, NADBank/COFIDAN has determined that the Project meets all BEIF program criteria and recommends that the EPA approve a BEIF grant for up to $11,500,000 for its construction. Table 4 presents a breakdown of total Project costs and the sources of funding.

Table 4
USES AND SOURCES OF FUNDS
(USD)

Uses	Amount	%
Construction*	$ 26,900,000	100.0
TOTAL	**$ 26,900,000**	**100.0**
Sources	**Amount**	**%**
Mexican funds**	$ 10,900,000	40.5
NADBank-BEIF (EPA grant)	11,500,000	42.8
Loan***	4,500,000	16.7
TOTAL	**$ 26,900,000**	**100.0**

* Estimated construction costs, supervision, and contingencies include 16% value-added tax (VAT).
**Federal, State, and local participation will conform to the current operational guidelines of the programs that will fund the Project. The JMAS may contract debt to provide a portion of these funds.
***The required loan and any contingency loan will comply with all requirements set forth under the Mexican Financial Discipline Law for States and Municipalities.

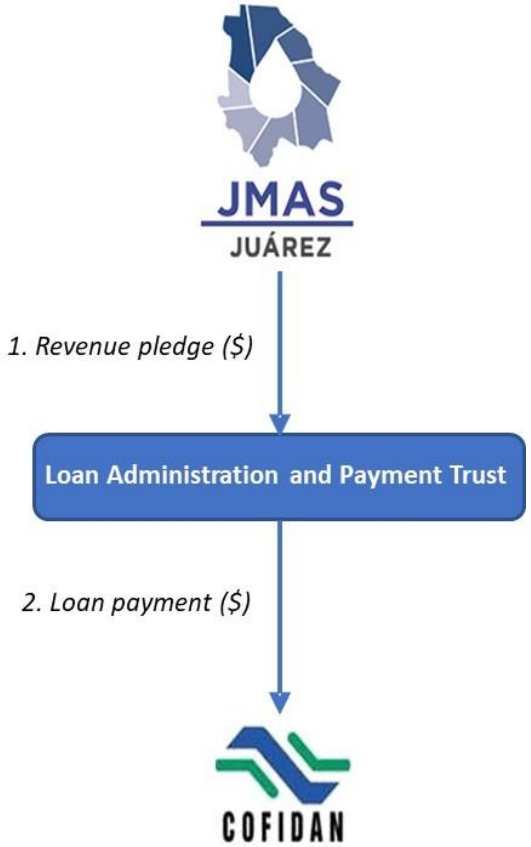
NADBank is also seeking approval from its Board to provide a loan for up to the peso equivalent of US$15,400,000 to COFIDAN, which in turn will participate in a public bidding process as set forth under the Mexican Financial Discipline Law for States and Municipalities (the "NADBank/COFIDAN Loan"). The proposed loan is composed of a component for US$4.5 million, which is the amount of debt that JMAS is obligated to contract for the Project, and a second component for up to US$10.9 million, which is included as contingency funding in case the proceeds of the construction loan are insufficient to complete the Project, and this funding would be obtained to complete the productive public investment related to Project construction, with the understanding that such loan proceeds may only be used for the purposes previously stated and may not be used for the payment of current expenses or for any other purpose other than the construction and start-up of the Project. Both loan components will comply with all requirements set forth under the Mexican Financial Discipline Law for States and Municipalities. [14]

[14] Considering its historical and current liquidity levels, JMAS will at least contract a US$4.5 million long-term construction loan.

3.3.2. Loan Payment Mechanism

The loan payment mechanism described below is a structured finance vehicle used to secure funding for projects in Mexico, where utility service revenues (typically water) are pledged to a Loan Administration and Payment Trust (the "Trust") as the source of payment. NADBank, through COFIDAN, has successfully used this structure in previous transactions, such as (i) the rehabilitation of wastewater treatment plants in the city of Chihuahua for up to 332.5 million pesos; (ii) a wastewater collection project in Mexicali, B.C.; that was partially financed with a loan for up to $200.0 million pesos; and (iii) the expansion of a wastewater collection system in Tijuana, B.C. for areas in the Tijuana River basin, which was partially financed with a loan for up to $31.3 million pesos. The last two loans have already been repaid in full. With this mechanism, monthly payments are managed by a trust, thus mitigating the risk of non-payment by the Borrower.

Figure 5
LOAN PAYMENT MECHANISM



1. All or a portion of revenue deriving from the monthly service fees collected by JMAS will be irrevocably deposited into the Trust.

2. The Trust will secure the monthly payment of NADBank/COFIDAN debt service and refund the debt service reserve. Once NADBank/COFIDAN debt service is paid, any remaining balance will be transferred back to JMAS to support their ongoing operation.

A debt service reserve fund will be created within Trust. Suppose the amounts pledged by JMAS are insufficient or not deposited into the Trust promptly. In that case, the proceeds of the reserve fund will automatically be drawn down by the trustee to cover the corresponding monthly payment, thus mitigating the risk of default on the NADBank/COFIDAN Loan.

3.3.3. Financial Analysis of the Source of Payment

The purpose of the section is to evaluate the source of payment of the Project by conducting a thorough analysis of the financial performance of JMAS and its projected cash flows, which will serve as the primary source of payment of the NADBank/COFIDAN Loan.

A. Historical Analysis of JMAS

JMAS's annual financial statements are prepared in accordance with the principles established under the General Governmental Accounting Law for public entities in Mexico (*Ley General de Contabilidad Gubernamental*. The 2020 financial statements were audited by an independent audit firm, DFK-GLF, S.C., with a qualified opinion. The auditor's opinion highlights the reasons why the audit report is not unqualified as follows:

1. JMAS has not performed an actuarial analysis of its long-term labor-related obligations and does not recognize this liability on its financial statements as required by the Mexican National Council for Accounting Harmonization (CONAC*)* for the determination of a utilities net assets (equity), and as required by the Financial Discipline Law for States and Municipalities for the determination of long-term obligations.

2. JMAS does not reconcile its payroll information with the accounting balances presented on its financial statements to determine if payroll taxes are determined as required by the applicable Federal Income Tax Law.

3. JMAS financial statements do not recognize potential legal contingencies required by General Governmental Accounting Law.

4. JMAS recognizes its water service revenues on a cash basis. For 2020, financial statements misstated revenues in the amount of $1,727 million pesos.

5. The auditors did not have access to the JMAS' fixed asset inventory reports to reconcile with book values (limitation of scope).

6. JMAS does not recognize a depreciation expense for buildings and infrastructure, leading to a misstatement of fixed asset values and net revenues.

JMAS's audited financial statements are presented in Table 5 to provide an overview of the Utility's financial and operational evolution from 2016 through 2020. In addition, the analysis evaluates JMAS's overall financial strength and its capacity to repay the proposed NADBank/COFIDAN Loan. It is important to emphasize that the Utility operates under a balanced budget policy whereby all cash surpluses, if any, are intended to be used within the same fiscal year or carried over for investments or operations of the incoming fiscal year.

Table 5
JMAS BALANCE SHEETS
(Millions of Pesos)

	2016	2017	2018	2019	2020
Cash and cash equivalents	$ 127.69	$ 361.37	$ 561.53	$ 628.30	$ 763.16
Receivables	140.20	149.09	186.29	276.58	406.15
Inventory	101.97	128.09	135.52	163.04	160.08
Total current assets	**369.86**	**638.56**	**883.34**	**1,067.93**	**1,329.38**
Total long-term assets	4,508.10	4,849.94	5,116.94	5,314.83	5,303.95
Total assets	**$ 4,877.96**	**$ 5,488.50**	**$ 6,000.28**	**$ 6,382.76**	**$ 6,633.33**
Accounts payable to suppliers	$ 12.80	$ 128.40	$ 201.69	$ 170.88	$ 124.28
Loans (short term)	181.44	0.00	0.00	0.00	0.00
Other (short term)	20.74	30.17	58.51	21.36	173.13
Total current liabilities	**214.97**	**158.57**	**260.20**	**192.24**	**297.41**
Total long-term liabilities	**0.00**	**746.00**	**611.93**	**484.76**	**393.55**
Total liabilities	**214.97**	**904.56**	**872.13**	**677.00**	**690.96**
Total equity	**4,662.99**	**4,583.94**	**5,128.15**	**5,705.75**	**5,942.37**
Total liabilities + equity	**$ 4,877.96**	**$ 5,488.50**	**$ 6,000.28**	**$ 6,382.76**	**$ 6,633.33**

Source: JMAS 2016-2020 audited financial statements.

At the close of 2020, cash on hand in the amount of $763.1 million pesos represented 57.4% of current assets and 33% of annual revenues. JMAS management does not intend to keep cash on hand at these levels and has stated that for 2022 they will implement a $450.0 million peso capital investment program funded with unallocated reserves. In the future, JMAS management expects to keep cash on hand at around $200.0 million pesos. In terms of receivables, as previously stated, JMAS does not register service receivables on its balance sheet because services are accounted for as they are paid (cash basis). The 2020 receivables balance represents a mix of short-term balances that include: $42.6 million pesos owed by developers; $120.4 million pesos owed by contractors and other parties; $213.2 million pesos in value-added tax payments; $11.31 million pesos in advanced payments for legal services; and $18.4 million pesos in advanced payments for goods and services. Inventory balances for 2020 are typical for a utility of this size and represent a significant investment in working capital of $160.0 million pesos, which is required to support the Utility's ongoing operations and maintenance. At the close of 2020, JMAS had net working capital of $1,031.9 million pesos, mainly attributed to high cash and inventory balances.

Fixed assets totaled $5,303.0 million pesos at the close of 2020, and since 2016 have increased at a compound annual growth rate (CAGR) of 4.1%. The value of fixed assets has been questioned in the auditor's report because JMAS failed to provide an inventory of fixed assets, and some assets are not depreciated in accordance with their useful lives. Over the years, JMAS has made significant investments in infrastructure to improve water and wastewater coverage and services that have been financed with cash from operations and with state, federal and BEIF grant funding. It should also be noted that JMAS currently has two public-private partnership (PPP) service contracts in place for the construction, operation and maintenance of three wastewater treatment facilities.

As of December 31, 2020, short-term liabilities totaled $297.4 million pesos, a decrease of 27% over 2019 figures. In 2021, Of the foregoing balance, accounts payable to suppliers was $124.28 million pesos and consisted of: $17.1 million pesos owed to employees; $39.1 million pesos owed to vendors; $6.1 million pesos owed in legal fees; $56.7 million pesos in employee taxes and related obligations; $17.6 million pesos owed to construction companies; and $5.2 million pesos owed to PPP service providers. Other short-term obligations in the amount of $173.1 million pesos consisted of: $18.4 million pesos for labor-related obligations; $153.1 million pesos for services and contractual works pending payment; and $1.5 million pesos in deposits for future services.

In terms of long-term obligations, at the close of 2020, JMAS owed $393.5 million pesos to PPP contractors, amortizing at an average rate of 19% annually over the period analyzed. It is important to note that these long-term obligations only began to appear in JMAS' financial statements in 2017, in response to the Mexican Financial Discipline Law for States and Municipalities, which requires disclosure of such payment obligations to determine an entity' ability to contract debt or other types of obligations.

Table 6
JMAS REVENUE AND EXPENSE STATEMENTS
(Millions of Pesos)

	2016	2017	2018	2019	2020
Total revenues	**$ 1,857.89**	**$ 1,951.59**	**$ 2,096.74**	**$ 2,300.06**	**$ 2,249.92**
Materials & general services	708.99	716.73	895.15	960.48	882.87
Personnel expenditures	744.49	743.79	691.96	755.62	843.08
Net operating revenues	**404.40**	**491.07**	**509.64**	**583.96**	**523.97**
Depreciation	58.54	57.89	61.46	78.58	72.31
Net revenues	**$ 345.86**	**$ 433.18**	**$ 448.18**	**$ 505.38**	**$ 451.66**

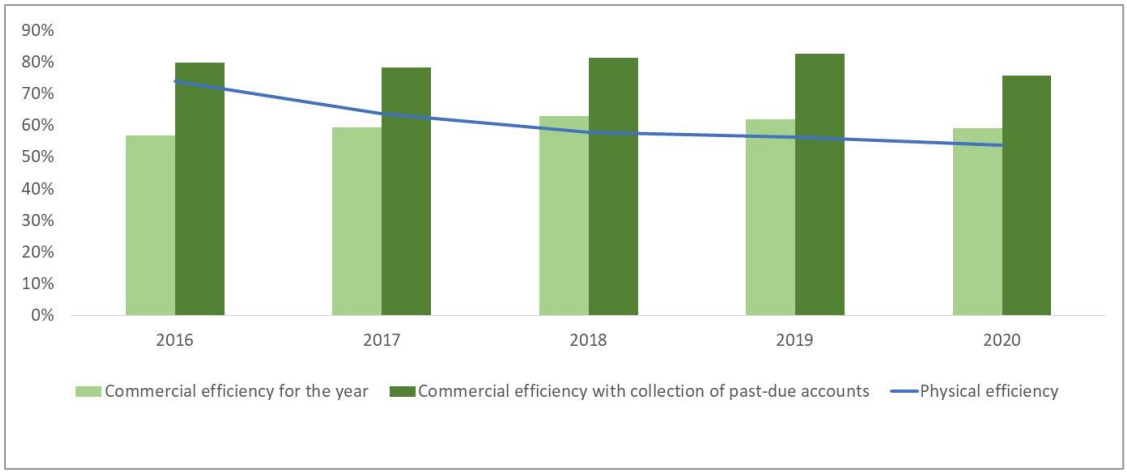
Source: JMAS audited financial statements.

For 2020, total revenue was $2,249.9 million pesos a decline of 2% compared to 2019 as a direct result of the pandemic; nevertheless, it has increased at a CAGR of 4.9% since 2016. At the close of 2020, JMAS registered 471,290 active accounts, of which 96% corresponded to residential users, 3.2% to commercial users and the remaining 0.6% to industrial and public-sector users. During the period analyzed, user accounts grew at a CAGR of 0.72%. Residential users grew 0.7%, commercial users grew 1.37%, industrial users grew 3.24%, and public users decreased 0.92%.

JMAS' current service fee structure reflects a higher cost per cubic meter for commercial and industrial users vis-à-vis residential users and higher prices per unit for higher consumption levels across the board. JMAS currently adjusts rates for inflation monthly, and for 2022 the Utility has been authorized to implement a 3.0% real rate increase to all users. This rate increase will help offset operation and maintenance rising costs.

Figure 6 presents commercial and physical efficiencies during the period analyzed. Commercial efficiency in 2020, including past-due accounts, dropped to 75.7% from 82.7% in 2019. Commercial efficiency in 2020 was the lowest recorded during the period analyzed and is attributed to the effects of the pandemic on the ability of service users to pay on time. JMAS' ability to cut services to users with outstanding balances is prohibited by law. To incentivize timely payments, for 2022, JMAS will implement water service pressure reductions that will limit water availability to the volume necessary to cover basic human needs. JMAS' physical efficiency was 53.94% in 2020, the lowest efficiency of the period analyzed. Water losses continue to increase annually, and JMAS management will continue to support investments and initiatives that help reduce this important operating indicator.

Figure 6
JMAS COMMERCIAL AND PHYSICAL EFFICIENCY



In 2020, operating expenses consisted of materials and general services and personnel totaled $882.87 million pesos and $843.08 million pesos, respectively. Materials andgeneral services have grown at a CAGR of 5.6% annually, considering an 8% drop in 2020. Personnel expenditures have grown at a CAGR of 3.2% annually and increased 12% during 2020. Together, both line items grew at a combined CAGR of 4.4% annually. Despite the pandemic, JMAS continues to work hard to reduce its operating expenses to keep them below its revenue generation capacity.

Table 7
JMAS CASH FLOW STATEMENTS
(Millions of Pesos)

	2016	2017	2018	2019	2020
Operating activities		**$ 399.65**	**$ 566.64**	**$ 398.20**	**$ 502.54**
Investment activities		(399.73)	(328.46)	(276.47)	(61.43)
Capital and related financing activities		233.76	(38.02)	(54.95)	(306.25)
Net cash flow		**$ 233.68**	**$ 200.15**	**$ 66.78**	**$ 134.86**
Beginning cash balance		127.69	361.37	561.53	628.30
Ending cash balance	**$ 127.69**	**$ 361.37**	**$ 561.53**	**$ 628.30**	**$ 763.16**

In terms of cash-generating capacity, the Utility registered positive cash flows throughout the period analyzed, demonstrating good operating practices and cash flow management. Cash from operating activities has been sufficient to cover JMAS' investment activity. Cash balances as of December 2020 and 2019 totaled $763.2 million and $628.3 million pesos, respectively.

In January of 2021, Fitch ratified JMAS' AA (mex) credit rating on the national scale, which denotes very good credit quality with respect to other public entities as defined by the rating agency, with above average liquidity and performance/profitability ratios (see Table 8). The rating reflects the strength of its revenues, cash flow generation and low leveraging, as well as its low physical and commercial efficiencies, which are below average compared to the group currently rated by Fitch. NADBank's financial analysis is in line with the rating's fundamentals. Looking ahead, JMAS will need to improve its efficiencies to support its ongoing operations and growth through significant capital investments funded with internal resources, grants and debt financing.

Table 8
JMAS FINANCIAL RATIOS

	2016	2017	2018	2019	2020
Liquidity ratios					
Current ratio	1.72x	4.03x	3.39x	5.56x	4.47x
Quick ratio	1.25x	3.22x	2.87x	4.71x	3.93x
Working capital	154,888	479,992	623,147	875,682	1,031,976
Debt to assets ratio	0.04x	0.00x	0.00x	0.00x	0.00x
Debt to equity ratio	0.04x	0.16x	0.12x	0.08x	0.07x
Debt to net operating revenue	0.45x	1.52x	1.20x	0.83x	0.75x
Performance/profitability ratios					
EBITDA margin	24.92%	28.13%	27.24%	28.81%	26.50%
Operating margin	21.77%	25.16%	24.31%	25.39%	23.29%
Depreciation & amortization	58,541	57,887	61,463	78,581	72,314
EBITDA	462,945	548,958	571,104	662,541	596,288

B. Financial Projections of JMAS

To determine whether JMAS can meet its obligations associated with the Project, NADBank performed a financial analysis based on its financial plan, which includes increases in user fees plus inflation. Projections were developed based on historical figures, operation efficiency levels, and current economic outlook. The main assumptions include:

- *Basis for projections*: JMAS historical financial statements.
- *Revenue*: Based on the current customer base and rate structure with an increase of 3% in real terms for 2022 and adjustments for inflation for the period analyzed.
- *Operation and maintenance (O&M) expenses*: Based on the JMAS financial statements, trends in expense growth and projected inflation.
- *Proposed NADBank/COFIDAN Loan:* Up to US$15.4 million or its equivalent in Mexican pesos. This amount is below the debt ceiling established for fiscal year 2022 by the Financial Discipline Law for States and Municipalities Alert System.
- *Debt Service*: 17-year loan term with a 13-month grace period on principal payments.
- *CAPEX expenditures*: Based on the nominal projected investments planned by JMAS for 2022.

Table 9 shows projected cash flows for the term of the proposed NADBank/COFIDAN Loan.

Table 9
PROJECTED CASH FLOW
(Millions of Pesos)

Year	Total Revenues	Materials & General Services	Personal Expenditures	Operating Cash Flow	Debt Service	CAPEX	Ending Cash Flow	DSCR (OCF/DS)
2022	$ 2,553.62	$ 1,017.42	$ 951.92	$ 584.29	$ 0.00	$ 450.00	$ 134.29	
2023	2,674.94	1,077.04	1,007.70	590.20	13.51	450.00	126.69	43.7x
2024	2,802.21	1,140.15	1,066.75	595.30	46.66	450.00	98.65	12.8x
2025	2,935.73	1,206.96	1,129.26	599.50	45.79	450.00	103.71	13.1x
2026	3,075.81	1,277.69	1,195.44	602.68	44.85	450.00	107.83	13.4x
2027	3,222.80	1,352.56	1,265.49	604.75	43.83	450.00	110.92	13.8x
2028	3,377.05	1,431.82	1,339.65	605.58	42.72	450.00	112.86	14.2x
2029	3,538.93	1,515.73	1,418.15	605.05	41.53	450.00	113.52	14.6x
2030	3,708.84	1,604.55	1,501.26	603.03	40.25	450.00	112.78	15.0x
2031	3,887.18	1,698.58	1,589.23	599.37	38.86	450.00	110.51	15.4x
2032	4,074.39	1,798.11	1,682.36	593.92	37.38	450.00	106.54	15.9x
2033	4,270.94	1,903.48	1,780.95	586.51	35.78	450.00	100.73	16.4x
2034	4,477.30	2,015.03	1,885.31	576.96	34.06	450.00	92.90	16.9x
2035	4,693.98	2,133.11	1,995.79	565.09	32.22	450.00	82.86	17.5x
2036	4,921.53	2,258.11	2,112.74	550.68	30.25	450.00	70.43	18.2x
2037	5,160.51	2,390.43	2,236.55	533.53	28.15	450.00	55.38	19.0x
2038	5,411.52	2,530.51	2,367.61	513.40	25.89	450.00	37.50	19.8x

CAPEX = Capital expenditures; DSCR = Debt service coverage ratio; OCF = Operating cash flows; DS = Debt service

The projected cash flows remain positive throughout the planning period. As indicated in Table 9, JMAS' financial margins are sufficient to cover NADBank/COFIDAN loan-related obligations throughout the loan period. NADBank/COFIDAN is confident that JMAS will have sufficient funds to cover the cost of its operations, capital investments, and the monthly payments associated with the proposed NADBank/COFIDAN Loan. Nonetheless, the Utility will need to maintain its operational efficiencies at least at their current levels and apply cost control measures to maintain adequate cash flow to support Project debt obligations and capital investments.

C. Project Debt Service Coverage Ratio (DSCR)

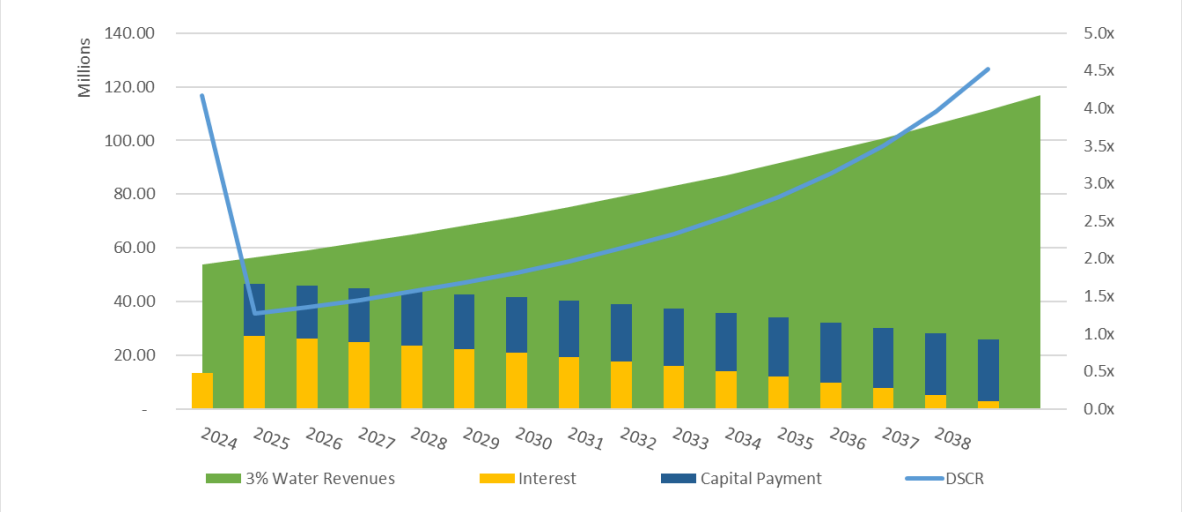
In accordance with NADBank/COFIDAN loan policies, the formula for calculating the DSCR for a proposed loan shall be based on the characteristics of the transaction and/or borrower and payment mechanism.

The DSCR for the proposed NADBank/COFIDAN Loan is defined as the ratio of JMAS pledged revenue to the Trust divided by the monthly nominal debt service (principal and interest) payments to NADBank/COFIDAN. The DSCR ratio must be at least 1.20x throughout the term of the Loan, based on the following formula:

$$\text{DSCR} = \frac{\text{JMAS Pledged Revenue}}{(\text{Interest}_t + \text{principal}_t)} \geq 1.20\text{x}$$

Figure 7 shows the projected DSCR for the proposed NADBank/COFIDAN Loan considering a 3% revenue pledge derived from water-related services.

Figure 7
PROJECTED DSCR THE NADBANK/COFIDAN LOAN
(Millions of pesos)



The minimum coverage ratio is 1.26 times the debt service in 2024. Based on these estimates, NADBank/COFIDAN considers the proposed pledged cash flows to be more than sufficient to cover the financial obligations under the proposed loan.

3.3.4. Risk Analysis

The purpose of this section is to assess the ability of JMAS to address any adverse changes to the base-case scenario that could negatively affect its cash flows. As part of this process, a sensitivity analysis with various scenarios is performed to evaluate the Utility's payment capacity concerning its annual financial obligations under the NADBank/COFIDAN Loan.

A. Quantitative Project Risks

1. *Increase in Total Project Cost*: Any unexpected increase in the construction costs will be covered by JMAS as a requirement in the NADBank/COFIDAN loan and BEIF grant agreements. Current cash and projected cash flows can support increases in construction costs or required project change orders.

2. *Increase in Expenses*: JMAS can afford an annual increase of 24.8% above the base case projected increase in O&M expenditures and still maintain a positive operating cash flow during the period projected. Should expenses go up more than projected, the Utility will have to increase revenue, reduce costs or use cash reserves to meet its financial obligations under the proposed NADBank/COFIDAN Loan, a scenario considered unlikely given the JMAS' recent performance despite the effects of the pandemic on its collection efficiency. In addition, the Project is expected to reduce maintenance costs because the the sewer mains will operate by gravity and, therefore, no new costs will be generated.

3. *Decrease in Revenue*: JMAS could experience an average decrease of up to 24.3% in projected revenue over the base case scenario and still have sufficient resources to meet its financial obligations with NADBank/COFIDAN. In the event of such a decrease, JMAS would have to make the necessary adjustments to continue its operations through such actions as raising service rates and/or deferring expenditures; and/or using cash reserves, among other remedies available to the Utility.

B. Qualitative Project Risks

1. *Financial/Administrative*: Based on the financial analysis, it can be concluded that JMAS has a solid and captive customer base with a relatively stable annual revenue. JMAS has successfully carried out its operational activities and met its financial obligations, demonstrating its ability to maintain adequate operating margins over time. As shown in the sensitivity analysis, JMAS can withstand decreases in revenue or increases in operating expenses without defaulting on its contractual obligations.

   Moreover, JMAS has a strong balance sheet with only PPP long-term obligations, which indicates that the Utility can contract the proposed obligations without any risk of financial

hardship. Finally, it is reasonable to expect positive cash generation during the loan term, which will allow the repayment of the NADBank/COFIDAN loan.

2. *Economic*: JMAS' operating revenue is directly affected by the ability of its customers to meet their monthly services payments, which, in turn, is affected by changes in the local economy. Ciudad Juarez has a dynamic economy that is primarily focused on the maquiladora industry, medical equipment industry and services. This growing and diversified economy will ultimately provide the economic support the Utility requires to implement its projected capital improvement projects successfully.[15]

3. *Political/Legal*: Changes in the management of JMAS are not expected to result in the non-payment of the NADBank/COFIDAN loan since the Trust will make the monthly debt service payments with revenue irrevocably pledged for the term of the NADBank/COFIDAN Loan.

4. *Technical*: The technical risk related to the Project is minimal because it entails using conventional materials and proven technology.

3.3.5. NADBank/COFIDAN Loan and BEIF Funding Package

Currently, one of the main concerns of the U.S.-Mexico bilateral relationship is the pollution caused by some border municipalities in Mexico, particularly the untreated wastewater discharges to shared bodies of water. The high-priority municipalities are Tijuana, Mexicali, Naco, Nogales, Ciudad Juárez and Nuevo Laredo, among others.

Current budgetary constraints experienced at all levels of government in Mexico and by the water utilities have directly impacted their ability to invest in much-needed infrastructure. In addition, the debt ceilings imposed by the Mexican Financial Discipline Law for States and Municipalities, at times, have limited the ability of state and local governments and their water utilities, to secure sufficient debt funding to match CONAGUA's program funding requirements.

NADBank/COFIDAN is proposing that states and municipalities and their water utilities receive a financing package that includes both a bank loan and a grant and complies with Article 22, paragraph three, of the Mexican Financial Discipline Law for States and Municipalities, which reads:

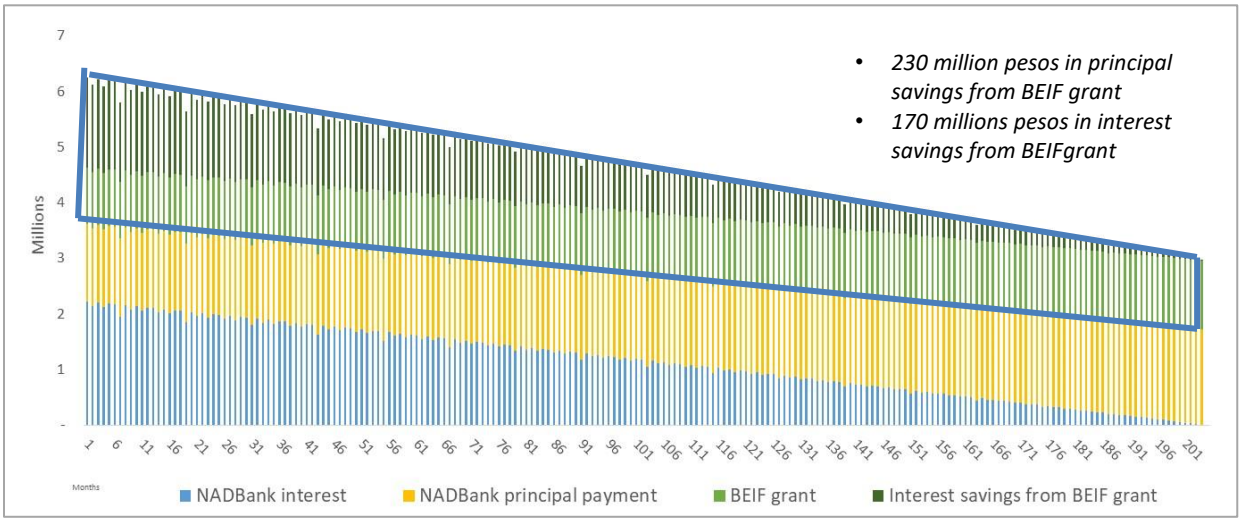
> *"The provisions of this Chapter shall not be applicable to the contracting of Financing in terms of federal programs or agreements with the Federation, which will be governed by what is agreed between the parties in the corresponding agreement, including those funds required to serve the population affected by natural disasters in the terms of the laws, operating rules, and applicable guidelines, as well as by the Fiscal Coordination Law."*

This proposal is under review and requires further detailed analysis for approval.

[15] https://datamexico.org/es/profile/geo/juarez-8037

A NADBank/COFIDAN loan and BEIF grant funding package generates significant savings for a project sponsor by reducing the real rate of the cost of borrowing. For this Project, a subsidy of 43.4% of the total investment reduces the interest generated throughout the term of the loan term by $170.0 million pesos. This savings is based on a peso interest rate using a TIIE base rate of 5.7% plus 250 basis points (bps) for the entire term of the loan, as well as the benefit of not having to repay the $230 million-peso BEIF grant. With the previous assumptions, the peso effective rate is 0.03%, which is 5,697 bps below the TIIE base rate of 5.7%, resulting in the Sponsor receiving an extremely low borrowing cost that would not be available in the marketplace. The previous calculation is also aligned with the provisions of the Mexican Financial Discipline Law for States and Municipalities that requires states, municipalities and their decentralized agencies to secure debt under the best available market conditions. The foregoing assumptions are based on maximizing the debt component required for the Project, but actual savings would be higher as the total loan amount and/or its tenure are reduced. Figure 8 illustrates the minimum savings effect of a combined NADBank/COFIDAN loan and BEIF grant funding package.

Figure 8
PROJECTED SAVINGS WITH
NADBANK/COFIDAN LOAN AND BEIF GRANT
(Millions of pesos)



4. PUBLIC ACCESS TO INFORMATION

4.1. Public Consultation

NADBank published the draft certification proposal for a 30-day public comment period beginning December 17, 2021. The following Project documentation was available upon request:

- Validation of the final design by COANGUA through official letters No. BOO.811.06-470(21), BOO.811.06-471(21), BOO.811.06-472(21), and BOO.811.06-473(21) issued on November 5, 2021.
- Technical Memorandum Compliant with the Border Environment Infrastructure Fund Requirements of a Categorical Exclusion Application, 2021;
- Categorical Exclusion for the Rehabilitation of the Wastewater Sewer Mains in the Northwest Area of Ciudad Juarez, Chihuahua, Mexico, issued by EPA on May 25, 2021; y
- Official Letter No. DOEIA.IA.1577/2019, dated June 14, 2019, issued by the Secretary of Urban Development and Ecology of the State of Chihuahua.

The 30-day public comment period ended on January 16, 2022, with no comments received.

4.2. Outreach Activities

JMAS conducted outreach activities to obtain the support of residents within the Project area by providing information regarding its scope, construction costs, and resulting benefits. The access of Project information was conducted as described in the Public Outreach Plan outlined by the public outreach requirements of the BEIF program.

Public meetings were not held due to the COVID 19 pandemic. A Project pamphlet was attached to water bills. In addition, JMAS posted descriptive and technical information of the Project on its website. The online information includes the Project's service area, construction costs, funding sources, potential disruptions, and connection information. Information about the Project was also posted in the offices of the Utility.

NADBank also conducted a media search to identify potential public opinion about the Project. Below are links to the articles found, along with A brief description:

- *Netnoticias.coml,* (September 22, 2021) "*Rehabilitarán colectores del Arroyo de las Víboras para evitar inundaciones*" [Arroyo de las Víboras sewer main to be rehabilitated to prevent flooding] The article reports that to prevent flooding JMAS plans to rehabilitate the sewer mains in the following streets: Arroyo de las Víboras, Arroyo del Mimbre, Nadadores and Norzagaray.
  Rehabilitarán colectores del Arroyo de las Víboras para evitar inundaciones - Juárez (netnoticias.mx)

- *El diario Cd. Juárez* (April 12, 2017) "*Colector Norzagaray, 'taponeado' desde el año pasado"* [Norzagaray Sewer Main clogged since last year]. The article reports that the Norzagaray Sewer Main has been so clogged since last year that the possibility of building a new one that runs parallel to the current one is being analyzed.
  Colector Norzagaray, 'taponeado' desde el año pasado - El Diario

- *Tiempo Digital* (November 5, 2016) "*Tapado, colector Norzagaray tras tormenta y granizo*" [Norzagaray Sewer Main clogged after hailstorm]. The article reports that the drainage was not working due to the runoff that occurred after the rains and hail.
  Tapado, colector Norzagaray tras tormenta y granizo | Tiempo

The activities carried out by the Project Sponsor, and the media coverage described above demonstrate that the public received updates related to the Project, including its technical aspects, environmental effects, disruptions from construction, funding structure, and financial impacts. The Project Sponsor informed NADBank that no comments expressing concern about the Project had been received during the public outreach process. To date, no opposition to the Project has been identified.

5. RECOMMENDATION

Certification Criteria Compliance

The Project falls within the eligible sector of wastewater and is located within the border region, as required under the NADBank Charter. The 30-day public comment period ended on January 16, 2022, with no comments received. The project review performed by the NADBank 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 Water Infrastructure Program prioritization process and was selected for 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 the U.S. Environmental Protection Agency (EPA) is expected to approve a BEIF grant for up to US$11,500,000 for its construction.

Furthermore, considering the Project's characteristics and based on the financial and risk analysis, the proposed Project is financially feasible and presents an acceptable level of risk. The proposed loan also meets all the requirements of NADBank loan policies. Therefore, NADBank, through COFIDAN, proposes providing a market rate loan for up to US$15,400,000 or its equivalent in Mexican pesos to JMAS, in accordance with the terms and conditions proposed in Annex B.

Accordingly, based on the foregoing conclusions as supported and presented in detail in this certification and financing proposal, NADBank hereby recommends certification of the project and approval of the proposed NADBank loan.