CERTIFICATION AND FINANCING PROPOSAL

STORM WATER INFRASTRUCTURE PROJECT
SANTIAGO, NUEVO LEÓN

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EXECUTIVE SUMMARY

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Project: The project consists of constructing storm water infrastructure for the community of Los Fierros in the municipality of Santiago, Nuevo León (the "Project").

Project Objective: The purpose of the Project is to improve storm water management by providing adequate infrastructure to prevent unsanitary conditions, including flooding and surface ponding, thereby eliminating exposure to stagnant water and reducing the risk for waterborne diseases.

Expected Project Outcomes: The Project is expected to generate environmental and human health benefits related to increased capacity of storm water infrastructure designed to support 10-year storm events, which will aid in the prevention of stagnant water conditions that create a habitat for disease transmitting vectors, such as mosquitos.

Population Benefitted: 20,000 residents of the municipality of Santiago, NL.

Project Sponsor: Municipality of Santiago, NL.

Project Cost: US$370,000

NADB Grant: US$333,000 from NADB's Community Assistance Program (CAP)

Uses & Sources of Funds:
(U.S. dollars)

Uses	Amount	%
Construction*	$ 370,000	100.0
TOTAL	$370,000	100.0
Sources	**Amount**	**%**
Municipality of Santiago	$37,000	10.0
NADB-CAP	$333,000	90.0
TOTAL	$370,000	100.0

* Includes costs related to construction only

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STORM WATER INFRASTRUCTURE PROJECT
SANTIAGO, NUEVO LEÓN

1. ELIGIBILITY

Project Type
The Project falls within the eligible sector of water pollution (storm water drainage).

Project Location
The Project is located in the municipality of Santiago in the center of the state of Nuevo León, 150 km (93 miles) south of the U.S.-Mexico border.

Project Sponsor and Local Authority
The public-sector project sponsor is the Municipality of Santiago, NL (the "Municipality" or "Sponsor"). The Municipality of Santiago has the legal authority to operate and maintain the local storm water collection system. The Public Works Department of the Municipality is responsible for developing infrastructure improvement projects.

2. CERTIFICATION CRITERIA

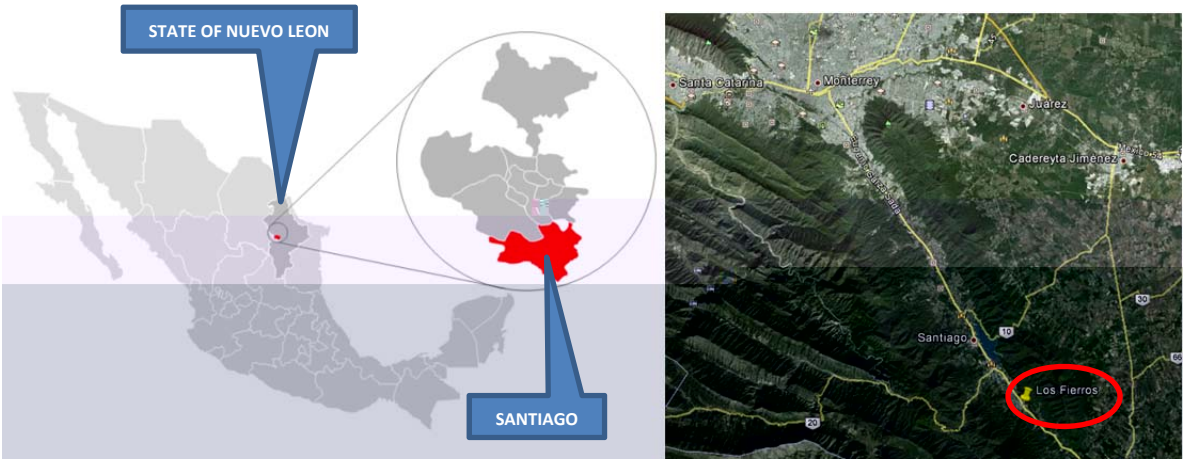
2.1. TECHNICAL CRITERIA

2.1.1. Project Description

Geographic Location

The community of Los Fierros is located in the municipality of Santiago, Nuevo

Figure 1
PROJECT VICINITY MAP



General Community Profile

According to the population projections of the Mexican census bureau, INEGI, the municipality of Santiago had 40,469 residents in 2010, having grown at an average annual rate of 1.05 % over the last ten years from a population of 36,812 in 2000.[1] Current estimates have the municipality's population at 41,300 residents.

The municipality's economic activities are based primarily on agriculture, industry, and tourism. The economically active population is estimated to be 14,861 inhabitants. The average annual household income is estimated at US$6,300, which is 17% less than the state average of US$7,581.[2]

The status of public services in Santiago is described in the table below.

[1] Source: *Instituto Nacional de Estadísticas y Geografía* (INEGI), Mexican censuses 2000 and 2010.
[2] Source: BECC estimations based on INEGI 2000 census. (Income data was not generated in the 2010 census)

Table 1
BASIC PUBLIC SERVICES AND INFRASTRUCTURE

Water System	
Service coverage	92.6%
Supply source	Surface water from the Cola de Caballo Aqueduct
Number of hookups	10,398
Wastewater Collection	
Service coverage	97%
Number of connections:	10,865
Wastewater Treatment	
Coverage	100%
Treatment facilities	Wastewater is conveyed to a treatment plant in Monterrey
Solid Waste	
Collection coverage	100%
Final disposal	Salinas Victoria Regional Landfill (Santiago has a transfer station)
Street Paving	
Street paving coverage	Not available

Local Storm Water Management

The community of Los Fierros is part of the metropolitan area of the city of Monterrey. A portion of the community experiences frequent flooding during the rainy season due to the lack of infrastructure to drain the accumulated storm water from the area.

The Municipality is planning to construct infrastructure to collect, convey and discharge the storm water into an existing storm water collector, which discharges to a regional storm water system managed by the Monterrey water utility, SADM. The existing system has sufficient capacity to receive the additional flow.

Project Scope and Design

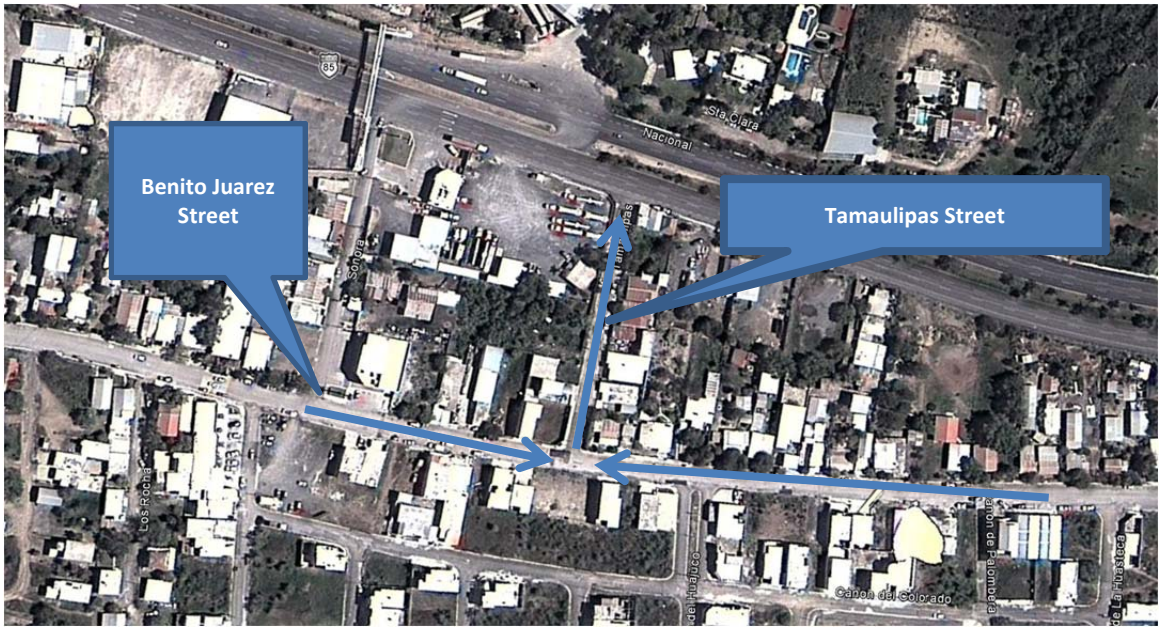
The Project consists of constructing a new storm water collection main along Benito Juarez Street and Tamaulipas Street to interconnect with the existing regional storm water system. The Project components include:

- *Pipeline*: 332 meters (1,089 ft.) of 48-inch diameter reinforced polystyrene pipes
- *Inlets*:
  - Two 25.6 x 2.1 ft. reinforced concrete boxes with 3.5 x 3.5" grating
  - Two 31.4 x 2.1 ft. reinforced concrete boxes with 3.5 x 3.5" grating
  - One 57.1 x 2.1 ft. reinforced concrete box with 3.5 x 3.5" grating
- *Manhole*: One reinforced concrete transition manhole (6.6 x 6.6 x 9.8 ft.)

- *Culvert*: One 5 x 2.1 ft. pentagonal reinforced concrete culvert extending 86.6 m (284 ft.)

Figure 2 shows the general location of the Project. The blue lines represent the new storm water mains with the arrows indicating flow direction.

Figure 2
PROJECT COMPONENTS



Construction permits will be issued by the Santiago Department of Public Works prior to construction. Table 2 shows the proposed schedule for Project implementation milestones.

Table 2
PROJECT MILESTONES

Key Milestones	Status
Initiation of procurement for construction	Anticipated: 3rd quarter 2013
Construction period	3 months

2.1.2. Technical Feasibility

Design Criteria

The final design of the proposed storm water collector was completed in accordance with the technical specifications set forth in the Storm Water Manual developed by the Mexican federal water agency, CONAGUA.

The estimated flow was calculated using the rational method described in CONAGUA's Storm Water Manual.[3] The return period used for the design of the storm water structures was taken from the manual as well. Rainfall intensity values were obtained from the intensity-duration-period curves reported by the *Adjuntas* weather station in Santiago.

Selected Technology

During the final design process, technical options for pipe diameter, material and alignment were evaluated to identify the most appropriate technology. The following factors were analyzed:

- Areas prone to flooding;
- Roadways prone to flooding;
- The catch basins of the collectors to be built;
- Topography of the area; and
- Roadways that could more easily use detour routes.

The pipe diameter was selected using appropriate flow rates and pipe resistance. The analysis also considered using various pipe materials in compliance with applicable standards and regulations. High density polyethylene and PVC pipes were also evaluated, and their characteristics and suitability for the soil type were reviewed. For the proposed Project, polypropylene was the selected material, which is consistent with the material used throughout the existing system and which has proven to be reliable.

2.1.3. Land Acquisition and Right-of-way Requirements

The storm water lines will be installed along the side of the roads where there are existing municipal rights of way.

2.1.4. Management and Operations

Management, construction, maintenance and operation of the Project will be the responsibility of the Public Works Department of the Municipality of Santiago, which has sufficient resources and staff available for these purposes. The Santiago Public Works Department is divided into five

[3] Maximum flow of 68 million gallons a day (MGD).

areas—Projects, Supervision, Construction, Machinery and Regulations—and has established procedures for the routine operation and maintenance of municipal infrastructure.

The Project Sponsor has provided a Storm Water System Maintenance Manual which describes the operation of the storm water infrastructure and the maintenance requirements to support continuous operation. According to the Sponsor, the new investment will require maintenance twice a year, which will cost approximately $7,650 pesos (US$630) in each case. The annual operations budget for 2013 includes an increase in funds, as compared with the 2012 budget, to accommodate operation and maintenance of the new infrastructure investment.

2.2. ENVIRONMENTAL CRITERIA

The Project will provide enough capacity to convey the peak flow to the regional storm water collection system. The lack of a storm water infrastructure in this area of the city impacts the health of area residents, including the risks associated with flooding and stagnant water.

2.2.1. Compliance with Applicable Environmental Laws and Regulations

Applicable Laws and Regulations

In accordance with the regulations of the Mexican Ministry of Environment and Natural Resources (SEMARNAT), on July 19, 2012, SEMARANT issued Official Letter No. 139.003.03.435/12 indicating that the Project for the community of los Fierros does not require an environmental impact assessment or authorization (MIA).

Since the Project will be developed in already disturbed areas, the consultation with the National Anthropology and History Institute (INAH) is not required. No cultural or historical resources are expected to be disturbed by the Project.

Environmental Studies and Compliance Actions

As indicated in the official letter from SEMARNAT, no environmental studies are required for this Project.

Pending Environmental Tasks and Clearances

There are no pending environmental tasks or authorizations.

Compliance Documents

As indicated in Official Letter No. 139.003.03.435/12 issued by SEMARNAT on July 19, 2012, no formal environmental authorization (MIA) is required for the Project.

2.2.2. Environmental Effects / Impacts

Existing Conditions and Project Impact – Environmental

The Project will reduce flooding and the risks associated with stagnant water during the rainy season by providing adequate storm water infrastructure for the area. Through the Project the Municipality will be able to manage storm water flows appropriately. Environmental effects expected as a result of Project implementation include:

- Proper storm water management; and
- Reduced risk of surface ponding and stagnant water that create a habitat for disease transmitting vectors, such as mosquitos.

Overall, the environmental impact of Project implementation will be positive, given that this Project will contribute to the proper management of storm water and thus improve the quality of life of area residents by curtailing potential health hazards.

Mitigation of Risks

Only minor temporary environmental impacts are anticipated during construction of the Project, provided that the tasks are implemented in accordance with best management practices. Potential impacts may be present during the construction phase and include the following:

- Fugitive dust emissions;
- Combustion gas emissions from construction machinery; and
- Temporary roadway blockages and presence of workers in the area.

Typical mitigation measures to be practiced include:

- Application of water to reduce fugitive dust emissions;
- Vehicle tune-ups to reduce emissions; and
- Placement of warning signs to prevent potentially hazardous situations.

Natural Resource Conservation

The Project will contribute to the conservation of natural resources by directing storm water flows to natural water bodies, thus creating opportunities for its beneficial use. It will also prevent dangerous erosion patterns caused by recurrent flooding.

No Action Alternative

The no-action alternative was not considered viable, since the risk for extreme climate conditions is likely to increase. Sufficient storm water infrastructure is needed to prevent hazardous conditions for the environment, as well as for the health and safety of the residents.

Existing Conditions and Project Impact – Human Health

Waterborne diseases are caused by pathogenic microorganisms that may be transmitted as a result of contaminated conditions in ponding water related to inadequate storm water management. Flooding can cause sewer systems to overflow, contaminate drinking water

supplies and create stagnant pools of water conducive to the proliferation of vector populations that transmit dangerous diseases, such as the West Nile virus and dengue fever. An individual can become ill from arboviral or dermatological diseases if infected by mosquito bites or by coming into contact with polluted water.

The Nuevo León Health Ministry reported an increased rate of dengue incidences in the state in 2012, almost double the 600 occurrences reported in 2011.[4]

Transboundary Effects

No negative transboundary impacts are anticipated by the implementation of this Project. The community is 93 miles from the border.

Other Local Benefits

In addition to public safety and health benefits, this Project will also help protect private property and public infrastructure from recurring flood damage.

2.3. FINANCIAL CRITERIA

2.3.1. Uses and Sources of Funds

The total estimated cost for construction of the Project is US$370,000. The Project Sponsor requested a US$333,000 grant from NADB through its Community Assistance Program (CAP) to complete the financing of the Project. Table 3 presents a summary of total Project costs, as well as the sources of funds.

Table 3
USES AND SOURCES OF FUNDS
(US$ Dollars)

Uses	Amount	%
Construction	$ 370,000	100
TOTAL	$ 370,000	100
Sources	**Amount**	**%**
Municipality of Santiago, N.L.	37,000	10
NADB-CAP grant	333,000	90
TOTAL	$ 370,000	100

2.3.2 Program Criteria Compliance

The Project complies with all CAP criteria. It is located within the U.S.-Mexico border region served by BECC and NADB, is being sponsored by a public-sector entity and is in an

[4] Source: http://www.sexenio.com.mx/nuevoleon/articulo.php?id=10390

environmental sector eligible for NADB financing. As shown in the above table, the Project Sponsor has agreed to cover 10% of the project cost, as required under the program.

The Project was selected through an evaluation and prioritization process using criteria mainly based on financial need, level of project readiness and number of residents to benefit. The representative degree of financial need in the project area was evaluated by comparing household income. In Mexico, the average household income of the community was compared to the average household income of Mexican communities in the border region. For the current evaluation, the average Mexican border income was US$12,401. According to the 2000 INEGI census, the average income in Santiago was estimated at US$6,300, almost half the average income of Mexican border communities and 17% less than the average state income (US$7,581).

Once funding has been approved, the Project Sponsor is ready to initiate bidding for construction. Upon completion, an estimated 20,000 residents will directly benefit from improved storm water management and the reduced risk of exposure to contaminated water and waterborne disease.

2.3.3. Conclusion

For the above reasons, NADB proposes providing a CAP grant for up to US$333,000 to the Municipality of Santiago, N.L., in accordance with the terms and conditions proposed in Annex B.

3. PUBLIC ACCES TO INFORMATION

3.1 PUBLIC CONSULTATION

BECC released the draft Certification and Financing Proposal for a 14-day public comment period beginning January 29, 2013. The following Project documents were made available for public access:

- Official Letter No. 139.003.03.435/12 issued by SEMARNAT on July 19, 2012, stating that this Project does not require a MIA.
- Final Design for the storm water system.
- Official Letter No. 076 issued by the City Council of Santiago on November 21, 2012, authorizing its financial commitment for the Project.

The public comment period ended on February 12, 2013 with two comments received: a letter of support for the Project from the regional water utility, *Agua y Drenaje de Monterrey (SADM)* and a letter from the International Boundary and Water Commission (CILA/IBWC) expressing no objection to the Project.

3.2. OUTREACH ACTIVITIES

The Sponsor promoted the Project at the November 14, 2012, City Council meeting. The meeting was open to the general public, and meeting agendas were made available beforehand. No opposition to the Project was expressed, and a general consensus to support the Project was reached.