

# Border Environment Cooperation Commission

## Solid Waste Project: Equipment for Nogales, Sonora

### 1. General Criteria

#### 1.a Project Type

The project consists of providing the necessary equipment to improve the efficiency of the solid waste collection service and management in the city of Nogales, Sonora. The project includes the acquisition of collection trucks, street sweepers.

This project belongs to BECC's *Municipal Solid Waste* sector.

#### 1.b Project Category

The project belongs to the *Community Environmental Infrastructure Projects – Community wide Impact* area, as it will improve the quality of the municipal solid waste management service by expanding the collection service, transportation, and final disposal capacity resulting in a positive impact for the community. The project considers the environmental infrastructure required by the community to expand its municipal solid waste collection, transportation, and final disposal capacity.

#### 1.c Project Location and Community Profile

The project will be developed within the city of Nogales, head of the municipality of Nogales, Sonora, which is located in the northern part of the State of Sonora. The community borders the United States of America and the city of Nogales, Arizona to the north; the municipalities of Magdalena and Imuris to the south; the municipality of Santa Cruz to the east, and the municipality of Saric to the west.



Figure 1 - Nogales, Sonora.

#### Demographics

Based on the 2005 Population and Housing Census developed by the National Institute of Statistics, Geography, and History (INEGI), Nogales' population by the year 2005 was 189,759 inhabitants, and according to data from the National Population and Housing Council (CONAPO), the population of Nogales by the year 2007 is estimated to be 199,749 inhabitants.

**Local Environmental Services**

According to the Benchmarking System used by the Sonora State Water Commission (*Comisión Estatal del Agua, CEA*), Nogales has 82% drinking water service coverage and as for wastewater collection and treatment, the coverage rate is 80%.

Solid waste collection coverage is at 80%, and the estimated street paving coverage is at 45%.

**1.d Legal Authority**

The project sponsor is the City of Nogales, Sonora, which according to the article 115 of the Mexican Constitution (Feb 06, 1917) and the Constitution of the State of Sonora (March 22<sup>nd</sup>, 1917), the municipality of Nogales is an entity integrated by a City Mayor, one syndic, and a municipal board elected by the city. It has legal capacity to develop municipal infrastructure projects, establish and collect fees, and use revenues from general funds.

operate the sanitary landfill (compactor, backhoe, dump trucks). However, the number of units may be modified depending on market conditions, prices, and/or other variables.

The project intends to replace units that will be removed from service by the City with the purchased vehicles, and to consolidate the provision of services by adding new routes; an action that will help municipal solid waste collection improve efficiency.

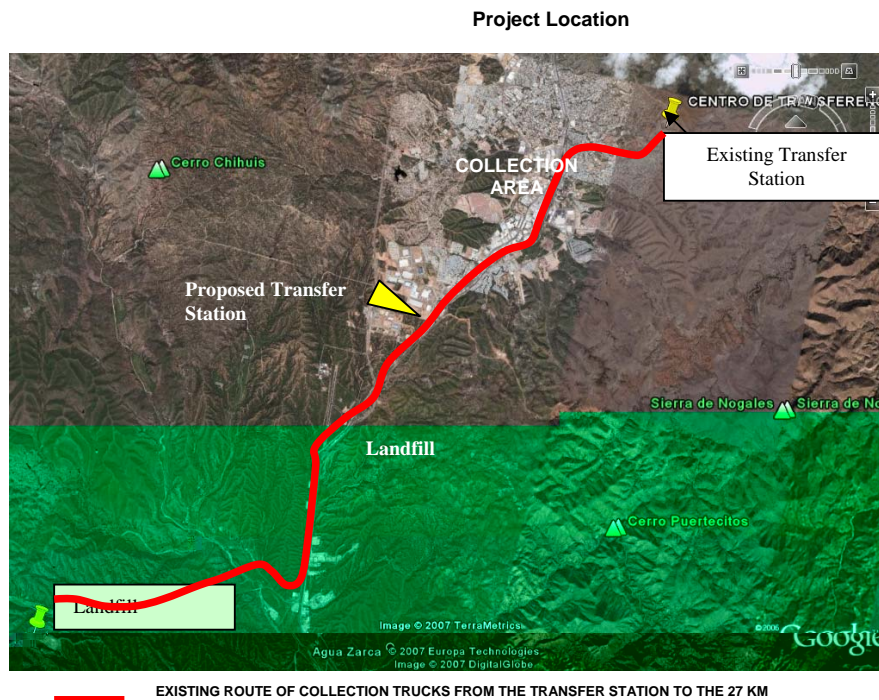
Phase II<sup>1</sup> of this project; consist of the construction of a new cell “B” and the closure of cell “A” in the existing landfill. This phase also includes the construction of a new transfer station that will be located at the south of the city; the Municipality already identified the site and is in the process of acquiring the land. In addition, the open dump located next to the existing transfer station will be closed as well. This phase will look for certification in the near future.

The phase I of the project, includes the purchase of collection trucks with 20-cubic-yard compaction equipment, collection trucks with 10-cubic-yard compaction equipment, automated street sweepers, dumpsters (including garbage collection truck features), tractor trailer trucks, and equipment to operate the sanitary landfill (compactor, backhoe, dump trucks). However, the number of units may be modified depending on market conditions, prices, and/or other variables.

The project intends to replace units that will be removed from service by the City with the purchased vehicles, and to consolidate the provision of services by adding new routes; an action that will help municipal solid waste collection improve efficiency.

### Project Outline

The proposed equipment will cover all existing collection routes and will improve operation efficiencies at the transfer station and the sanitary landfill. The following figure shows the proposed outline for the project's implementation.



<sup>1</sup> Estimated cost of 28.4 million pesos

## Project Justification

The demographic growth experienced by the city of Nogales, as well as the related increase in solid waste generation rates, in addition to an extraordinary demand for public services, particularly as to municipal solid waste collection, transfer, and final disposal, have created a backlog in the provision of comprehensive solid waste management services. This deficiency results primarily from the failure to replace solid waste collection equipment. The associated backlog in solid waste collection and final disposal caused by the lack of infrastructure, results in a significant amount of solid waste being disposed or burned at various unregulated sites. The above gives rise to unhealthy scenarios that pose high environmental and public health risks.

Nogales generates approximately 130,858 tons of solid waste per year, including non-domestic waste.

The following table shows solid waste generation rates in Nogales, Sonora.

<b>Solid Waste Generation in Nogales, Son.</b>						
<b>Year</b>	<b>Population</b>	<b>Residential and Street Sweeping (Ton.)</b>	<b>Non-Residential (Ton.)</b>	<b>TOTAL (Ton.)</b>	<b>Residential per capita (Kg./day)</b>	<b>Total per capita (Kg./day)</b>
2003	182,693	73,999	31,028	105,027	1.12	1.58
2004	188,113	76,983	31,109	108,092	1.13	1.57
2005	193,495	82,121	38,439	120,560	1.17	1.71
2006	198,847	88,984	41,873	130,857	1.24	1.8
2007	204,176	96,278	45,179	141,457	1.3	1.9

Source: H. Ayuntamiento de Nogales (Estimated information from Oct 2006 to June 2007).

The City of Nogales<sup>2</sup> currently collects approximately 257 tons of solid waste each day. According to studies developed by the Nogales' Directorate of Public Services and Urban Development –the agency in charge of providing waste collection services–, operation efficiency rates for garbage collection vehicles range between 55% and 85%; however, most of the equipment is working with efficiencies that fall in the bottom of said range.

Street sweeping is currently performed manually. In order to increase service coverage, the project proposes the purchase of automated sweeping units and solid waste dumpsters for areas with high population density, such as residential units, schools, parks, sports complexes, community centers, and public facilities, especially those located in areas where the surface topography prevents the entrance of garbage collection vehicles.

Improving solid waste management efficiency requires the renovation of the existing vehicle fleet used for solid waste collection, management, transfer, and final disposal. Replacing the units that will be removed from service by the City will help improve collection efficiencies, inasmuch as the vehicles will not have to be disabled for extended periods of time due to mechanical failures. This will give an opportunity to expand waste collection to areas where service is currently unavailable.

<sup>2</sup> Source: City of Nogales, Sonora- September 2007

The project's implementation will help the City of Nogales substantially improve the provision of solid waste collection and final disposal services. In addition, the proposed project will address environmental and human health concerns related to the accumulation of improperly handled solid waste and illegal dumpsites that may stem from the unavailability of accessible disposal sites, or the issue of waste burning at the household level as a regular practice in areas where waste collection service is deficient or inexistent. The above practices may become generalized if the project is not implemented.

**Important Aspects for Certification:**

The project falls within the BECC's priority sectors and meets the basic general criteria.

**Pending Issues:**

None

## 2. Human Health and Environment

### 2.a Compliance with Applicable Environmental Laws and regulations.

The objective of the project is to improve public health and environmental conditions through the implementation of improvements to the municipal solid waste management and disposal system. These actions will substantially improve solid waste collection services throughout the city, inasmuch as the backlog in solid waste collection and management infrastructure results in waste collection delays, thus creating a threat for infection due to the excessive buildup of domestic waste on the streets and sidewalks.

The project conforms to the objectives of the General Law for Solid Waste Prevention and Management with regards to urban solid waste management and disposal.

The project complies with the parameters established by SEDESOL's Municipal Solid Waste Collection and Route Design Manual as well as the Solid Waste Management and No Controlled Site Rehabilitation and Closure Manuals and Solid Waste Best Management Practices. As for the implementation, the project will adhere to guidelines established by the city in its general purchasing specifications, as well as urban development and traffic recommendations issued by the State of Sonora.

### 2.a Human Health and Environmental Impacts

#### Human Health Impacts

The primary purpose of the project is to collect and dispose of municipal solid waste without creating public health, safety, and environmental disturbances or hazards. The timely collection of solid wastes and their final disposal at the sanitary landfill will prevent the illegal disposal of waste in unauthorized sites. As a result, the project will protect the environment and human health by preventing the direct contact with decomposing matter.

The inappropriate management of municipal solid waste could create conditions that foster the proliferation of disease vectors that may increase the risk for diseases such as leptospirosis, Hantavirus pulmonary syndrome, flea-borne typhus, bubonic plague, rabies, vesicular rickettsiosis, and Harverhille fever, among others. Moreover, the inadequate disposal of solid waste may be a source of air, soil, and surface and groundwater contamination. The project's implementation will contribute to reduce or prevent the risk of human diseases and the negative environmental impacts associated to the inappropriate handling of solid waste. The following table shows human health statistics related to Hepatitis or Shigelosis in the US-Mexico Border

Incidence of Diseases and number of cases in US-Mexico Border Communities

AREA	DISEASES				
	Hepatitis A	Measles	Shigellosis	Tuberculosis	AIDS
Population US	12.64	11.2	10.9	10.3	16.7
Arizona Border	39.4	9.8	38.3	6.9	15.1
California Border	30.7	61.9	22.1	12.7	22.0
New Mexico Border	46.9	14.6	21.2	7.3	3.9
Texas Border	40.4	38.9	49.1	26.5	7.9

Source: National Center for Health Statistics. Centers for Disease Control and Prevention, Vital Statistics Database. HRSA, n.d. <http://bphc.hrsa.gov/bphc/borderhealth/table1.htm>

The previous chart shows a study related to public health in communities adjacent to the US-Mexico Border. The conditions in Nogales, Son are similar to the ones reported for the state of Arizona. As it can be observed in the table, the incidences of diseases such as Hepatitis or Shigellosis, which are associated to inadequate solid waste disposal, are considerably greater in the Arizona border area than in the rest of US.

The development of this project will improve public health conditions as follows:

Human health conditions will improve as a result of reducing or eliminating vectors for diseases associated to the inadequate disposal of solid waste.

The potential for air, soil, and surface and groundwater will also be reduced.

### **Environmental Impacts**

The purpose of the project is to expand the equipment used for solid waste collection, transportation, and final disposal in Nogales.

The project's implementation is not anticipated to negatively impact the environment, inasmuch as:

- The project proposes the purchase of automotive vehicles that meet the technical and environmental specifications required for their operation.

### **Transboundary Impacts**

No significant negative transboundary impacts are anticipated as a result of the project's implementation. A beneficial impact is anticipated on the U.S. side, as the project will reduce the risk of diseases related to the improper management of solid waste in this Mexican border community and the associated risk of transmitting these diseases to the U.S. population.

Air polluted emissions resulted from waste burned will be also reduced as the efficiency of solid waste collection improves, resulting in benefits to both Nogales Arizona and Sonora populations.

### **Formal Environmental Clearance**

The project's equipment purchase component does not require an Environmental Assessment; however, it is important to note that while the project does not require an environmental assessment, not implementing the project may result in adverse impacts to the environment. These impacts would be direct and indirect. A direct impact is the potential pollution of surface water and aquifers, the development of harmful animal species, a increase in vectors, all caused by the disposal of solid wastes in inappropriate areas. Indirect effects include air pollution caused by the illegal burning of waste or by accidental fires, exposure to toxic substances, flooding caused by the blockage of canals or drainage pipes, and an increase in diseases caused by the inadequate management of solid waste.

The project adheres to international agreements signed by Mexico and the United States, particularly the Border 2012 Program. This program established an objective to reduce solid waste contamination on both sides of the border.

#### **Important Aspects for Certification:**

The project addresses a major human health and environmental issue.

#### **Pending Issues:**

None

## 3. Technical Feasibility

### 3.a Technical Aspects

#### Project Development Requirements

In order to implement the Emergency Sanitation Plan, the City of Nogales developed a diagnosis of the current solid waste management system and concluded that the collection system is operating deficiently due to the faulty condition of existing equipment.

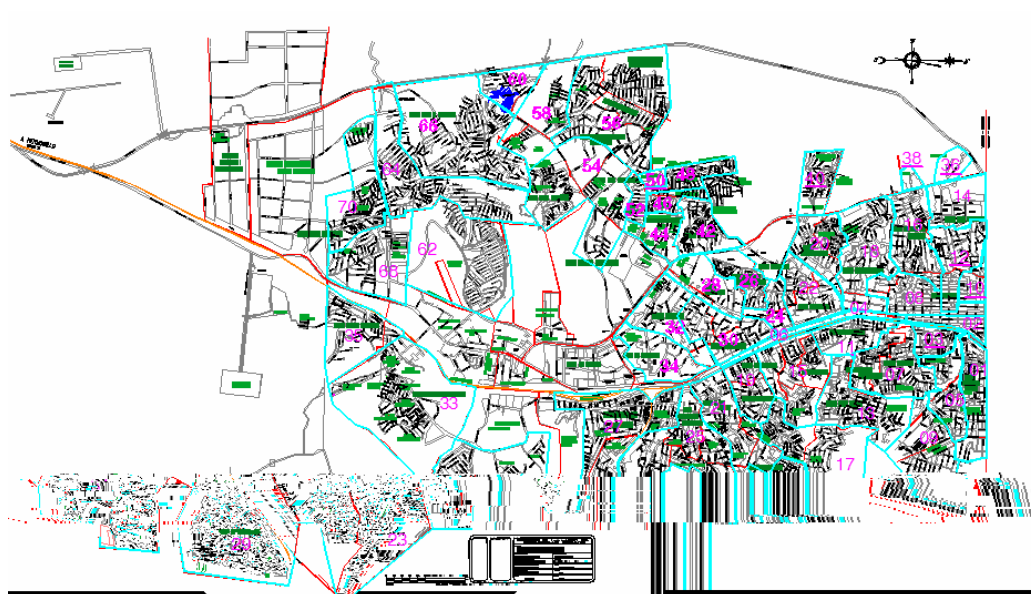
As a phase I of the Municipal Emergency Sanitation Plan, and based on the Waste Collection Route Analysis developed by the Nogales' Directorate of Public Services and Urban Development, it was determined the renewal of the vehicle fleet used for waste collection, street sweeping, and solid waste final disposal. The following equipment requirements were identified:

<b>Solid Waste Project: Equipment for Nogales Sonora</b>	
<b>Number</b>	<b>Type of Unit(s)</b>
12	20-cubic-yard garbage collection trucks with compaction equipment
*	10-cubic-yard garbage collection trucks with compaction equipment
*	Automated street sweepers
*	Dumpsters (including systems for garbage collection trucks)
*	Tractor trailer trucks
*	Equipment for Sanitary Landfill operations (compactor, backhoe, dump trucks)

\* The number of units will be contingent upon the availability of funds.

Based on the proposed equipment, garbage collection routes were redefined considering: providing waste collection service with a smaller number of units, which will help to realize significant operation and maintenance savings, balance work loads for collection routes, and provide timely and efficient service.

Rescheduling garbage collection routes will help the city to address the totality of the urban area. The following figure shows the new configuration of garbage collection routes:



**Solid Waste Collection Routes in Nogales, Sonora**



The City of Nogales has proposed the following standard technical specifications for the equipment in order to purchase the units that are most useful to provide waste collection services. These specifications may vary according to specific market conditions and/or prices:

Garbage collection trucks, 2007 model, with 20- and 10-cubic-yard rear-loading compaction bins will be mounted on the cab-chassis, and will include the following additional specifications:

- Class 8 truck (4x2)
- Minimum 12,000 lbs. front axle load capacity
- 23,000 rear axle load capacity
- Minimum 190 hp engine, electronic system
- 6-speed direct manual transmission ROV/PTO and pneumatic power take off
- Minimum 23,000 lbs. mechanical suspension
- Minimum 23,000 lbs. rear spring suspension
- 22.5" disc rims
- R 22.5/14 tires
- Aluminum fuel tank
- Metric gauge indicators
- Additionally, the vendor is required to maintain a local shop or be able to provide post-sale and manufacturer warranty services in Nogales, Sonora.
- Characteristics of waste collection bin: 20-cubic-yard capacity, rear loading, 2.3 cubic yard hopper capacity with pneumatic power take off
- Trailer mounted over the cab-chassis.

The hydrostatic broom three-wheel sweepers, model 2007, to be used by the municipality will have the following specifications:

- Type: Single-engine municipal hydrostatic broom three-wheel or tricycle-type sweeper.
- Engine: 4-cylinder turbo-charged diesel; 110 hp engine at a minimum 2400 rpm; minimum 30-gallon fuel tank capacity.
- Chassis: It must C-channel, modular body frame with steel construction; front and rear hooks.
- Hopper: minimum 3.5 yds<sup>3</sup> capacity; ability to dump at a minimum 2.6 m. height; hydraulic operation.
- Sweepers will include: waste elevators; endless one-piece conveyor belt joined with metal clips and powered by a hydraulic engine; a spray system; a minimum 180-gallon capacity high-resistance and non-corrosive water tank for spraying; sprinklers to control sweeping dust; hydraulic drive; front-wheel drive and two fixed rear-wheels; 4.26 m. swing radius; 3.17 m. variable sweep width; a broom hydraulic tilt system. The unit must have in-cab controls to operate the brooms' hydraulic tilt, which helps the operator adjust the broom to the sweep area, and allows for an efficient gutter, curb, and sidewalk penetration. There must be two hydraulic powered 47" (1,194 mm.) variable diameter side brooms with interchangeable segments and steel-fiber filler; sweepers must also have a hydraulic lift and dump system. The cab must have front and side visibility, double controls, and independent console for brooms and all the rest of the machine's functions. The cab's height shall not exceed the height of the hopper.

The city is currently developing an assessment to identify the number of dumpsters that will be part of the proposed upgrade and their characteristics. Consequently, their specifications will be determined once the assessment is completed.

The equipment that currently operates at the transfer station and sanitary landfill has exceeded its lifetime, so it requires continuous repairs and expensive maintenance. The project proposes to

purchase tractor trailers and the equipment required to operate the landfill, so the city must define specifications for the proposed equipment prior to the beginning of the bidding process.

**Appropriate Technology**

The technology proposed for the project is typical of the municipal solid waste management industry and considers the efficiencies required to operate a profitable comprehensive sanitation service. Additionally, the project considers the operating experience that the City has gained through the provision of services.

The project alternatives reviewed consisted basically of the following scenarios:

- a) **No-Action Alternative.** In view of the environmental, human health, social, and political implications, this alternative was considered without merit, inasmuch as the proposed project is required as a planned component of the 2006-2009 Municipal Development Plan, which considers it necessary to provide adequate solid waste collection and disposal service to Nogales residents.
- b) **Implement improvements to the solid waste collection and final disposal equipment in Nogales.** This was the preferred alternative. The improvements to the equipment described are essential to implement the Emergency Clean up Plan, an activity whose objective is to eliminate the existing solid waste collection backlog in Nogales.

The implementation of this project will allow the effective collection of solid waste that will reach 100% of the city’s population. Furthermore it will be possible to reduce operation and maintenance costs, and comply with the existing laws and regulations regarding solid waste management.


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

The equipment proposed by the project will be driven on existing roadways, so there will not be a need to meet any property or right-of-way requirements.

**Work Tasks and Schedule**

The City of Nogales proposes implementing in one phase, the features needed to provide comprehensive solid waste management services.

The following figure shows the proposed timetable for the project's implementation.

Task Schedule for the Solid Waste Project: Equipment for Nogales Sonora									
Municipality Nogales, Sonora									
Month	1	2	3	4	5	6	7	8	
Concept									
Equipment									
Acquisition collection trucks									
Acquisition mechanical sweepers									
Acquisition for transfer station equipment									
Acquisition for landfill operation equipment									

**Technical Process**

The technical process that has been considered to offer a comprehensive solid waste management in Nogales is adequate, in order to have an appropriate solid waste collection service and final disposal in the landfill. Human Health potential risks will be eliminated at reducing human

contact with waste. The justification of the units to be replaced was based on the equipment operation record of the Municipality, where the condition of each unit was registered. In order to select the equipment to be replaced, the City of Nogales developed technical reports for each equipment and specified the number of proposed units.

### 3.b Management and Operation

#### Project Management

The operation and maintenance of the comprehensive solid waste collection and management system in Nogales will be the responsibility of the Directorate of Public Services and Urban Development of the City of Nogales, who has the necessary infrastructure and capacity to provide municipal cleaning services to the city of Nogales.

#### Operation and Maintenance

##### Organization

The provision of solid waste collection and final disposal services in Nogales is the responsibility of the Directorate of Public Services and Urban Development of the City of Nogales. The provision of comprehensive sanitation services will be charged as an operating expense to the Mayor's Office. The project's implementation does not require any additional staff or special training for existing staff.

##### Permits, Licenses, and other Regulatory Requirements

For the purchase of the equipment proposed by the project, there are no standards or regulations other than the internal rules established for the purchasing process. The purchase of equipment will adhere to the City of Nogales bidding procedures and technical specifications previously described.

#### **Important Aspects for Certification:**

The proposal for the purchase of equipment was reviewed by NADB and BECC.

#### **Pending Issues:**

None.

## 4. Financial Feasibility

### 4.a Financial Feasibility

The North American Development Bank (NADB) after reviewed the Municipality of Nogales' financial information determined that the Project financial structure is adequate. Sponsor's financial information includes, among other:

- a. Economic and demographic information of Project's area of influence;
- b. Historic financial statements;
- c. FY 2007 budget;
- d. Letter of request of funding components;
- e. Capital investment project, and
- f. Project's itemized budget.

Financial information analysis includes Project's financial structure based on the following: total Project's cost, including both phases and it is estimated in \$5.25 million. Phase I which is now presented for NADB/BECC's Board authorization is estimated in US\$2.7 million<sup>3</sup>.

Nogales' financial information suggests that the Municipality is able to borrow up to US\$2.3 million. Therefore, according to this, Nogales and NADB agreed to a financial structure that includes a loan at market rate and the resources from the Municipality to complete Phase I:

Sources of Financing	Amount(\$USD) <sup>1</sup>	%
NADB Loan	2,302,158	85
Nogales Equity	406,263	15
<b>TOTAL</b>	<b>2,708,421</b>	<b>100</b>

### 4.b Solid waste rates

Tipping fees and containers fees are specified in the Municipal Revenue Law for no residential users only. Nogales is authorized to charge \$8.99 per ton for disposal at the landfill for hotels, industries and restaurants and for users not being serviced by the municipal collection system. Important industrial customers, especially manufacturers, pay private waste service providers to haul their garbage into the landfill.

The Municipal Administration is showing commitment to enforce tipping fees. Tipping fees may potentially generate more than \$0.27 million per year. In addition to this, on April 1<sup>st</sup>, 2007, Nogales citizens approved the implementation of a monthly solid waste rate of MX\$15, which will be charged from mid-2007 to mid-2008. This new residential rate is expected to generate about \$0.41 million in annual revenue during its entire implementation, which will be used to partially fund the Project. Nogales will continue to subsidize its solid waste system, whose O&M expenses reached \$3.24 million in 2006.

### 4.c Project Management

The Project will be operated by the Municipality of Nogales, Sonora. Nogales has the adequate personnel to manage Projects' procurement and construction. Nogales has also the human resources and experience to operate and maintain the Project. The Municipal central budget allocates adequate budgetary resources to operate and maintain its solid waste system.

<sup>3</sup> For indicative purposes, all figures are transformed into dollars at an exchange rate of \$11.12 pesos per dollar quoted on September 18, 2007.

**Important Issues for Certification:**

The project was reviewed and it was determined to be financially viable.

**Pending Issues:**

None.

## 5. Community Participation

### 5.a Local Steering Committee

The Comprehensive Community Participation Plan developed by the Local Steering Committee was approved by the BECC on March 19, 2007. The Local Steering Committee was responsible for preparing an outreach program, including informing the resident of the benefits resulting from the project, as well as the associated costs and economic impacts for the community. In addition, the program includes the information that will be presented through public media as well as a meeting program with representants of the community such as professional organizations, academia and NGO's. The program also includes a public consultation to determine if the community agrees to pay a monthly fee of MX\$15 pesos during one year, for the solid waste collection service. Most of the community had access to the project information as well as the benefits that the project will bring to them.

The following sections describe the actions performed on this regard.

The Local Steering Committee was formally established on March 12, 2007. A Board of Directors was elected, and is integrated by the following individuals:

Chairperson:	Mr. Nicolás D. Kyriakis G.
Vice-Chair:	Mr. Luís Héctor Mendoza Madero
Public Meetings Official:	Ms. Aurora Bustamante
Community Organizations Official:	Ms. Ma. Teresa Robles.
Outreach Official:	Mr. Juan Torres P.

During the meeting, the committee was informed of the task required for the certification of this project.

### 5.b Public Access to Project Information

#### Public Notice

An invitation to the Public Meeting, scheduled to be held on September 20, 2007, was published on September August 21, 2007 in the "El Imparcial" newspaper in Hermosillo Sonora.

#### Additional Outreach Activities



In order to implement the Program for clean up and solid waste collection in Nogales, the Steering committee in coordination with the Municipality developed initiatives to transmit the actions that will be performed to achieve a comprehensive solid waste management in Nogales.

As part of the strategies proposed to inform about the project, the Steering Committee in coordination with the Municipality organized a public consultation on April 1, 2007. During this event, the community was informed about the means to acquire new equipment and improve the efficiency in the solid waste collection service and disposal in Nogales, as well as the contributions required per household. To develop this process it was installed 20 polling stations, where people cast their ballot presenting their electricity bill. The results showed most people approved the project and

accepted a rate of MX\$15 pesos per month per household during one year. The development of the public consultation was evaluated by a Citizen Council created to validate the process.

Project information was made available to the public, at least 30 days before the public meetings.

### **Meeting with Local Organizations**

Information meetings were held with local residents and members of the community in anticipation of BECC public meetings. Members from the steering committee were nominated to contact local organizations, present information about the project and ask for comments, and support. Among the organizations contacted was the Nogales' Institute of Technology.

## **Public Meetings**

### **Public Meeting**



The meeting took place at 7:00 PM on September 20, 2007, at the Municipal Auditorium. The meeting was attended by members of the Local Steering Committee and approximately 230 residents.

During the meeting, the Chairman of the Local Steering Committee introduced the members of the committee to the community and described their duties and responsibilities.

Additionally, a presentation on the technical aspects of the project was made by Ms. Claudia Gil Anaya, Sub director of Urban Infrastructure and Public Works, establishing the project's features and objectives, and specifying the vehicle routes for solid waste collection, equipment needed, and related benefits. Additionally, 168 surveys were administered during the meeting and 100% of those surveyed said to have understood the project well and explicitly expressed their support for it.

### **5.c Final Public Participation Report**

The Local Steering Committee and the project sponsor prepared the "Final Public Participation Report" to demonstrate that the proposed objectives were fully met according to BECC's criteria.

#### **Important Issues for Certification:**

The project has the community's support and the corresponding information to demonstrate public support is available.

#### **Pending Issues:**

None

## 6. Sustainable Development

### 6.a Institutional and Human Capacity Building

Actions within the scope of the project that contribute to institutional and human capacity building at the Municipality of Nogales are the following:

- Improving the equipment of the Direction of Urban Planning and Public Services in regards to solid waste collection, transportation and disposal.
- Improve Operation and Maintenance Solid Waste Management Programs
- Provide training to operating staff.
- To implement a process of public participation that allows for a rate that supports the self-sufficiency of public clean services.
- The project will be operated by the Direction of Urban Planning and Public Services, which counts with the required staff to operate and maintain the project. Moreover the Nogales' municipality has a bylaw regarding Public Service for Clean up, Solid Waste Collection, Transfer and Final Disposal, which establishes general guidelines for equipment operation, collection service, waste transportation and final disposal.
- The Nogales' Municipality will provide technical training to the staff for the operation and maintenance of the new equipment as a result of the project's implementation.

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

The proposed project complements the actions considered in the 2006-2009 Municipal Development Plan, which establishes goals to improve the solid waste collection service and final disposal.

The project adheres to the US-Mexico Border 2012 Environmental Program by meeting Goal #3 (Reducing soil contamination) and Objectives 1 (Promoting strategies to improve solid waste management). One of the program's guiding principles is reducing major risks to public health and conserving and restoring the natural environment.

### 6.c Natural Resource Conservation

The project contributes to reduce environmental deterioration by improving the solid waste collection service and final disposal in the municipality of Nogales, including the towns of Cicuta and Mascareñas, in addition it will bring benefits to human health in the border region.

The project also includes the implementation of sustainable building practices that will be part of the specifications of the construction process. The project does not interfere with the conservation of natural resources. The project will be implemented in urban areas that have been previously affected; Transportation will be done utilizing existing roads.

The Municipality also implemented a recycling program, as a strategy to promote conservation. Different sector of the community, students, merchants and municipal authorities participate in this program that also established economic incentives to promote material reuse such as paper.

### 6.d Community Development

The completion of this project is crucial to the development of the community, as it will reduce the incidence of diseases associated to the inadequate or illegal solid waste disposal. Thus,



benefits for the community are expected as this project reduces the incidence of diseases related to human contact with waste, and also reduces contamination. All of these contribute to improve life quality, and at the same time promotes economic development and environmental conservation.

**Important Aspects for Certification:**

The project meets all applicable Sustainable Development principles.

**Pending Issues:**

None.

**Project Documentation Available:**

- Proyecto de Ampliación del relleno Sanitario: Construcción de la Celda “B”, Mayo del 2005, preparado por la Dirección de Planeación del Desarrollo Urbano, H. Ayuntamiento de Nogales, Son.
- Evaluación de la Quema de Basura y Leña en Nogales, Son., 2007: H. Ayuntamiento de Nogales Son.
- Análisis Preliminar de Rutas de Recolección de Residuos Sólidos en Nogales, Son. 2007: H. Ayuntamiento de Nogales Son.