

Border Environment Cooperation Commission Solid Waste Project (Phase II): Sanitary Landfill & Waste Transfer Station for Nogales, Sonora

1. General Criteria

1.a Project Type

Project Name: Solid Waste Project (Phase II): Sanitary Landfill & Waste Transfer Station for Nogales, Sonora

Project Sector: Municipal Solid Waste.

1.b Project Category

Category: Municipal Environmental Infrastructure Project – Community-wide Impact.

1.c Project Location and Community Profile

Community: City of Nogales, Sonora, head of the municipality of Nogales

Location: 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.

Location within the border: The project is within the 62.5 miles border area, and the furthest project site is 12 miles south of the U.S.-Mexico border.

Image:



Figure 1 - Nogales, Sonora location (Source: Google Earth).

Demographics

Current Population:	213,976 inhabitants
Growth Rate::	2.3%
Reference:	INEGI, 2000 and CONAPO, 2005
Economically active population:	65,133 inhabitants
Reference:	INEGI, 2000 and CONAPO, 2005
Median per capita income:	\$ 8,153 US Dollars (at 13.5 pesos per dollar)
References:	<i>National Institute of Statistics, Geography, and Informatics (INEGI)</i>
Primary economic activities:	Commerce and Services
Marginalization rate:	Very Low, -1.69%

Services

Drinking Water System Service	
Coverage:	84%
Wastewater Collection Service	
Coverage:	86%
Wastewater Treatment	
Coverage:	86 %

- Compliance with agreements:**
- La Paz Agreement of 1983 or the Border Environmental Agreement.
 - North American Free Trade Agreement of 1994 (NAFTA).
 - Border 2012 Program.

1.e. Project Summary

Project description and scope: The project consists of the closure of cell “A” which is the current cell in operation at the existing landfill, the first stage construction of both a new cell (cell “B”), and new transfer station.

The project implementation will help to provide solid waste collection service and disposal in an organized and efficient manner and in compliance with current regulations. In addition, the project concurs with applicable strategies identified in the 2006-2009 Municipal Development Plan. This project complements the Solid Waste Project: Equipment for Nogales, Sonora, considered as a first phase of the Nogales comprehensive solid waste project.

The project considers the first stage construction of a new cell (Cell B) within an area of 11.8 acres in the existing landfill with a total capacity of 487,339 yd³ (372,597 m³). The equipment is described in section 3, Table 3.3. The expansion of the landfill considers all the required works to comply with the Mexican Norm NOM-083-SEMARNAT-2003.

- Components:**
- First Stage construction of a new cell at the landfill,
 - Closure of the current operational cell,
 - First stage construction of a new waste transfer station,
 - Required equipment for the Waste Transfer Station.

Additional comments: The project includes the closure of the cell in operation at the existing landfill (Cell A), that was constructed in January 1995 and contains approximately 1,260,614 tons of solid waste, in a surface of 12.35 acres¹. Originally this cell was planned to be closed in 2005.

Benefited population: 213,976 inhabitants

Project cost: \$40,339,289 pesos

¹ Proyecto de Ampliación del Relleno Sanitario “H. Nogales, Sonora”, Ayuntamiento de Nogales, Son

Project map:

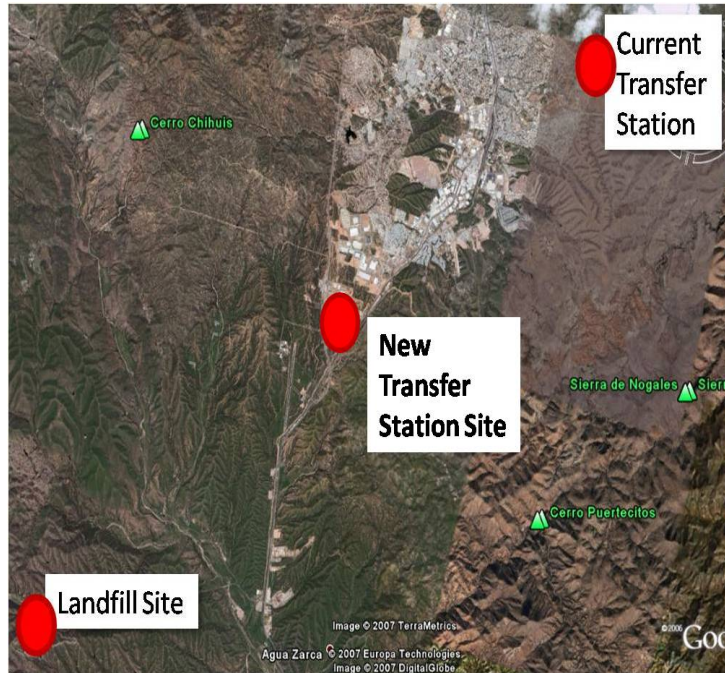


Figure 2. Project Location (Source: Google Earth).

Project justification

Project justification:

The demographic growth experienced by the city of Nogales, as well as the related increase in solid waste generation rates and the 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. 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 inadequately and causes high environmental and public health risks.

Nogales generates approximately 156,326 metric-tons (mtons) of solid waste per year (2009), including non-domestic waste.

Project need or consequences of the no action alternative:

The poor solid waste management in Nogales causes environmental problems such as air quality pollution, groundwater and soil contamination, potential site explosion and fire risks at current sites, as well as the development of harmful fauna in the project sites.

The project implementation will help the City of Nogales to substantially improve the service of solid waste collection and final disposal. The construction of a new transfer station

will optimize the use of the collection equipment, reducing the transportation time to the landfill and improving solid waste collection. In addition, by expanding the current landfill with a new cell, the proposed project will address environmental and human health issues related to the insufficient capacity at the current operational cell, buildup of improperly handled solid waste, and illegal dumpsites. The above practices may become generalized if the project is not implemented.

Pending issues:

None.

Criterion summary:

The project falls within BECC's core sectors and complies with the general criteria.

2. Human Health and Environment

2. a Compliance with Applicable Environmental Laws and Regulations.

Environmental and public health needs addressed by the proposed project:

The Municipality of Nogales does not have enough solid waste capacity at the current landfill operational cell for the proper management of municipal solid waste.

The lack of sufficient disposal capacity at the current solid waste landfill in Nogales entails solid waste disposal in inadequate dumpsites, creating solid waste dispersion that breeds groundwater and soil contamination, potential site explosion and fire risks at current sites, as well as the development of harmful fauna which is a disease transmission vector to the community.

The problem in the municipality is the lack of sufficient solid waste landfill capacity to comply with the requirements established in NOM-083-SEMARNAT-2003. The project objective 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 management throughout the city.

The project complies with the parameters established by the Secretariat of Social Development (SEDESOL, for its initials in Spanish) Municipal Solid Waste Collection and Route Design Manual as well as the Solid Waste Management and Uncontrolled 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 construction specifications, as well as urban development recommendations issued by the State of Sonora.

The project meets the following applicable laws and regulations:

The project complies with Mexican Official Norm NOM-083-SEMARNAT-2003, Environmental Protection Specifications for Site Selection, Design, Construction, Operation, Monitoring, Closure, and Ancillary Works for Solid and Hazardous Waste Disposal.

INAH Response Letter:

No. CIS/DIR.273/08

2.b Human Health and Environmental Impacts

Human Health Impacts

Direct and indirect benefits to human health:

- Reduce inadequate solid waste disposal
- Reduce the pollution of groundwater sources
- Reduce soil contamination
- Prevent the direct contact with decomposed matter.

The appropriate final disposal at the sanitary landfill, according to current regulations, 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 decomposed 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 pollution, 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.

Health statistics:

The following table shows human health statistics related to Hepatitis or Shigelosis in the US-Mexico Border

Table 2.1.
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>

Environmental Impacts

Direct and indirect benefits:

Human health conditions will improve as a result of reducing or eliminating vectors for diseases associated to the inadequate disposal of solid waste. The purpose of the project is to improve environmental conditions by implementing the works that allow complying with the NOM-083-SEMARNAT-2003 which establishes guidelines, requirements, and regulations of environmental protection for the construction of sites for final disposal of urban solid waste. It also provides guidelines that allow a better management of solid waste in Nogales.

Environmental impacts:

The project implementation is not forecasted to have negative impacts to the environment, as long as the project proposes the development of works according to the norms and in a site previously affected by human activities.

Minor environmental impacts are expected during the construction activities of the three phases, but these should not become significant impacts as long as they are completed according to the Environmental Impact Study Ruling (MIA, for its initials in Spanish) specMinoeeTwβ.7()TJT*.0005T*.042

environment and improving the quality of life for the inhabitants of the region.

- The balance of the environmental impacts will be positive since the overall benefits outweigh the potential negative impacts during the construction and operational phases of the project. In addition, the overall efficiency of solid waste management in the Municipality of Nogales will be increased.

Transboundary Impacts

Transboundary environmental impacts are not anticipated since the location of the landfill is not adjacent to the United States. However, indirect benefits are expected in the region due to the reduction of transmissible diseases related to the inadequate disposal of solid waste in the area.

Formal Environmental Clearance

Environmental Clearance:

Regarding environmental permits, the Nogales' landfill was constructed and has been operating under the authorization of the former Secretariat of Urban Infrastructure and Ecology of the state of Sonora, by means of the ruling No. 10-0702-94 issued on April 14, 1994. As a response to the Nogales Municipality's inquiry, the Commission of Ecology and Sustainable Development of the State of Sonora (CEDES, by its initials in Spanish) in the letter DG-1189/07 issued on September 20, 2007, confirmed that the municipality can operate the landfill based on the original authorization and according to current regulations.

Concerning the construction and operation of the transfer station included in the project, the CEDES, by means of the letter DGA-593/07 issued on September 13, 2007, informed to the Nogales' municipality that an Environmental Impact Assessment (MIA, for its initials in Spanish) in standard format was required. Nonetheless, the CEDES in the same document indicated that the municipality could apply for an exception as it is stipulated in the Law for Ecological Equilibrium and Environmental Protection of the State of Sonora. The municipality requested the CEDES exception based on the simplified process, the authorization was given in the letter No. DG-800/08, dated November 10, 2008. On the other hand, previous consultation from the City of Nogales to the Secretariat of Environment and Natural Resources (SEMARNAT, by its initials in Spanish) confirmed that a federal authorization with regards to environmental impact or land use for the construction and operation of the transfer station is not necessary as explained in the letter DS-UGA-IA-0752-07 issued on September 20, 2007.

Since the works proposed in the landfill are going to be developed in sites previously impacted by human activity, a consultation to the National Institute of Anthropology and History (INAH, for its initials in Spanish) is not necessary in order to determine if there are potential impacts to archeological, historical or cultural resources in the project area. In regards to the new solid waste transfer station, the INAH found no allocation of archeological, historical or cultural resources, through letter No. CIS/DIR.273/08 dated September 5, 2008.

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.

Pending issues:

None.

Criterion summary:

The project provides solution for a human health and environmental problem.
The project has all required environmental authorizations and reviews.

3. Technical Feasibility

3.a Technical Aspects

Project Development Requirements:

Design criteria:

The project was developed according to regulations set forth in the Mexican Law NOM-083-SEMARNAT-2003.

The preliminary engineering studies and final design for the expansion of the sanitary landfill and for the new Waste Transfer Station were prepared according to NOM-083-SEMARNAT-2003 (Environmental Protection Specifications for Site Selection, Design, Construction, Operation, Monitoring, Closure, and Ancillary Works for Municipal Solid and Hazardous Waste Disposal).

In order to implement the Municipal Emergency Sanitation Plan, the municipality of Nogales performed an assessment of the conditions of the current system for solid waste management. The study concluded the following:

- The location of the existing transfer station is inadequate.
- It is necessary to perform construction works in the landfill to comply with the norms related to the final disposal for urban solid waste.

Project Components

The project has the following components:

1) New Transfer Station

The facilities of the existing transfer station are located within the urban area of Nogales. As a result, it has high costs of operation and low efficiency. Considering transportation distance, solid waste generation volume, and the recommendations from the SEDESOL's Municipal Solid Waste Generation, Collection and Transportation Manuals, the municipality determined the construction of a new transfer station. The City acquired a site located strategically to construct the new transfer station and thus reduce cost of operation and improve the efficiency. The proposed site (Figure 3) has a surface of 1.82 acres and is located at 5.8 miles from downtown Nogales, via the federal road 15 Nogales-Mexico with coordinates 31°14'38.47" N and 110°57'55.07" W.

The new transfer station (NTS) will be constructed by indirect disposal method, with a pre-compactor system, with either custom trailers to have a "walking floor" technology disposal or exchangeable enclosed systems. The NTS will have a minimum

initial capacity of 345 metric tons per day, sufficient to operate the NTS until 2013, after which the NTS will require to expand its capacity to 790 metric tons per day to continue operating until 2028. As in Figure 4, the functional NTS design will have the following operational site plan design and equipment:

- Exit/entrance roads.
- Queuing area.
- Access roads.
- Commercial tipping floor.
- Waste Pit.
- Unloading Stall.
- General services, workshops and parking lots.
- Static Compactor FC-6000.
- 653 cf (18.5 m³) hopper.
- Mechanical displacement table TM-2/3.
- Two 34/40 m³ reinforced containers with hydraulic hitch and automatic shutdown.
- Volvo VHD 64 Dump Truck (adjusted to transport containers).
- Equipment Kit - Multivol model MV-30/84 CA

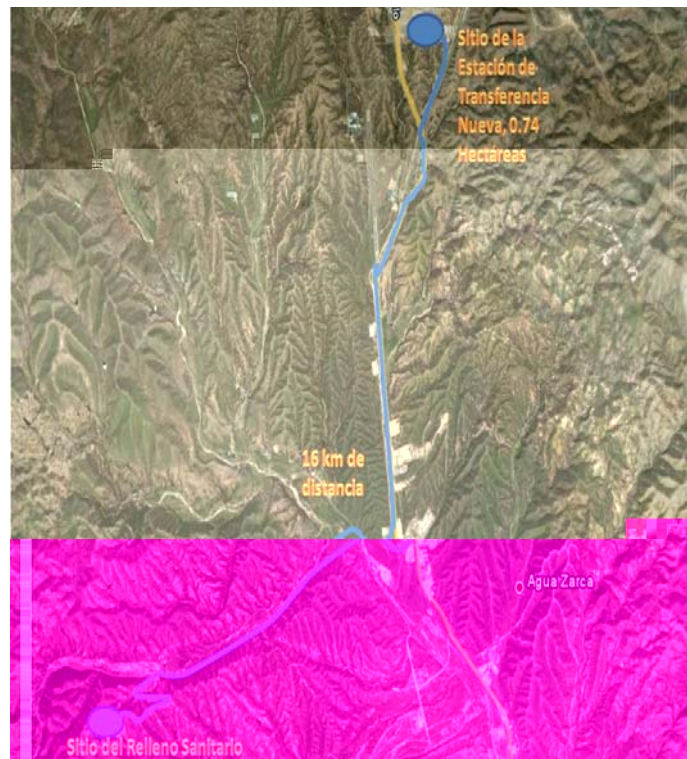


Figure 3. Solid waste transfer routes.

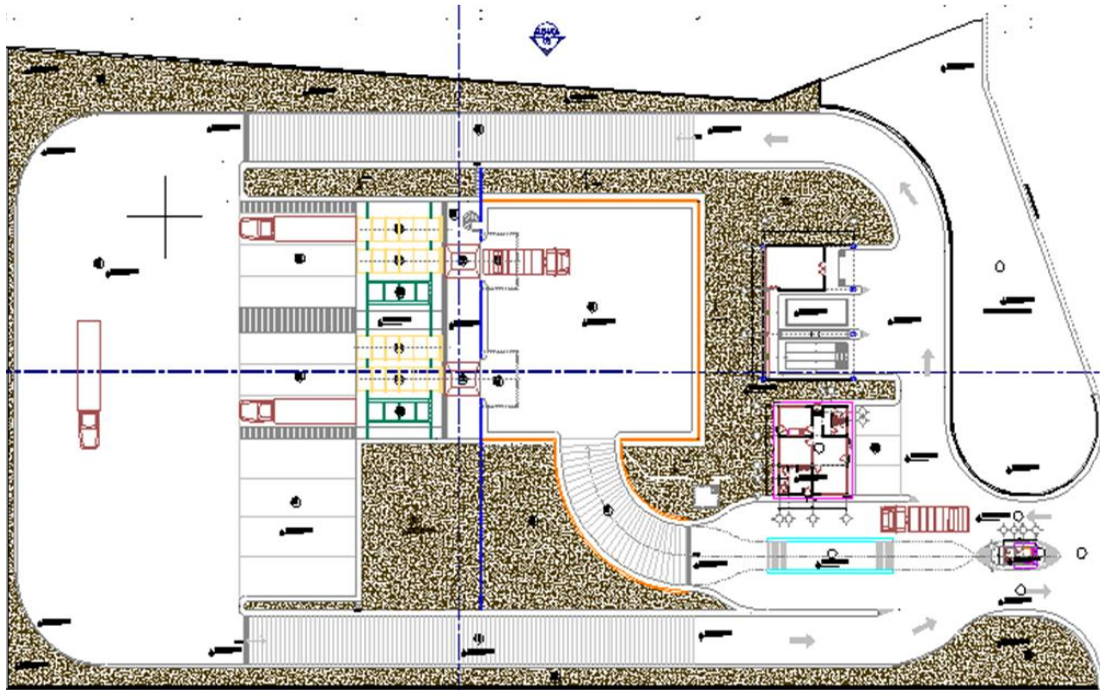


Figure 4. General New Transfer Station Layout.

1) Landfill

The existing landfill was constructed in 1995 and considering the site's topography the final design of the landfill included 3 cells. The cell A with an extension of 12.35 acres is in operation since 1995 with a lifespan of 10 years, and an estimated capacity of 1,260,614 tons of solid waste. According to estimates from the Municipality, the cell A should not receive any more solid waste by the end of 2005. Consequently, the municipality of Nogales has projected the closure of the cell A and the construction of a new cell B with a surface of 11.83 acres during the first stage, as it was planned in the original design. To develop these works, the final design was updated according to the NOM-083-SEMARNAT-2003.

Solid Waste Generation

The total generation of solid waste was determined at 428.29 metric tons per day (mton/day) for 2009, and according to the final design, the generated solid waste projected volume per year and the daily cover earth material were determined (in SI units of measurement) as shown in Table 3.1.

Table 3.1 SW volume yearly projection

Year	URBAN SW PER DAY (mtons/day)	Per capita domestic waste generation (Kg/cap/day)	SW VOLUME PER DAY (m ³ / day)	SW VOLUME PER YEAR (m ³ / yr)	COVER MATERIAL (m ³ /yr)	TOTAL VOLUME (m ³)	ACCRUED SW VOLUME (m ³)
2009	428.29	1.282	475.88	173,697	25,059	198,756	198,756
2010	449.77	1.316	499.75	182,408	25,817	208,224	406,980
2011	471.87	1.35	524.3	191,371	26,596	217,966	624,947
2012	494.61	1.386	549.56	200,590	27,398	227,988	852,935
2013	518.00	1.422	575.55	210,076	28,222	238,298	1,091,233
2014	542.05	1.46	602.28	219,833	29,071	248,904	1,340,137
2015	566.81	1.498	629.79	229,874	29,944	259,818	1,599,955
2016	592.28	1.537	658.09	240,204	30,842	271,046	1,871,002
2017	618.49	1.578	687.21	250,833	31,767	282,599	2,153,601
2018	645.45	1.619	717.16	261,764	32,717	294,481	2,448,082
2019	673.15	1.662	747.94	272,998	33,694	306,692	2,754,774

Source: Final Design (INCREMI, Dec 2008).

Table 3.1 shows that during the first operational year, Nogales will generate an accrued solid waste volume of 259,965 yd³/yr (198,756 m³/yr), and an accrued volume of 3,603,108 yd³ (2,754,774 m³) after a 10-yr period.

Solid Waste Site Preparation

The area of the site will be prepared in three stages with an estimated first stage excavated total soil volume of 434,713 yd³ (332,361.74 m³) and a capacity of 487,339 yd³ (372,597 m³). The excavated soil will be used as fill material during the closure of Cell A, as daily cover, final cover material, and for conditioning purposes of the Cell B area.

The studies completed by the Nogales municipality in 2004 for the landfill determined a soil permeability variable between 3.1×10^{-5} to 8.1×10^{-7} cm/s. Accordingly; the final design proposes to use a combined artificial and natural lining. For the landfill site, high density polyethylene geomembrane and a clay layer compacted at 90% proctor will be utilized.

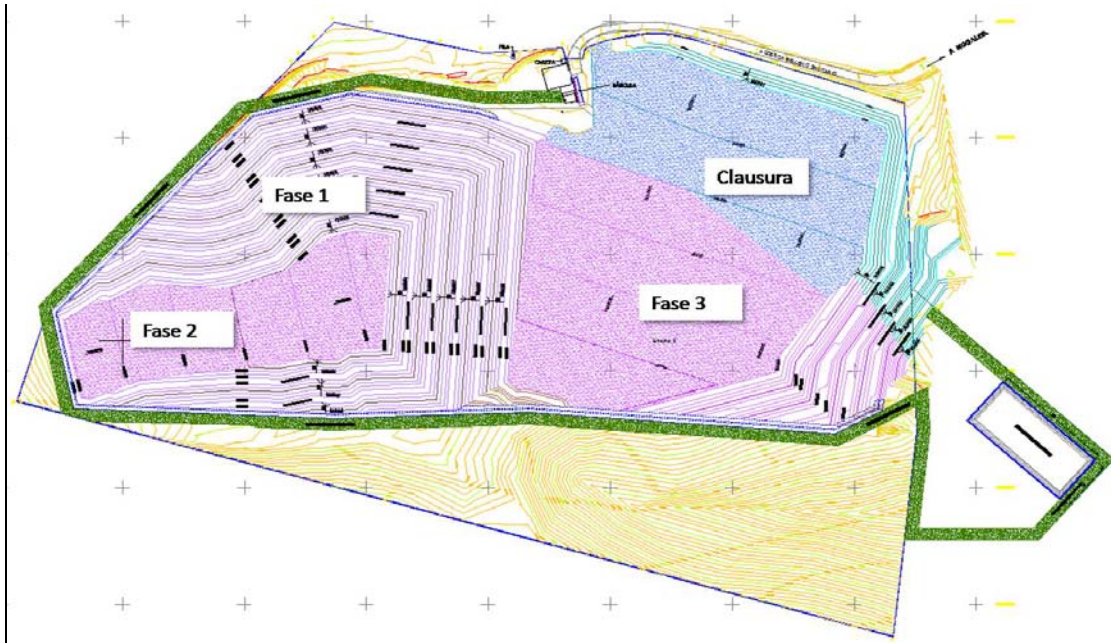


Figure 5. Development of the landfill 3 stages.

Table 3.2. Landfill Phase scheduling.

Year	SW Quantity (mton/day)	SW Vol (m ³ /day)	Yearly SW Quantities (mton/yr)	Yearly SW Vol (m ³ /yr)	Cover Material Required (m ³ /yr)	Annual Total Vol (m ³ /yr)	Accrued Vol (m ³)	Superficial Area utilized (ha)	Cells	Operation Phase
2009	428.29	475.88	156,327	173,697	25,059	198,756	198,756	7.95	365	I
2010	449.77	499.75	164,167	182,408	25,817	208,224	208,224	16.28	624	I Y II
2011	471.87	524.3	172,234	191,371	26,596	217,966	217,966	25	936	II
2012	494.61	549.56	180,531	200,590	27,398	227,988	227,988	34.12	1248	III
2013	518	575.55	189,068	210,076	28,222	238,298	238,298	43.65	1560	III
2014	542.05	602.28	197,850	219,833	29,071	248,904	248,904	53.61	1872	III
2015	566.81	629.79	206,887	229,874	29,944	259,818	259,818	64	2184	III
2016	592.28	658.09	216,184	240,204	30,842	271,046	271,046	74.84	2496	III
2017	618.49	687.21	225,749	250,833	31,767	282,599	282,599	86.14	2808	III
2018	645.45	717.16	207,188	230,236	26,675	256,911	294,481	97.92	3606	III

Source: Final Design (INCREMI, Dec 2008).

Appropriate Technology

The works to be constructed in the landfill will be done according to the technology considered in the updated final design, thus the closure of the cell and the construction of the new cell will be done according to the original final design.

The works proposed in the project for the construction of the new station will be developed pursuant the environmental norms and regulation as well as the applicable design and construction guidelines and regulations and best management practices.

Assessment of alternatives:

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, resulting from the inadequate disposal of solid waste in the landfill; and the continuing operation of the existing transfer station with its high operating cost, this alternative was detracted.
- b) **Construct works required to comply with the environmental laws for solid waste collection and final disposal in Nogales.** This was the preferred alternative. The improvements to the landfill and construction works of the new transfer station described above, are essential to implement the Emergency Cleanup Plan, whose objective is to comply with the current regulations related to solid waste disposal and eliminate the existing solid waste collection backlog in Nogales. This project complements the scope of the Solid Waste Plan: Equipment for Nogales, Sonora.

The implementation of this project will allow Nogales to improve solid waste management and provide a better service.

Land Acquisition and Right-of-Way Requirements

Requirements:

The city of Nogales constructed a landfill within an area of 34.39 acres (139,175 m²), property of the municipality and started operating in 1995. The construction of the proposed project does not require any additional activities related to permits, since the project site already belongs to the municipality.

For the relocation of the existing transfer station the City has acquired a tract of land which now belongs to the Municipality of Nogales.

Work Tasks and Schedule

Project Schedule:

The City of Nogales proposes implementing in 22 months, the works needed to provide comprehensive solid waste management services according to the Mexican Norm NOM-083-SEMARNAT-2003.

The following Table 3.4. shows the proposed timetable for the project's implementation.

Table 3.4. Construction Schedule

General Construction Schedule for the New Transfer Station (NTS) and Solid Waste Landfill																						
ACTIVITY	MESES																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
CLOSURE "CELL A"																						
CONSTRUCTION PHASE I																						
TRANSFER STATION																						

3. b Management and Operations

Project Management

Resources:

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, which has the necessary infrastructure and capacity to provide municipal cleaning services to the city of Nogales. The project sponsor has committed to comply with all the regulation and laws in force for the construction of this project.

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.

The operation and maintenance plan for the Municipal Landfill was developed and has been included in the final design for the landfill construction.

The administrative tasks and operation development of the landfill will require trained personnel to comply with the profile required to develop daily chores efficiently. Figure 6 shows the organization chart proposed by the final design.

Operation Plan:

An operations and maintenance (O&M) manual was prepared as part of the final design. The O&M manual outlines the main

	activities to guarantee an adequate operation of the landfill and prevention of emergencies on site.
Permits, licenses, and other regulatory requirements:	The tasks considered to update the final design will include obtaining or updating the permits and licenses required.
Reviewing agencies:	COCEF, BDAN, CEDES, SEDESOL

Pending Issues:

None.

Criterion Summary:

The final design was reviewed by NADB and BECC.

4. Financial Feasibility

4.a Demonstrating Financial Feasibility			
Financial Conditions			
Information submitted:	The Municipality of Nogales' financial statements		
Financial analysis results:	The Municipality has enough revenues to operate the project, as well as to achieve and maintain the required reserve levels.		
Project Costs, Financial Structure, and Other Plans for Capital Investment			
Item:			
Construction Cost:	\$31,498,618 pesos		
Equipment Cost:	\$8,840,671 pesos		
Total Cost:	\$40,339,289 pesos		
Financial Structure:			
Source	Type	Amount	%
Mexico	Municipality of Nogales equity/Grant	\$26,739,289	66.3
NADB-SWEP	Grant	\$13,600,000*	33.7
Total:		\$40,339,289	100.0
<small>* Equivalent of \$1.0 Million U.S. dollars quoted at an exchange rate of 13.60 pesos per dollar, according to Bloomberg.com dated October 5, 2009.</small>			
Primary Source of Income			
Source of income:	Municipality's Federal Tax Revenues.		
4.b Legal Considerations			
Project management:	The Project will be managed by the Municipality of Nogales, Sonora who has sufficient capacity to operate and maintain the project.		
Status of funding agreements:	Grant contract to be signed once project is certified.		

Pending Issues:

None

Criterion Summary:

The project was evaluated and is considered financially feasible.

5. Public Participation

5.a Community Environmental Infrastructure Projects – Community-wide Impact

Steering Committee

Date of establishment: The Local Steering Committee was formally established on March 12, 2007.

Steering Committee members: 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 by the BECC.

Date of approval of Public Participation Plan: The Comprehensive Community Participation Plan developed by the Local Steering Committee was approved by the BECC on March 19, 2007.

Public Access to Project Information

Public access to project information: Technical and financial project information was made available to the public, at least 30 days before the First Public Meeting, as part of the outreach plan. An invitation to the First Public Meeting, scheduled to be held on September 20, 2007, was published on August 21, 2007 in the “El Imparcial” newspaper in Hermosillo, Sonora.

An invitation to the Second Public Meeting, scheduled to be held on March 17, 2009, was published on March 6, 2009 in the “El Diario” newspaper.

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. 20 survey drop-off boxes stations were installed to conduct a survey. In order to participate in the survey people presented their electricity bill issued by the "Comisión Federal de Electricidad". The results showed that 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.

Public meeting:

The first public 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. 100% of the 168 surveyed assistants said to have understood the project well and explicitly expressed their support for it.

The second public meeting took place at 8:00 PM on March 17, 2009, at the OOMAPAS-Nogales Meeting Room. The meeting was attended by members of the local Steering Committee and approximately 30 residents. 100% of the 30 surveyed assistants said to have understood the project well and explicitly expressed their support for it.

Final Public Participation Report

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.

Post-Certification Public Participation Activities

Post-certification activities:

The sponsor and the Local Steering Committee will develop a general description of the public participation activities that can be accomplished after certification takes place to support the feasibility of the project in the long term.

Pending Issues:

None

Criterion Summary:

The sponsor has developed a wide public outreach process for the project.

6. Sustainable Development

6.a Human and Institutional Capacity Building

Project operation and maintenance:

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 for both the landfill and the new waste transfer station.

Human and institutional capacity building:

The Nogales institutional and human capacity will be strengthened by improving the sanitary landfill capacity and the construction of a new waste transfer station.

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

Local and regional plans addressed by the project:

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.

Laws and regulations addressed by the project

Article No. 217 of the Ecological Equilibrium and Environmental Protection of Sonora Law.

Article 21 of the Ecological Equilibrium and Environmental Protection of Sonora Law.

Environmental and Natural Resources Protection Agency Law.

Law for Public Administration for the State of Sonora.
Interior Regulation from the Ecology Commission and Sustainable Development of Sonora.

6.c Natural Resource Conservation

The project contributes to reducing environmental deterioration by improving the solid waste collection service system and final disposal in the Nogales landfill, in compliance with NOM-083-SEMARNAT-2003.

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

6.d Community Development

The project components will reduce the potential for detrimental conditions related to the inadequate management of solid waste that can facilitate spreading contagious diseases.

The construction of the new sanitary landfill cell and a new waste transfer station promotes community development; since it will reduce the potential for contamination caused by inadequate solid waste disposal and thus will improve the welfare of the community at large.

Pending Issues:

None.

Criterion Summary:

The project complies with all the sustainable development concepts.

Project Documentation Available (in Spanish only):

- Proyecto Ejecutivo 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.
- Documentos de la Primera consulta ciudadana para el Manejo Integral de los Residuos Sólidos en Nogales.
- 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.
- Actualización del Proyecto Ejecutivo del Relleno Sanitario del Municipio de Nogales, Sonora. Diciembre del 2008, INCREMI, S.A. de C.V.
- Proyecto Ejecutivo de la Estación de Transferencia del Municipio de Nogales, Sonora. Diciembre del 2008, INCREMI, S.A. de C.V.