

Border Environmental Cooperation Commission

Municipal Solid Waste Comprehensive Management Project in China and General Bravo, NL

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General Criteria

1. Type of Project. The project contemplates the construction of a regional landfill that would allow for the adequate municipal solid waste management for the municipalities of China and General Bravo in the state of Nuevo Leon.
2. Location of the Project. The communities of China and Bravo are located on the extreme northwest of the country, within the state of Nuevo Leon. The project is within the 100 km border zone. The municipality of China is located at 119 Km to the northeast of the city of Monterrey, state capital. The population in the municipality is 11,500 for the year 2000. The population estimated for the end of this project is 15,600. On the other hand the municipality of General Bravo is 120 Km to the northeast of Monterrey and 98 Km to the southwest of Reynosa, Tamps., it borders with the municipality of China. It has a population of 5,800 inhabitants for the year 2000. It is estimated that by the end of the project the population will be 6,700 inhabitants. The project expects to benefit a total of 17,300 current population and 22,300 inhabitants for the year 2013.
3. Description of Project and Tasks. The project comprehensively covers all the necessary aspects to provide the infrastructure and equipment required for the adequate management of solid waste from both municipalities, therefore increasing the efficiency of the processes and strengthening them to guarantee that it is permanent. It includes the construction of the regional landfill located in land belonging to the municipality of China, N.L. It is also proposes the creation of a decentralized organizational restructuring from the sanitation department in each municipality.
4. Compliance with International Treaties and Agreements. The project is within the Agreements, that the United States and Mexico have signed, such as the La Paz Agreement, Border Environmental Comprehensive Plan, Border XXI Program and the Free Trade Agreement.

Human Health and Environment

1. Human Health and Environmental Needs. The generation per capita of municipal solid waste in the municipalities of China and General Bravo, have shown a substantial increase in recent years, which worsens the existing problem derived from the collection and inadequate disposal of solid waste. This has caused the proliferations of three open-air dumps in these municipalities, which has propitiated the deterioration of the natural environment of the sites

and are a strong potential source of soil and bodies of groundwater contamination. Additionally, the growth of harmful fauna in the dumps, allows for the increase of harmful vectors and the consequent effects on the health of the population. For this reason, the main objective of this project is to develop the infrastructure that would allow the adequate management and final disposal of municipal solid waste. The construction of a regional landfill and the closing of the current final disposal sites, will contribute to the solution of environmental and health contamination problems that affect these municipalities.

2. **Environmental Assessment.** A General Environmental Impact Study was prepared, which concludes that the project will not cause any significant impacts on the environment. Currently, the EIS is being reviewed by the General Office of State Ecology for the State of Nuevo Leon, and it is estimated that the EIS judgment will be issued during the first two weeks of April.
3. **Compliance with Environmental and Cultural Resources Laws and Regulations.** The selected site and the design for the construction of the landfill, meet the conditions required by sites intended for the final disposal of municipal solid waste, according to Mexican Official Standard NOM-083-ECOL-1996. Likewise, the National Anthropology and History Institute has informed that the implementation of the project will not impact archeological nor historic resources, according to document D-033/01, dated April 3 of this year.

Technical Feasibility

1. **Adequate Technology.** The comprehensive management of solid waste project contemplates the following actions:

Sweeping: Improvements will be made on the quality, coverage and efficiency of manual sweeping services, there will be new routes, the schedules and frequency will be extended, personnel will be trained and new equipment will be purchased.

Collection: The coverage and efficiency will improve, by establishing collection macro-routes in order to balance work and waste loads collected by route. The collection frequency and schedules will increase. Personnel will be trained and they will be provided the adequate equipment.

Final Disposal: A landfill will be constructed for final disposal. This method uses the engineering principles of confining waste in an area as small as possible, covering it daily with layers of dirt and compacting it in order to reduce its volume. Also, it foresees the problems that liquids and gases produced in the landfill could cause, due to the decomposition of organic matter. The method of operation proposed will be combined; consisting of previously digging two ditches 1.55 m in depth for the first two stages and a third ditch that corresponds to the third stage in the future. The landfill will have a useful life of almost 13 years for the first two stages and 12 years for the third one in the future.

Closing of current dumps: A proposal has been made to close down current dumps in both municipalities. Once the land has been leveled, the waste will be covered with a 0.20 m width layer, requiring almost 3000 m³ of covering material. These layers will be compacted 70%. Later a perimetrical drain will be constructed to channel storm water. Also, 6 capturing and bioventing wells will be built for the China landfill and 2 wells for the one in General Bravo. Finally, the area will be fenced in with a 2 m high cyclone fence.

Institutional Strengthening: The project proposes institutional strengthening actions, sponsored by the regulatory frame, the design and implementation of an inter-municipal utility for the exclusive operation of the landfill.

2. Operation and Maintenance Plan. An organizational manual will be developed for the operation of the landfill, which will include structure and units that incorporate the stated inter-municipal utility, responsibilities, attributions, obligations and functions.
3. Compliance with Applicable Design Norms and Regulations. The design meets the norms established by the Government of the State of Nuevo Leon, required by the Environmental Impact Study, it meets the federal norms issued by SEDESOL.

Financial Feasibility

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1. Financial Feasibility.

The financial feasibility analysis was concluded to determine the financial structure of the project, being structured as follows:

Sweeping	\$	5,400 USD
Collection	\$	431,500 USD
Management	\$	4,750 USD
Final Disposal	\$	495,897 USD
Closures	\$	26,000 USD
Creation of Utility	\$	150,000 USD
Studies	\$	50,000 USD
TOTAL	\$	1,163,547 USD

FINANCIAL STRUCTURE

State and Municipalities	\$	267,277 USD	22.97%
SWEP	\$	440,000 USD	37.85%
Studies (PRODIN)	\$	200,000 USD	17.19%
Crédit	\$	255,900 USD	21.99%
TOTAL	\$	1,163,547 USD	100.00%

Rate Model: The municipalities of China and General Bravo, N.L., authorized a rate to carry out the infrastructure works, operate and maintain them. The monthly rates for medium domestic are \$4 USD and \$ 2 USD for low domestic until 2009. In 2010 the rates will be increased up to \$ 4.2 USD for medium domestic and \$ 2.1 USD for low domestic. In 2013 the rates will be increased up to \$ 4.5 USD for medium domestic and 2.2 for low domestic.

2. Project Management. The management of the landfill will be through the inter-municipal utility with legal status and equity capital. The self-sufficiency will be through rates collected for the service. On the other hand the municipalities are committed to cover the resulting expenses.

Public Participation

Beginning of the Public Process: it begins on September 11, 2000 in a meeting at the City County Building at General Bravo, with the attendance of the 2 Mayors and the 2 Elected Mayors. At this meeting the BECC Public Process was explained, what it was and how it could be carried out; those attending were:

Representing the City County of General Bravo, NL: Mayor Prof. Luis Lauro Espino Rodríguez; Director of Municipal PRONASOL, Lic. Jorge Gracia Martínez; Mayor Elect, Guadalupe Guajardo Pérez C and Mr. Miguel Camacho Jiménez, Municipal Public Works Director.

Representing the City County of China, NL: Mayor Noe Leal González; City County General Secretary, José Olvera Ríos and Mayor Elect, Oscar Cantú Bazán.

Representing the State of Nuevo Leon: Municipal Infrastructure Project Coordinator, Ing. Sergio de la Fuente.

Citizens Committee: It is organized through Minutes dated October 2, 2000; this committee due to the project's characteristics of providing service to 2 communities at the same time, was organized with a main characteristic of having 2 Co-presidents; one for each community, this means, one for General Bravo, NL and another for China, NL. Likewise, it was established that its members, would be represented in equal number; therefore the citizens committee includes:

General Bravo, NL City County:

Co-President: Lic. Jorge H. Gracia Martínez.

Board Members:

Miguel Camacho Jiménez, Alonso Cantú Garza, Adolfo de la Garza González, Aarón cantú González, Adolfo Cantú, Rogelio Solís de Anda, Oscar González Arizpe, and Lic. Juan de Dios Quintanilla.

China, NL City County:

Co-President: Mrs. Norma N. Tijerina

Board Members:

Cristán Rodríguez Cantú, Ramiro González Tijerina, Saúl González Cantú, Dr. Ramiro Alfonso Sarmiento, Ing. Cesar A. Cárdenas V, Albar González Cantú, Guadalupe Javier Salinas G, José Manuel Benavides G, Benito González Morua, José Ursino Garibay Ortiz and Guadalupe Damián Tijerina Prado.

Community Participation Comprehensive Plan: it was received on September 12, 2000 and was authorized by BECC on September 14 of the same year.

Public Information: The project has been available for public review at the City County China and General Bravo, NL offices at the Departments of Public Works. More than 3 thousand flyers have been distributed with general information about the project and to summon the first Public Meeting, distributed mainly through the Garbage Collection Systems in both City Counties.

Public Meetings:

First Public Meeting: The summons for this meeting, which was carried out on October 14, 2000 at the "Community Development Center" (CEDECO) in the General Bravo, NL community, at 11:00 a.m. met the criteria of being announced 30 days prior to the meeting, through written media of regional circulation, with the presence of the Citizens Committee, the Promoters and the attendance of approximately 50 persons from both communities. The main objective of this meeting was to make the technical characteristics of the project known by the consultant and questions from the community were answered, with an enthusiastic participation especially from the teachers from both communities.

The Citizens Committee has been carrying out work meetings with different sectors and organizations from both communities.

Second Public Meeting: This meeting will be held on April 30 in the China, NL community to submit the financial information and make an evaluation of the project's support by both communities.

Sustainable Development

1. **Definition and Principles:** The proposed project complies with BECC's definition of Sustainable Development. The municipal solid waste comprehensive management project in China and General Bravo, NL is centered on providing a better quality of life for human beings.

The project contributes to the decrease of environmental degradation by constructing a new regional landfill and closing down the three current ones because they are unsafe and inefficient.

The stakeholders in this project are the municipalities of China and General Bravo, the Government of the State of Nuevo Leon and the citizens from both municipalities who will benefit with the environmental and ecological improvements.

2. **Strengthening of the Institutional and Human Capacity.** One important aspect of this project is that it will strengthen the institutional capacity of both municipalities with the creation of an inter-municipal utility, with a new and modern organization with adequate rates that guarantee self-sufficiency.
3. **Conformance with Applicable Local/Regional Conservation and Development Plans.** The project complies with all the applicable provisions established in the National and State Development Plans. Specifically, the project responds to actions recommended in the China and General Bravo Municipal Development Plans, to solve problems derived from inadequate management and disposal of municipal solid waste.
4. **Natural Resource Conservation.** Resource conservation, will be accomplished in this project at two different levels: an operations level and a community level. Operationally the project contemplates engineering solutions that eliminate soil and ground water contamination and the development of a buffer vegetation zone, where only indigenous species would be planted. To favor the recovery of the currently affected area, the development of a green area is being considered in the area where the current landfills and final use is located, that will follow the same guidelines. At a community level we are trying for the Public Participation Committee to promote waste reduction.
5. **Community Development.** The purpose of this project is to provide the population in the region a safe, efficient and reliable public sanitation program. This will increase the level of well being in the communities, eliminating risks of diseases and outbreaks.

List of Documents

1. Baseline Conditions Report for the Environmental Infrastructure in China, NL.
2. Baseline Conditions Report for the Environmental Infrastructure in General Bravo, NL
3. Step II Document
4. Environmental Assessment
5. Financial Study
6. Final Design for the Regional Landfill
7. Final Design for the Closure of the Actual Dump Sites for China and General Bravo.

Permits

8. Approval documents of Environmental Assessment by the Ecology Department of the State of NL
9. Approval documents by SEDESOL for the final design of the Landfill for China and General Bravo
10. Approval documents by Nacional Antropologic and History Institute
11. Resolutions of the City Councils approving the Project
12. Agreement between China and GB Municipalities for the creation of the intermunicipal operation system for the Landfill.