Border Environment Cooperation Commission
Construction of the La Morita and Tecolote-La Gloria Wastewater Treatment Plants, in Tijuana BC.

1. General Criteria

1.a Project Type

Project Name:	Construction of the La Morita and Tecolote-La Gloria Wastewater Treatment Plants in Tijuana, Baja California. The project sponsor submitted two projects for certification; these projects will be presented in one certification document and one financial structure.
Project Sector:	Wastewater Treatment.

1.b Project Category

Category:	Community Environmental Infrastructure Project – Community-wide impact.

1.c Project Location and Community Profile

Community:	Municipality of Tijuana, Baja California, Mexico.
Location:	The projects are located in the municipality of Tijuana, in the northwestern side of the State of Baja California, Mexico. Tijuana borders the United States–San Diego, California Metropolitan Area– to the north, the municipality of Playas de Rosarito to the south, the Pacific Ocean to the west, and the municipality of Tecate to the east.
Location within the border:	The projects are located within the 100 km (62.5 mi) of the US-Mexico border area. The La Morita and Tecolote-La Gloria wastewater treatment plants are located at 11.5 km (7 miles) southeast and 8 km (5 miles) southwest, respectively, of the U.S-Mexico International Border in Tijuana, Baja California.
Figure:	The following figure shows the location of the municipality of Tijuana, Baja California.

Figure 1.1 Tijuana, Baja California, México.

Demographics	
Current population:	1,641,168 residents
Growth rate:	2.7 %
Reference:	INEGI year: 2005, CONAPO 2010
Economically active population:	793,112 residents
Reference:	INEGI Year: 2000
Median per capita income:	$ 16,148 U.S. dollars PCC
References:	The median per capita income was estimated by BECC using the XII General Population and Housing Census of 2000 by INEGI and UN guidelines to calculate development index.
Economic activity:	Manufacturing industry, tourism, trade, and services
Marginalization rate:	-1.90, very low
Services	
Community:	Tijuana
Water System	
Water coverage:[1]	99.63%
Water supply source:	Colorado River, Abelardo Rodriguez Dam, and wells

[1] Source: CEA BC, August 2010

Number of hookups:[2] 511,063

Wastewater Collection System

Coverage:[3] 97 %
Number of connections:[4] 467,298

Wastewater Treatment

Coverage: 91.12%

Wastewater Treatment Plants (WWTP) and treatment technologies:

Plant	Type	Capacity
SAB	activated sludge	1,100 lps (25MGD)
PITAR	"	1,100 lps (25MGD)
La Morita	"	254 lps (5.8 MGD)
Arturo Herrera	"	460 lps (11 MGD)

Solid Waste

Solid waste collection coverage: 100%
Final disposal: Landfill

Street Paving

Coverage: 60%

1.d Legal Authority

Project sponsor: Comisión Estatal de Servicios Públicos de Tijuana (CESPT)

Legal representative: Hernando Durán Cabrera

Legal instrument to demonstrate legal authority: Decree No. 44, V Legislature of the State of Baja California

Date of instrument: December 16, 1966

Compliance with agreements:

- 1889 International Boundary Convention
- 1944 Water Treaty
- 1983 La Paz Agreement, or Border Environment Agreement
- 1990 Integrated Border Environmental Plan (IBEP)
- 1994 North American Free Trade Agreement (NAFTA)
- Border 2012 Program
- Minute 283 (CILA/IBWC)

[2] Source: CEA BC, August 2010
[3] Source: CEA BC, August 2010
[4] Source: CEA BC, August 2010

1.e. Project Summary

Project description and scope:

The sponsor has two wastewater treatment projects, which will be presented in one certification document and one financial structure.

Project description and scope:

The projects consist of the construction the "La Morita" and "Tecolote-LaGloria" wastewater treatment plants (WWTP), with capacities of 254 lps (5.8 MGD) and 381 lps (8.7 MGD) respectively. A biological treatment process that comprises an Extended Aeration/Activated Sludge (EA/AS) treatment system was selected as the treatment system for both plants. The system includes nitrification-denitrification, phosphorus removal and UV disinfection.

Each one of the treatment plants will have the following unit operations: Preliminary treatment with coarse screening and grit removal, anaerobic and aerobic reactors oxidation ditch type, secondary clarifiers, dual filtration, UV disinfection system and aerobic sludge digester. The treated effluent will comply with the Mexican Norm NOM-001-SEMARNAT-1996. In addition it will comply with Table 1 of the Mexican norm NOM-003-SEMARNAT-1997 that indicates the maximum permissible levels of contaminants for reclaimed water used in services for the public with direct contact.

Treated effluent from the La Morita WWTP will be discharged into the Matanuco creek. A conveyance system will be constructed in order to take the treated effluent to the discharge point.

Treated effluent from the Tecolote-La Gloria WWTP will be discharged into the San Antonio Creek which leads to the Pacific Ocean.

Conveyance, treatment and disposal of the sludge generated at the treatment plants will be pursuant to NOM-004-SEMARNAT-2002.

The stabilized and dehydrated sludge will be disposed of at a location assigned by the CESPT and authorized by the Secretaria de Proteccion al Ambiente (Environment State Department).

Population served:[5]

Project	Benefitted Population
La Morita WWTP	124,691
Tecolote-La Gloria WWTP	187,036

[5] Benefited population figures are based on the treatment plants' full capacity operation.

Number of connections:[6]

Project	Estimated number of connections
PTAR La Morita	30,265
PTAR Tecolote-La Gloria	45,397

Project cost: $202,620,388.97 pesos

Project map: The following figure shows the location of the La Morita and Tecolote-La Gloria WWTPs, in the municipality of Tijuana.

Figure 1.2 La Morita and Tecolote - La Gloria WWTP, in Tijuana, BC.

1.f Project Justification

Project justification:

- The construction of the Tecolote-La Gloria and La Morita WWTP will address environmental and public health risks by providing adequate wastewater collection, treatment and discharge conditions and eliminating untreated sewage discharges in areas of Tijuana that are not currently served nor connected to a wastewater treatment facility.

- The proposed projects will significantly reduce or eliminate inappropriate wastewater disposal, resulting in improved environmental and sanitation conditions. It will

[6] Connection figures are based on the treatment plants' full capacity operation

	also reduce human contact with contaminated water as well as with vectors of waterborne diseases. - With the proposed action, wastewater treatment capacity in Tijuana would be available for the short and long term. The wastewater would be treated by the proposed methods instead of being directly disposed into the streets and water bodies that could eventually reach the Pacific Ocean. The projects will reduce potential surface water and groundwater contamination by eliminating raw wastewater discharges in open ditches and existing creeks in the area. - With the construction of these works, it will be possible to reach 100% coverage of treatment capacity, in Tijuana, Baja California. Approximately 177 lps (4 MGD) of existing wastewater discharges to the environment will be eliminated, reducing surface water and groundwater contamination caused by these discharges.
Urgency of the project or consequences of no action:	• The lack of wastewater treatment jeopardizes the health of Tijuana residents and surroundings, since they are exposed to having contact with raw wastewater and thus are at risk of acquiring associated diseases. According to morbidity statistics for Tijuana (see Table 2.1) intestinal diseases show the highest incidence among all types of diseases. • The inappropriate discharge of untreated wastewater in the area of influence of the projects results in wastewater runoff, a portion of which eventually reaches the Pacific Ocean, contributing to water contamination.
Prioritization Process category:	Category 1

Pending Issues:

None.

Criterion Summary:

The projects fall within BECC priority sectors and meets basic general criteria.

2. Human Health and Environment

2.a Compliance with Applicable Environmental Laws and Regulations.

Environmental and human health conditions addressed by the proposed project:

- Appropriate wastewater treatment. The construction of these two treatment plants in Tijuana will provide treatment to wastewater flows that are being discharged without treatment to the Tijuana River, San Antonio de los Buenos and San Antonio del Mar watershed.

- Reduce the risk for communicable waterborne diseases caused by human contact with raw wastewater runoff resulting from the lack of wastewater collection and treatment in several areas in Tijuana.

- Reduce soil and surface water contamination, since it has been estimated that a portion of the runoff resulting from inappropriate wastewater discharges in the area of influence of the projects will eventually discharge to the Pacific Ocean.

Human health:

As shown in the health statistics section below, there are an important number of cases per year of waterborne diseases in Tijuana, where the projects are located. The statistics registered a number of cases of intestinal diseases, helmintiasis, amebiasis, and scabiosis. It is expected that the project implementation will contribute to reduce the number of cases of the waterborne diseases mentioned above.

Environmental:

Wastewater discharges in the project area, due to a lack of wastewater treatment, are a potential source of disease-causing organisms and soil, surface and groundwater contamination.

The inappropriate disposal of untreated wastewater in the area of influence of the La Morita WWTP (Matanuco watershed), results in wastewater runoff in the Tijuana River, where wastewater flows are intercepted during dry weather flows and conveyed to the Pacific Ocean for final discharge, contributing to its pollution. The inappropriate disposal in the area of influence of the Tecolote-La Gloria WWTP in the San Antonio de los Buenos and San Antonio del Mar results in wastewater runoff that will flow directly to Pacific Ocean passing on its way by residential areas and public beaches.

The environmental conditions addressed by the project are:

- Wastewater connections without treatment: 21,090
- Flow of uncollected wastewater discharges: 177 lps (4 MGD)

	- Total estimated organic load (based on BOD_5): 6.11 tons/day - Estimated total suspended solids (TSS): 4.7 tons/day Suspended Solids can lead to the development of sludge deposits and anaerobic conditions when untreated wastewater is discharged in the aquatic environment[7]. Suspended solids are an important cause of water quality deterioration leading to aesthetic issues, higher costs of water treatment, a decline in the fisheries resource, and serious ecological degradation of aquatic environments.[8] Biodegradable organics are measured most commonly in terms of BOD5 (biochemical oxygen demand). If discharged untreated to the environment, their biological stabilization can lead to the depletion of natural oxygen resources and to the development of septic conditions[9]. The higher the amount of BOD, the more water is polluted with organic waste, this often lead to algal bloom and eutrophication, which is is most common in stagnant water bodies such as ponds and lakes. Algal bloom and eutrophication lead to the suffocation of fish and other organisms in a water body.
The project meets the following applicable environmental laws and regulations:	- Official Mexican Standard NOM-001-SEMARNAT-1996, which establishes the maximum permissible levels of contaminants for wastewater discharges into national waters and territories. - Official Mexican Standard NOM-003-SEMARNAT-1997, which establishes the maximum permissible levels of contaminants for reclaimed water use for non-potable uses. - Official Mexican Standard NOM-004-SEMARNAT-2002, which establishes the maximum permissible levels of contaminants for biosolids reuse and final disposal.
Environmental and human health benefits the project is expected to achieve:	
Human Health:	According to the World Health Organization's "Water, Sanitation and Hygiene Links to Health Facts and Figures," updated November 2004, sanitation projects can have the following benefits to human health: - Improved sanitation reduces diarrhea morbidity by 32%.

[7] Metcalf & Eddy Inc, "Wastewater Engineering: Treatment, Disposal, Reuse", 3rd ed., McGraw Hill, New York, 1991.
[8] G.S Bilottal and R.E Brazier, "Understanding the Influence of Suspended Solids on Water Quality and Aquatic Biota," Water Research, Volume 42, Issue 12, June 2008, pages 2849-2861.
[9] Metcalf & Eddy Inc, "Wastewater Engineering: Treatment, Disposal, Reuse", 3rd ed., McGraw Hill, New York, 1991.

- Access to safe water and sanitation facilities and better hygiene practice can reduce morbidity from ascariasis by 29%.
- Project implementation is expected to contribute with the reduction of the number of cases of waterborne diseases in Tijuana.

Environmental

The proposed projects will eliminate untreated wastewater discharges, and it is expected that this will contribute to improve environmental conditions and reduce the potential contamination of surface and ground water such as the Pacific Ocean.

The following are the expected project environmental benefits:

- Wastewater connections with treatment:21,090
- Treated wastewater flows: 177 lps (4 MGD)
- Total removed organic load (based on BOD_5): 6.11 tons/day
- Total removed suspended solids load (based on TSS): 4.7 tons/day

2.b Human Health and Environmental Impacts.

Human Health Impacts

Direct and indirect benefits:

- The project will help reduce groundwater and surface water contamination.
- The project will reduce soil contamination.

Health statistics:

Waterborne diseases are caused by pathogenic microorganisms that are directly transmitted as a result of inadequate wastewater disposal practices which may result in human contact with raw wastewater and unsafe water supplies.

An individual may become ill after drinking water that has been contaminated with these organisms; eating uncooked foods that have been in contact with contaminated water; or through poor hygiene habits that contribute to the dissemination of diseases by direct or indirect human contact. Waterborne diseases may be caused by protozoan, viruses, bacteria, and intestinal parasites.

Supporting figures:

The following table shows waterborne disease statistics for the city of Tijuana. As shown below, the number of cases has dropped throughout the years despite the population's growth. Projects to improve water services, such as the provision of wastewater collection and treatment services contribute to improve the communities' public health.

No. of Cases						
Disease	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Intestinal diseases by other organisms	22110	36930	33084	31858	34354	33966
Other Helmintiases	2500	1812	1651	1928	1679	1586
Intestinal Amoebiasis	1485	1715	1636	1202	1179	1178
Scabiosis	1391	1187	1275	2103	1105	840

Table 2.1 – Waterborne Disease Statistics for Tijuana, B.C.
Source: Secretariat of Health, Epidemiological Surveillance Coordinating Unit, General Morbidity, New Cases. Tijuana 2004-2009

Environmental Impacts

Direct and indirect benefits:

The construction of these wastewater treatment plants in Tijuana will reduce health and environmental risks associated to inadequate wastewater disposal and lack of wastewater treatment. The proposed project will allow CESPT to collect and treat 100% of the wastewater generated in Tijuana in compliance with existing federal and state laws and regulations.

Environmental impacts:

The implementation of these projects will help eliminate wastewater discharges to latrines or open drains, positively impacting ground and surface water bodies. Wastewater produced in the southeast and west areas of Tijuana will be collected and treated at the La Morita and Tecolote-La Gloria WWTP, improving the quality of groundwater and surface waters, including the Pacific Ocean.

Minor environmental impacts are anticipated from implementation of the different phases of these projects, provided that the tasks are implemented in accordance with the specifications of Mexico's Environmental Impact Assessment Document, Manifestacion de Impacto Ambiental (MIA, for its initials in Spanish), and taking into account the mitigation measures established in it.

Potential impacts include the following:

Construction Phase

- Fugitive dust emissions
- Gas emissions from construction machinery
- Temporary roadway blockages, presence of workers in the area

Mitigation measures:

Mitigation measures in the MIA include:

- Application of treated wastewater to reduce fugitive dust emissions

	- Vehicle tune ups to reduce emissions - Placement of warning signs to prevent potentially hazardous situations - Separate Management for urban and special solid waste and disposal according to the existing Mexican norms and the State regulations.
Impacts:	The environmental impact resulting from the projects implementation will be positive overall, given that they increase wastewater treatment coverage, reducing environmental contamination and improving the quality of life of area residents by curtailing potential health hazards.
Transboundary Impacts	
	Due to the proximity of Tijuana with various communities in the San Diego County in the United States, there are frequent border crossings between cities. The construction of new wastewater treatment systems will have a positive impact on the health of residents from San Diego County and the entire region since these actions will reduce the risk of waterborne diseases caused by inappropriate wastewater management. Furthermore, the projects will reduce human contact with raw wastewater. Additionally, the implementation of the projects will reduce the potential for contamination of local and shared water bodies, such as the Tijuana River (La Morita WWTP case) and the Pacific Ocean.
Formal Environmental Clearance	
Environmental Clearance:	Pursuant to the provisions of the Mexico's General Law on Environmental Equilibrium and Protection (LGEEPA, by its initials in Spanish) regarding the environmental impacts of the projects, the Mexico's Secretariat of the Environmental and Natural Resources (SEMARNAT, by its initial in Spanish) established, that the projects required a MIA, an Environmental Impact Statement in the Particular Modality. The documents for the Tecolote-La Gloria and La Morita WWTP were prepared and submitted to the SEMARNAT on November 21st, 2006. The projects were authorized in the official documents DFBC/SGPA/UGA/DIRA/1988/07 issued on June 1st, 2006 for the La Morita WWTP and document DFBC/SGPA/UGA/DIRA/ 833/07 issued on March 9, 2007 for the Tecolote-La Gloria WWTP, after a determination was made that the projects comply with all the requirements of the Mexican environmental clearance process.

Results Measurement Project Matrix Summary	
Results Measurement	
1. Increase Access to Wastewater Treatment	**Indicators and Targets** - Increase wastewater treatment service with La Morita WWTP (target = 254 lps [5.8 MGD]) - Increase wastewater treatment service with the Tecolote-La Gloria WWTP (target = 381 lps [8.7 MGD]) **Baseline Value** Current wastewater treatment capacity[10] = 2,660 lps (60.7 MGD)
2. Reduction of uncollected WW discharges to water bodies or other (Protection of Natural Resources)	**Indicators and Targets** Eliminate uncollected wastewater discharges (target= 177 lps [4 MGD]) **Baseline Value** Uncollected wastewater discharges[11] = 177 lps (4 MGD) WWTP La Morita = 88 lps (2 MGD) WWTP Tecolote La Gloria = 89 lps (2MGD)
Outputs: Goods and services that the project will deliver	Construction of the La Morita WWTP: 254 lps (5.8 MGD) Construction of the Tecolote-La Gloria WWTP: 381 lps (8.7 MGD)

Pending Issues:

None.

Criterion Summary:

The projects comply with BECC's Human Health and Environment criteria.

[10] Current treatment capacity in the municipality of Tijuana BC.
[11] Information based on wastewater flow projects for 2010 in the influence areas of the treatment plants, CESPT.

3. Technical Feasibility

3.a Technical Aspects

The projects consist of the construction the "La Morita" and "Tecolote-La Gloria" wastewater treatment plants (WWTP), with capacities of 254 lps (5.8 MGD) and 381 lps (8.7 MGD) respectively, located in Tijuana, Baja California.

Project Development Requirements

Design criteria:

The project final designs were developed pursuant to the technical specification required by the Comision de Servicios Publicos de Tijuana (Tijuana's water utility) in coordination with the Comision Nacional del Agua (Mexico's water management agency), and according to the technical specifications contained in the Water, Wastewater Collection and Treatment Manual prepared by CONAGUA. Final designs were reviewed by BECC and NADB, and validated by CONAGUA.

A biological treatment process that comprises an Extended Aeration/Activated Sludge (EA/AS) treatment system was selected as the treatment system for both plants. The system includes nitrification-denitrification, phosphorus removal and UV disinfection. It also includes a sludge digester and sludge pumping station.

Each one of the treatment plants will have the following unit operations: Preliminary treatment with coarse screening and grit removal, anaerobic reactor and aerobic reactors oxidation ditch type, secondary clarifiers, dual filtration, UV disinfection system and aerobic sludge digester. The treated effluent will comply with the Mexican Norm NOM-001-SEMARNAT-1996. In addition it will comply with Table 1 of the Mexican norm NOM003-SEMARNAT-1997 that indicates the maximum permissible levels of contaminants for reclaimed water use for non-potable uses.

Treated effluent from the La Morita WWTP will be discharged into the Matanuco creek. A conveyance system will be constructed in order to take the treated effluent to the discharge point. The Matanuco creek discharges into the Tijuana River downstream of the Abelardo Rodriguez dam.

Treated effluent discharged in the Tijuana River together with other flows in the river, will be intercepted and deviated before these flows cross the international boundary and will be conveyed to the Pacific Ocean for final discharge in Mexico.

The construction of the la Morita WWTP is currently underway at approximatry 80% completeness.

Treated effluent from the Tecolote-La Gloria WWTP will be discharged into the San Antonio Creek which leads to the Pacific Ocean.

The Tecolote-La Gloria WWTP with a total capacity of 381 lps, will be constructed by phases, and for the first bidding process (phase 1) a module of 127 lps has been considered. The construction of the Tecolote-La Gloria WWTP is currently under construction, at approximately 50% completeness.

The treatment system for both plants has been designed to operate with 90% efficiency on total suspended solids and BOD removal.

Design parameters are:

Monthly Average

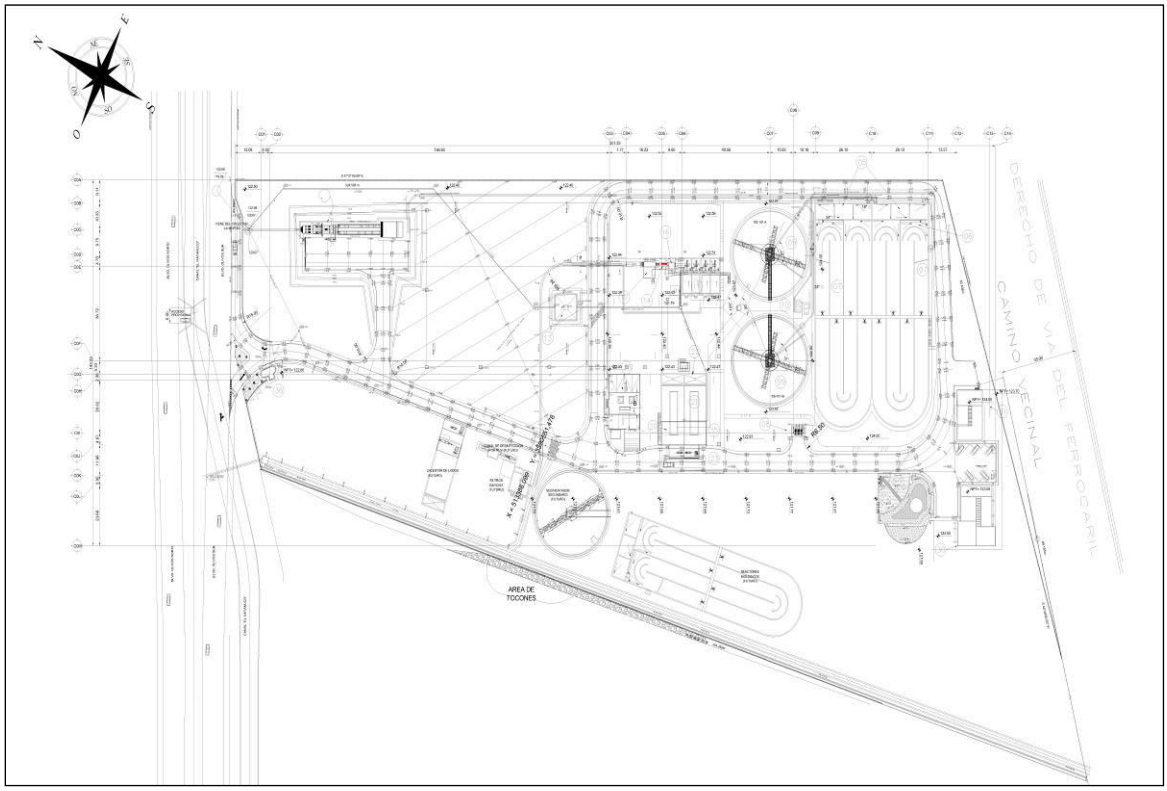
Fecal Coliforms NMP/100mL	Grease and oil M/L	BOD_5 mg/L	TSS mg/L	Total Nitrogen (mg/l)	Total Phosphorus (mg/l)
240	15	20	20	15	5

Sludge generated at the treatment plants will be transported, treated and disposed pursuant to NOM-004-SEMARNAT-2002.

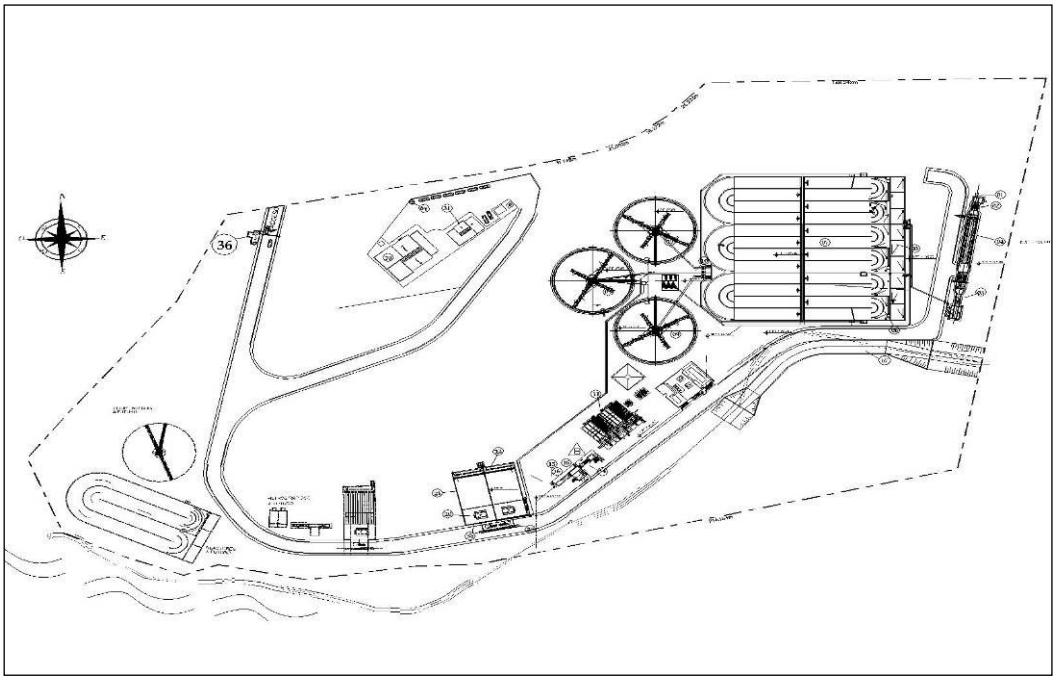
The stabilized and dehydrated sludge- will be disposed at a location assigned by the CESPT and authorized by the Secretaria de Proteccion al Ambiente (Environmental Protection State Department). Punta Bandera located approximately 6.8 km (4.2 miles) south of the international border, is the site for sludge disposal and treatment. Punta Bandera facilities have a surface area of approximately 400,000 m^2 (98.9 acres), and include piles for additional sludge dewatering and 8 sludge disposal cells with capacity of 23,726 m^3/year (dry base) (837,876 ft^3/year), each.

The final design specifications described the availability of materials and its characteristics so the contractors have the option to select materials with low toxicity such as paint, plaster, pipes, packages etc. It also requires the use of energy efficient equipment such as high efficiency motors, lighting by solar energy and the use of sensors and automated controls. The specifications also mention how to manage byproducts generated during the construction process.

The following figures show a general scheme of the treatment plants:



La Morita WWTP General Diagram



Tecolote-La Gloria WWTP General Diagram

Appropriate Technology

Assessment of Alternatives:

As part of the project designs development, the following parameters were evaluated:

- Cost
- O&M Cost
- Material and Equipment Reliability
- Environmental Impacts
- Social/Community Acceptance
- Technology and sustainable practices

Site selection, capacity and treatment technology were recommended by different planning studies prior to construction, including the Water and Wastewater Master Plan for the city of Tijuana and Playas de Rosarito (2003).

Treatment alternatives were evaluated based on the use of biological treatment at a low cost. Different activated sludge technologies were evaluated along with two alternatives for disinfection; chlorination and UV light.

The alternative selected consisted of a biological treatment process at a secondary treatment level with oxidation ditch type activated sludge/extended aeration system, UV disinfection and filtration.

This technology will allow reusing the treated effluent according to NOM-003-SEMARNAT-1997.

For treatment capacity requirements, the design considered maximum daily loads and full build-out of the areas that are being connected to the wastewater collection system in Tijuana.

On the other hand, the CESPT has developed several studies aimed to find alternatives for treated wastewater reuse, within these alternatives the following options have been considered:

- Agriculture irrigation
- Landscaping irrigation
- Industrial

Since treated wastewater cost is cheaper than drinking water, Landscaping irrigation was selected as the most feasible option in the short term to reuse a small portion of the treated effluent.

Property and Right-of-way Requirements

Requirements:

- The project sponsor owns the sites assigned to develop these projects and land acquisition will not be required.

- The utility has obtained the permits and licenses required to implement the projects.

Project Tasks and Timelines

Project	Start/End	2010												2011											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Tecolote La Gloria WWTP	Nov05/Dec11																								
La Morita WWTP	Nov05/Jan11																								
Construction														Start up											

3.b Management and Operations

Project Management

Resources: Management, construction, and operation of the proposed projects will be responsibilities of the project sponsor that has the necessary resources and staff available for these purposes.

Operation and Maintenance

Organization: CESPT serves approximately 500,000 water hook-ups and wastewater connections in the Tijuana and Playas de Rosarito metropolitan area, and has an appropriate Operation and Maintenance plan. The utility is organized in various departments, including: Planning, Wastewater Treatment, Operation and Maintenance, Construction, and Administration.

Pretreatment: The project sponsor has a pretreatment program to control industry and small businesses discharges in coordination with Baja California's Environmental Protection Agency.

Operation plan: The operation and maintenance consist of inspection procedures, verification of star-up and stop, and equipment conservation. The operation and maintenance manual will comprise the following aspects:

- Practical procedures for routine operation
- Operation policy
- Guidelines of the most common and important problems and practical solutions.
- Diagram of the treatment plant elements
- Relevant technical data and interpretation for proper control of the processes

Permits, licenses, and other regulatory requirements: The project sponsor has the following documentation available:

- Wastewater discharge permit (CONAGUA)
- Final Design validations (CONAGUA)
- State Environmental Clearance.

Reviewing agencies:	BECC, NADB, CONAGUA, EPA

Pending Issues:

None

Criterion Summary:

The projects comply with BECC's Technical Feasibility criteria.

4. Financial Feasibility

4.a Verification of Financial Feasibility

Financial Conditions

Information Presented: CESPT's financial statements.

Summary of Financial Analysis: CESPT has sufficient revenue to service the debt.

Project Total Cost, Financial Structure and Other Capital Investment Plans

Concept: Construction of the La Morita and Tecolote-La Gloria Wastewater Treatment Plants in Tijuana, Baja California.

Total Cost: **$ 202,620,388.97 million pesos**

Financial Structure: **$202,620,388.97 million pesos**

Source	Type	Amount	%
NADB Loan	Loan	$58,030,000.00	28.7%
Federal	Grant	$40,485,308.95	20.0%
JBIC Loan	Loan	$99,767,368.32	49.2%
CESPT	Equity	$4,337,711.70	2.1%
Total:		**$202,620,388.97**	**100.0%**

Dedicated Revenue Source

Revenue Source: CESPT's revenues.

4.b Legal Considerations

Project Administration: The projects will be managed by the CESPT, who has trained staff to manage the proposed infrastructure and address any potential emergency related to the operation and maintenance of the projects.

Financing Status: Construction of these works has already started with CESPT funding and needs NADB financing in order to complete the projects. The NADB loan component for these works will come from the original loan authorization by NADB Board as of July 21, 2009 for up to $380 million pesos.

As described in the Chapter 4 of the $380 million loan certification document, other projects certified by BECC can be funded with this loan. Therefore, no additional loan approval from the NADB Board is required.

Pending Issues:

None.

Criterion Summary:

The projects comply with BECC/ NADB's Financial Feasibility Criteria.

5. Public Participation

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

Local Steering Committee

Date of Establishment: The Local Steering Committee was formally installed on May 18th, 2010 at a meeting held in CESPT facilities.

Local Steering Committee Members: At this meeting, a Board of Directors was selected, and it is formed by the following individuals:

Chairperson:	Rosa Emilia Rivera Cruz
Secretary:	Juan Manuel Álvarez
Technical Secretary:	Hector Valadez
Alternates:	Jorge Vargas Mendoza
	María Paulina Pena Santos

Date of approval of Public Participation Plan: The Comprehensive Community Participation Plan developed by the Local Steering Committee was approved by the BECC on May 20, 2010.

Public Access to Project Information

Public access to project information: The projects technical and financial information was made available to the public for review. The Local Steering Committee, with assistance from the project sponsor, prepared the following:

- Project Presentation

The above was used to inform the community about the project.

Additional outreach activities:

- Development and dissemination of projects fact sheet
- Project surveys to document the community's concerns or support for the projects

Public Meeting: Advance notice to announce a Public Meeting was published in "El Mexicano," a local newspaper, on April 22, 2010.

During the meeting, technical aspects of the projects were presented. The meeting was held at 11:00 a.m. on May 25th, 2010 at the CESPT facilities. Attendees included the Local Steering Committee, as well as CESPT, and BECC representatives.

The meeting was attended by 120 residents of which 67 answered a project survey, a 100% percent of those surveyed said they were able to fully understand the project and explicitly expressed their support.

Final Public Participation Report	
Final report:	The Local Steering Committee and the sponsor prepared the Final Public Participation Report, to demonstrate that the proposed objectives were fully met to BECC's satisfaction.
Post-Certification Public Participation Activities	
Post-Certification Activities:	The project sponsor, in coordination with the Local Steering Committee, provided a general description of public participation activities that may be carried out after the certification of the projects to support their implementation and long-term feasibility.

Pending Issues:

None.

Criterion Summary:

The projects comply with BECC's Public Participation Criteria.

6. Sustainable Development

6.a Human and Institutional Capacity Building

Project operation and maintenance:

The project sponsor will be the agency responsible for operating and maintaining the system as it relates to:

- Wastewater treatment
- Water distribution
- Wastewater collection

The sponsor has the basic institutional and human capacity to operate and maintain the following:

- Proposed wastewater treatment infrastructure.
- Pretreatment program

Human and institutional capacity building:

Actions within the scope of the projects that contribute to institutional and human capacity building for the Tijuana Public Works State Commission (CESPT) include:

- Provide wastewater collection, and treatment services in a continuous, efficient, and cost-effective approach.
- Operate wastewater collection and treatment system that meet applicable local, state, and federal regulations.
- Provide training and continuing education to the utility's operating staff throughout its different areas, to offer essential services that meet the needs of the community and provide responsible maintenance of the new infrastructure.
- Optimize the use of scare water resources, and raise public awareness about the importance of water for the community development.

Additional plans or programs:

The sponsor currently manages an educational program called "Cultura del Agua," which aims to promote water conservation and the efficient use of the water resources among the community.

There is also a water reclamation program called "Proyecto Morado," this program includes the development of treated wastewater studies to find reuse alternatives and proper implementation.

6.b Conformance to applicable Local, State, and Regional Regulations and Conservation and Development Plans.

Local and Regional Plans addressed by the project:

The proposed projects conform to applicable plans and actions described in the following documents:

- Master Plan for Improvements to Water, Wastewater and Collection Services
- State Development Plan

- Municipal Development Plan
- The Municipal Development Plan establishes the need to develop basic sanitary infrastructure in Tijuana, such as wastewater collection and treatment services.
- The implementation of the projects will eliminate risks inherent to inappropriate wastewater management, and treated wastewater will be available for reuse. This will reduce the use of drinking water for landscaping purposes.
- From a regional planning standpoint, the projects incorporate actions and tasks included in the National Hydraulic Program (*Programa Nacional Hidráulico*, PNH), such as the reduction of water contamination in a watershed deemed to be a priority to the PNH due to its bi-national condition since the Pacific Ocean is a shared waterbody with United States.
- The projects adhere to the U.S.-Mexico Border 2012 Environmental Program by meeting Goal 1 (Reducing water contamination) and Objectives 1 (promoting an increase in the number of household connections to wastewater collection and treatment services) and 4 (promoting improve water utility efficiency). One of the program's guiding principles is to reduce major risks to public health and conserving and restoring the natural environment.

Laws and regulations met by the project:	The projects meet applicable federal regulations pursuant to wastewater collection, treatment, and final disposal.
Impacts to neighboring communities in the U.S.:	The development of these projects will prevent untreated wastewater from being discharged into the Pacific Ocean.

6.c Natural Resource Conservation

The project contributes to reduce environmental deterioration by expanding existing wastewater treatment capacity and reach 100% coverage of this service in Tijuana. Wastewater will be collected and conveyed to an existing WWTP to improve its quality, so as to reduce aquifer contamination and human health hazards resulting from the discharge of raw wastewater to streams or agricultural drains.

6.d Community Development

- The completion of these projects is crucial for the development of the community. The tasks proposed by the projects will contribute to the appropriate disposal of wastewater, which in turn will reduce the conditions that favor the proliferation of water-borne and arboviral diseases.

- The implementation of wastewater treatment systems will promote community development, as it will reduce contamination in the city and improve the quality of life for local residents.

- Treated wastewater will be available for other uses, including agricultural and urban public purposes.

- The projects will help the city achieve 100% wastewater treatment coverage, which in turn will enhance the development of the community, since it will reduce contamination on the streets caused by raw wastewater runoff.

Pending Issues:

None

Criterion Summary:

The projects comply with the Sustainable Development Criteria.

Available Documents

- Final Design, Tecolote-La Gloria and La Morita WWTP
- Basic Information and Demographic data, Tijuana, CESPT 2010
- Wastewater generation and treatment analysis and projections, Tijuana
- "Transboundary Environmental Assessment (EA) for the Expansion of the wastewater collection system to unserved areas in the city of Tijuana and Playas de Rosarito, Baja California", Marzo 2009
- Environmental Assessment Tijuana and Playas de Rosarito Potable Water and Wastewater Master Plan, CDM 2003
- DICTAMEN MIA NO. DBFB/SGPA/UGA/DIRA/1988/07
- DICTAMEN MIA NO. DBFB/SGPA/UGA/DIRA/833/07
- PERMISOS DE DESCARGA CONAGUA OFICIO NO. BOO.00.R02.04.5-1491/1631, Y OFICIO No. BOO.00.R02.04.5.-1492/1632