

# ANNUAL REPORT 2016

BORDER ENVIRONMENT COOPERATION COMMISSION



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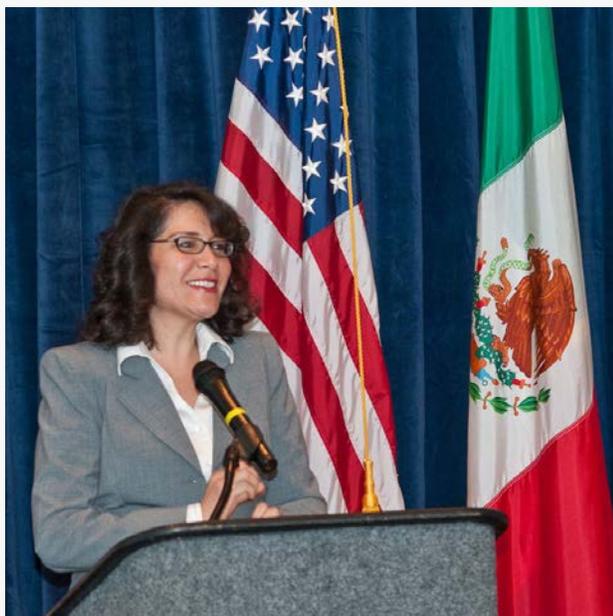
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# MESSAGE

## From BECC's General Manager

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For more than 20 years, the Border Environment Cooperation Commission (BECC) along with its sister institution the North American Development Bank (NADB), have been charged with helping to improve the environmental conditions of the U.S.-Mexico border region. As the needs and demands of the border change, so must the institutions that serve it. 2016 was a remarkable year, not only because important environmental infrastructure investments continued, new partnerships were developed, and new initiatives launched, but also because of the strongly coordinated efforts to bring closer together these two exceptional organizations, including the launch of the integrated organizational approach for the upcoming merger of BECC and NADB.



The 15 projects certified in 2016 will directly benefit 29 border region communities with better water service, first-time access to wastewater collection and/or treatment, strengthened capacity to manage landfill operations, as well as innovative programs to reduce harmful emissions such as a low-emission vehicle purchase program in Mexico and a border-wide financing program to improve energy and water efficiency for commercial properties in the United States. More than 800,000 residents are expected to directly benefit from these important investments.

Aside from our core efforts in project development and certification, BECC continues to enhance its organizational strategic planning, as well as to advance innovative initiatives, such as results measurements at the project level, energy efficiency at water utilities and integration of green infrastructure for local stormwater management. Strategic initiatives such as these will continue to be strengthened upon the integration of BECC and NADB.

The upcoming year will be one of challenges, and opportunities for BECC. As the organization works on integrating with NADB, a new leadership team is in place to help meet the needs of the border communities that have relied on both BECC and NADB for the past 20 years and to lead a remarkable staff in developing effective programs and providing high-quality services that will advance the well-being of residents in both nations. We are confident that even greater efficiencies in serving our clients will be achieved.

At a personal level, after almost 20 years at BECC, I prepare to leave as General Manager and I am confident that, upon integration with the NADB, BECC's purpose, functions and operations will continue to be strengthened to fulfill its original mission of helping preserve and protect human health and the

environment in the U.S.-Mexico border region. It has been a great honor to serve border communities and the BECC-NADB Board of Directors. Working at BECC has been one of the most important stages of my professional life and the lessons learned will carry over to the next phase in my career. I leave a network of friends at BECC, NADB and in the border states and communities who have welcomed and supported me. I want to express my appreciation to BECC staff who have responded to the demands of innovating and elevating our institution to the next level.

### MISSION:

"To preserve, protect and enhance human health and the environment of the US-Mexico border region, by strengthening cooperation among interested parties and supporting sustainable projects through a transparent binational process in close coordination with NADB, federal, state and local agencies, the private sector, and the general public."

### VISION:

BECC is a strategic, visionary and innovative organization capable of leading the efforts of border communities to accomplish their environmental and public health goals. Our leadership arises from technical excellence, team work and effective program and project management.



**THE 15 PROJECTS CERTIFIED IN 2016  
WILL DIRECTLY BENEFIT 29 BORDER  
REGION COMMUNITIES.**

# INSTITUTIONAL PERFORMANCE AND RESULTS HIGHLIGHTS

From 1995 to December 31, 2016, BECC's most notable project-related accomplishments include the following:

As of December 2016, a total of 112 projects have been certified to receive a total of USD\$656.94 million in BEIF grants. Of that amount, USD\$602.86 million has been disbursed to support the implementation of 102 projects. For 2016, three projects received \$96.88 million in loans.

## RESULTS

- 147 Water and Wastewater projects providing new or improved services to more than 13 million border residents with a capacity to adequately treat more than 470 million gallons per day (mgd) of wastewater discharges, equivalent to the wastewater discharge of nearly 13 million people.
- 28 Solid Waste projects accommodating approximately 1,700 tons/day of waste previously disposed of in open or uncontrolled sites, benefiting 3 million people.
- 13 Air Quality projects related to paving and urban mobility, which eliminate approximately 175,000 tons/year of PM<sub>10</sub>, caused by vehicular traffic on unpaved roadways.
- 26 Water Conservation projects estimated to save energy and to decrease water losses by approximately 330 million gallons per year; enough to serve the average demands of some four million people.
- 29 Clean and Efficient Energy projects with an installed capacity of 1,761 megawatts (MW), which is expected to offset demand for traditional fossil-fuel based energy production, thereby avoiding nearly 2.86 metric tons of carbon dioxide (CO<sub>2</sub>)/year. Annual generation of 5,433 gigawatt hours (GWh) of energy from renewable sources.

Water and Wastewater

**147**



Solid Waste

**28**



Air Quality

**13**



Water Conservation

**26**



Clean and Efficient Energy

**29**





# CERTIFIED PROJECTS

1995 → 2016



US	TOTAL PROJECTS	ESTIMATED COST AT CERTIFICATION (US\$)
California (CA)	28	\$ 1.25 B
Arizona (AZ)	24	\$ 388.19 M
New Mexico (NM)	13	\$ 83.76 M
Texas (TX)	59	\$ 1.68 B
<b>TOTAL</b>	<b>124</b>	<b>\$ 3.41 B</b>

MEXICO	TOTAL PROJECTS	ESTIMATED COST AT CERTIFICATION (US\$)
Baja California (BC)	38	\$ 1.60 B
Sonora (SON)	31	\$ 657.81 M
Chihuahua (CHIH)	35	\$ 591.98 M
Coahuila (COAH)	10	\$ 594.81 M
Nuevo Leon (NL)	10	\$ 871.68 M
Tamaulipas (TAMPS)	24	\$ 1.53 B
<b>TOTAL</b>	<b>148</b>	<b>\$ 5.85 B</b>

# TECHNICAL ASSISTANCE

1995 —————> 2016

US \$

## BY LOCATION

US	TOTAL PDAP	TOTAL BECC TA	MEXICO	TOTAL PDAP	TOTAL BECC TA
California (CA)	\$ 3,398,113	\$ 209,917	Baja California (BC)	\$ 1,856,161	\$ 1,066,759
Arizona (AZ)	\$ 6,444,181	\$ 460,696	Sonora (SON)	\$ 3,120,050	\$ 863,935
New Mexico (NM)	\$ 4,627,873	\$ 207,641	Chihuahua (CHIH)	\$ 2,260,666	\$ 1,218,939
Texas (TX)	\$ 14,647,072	\$ 1,300,983	Coahuila (COAH)	\$ 852,447	\$ 649,501
Border-wide		\$ 196,690	Nuevo Leon (NL)	\$ 153,752	\$ 354,150
			Tamaulipas (TAMPS)	\$ 3,640,433	\$ 1,291,657

**TOTAL \$ 48,821,918**

## BY SECTOR

	MEXICO	US	BORDER-WIDE
 Water/Wastewater	\$ 13,362,828	\$ 30,570,040	\$ -
 Solid Waste	\$ 2,466,989	\$ 548,880	\$ -
 Water Conservation	\$ 151,739	\$ 102,750	\$ -
 Clean and Efficient Energy	\$ 1,186,597	\$ 55,470	\$ -
 Air Quality	\$ 92,113	\$ -	\$ 40,000
Other	\$ 68,483	\$ 19,338	\$ 156,690

# 2016 PROJECT REPORT

BECC and NADB were established to help address critical environmental and human health conditions in the border region related to the lack of adequate **environmental infrastructure**. To achieve this objective, BECC works with local, state, federal and private-sector sponsors to develop projects through a process consistent with its Certification Criteria, NADB financing prerequisites, and other applicable regulatory or funding requirements. This well-balanced process evaluates the environmental, technical, social and financial feasibility of the proposed infrastructure investment and seeks long-term project sustainability for the sponsor, investors and the intended beneficiaries. Once a project satisfies these elements, BECC and NADB prepare a certification and/or financing proposal for each project to be presented to the Board of Directors for consideration and approval.

**In 2016, the Board of Directors approved 15 environmental infrastructure projects for BECC certification and NADB financing.** Each of these projects is expected to achieve project-specific outcomes related to improving environmental and human health conditions.

## PROJECT HIGHLIGHTS

- Grant funding totaling USD\$12.8 million for expanding two existing water and wastewater systems in Arizona and Sonora, benefitting more than 30,000 border residents.
- Certification and financing of a wastewater collection and treatment project in Hidalgo County, Texas that will provide first time access to sewer services for 400 homes in six colonias.
- Approval of a Border-wide Financing Program to Improve Water and Energy Efficiency in the US that consists of providing financing to support the implementation of a Property Assessed Clean Energy (PACE) funding program to finance energy efficiency, renewable energy, and water conservation improvements for non-residential properties, such as, commercial, industrial, and agricultural facilities.
- Mercader Financial receives NADB loan to fund border-wide program for purchase of low-emission vehicles in Mexico.

PROJECT	BORDER-WIDE	UNITED STATES	MEXICO	TOTAL
Water/Wastewater	-	5	2	7
Solid Waste	-	-	5	5
Air Quality	1	-	-	1
Clean and Efficient Energy	1	1	-	2

# WATER/WASTEWATER

## REDUCING THE RISK OF WATER-BORNE DISEASE AND WATER POLLUTION

The fundamental objective of water and wastewater projects is to eliminate exposure to unsanitary water conditions, which can have immediate and severe health and environmental impacts. Because of the shared water resources along the border and the movement of goods, people, and services back and forth across the border, the investment to improve this infrastructure in either country provides the residents in the neighboring country with a lower risk of contagious water-borne diseases. The level of investment and increased access to this infrastructure has been greatly influenced by the availability of grant funding provided by the U.S. Environmental Protection

Agency (EPA) through the Project Development Assistance Program (PDAP) and Border Environment Infrastructure Fund (BEIF).

Altogether, the seven water and wastewater projects certified in 2016 are intended to benefit more than 300,000 border residents, including enhanced drinking water services provided to more than 3,000 households and first-time and enhanced wastewater collection and treatment services to more than 84,000 households. These projects are anticipated to reduce more than 10 mgd of untreated wastewater currently polluting community streets, irrigation systems and shared water bodies in the border region.

## DOUGLAS, ARIZONA

### BAY ACRES WASTEWATER COLLECTION SYSTEM AND WASTEWATER TREATMENT PLANT EXPANSION

**Benefited Population** 17,378 people

**Project Cost** USD \$16,332,904

**Funding Partners**

United States Department of Agriculture Rural Development (USDA-RD) Grant;

Water Infrastructure Finance Authority of Arizona (WIFA) Loan; NADB-Border Environment Infrastructure Fund (BEIF) Grant

**Existing Condition**

Residents of the Bay Acres Colonia currently use inadequate, failing onsite wastewater treatment systems (septic tanks with leach fields). As a result, inadequately treated sewage, black water, and gray water are discharged into streets, backyards, and alleyways. Additionally, to provide new wastewater collection services to this area, the existing wastewater treatment plant must be expanded to accommodate existing and new wastewater flows.

**Anticipated Outcome**

To provide access to and use of first-time wastewater services in unserved areas, eliminate exposure to untreated or inadequately treated wastewater discharges, and provide adequate wastewater treatment capacity contributing to the reduction of water pollution and the risk of waterborne disease.

**Measurement**

- Provide access to wastewater collection services for 342 existing homes, including the installation of household wastewater connections to 100% of the existing homes in the project area.
- Eliminate untreated or inadequately treated wastewater discharges of approximately 96,000 (gpd).
- Improve wastewater treatment service for 100% of the system's wastewater connections.

# TOMBSTONE, ARIZONA

## DRINKING WATER SYSTEM IMPROVEMENTS

**Benefited Population** 1,380 people

**Project Cost** USD \$742,000

### Funding Partners

City of Tombstone; NADB Community Assistance Program (CAP) Grant

### Existing Condition

Naturally occurring arsenic concentrations in drinking water are above maximum contaminant level of 10 micrograms per liter ( $\mu\text{g/l}$ ).

### Anticipated Outcome

To improve drinking water quality by blending Well No. 1 water with surface (spring) water to bring arsenic concentrations within the established MCL of 10 micrograms per liter ( $\mu\text{g/l}$ ), which will contribute to the reduction of health risks associated with high levels of arsenic.

### Measurement

- Provide improved drinking water quality for 718 residential service connections.
- Full compliance with regulatory standards for arsenic concentrations.



# ANTHONY, NEW MEXICO

## ANTHONY LIFT STATION REPLACEMENT PROJECT

**Benefited Population** 8,700 people

**Project Cost** USD \$2,811,400

### Funding Partner

NADB-BEIF Grant

### Existing Condition

The existing "Sonic" Lift Station and its corresponding force main were constructed in the 1980's; it no longer has capacity due to the community's growth, and it is vulnerable to breakdowns due to the system's age.

### Anticipated Outcome

To eliminate exposure to untreated or inadequately treated wastewater, contributing to the reduction of water pollution and the risks of waterborne diseases.

### Measurement

- Eliminate the risks of sewage overflows in the populated areas surrounding the existing lift station, which fails, on average, twice per year;
- Increase capacity of the lift station from an average flow of 0.4 to 0.9 mgd



# EL PASO COUNTY, TEXAS

## VISTA DEL ESTE WATER SYSTEM REPLACEMENT PROJECT

**Benefited Population** 1,068 people

**Project Cost** USD \$1,564,000

**Funding Partners**

El Paso County; NADB-CAP Grant

**Existing Condition**

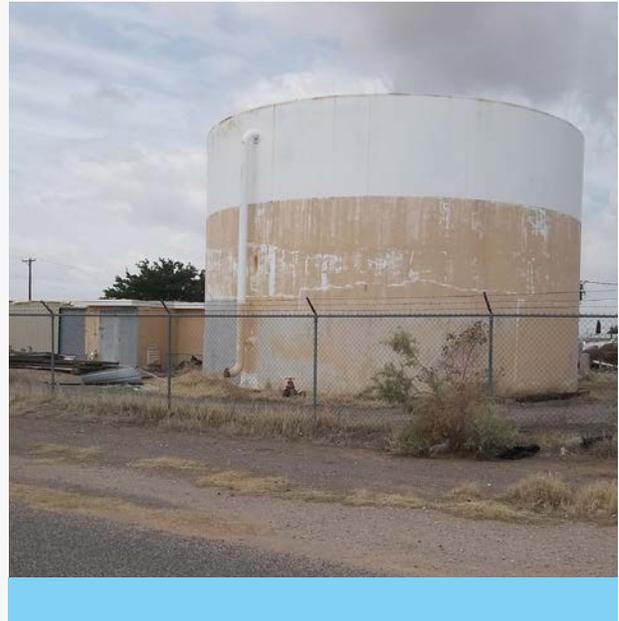
The Vista del Este area is served by an existing water system which is failing, leading to regular line breaks and maintenance issues for the County. Additionally, residents lose service during repairs.

**Anticipated Outcome**

To increase access to sustainable drinking water service, reducing interruptions and water losses, as well as help improve water resource management and reduce health risks associated with waterborne diseases.

**Measurement**

- Increase access to safe and reliable drinking water services for 340 households;
- Eliminate water losses from line breaks (approximately 5 million gallons annually);
- Eliminate service interruptions (4 to 6 annually).



# HIDALGO, TEXAS

## NORTH ALAMO REGIONAL WASTEWATER COLLECTION AND TREATMENT PROJECT

**Benefited Population** 1,616 people

**Project Cost** USD \$11,778,174

**Funding Partners**

Texas Water Development Board (TWDB) Loan and Grant; NADB-BEIF Grant; North Alamo Water Supply Corporation

**Existing Condition**

Residents within the project area currently use on-site septic tank/drain field systems with a few dwellings being served by other types of on-site systems. Due to population density, small lot sizes, high water tables, and poor storm water drainage, most of these systems are generally not considered to be in compliance with regulatory requirements. In a considerable portion of the Project area, a health hazard likely exists, particularly during wet weather.

**Anticipated Outcome**

To provide access to and use of first-time wastewater services in unserved areas and eliminate exposure to untreated or inadequately treated wastewater discharges by connecting the homes to new wastewater collection and treatment infrastructure, contributing to the reduction of water pollution and the risk of waterborne diseases.

**Measurement**

- Provide access to wastewater collection and treatment services for 400 homes, of which up to 318 new residential connections will be installed with TWDB-Economically Distressed Areas Program funding, and 82 with NADB-BEIF funding.
- Eliminate untreated or inadequately treated wastewater discharges of approximately 0.17 mgd.

# NOGALES, SONORA

## EXPANSION OF THE WATER AND WASTEWATER SYSTEMS TO THE SOUTHWEST AREA

**Benefited Population** 16,701 people

**Project Cost** USD \$10,483,888

### Funding Partners

Mexico's National Water Commission (CONAGUA); NADB-BEIF Grant; Water-Wastewater Municipal Operator (OOMAPAS) of Nogales, Sonora

### Existing Condition

The Nogales water distribution system reaches an estimated 72% of the homes of the city. The remaining population relies on drinking water hauled by trucks, a practice that is subject to significant risk of contamination in the delivery and storage of drinking water. An estimated 58% of the homes in the area have access to wastewater collection services. The remaining wastewater is either disposed of in cesspools or is discharged directly as raw sewage, posing a risk to human health with the potential exposure to untreated sewage.

### Anticipated Outcome

To increase access to sustainable potable water service and eliminate exposure to untreated or inadequately treated wastewater discharges by providing first-time drinking water and wastewater collection services to residents, contributing

to the reduction of water pollution and risk of waterborne diseases; as well as reducing health risks associated with hauled water service.

### Measurement

- Provide access to drinking water services for 2,350 homes.
- Provide access to wastewater collection services to 3,506 homes, including the installation of household connections for 100% of the project area.
- Eliminate untreated or inadequately treated wastewater discharges of approximately 0.93 mgd.

# REYNOSA, TAMAULIPAS

## WASTEWATER COLLECTION AND TREATMENT PROJECT

**Benefited Population** 266,853 people

**Project Cost** USD \$15,658,735

### Funding Partners

Federal and state grants through the National Water Commission (CONAGUA) and the Tamaulipas State Water Commission (CEAT); NADB-BEIF Grant

### Existing Condition

Reynosa currently has the capacity to treat 28.5 mgd of wastewater but the current wastewater flows generated by the city exceeds this capacity. As a result, approximately 9 mgd of untreated or inadequately treated wastewater are being discharged into the Rio Grande. In addition to the lack of wastewater treatment capacity, lift stations 1, 2, 7, and 8 in the city's north sector have exceeded their service life and experience leaks and recurrent problems that also result in raw wastewater discharges into the Rio Grande.

### Anticipated Outcome

To provide improved access to sustainable wastewater collection and treatment services by expanding the capacity

of the Wastewater Treatment Plant No. 2, building lift station No. 278, rehabilitating lift station No.1, and decommission lift stations 2, 7, and 8, which will reduce the risk of untreated or inadequately treated wastewater discharges and improve the quality of effluent discharges to receiving water bodies.

### Measurement

- Increased access to adequate wastewater collection services for 28,623 existing sewer connections
- Increased access to wastewater treatment services for 44,891 sewer connections receiving this service for the first-time
- Increase the wastewater treatment capacity by 11.4 mgd
- Eliminate approximately 9 mgd of untreated or inadequately treated wastewater discharges

# SOLID WASTE MANAGEMENT

## REDUCING WASTE GENERATION AND RISKS OF VECTOR-RELATED DISEASE AND HARMFUL ENVIRONMENTAL EFFECTS OF IMPROPERLY DISPOSED WASTE

By supporting border communities to improve municipal solid waste management, BECC addresses the environmental and human health concerns related to improperly handle solid waste and helps improve the quality of life of border residents.

In 2016, BECC certified five solid waste management projects, three in Chihuahua and two in Coahuila. With these five projects, up to 557 metric tons of solid waste per day will be disposed of in properly operated landfills, benefitting more than 500,000 residents.

## AHUMADA, CHIHUAHUA

### EQUIPMENT FOR SANITARY LANDFILL OPERATIONS

**Benefited Population** 11,500 people

**Project Cost** USD \$290,000

**Funding Partner**

NADB-CAP Grant

**Existing Condition**

The Sponsor currently provides waste collection services to 11,5000 residents (100% coverage). The solid waste collected is disposed of in a controlled dumpsite. However, to improve waste management and comply with Mexican federal standard NOM-083 SEMARNAT- 2003, the Sponsor is completing the construction of a new sanitary landfill with federal funding through the Mexican Ministry of Environment and Natural Resources (SEMARNAT).

**Anticipated Outcome**

To achieve proper solid waste management in Ahumada, by providing the equipment necessary to adequately operate the new sanitary landfills, thereby allowing the communities to comply with the applicable laws and regulations and helping reduce improper solid waste disposal and related risks for soil and groundwater contamination, as well as vector-related diseases and other harmful effects

**Measurement**

- Improved landfill operations for the disposal of up to 10 metric tons of solid waste per day.
- Full compliance with the applicable laws and regulations.
- Improved solid waste management system for approximately 3,134 households.



# MADERA, CHIHUAHUA

## EQUIPMENT FOR SANITARY LANDFILL OPERATIONS

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**Benefited Population** 17,050

**Project Cost** USD \$290,000

**Funding Partner**

NADB-CAP Grant

**Existing Condition**

The Sponsor currently provides waste collection services to more than 17,000 residents in the city of Madera, and the surrounding communities collected solid waste is disposed of in a controlled dumpsite. However, to improve waste management and comply with Mexican federal standard NOM-083 SEMARNAT-2003, the Sponsor has completed construction of a new landfill with federal funding through SEMARNAT.

**Anticipated Outcome**

To achieve proper solid waste management in Madera by providing the equipment necessary to adequately operate the new sanitary landfills, thereby allowing the communities to comply with the applicable laws and regulations and helping

reduce improper solid waste disposal and related risks for soil and groundwater contamination, as well as vector-related diseases and other harmful effects.

**Measurement**

- Improved landfill operations for the disposal of up to 17 metric tons of solid waste per day
- Full compliance with the applicable laws and regulations.
- Improved solid waste management system for approximately 4,145 households.

# NUEVO CASAS GRANDES, CHIHUAHUA

## EQUIPMENT FOR SANITARY LANDFILL OPERATIONS

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**Benefited Population** 59,337

**Project Cost** USD \$500,000

**Funding Partners**

NADB-CAP Grant

**Existing Condition**

The Sponsor currently provides waste collection services to more than 59,000 residents. The solid waste collected is disposed of in a controlled dumpsite. However, to improve waste management and comply with Mexican federal standard NOM-083 SEMARNAT- 2003, the Sponsor is completing the construction of a new sanitary landfill with federal funding through SEMARNAT.

**Anticipated Outcome**

To achieve proper solid waste management in Nuevo Casas Grandes by providing the equipment necessary to adequately operate the new sanitary landfills, thereby allowing the communities to comply with the applicable laws and

regulations and helping reduce improper solid waste disposal and related risks for soil and groundwater contamination, as well as vector-related diseases and other harmful effects.

**Measurement**

- Improved landfill operations for the disposal of up to 55 metric tons of solid waste per day
- Full compliance with the applicable laws and regulations.
- Improved solid waste management system for approximately 16,500 households.

# CINCO MANANTIALES, COAHUILA

## EQUIPMENT FOR SANITARY LANDFILL OPERATIONS AND WASTE COLLECTION

**Benefited Population** 77,800

**Project Cost** USD \$567,000

### Funding Partners

Asociacion Pro Limpieza de los 5 Manantiales A.C. (Non-Profit Organization operating regional landfill); NADB-CAP Grant

### Existing Condition

The municipalities of Allende, Morelos and Nava transport their solid waste to the landfill for final disposal. Although the collection vehicles used by these three communities are in good condition, they are used extensively, typically operating 16 hours a day, resulting in the need for new equipment to maintain and improve solid waste collection services. Because of the deteriorated conditions of the collection vehicles used by the municipalities of Villa Union and Zaragoza, the solid waste collected in those communities is disposed of in an open dumpsite.

### Anticipated Outcome

To achieve and maintain proper solid waste management in the Cinco Manantiales region through the purchase of equipment for landfills operations and garbage collection, which will help reduce inadequate solid waste disposal and related risks for soil and groundwater contamination, as well as vector-related diseases and other harmful effects.

### Measurement

- Improved landfill operations for the disposal of up to 75 metric tons of solid waste per day
- Full compliance with the applicable laws and regulations.
- Improved solid waste management system for approximately 21,600 households.

# CENTRAL REGION, COAHUILA

## EQUIPMENT FOR SANITARY LANDFILL OPERATIONS

**Benefited Population** 345,797

**Project Cost** USD \$495,000

### Funding Partners

Patronato Pro Limpieza de los Municipios de la Region Centro del Estado de Coahuila A. C. (Non-Profit Organization operating the regional landfill); NADB-CAP Grant

### Existing Condition

The regional landfill began operations in 1995 and is classified as a Type A landfill (more than 100 metric tons per day), and is expected to have a total of 16 cells with an overall useful life through 2035. Approximately 380 metric tons of waste is deposited in the landfill daily. Cell No. 9 will reach full capacity in about one year. The Sponsor owns heavy equipment and machinery for landfill operations that has exceeded its useful life, requires constant repairs and jeopardizes proper solid waste management.

### Anticipated Outcome

To achieve and maintain proper solid waste management in the Central Region through the purchase of equipment for landfills operations and garbage collection, which will help reduce inadequate solid waste disposal and related risks for soil and groundwater contamination, as well as vector-related diseases and other harmful effects.

### Measurement

- Improved landfill operations for the disposal of up to 400 metric tons of solid waste per day.
- Full compliance with the applicable laws and regulations.
- Improved solid waste management system for approximately 96,600 households.

# AIR QUALITY

## IMPROVING AIR QUALITY TO REDUCE THE RISKS OF RESPIRATORY DISEASES

In 2016, BECC certified one air quality project, the Border-wide Low-Emissions Vehicle Purchase Program in Mexico. This project consists of the establishment of a financing program to support the acquisition of vehicles with low-emission technology for public transportation within the 300-kilometer border region in Mexico.

### BORDER-WIDE

#### LOW-EMISSION VEHICLE PURCHASE PROGRAM IN MEXICO

**Benefited Population** N/A

**Project Cost** USD \$35,000,000

**Project Sponsor**

Mercader Financial S.A. de C.V. SOFOM, E.R.

**Funding**

NADB Loan

**Impact/Existing Condition**

According to the Mexican national statistics institute, INEGI, more than 15.6 million vehicles were registered in 2000 in Mexico and by 2010, vehicle inventories had more than doubled to 31.6 million. Nearly 20% of these vehicles were registered in the six northern border states. More vehicles on urban roadways give rise to side-effects such as traffic congestion, accidents, pollution and noise. Additionally, the increased use of private vehicles in comparison with buses promotes an inefficient use of the urban surface, with private vehicles parked nearly 95% of the time, while public transportation works throughout the day and uses up to 50 times less road space per passenger carried.

**Anticipated Outcome**

To improve public transportation fleets by facilitating the financing of low emission vehicles, contributing to the reduction of greenhouse gases (GHG) and other pollutants in urban areas throughout the northern border region of Mexico.

**Measurement**

- Sale of low emission vehicles that comply with the 2004 emission standards set by the EPA, which can reduce nitrogen oxides (NOx) and hydrocarbons (HC) emissions by approximately 50% and reduce carbon dioxide (CO<sub>2</sub>) emissions by nearly 24% compared to older models, while in the case of compressed natural gas-fueled vehicles, the criteria pollutant emissions are nearly eliminated.
- Project outcomes will be measured based on the emissions generated by vehicles with the low-emission technology offered through the program compared to the emissions generated by diesel buses with EPA 1998 technology, which are commonly used for public transportation in the Mexican border region.



# CLEAN & EFFICIENT ENERGY

## REDUCING THE DEMAND ON TRADITIONAL FOSSIL-FUEL-BASED ENERGY PRODUCTION

BECC and project sponsors develop energy projects to support local communities and generate electricity with less emissions among those generated by fossil-fuel fired plants or using scarce water resources. In 2016, two projects in this sector

were approved, one which will increase renewable energy capacity, and another that provides long-term financing for energy and water improvements to non-residential properties in various U.S. border communities.

## DIXIELAND, CALIFORNIA

### SEPV IMPERIAL SOLAR PROJECT

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**Benefited Population** 6,436 people

**Project Cost** Reserved information

**Project Sponsor**

AES Distributed Energy (SEPV Imperial, LLC)

**Funding**

NADB Loan

**Impact/Existing Condition**

In 2009, the California Air Resources Board was directed by Executive Order S-21-09 to enact regulations to achieve the goal of 33% renewables by 2020. To achieve this goal, Senate Bill X1-2 was signed in April 2011. Under the renewables portfolio standard, all electricity retailers in the state needed to adopt the new goals of 25% by the end of 2016 and 33% by the end of 2020. Senate Bill 350 was signed on October 7, 2015, and requires that the target of electricity generation from renewable resources be increased from 33% by 2020 to 50% by 2030.

**Anticipated Outcome**

To increase installed capacity of renewable energy resources, reducing the demand on traditional fossil fuel-based energy production and contributing to the reduction of greenhouse gas emissions and other pollutants from power generation by fossil fuels.

**Measurement**

- Approximately 15.1 GWh during the first year of operation.
- An expected displacement of more than 4,319 metric tons/year of CO<sub>2</sub> and 7 metric tons/year of NO<sub>x</sub>.



# BORDER-WIDE

## FINANCING PROGRAM TO IMPROVE WATER AND ENERGY EFFICIENCY IN THE UNITED STATES

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The Border-wide Financing Program is intended to facilitate water conservation, clean and efficient energy and related improvements in commercial buildings through the Property Assessed Clean Energy (PACE) programs that are created by state legislation and instituted by local ordinances. The PACE program provides long-term financing for qualified energy efficiency, renewable energy and water conservation improvements in non-residential properties, such as commercial, industrial and agricultural facilities. A qualified improvement is defined as a permanent improvement fixed to real property and intended to decrease water or energy consumption, including devices that use energy technology to generate electricity. Participants repay the loans through a voluntary property assessment or tax lien imposed by the local government at the request of the property owner. PACE helps property owners overcome market barriers, such as short payback periods and lack of access to capital, that often discourage investment in these types of projects. Under the certified project, eligible properties must be located within the 100-km U.S. border region in cities and counties where PACE legislation has been enacted.

**Benefited Population** N/A

**Project Cost** USD \$63,000,000

**Project Sponsor**

CleanFund Commercial PACE Capital Inc.

**Funding**

NADB Loan

**Impact/Existing Condition**

Local governments can take a wide range of approaches to promote energy efficiency by providing viable financing options for projects such as rooftop solar systems, equipment replacement, automation and other energy efficiency projects. PACE programs are authorized by local governments to help property owners finance qualified improvements.

**Anticipated Outcome**

To decrease demand on fossil-fuel-based energy sources and/or decrease water demand through the financing of energy efficiency, renewable energy and water conservation facility improvements for non-residential properties ("sub-project"), contributing to the reduction of harmful emissions and improved water management.

**Measurement**

- Increased renewable energy generation capacity (kilowatts)
- Energy savings (kilowatt-hours)
- Emission displacement per year based on the quantity of energy savings.
- Water conservation subprojects: quantity of water savings (gallons of water/year).

# RESULTS MEASUREMENT SYSTEM

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BECC and NADB developed a joint Results Measurement System (RMS) for implemented projects that includes a closeout process (COP) for all projects certified since 2006, and impact assessments for a select group of projects.

The BECC-NADB RMS was developed to provide an objective assessment of the results of the institutions, moving its practice from 'implementation-based' to 'results-based' evaluation

and determining whether implemented projects generated the expected results. The RMS provides accountability on performance and results achieved. The main tool on which the RMS relies is the project result matrix developed for each particular project, which includes project objectives, baseline indicator values, target values, and the recommended measurement methodology.

## Closeout Process

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The COP for environmental projects is an effective tool for measuring results. This activity fosters the opportunity to confirm a project's achievement of its fundamental objective, to the extent to which physical targets are met (outputs), and the intended benefit achieved (outcomes), as well as to seek feedback for improved practices (lessons learned) through on-site observation and direct dialogue with project sponsors and operating personnel. Some COP objectives include:

- Evaluate constructed/operational conditions vs projected conditions at project's certification
- Determine causes for project deviations (lessons learned)
- Create a feedback loop to apply lessons learned for future projects

The COP is usually conducted after one year of operation of the certified project and allows measuring the following elements:

- **Inputs** - defined as the 'resources at the disposal of the project', and activities, defined as the 'actions taken...to convert inputs to outputs', are established in the certification document and tracked as part of the day-to-day activities of the institutions (through fund disbursement and monitoring processes).
- **Outputs** - or 'the tangible goods and services that the project activities produce', are measured to determine whether the project deliverables, as certified were achieved, in terms of their physical characteristics (i.e. dimensions, capacity, technology), schedule, costs and funding structure
- **Outcomes** - defined as the 'results likely to be achieved once the population benefits from the project outputs', measured as access to or performance of the infrastructure.

A menu of typical indicators was developed for each of the environmental infrastructure sectors and each indicator was selected considering its appropriateness to represent the change in status - before (baseline) and after (post intervention) - of the most important environmental or human health conditions addressed by the project as well as its characteristics of simplicity, representativeness, feasibility and verifiability.

## FOR 2016, BECC AND NADB COMPLETED THE FOLLOWING CLOSEOUT REPORTS FOR LOAN AND GRANT PROJECTS

### US

#### WATER/WASTEWATER PROJECTS

- Wastewater System Improvements in Brawley, CA (CAP)
- Drinking Water System Improvements Program -Meter Replacement in Sunland Park, NM (CAP)
- Improvements to the Water and Wastewater Services in 15 Colonias in Laredo and Webb County, TX (BEIF)
- Wastewater Collection Improvements Project in Clint, El Paso County, TX (BEIF)

#### CLEAN ENERGY

- Global Alternative Fuels, LLC
- Biodiesel Production Facility in El Paso, TX (Loan)

### Mexico

#### WATER/WASTEWATER PROJECTS

- Wastewater Collection and Treatment Project in Colonia Esperanza, CHIH (BEIF)
- Wastewater Collection and Treatment Project (Mexicali IV) in Mexicali, BC (Loan)
- Expansion of the Wastewater Collection System for the Unserved Area of Colonia Alcatrazes in Tijuana, BC (BEIF & Loan)
- Expansion of the Wastewater Collection System for the Unserved Area of Ejido Plan Libertador and Ampliacion in Playas de Rosarito, BC (BEIF & Loan)
- Expansion of the wastewater collection system for the unserved area Ampliacion Lucio Blanco (Phase II) in Playas de Rosarito, BC (BEIF)
- Wastewater Collection System Improvements
- Disconnection from Storm Water Sewer in Nuevo Laredo, TAM (BEIF)

## First Aggregated Report

BECC and NADB are required to complete a Closeout Report for all projects financed by NADB since 2006, as well as for all BEIF projects implemented since the inception of the program. As of December 31, 2016, a total of 272 projects have been certified, out of which 147 implemented projects are eligible for COP. A total of 60 COPs have been completed and a total of 80 are in the pipeline.

In 2016, the First Aggregated Report was completed, which provided a compilation of indicators documented in the closeout reports for each infrastructure sector, based on BECC and NADB records, field visits, and extended interviews with key stakeholders for 60 BEIF and Non-BEIF completed projects, 35 in Mexico and 25 in the United States. The conclusions comprised of environmental objectives achieved, investments made and lessons learned. An electronic 'tracking tool' was developed to document the status of all COPs, which includes the entire set of selected indicators under each project. Its main purpose is to facilitate aggregate results by indicator and sector.

Some important aggregated indicators derived from 35 COP in Mexico and 25 COP in the United States, are:

#### DRINKING WATER PROJECTS

- 21.46 mgd of improved drinking water treatment with 1 new and 3 expanded or rehabilitated plants [objective achievement = 100%]
- 20.50 mgd of increased access to drinking water services [objective achievement = 100%]
- 13,414 new drinking water domestic hookups [objective achievement = 84%]

#### WASTEWATER PROJECTS

- 319,035 new wastewater domestic sewer connections [objective achievement = 89%]
- 170.05 mgd of increased access to wastewater treatment services [objective achievement = 94%]
- 133.85 mgd reduction of untreated wastewater discharges [objective achievement = 94%]

The full report is available at <http://www.becc.org/capacity-building/publications-reports>.

All COPs contain a section on lessons learned which includes what worked well (best practices) and areas of improvements. The main lessons learned for water, wastewater, and solid waste projects are:

- Internal Process Perspective: document and record information related to septic tanks, latrines and cesspools eliminated through the project's implementation.
- Technical Perspective: planning and design should consider additional factors such as actual population and population projections; addition of connections and decommissioning of on-site systems into the project; pilot testing of innovative or uncommonly used technologies for water and wastewater treatment; proper operational and financial guidance is key for all projects.
- Financial/Funding Perspective: multi-year investment plans are many times necessary to complete match requirements through funding sources constrained by annual allocations/spending requirements or budget limits.
- Schedule/Time Perspective: Project sponsors must demonstrate proper legal authority to provide service, obtain funding, contract loans, and construct within the required property.
- Communication Perspective: Effective public participation, particularly in the case of water infrastructure projects, contributes to readiness of the population to receive the project and/or to mitigate obstacles as early as possible.

## Impact Assessment

The impact assessment is an essential tool to determine if projects, in representative sectors, are being successful in meeting their fundamental objectives and providing health and environmental benefits. Impact assessment (IA) studies are very useful to communicate results, benefits and the value created to stakeholders and funding agencies, as well to generate knowledge, identify opportunities for improvement and inform policy direction. The IA complements an "implementation based" evaluation with a "results-based" evaluation for selected projects, and is focused in the assessment of specific projects, not on a broader evaluation of environmental or health variables throughout the Border region.

To date, two impact assessments have been completed for eight communities to evaluate if wastewater collection and treatment infrastructure projects have achieved their fundamental objectives: to provide improved access and increased use of first-time services in unserved areas, eliminated exposure to untreated or inadequately treated wastewater discharges, and provided adequate wastewater treatment capacity contributing to the reduction of water pollution and the risk of waterborne disease.

In 2016 an assessment was completed for wastewater infrastructure projects in Mexicali, Playas de Rosarito, Tecate and Tijuana, Baja California. Among the findings were:

- Wastewater treatment collection and treatment significantly improved between the years 2000 and 2015; infrastructure projects implemented by BECC and NADB were an important catalyst for this achievement.
- On average 90% of residents in the project areas were connected to the collection and treatment systems and eliminated their cesspools and latrines.
- The decrease in the incidence of gastrointestinal diseases was significant in three of four communities studied ranging from 16% to 33%.
- Opinion surveys showed a high degree of satisfaction with the operation of the utility (87%+) as well as a perception of well-being associated with the implemented project (90%).

The full report is available online at <http://www.becc.org/capacity-building/publications-reports>.

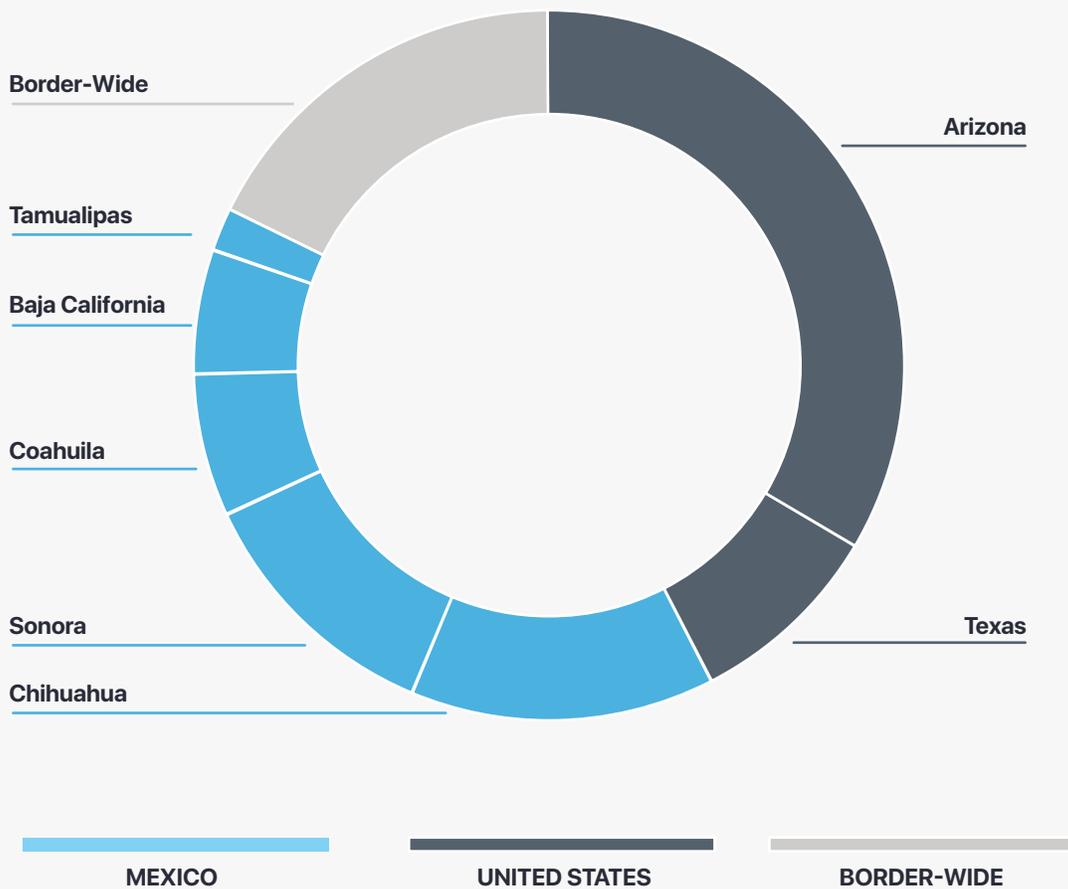
# TECHNICAL ASSISTANCE

## 2016

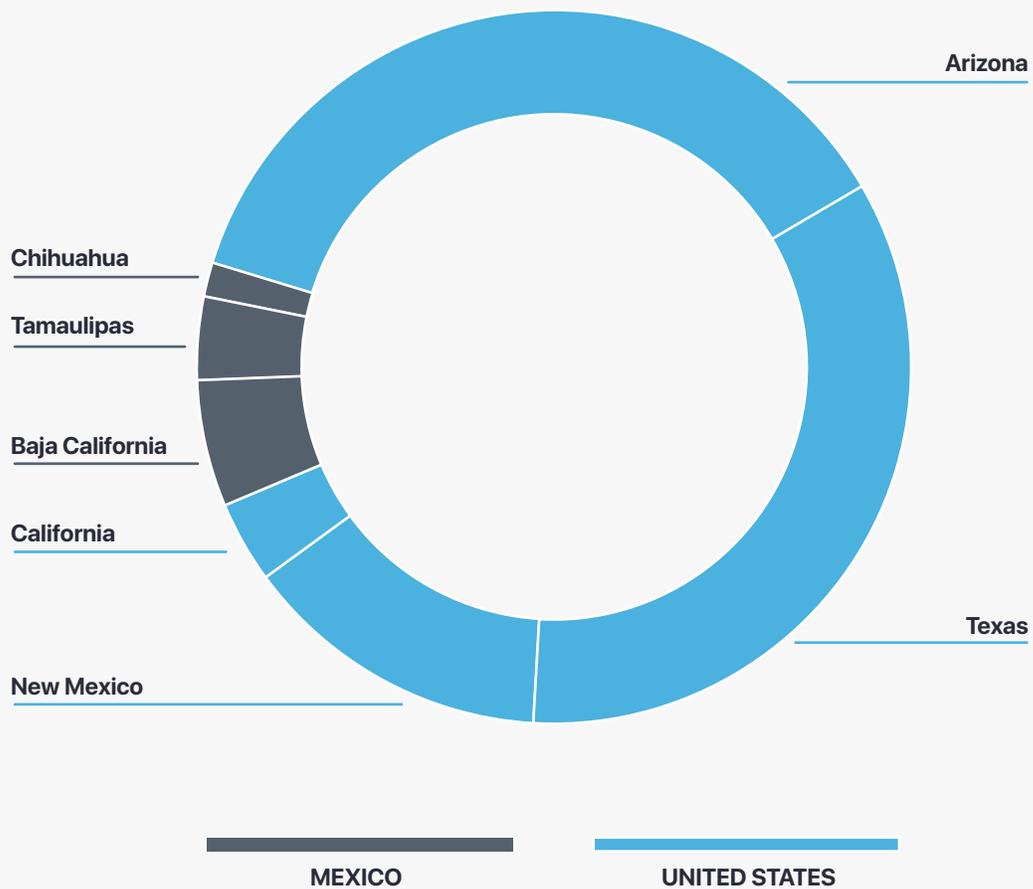
BECC and NADB work closely with project sponsors and other funding agencies to achieve the greatest level of project development possible prior to certification, as well as to provide ongoing support during project execution. To that end, both institutions offer technical assistance through various programs aimed at helping communities prepare projects for certification and implementation.

Technical assistance was provided by NADB and BECC through the Joint Technical Assistance Program (JTAP), as well as through the Project Development Assistance Program (PDAP) and the Border 2020: U.S.-Mexico Environmental Program (Border 2020), both funded by EPA.

## BECC TECHNICAL ASSISTANCE



# PROJECT DEVELOPMENT ASSISTANCE PROGRAM



# 2016 TECHNICAL ASSISTANCE ACTIVITY BY LOCATION

## BECC TECHNICAL ASSISTANCE

	LOCATION	SECTOR	PROJECT DESCRIPTION	AMOUNT (USD\$)
MEXICO	Mexicali	BC SW	Development of a manual and training in the adequate disposal of e-waste.	\$679
	Mexicali	BC SW	Environmental education and electronic waste collection project focusing on the correct disposal of e-waste generated in the city.	\$15,000
	Tijuana	BC CE	Planning and logistical support for CONAGUA training on energy efficiency and audits to eight water system operators of Baja California and Sonora.	\$59.80
	Magdalena de Kino	SON W	Development of the final design of a water distribution system.	\$22,189
	Nogales	SON WW	Development of the final design of meters for the international outfall interceptor of the Ambos Nogales international wastewater treatment plant.	\$10,874
	Cd. Juarez	CHIH OT	Legal advice for the development of green infrastructure policies for municipal governments.	\$19,026
	Cd. Juarez	CHIH OT	Technical advice and the development of a green infrastructure manual for Ciudad Juarez, Tijuana and Nogales to help in municipal policy planning.	\$20,399
	Piedras Negras	COAH OT	Professional services for a macro analysis of the socioeconomic and environmental impacts of state mitigation policies of Phase Two of the State Climate Change Action Plan.	\$10,424
	Saltillo	COAH CE	Professional services for the organization and facilitation of an energy efficiency network.	\$7,698
	Reynosa	TAMPS WC	Alternatives analysis to improve water quality of the El Morillo drainage.	\$5,660
UNITED STATES	Douglas	AZ WW	Evaluation of flood mitigation alternatives for the sister cities of Douglas, Arizona and Agua Prieta, Sonora	\$75,000
	Nogales	AZ OT	Development of a 2017-2021 Binational Environmental Strategic Plan and MOU between Arizona and Sonora.	\$19,338
	La Joya	TX WW	Final design for wastewater collection for 113 households in the city.	\$25,000
	Border-wide	BW OT	Green Infrastructure Border Forum III consisted of a follow-up forum to exchange information and best practices techniques.	\$50,000
<b>TOTAL</b>				<b>\$281,350</b>

# 2016 TECHNICAL ASSISTANCE

## PROJECT DEVELOPMENT ASSISTANCE PROGRAM

	LOCATION	SECTOR	PROJECT DESCRIPTION	AMOUNT (USD\$)
MEXICO	Tecate	BC WW	Development of the final design of a wastewater treatment plant in Colonia Nueva Hindu.	\$31,013
	Tijuana	BC WW	Development of the Environmental Impact Statement (MIA).	\$12,927
	Loma Blanca	CHIH WW	Survey to determine potential users of the collection system and field work for the decommissioning of septic tanks.	\$10,634
	Nva. Cd. Guerrero	TAMPS WW	Development of the Environmental Impact Statement (MIA).	\$30,000
UNITED STATES	Niland	CA WW	Development of a preliminary engineering report and environmental information document.	\$28,560
	Douglas	AZ W	Incorporation of value engineering recommendations to the final design.	\$22,806
	Pomerene	AZ W	Development of drawings of easements and right of way for the water line alignments.	\$2,690
	Pomerene	AZ W	Development of the water system final design for arsenic removal.	\$279,585
	Sunland Park	NM WW	Development of a water conservation study, water audit, and rate study.	\$107,326
	Marathon	TX WW	Development of the wastewater collection system final design.	\$126,022
	Marathon	TX W	Development of a water audit.	\$64,217
	Presidio	TX W	Development of an archaeological and biological survey.	\$40,994
	Presidio	TX W	Development of an energy audit.	\$31,731
<b>TOTAL</b>				<b>\$788,508</b>



## PROJECTS

Completed  
**239**

Canceled  
**27**

Under Development  
**23**

**TOTAL**  
**289**

# BORDER 2020

Border 2020: U.S.-Mexico Environmental Program is a collaborative effort of the United States and Mexico to improve the environment and protect the health of the millions of residents living in the region served by this program which is defined as 100 km on each side of the border. The bi-national program focuses on cleaning the air, providing safe drinking water, reducing the risk of exposure to hazardous waste, and ensuring emergency preparedness along the U.S.-Mexico border. To support EPA and SEMARNAT in their efforts to achieve results, BECC provides services to facilitate stakeholder meetings, as well as to identify, contract, and manage projects.

As of December 31, 2016, EPA had authorized a total of 289 projects, of which 239 projects have been completed, 27 were canceled and 23 are under development. In 2016, EPA authorized approximately US\$761,000 in grant funding for 19 BECC-managed Border 2020 projects.

**\$761,000** in grant funding for 19 BECC-managed Border 2020 projects

# GOAL 1

## REDUCE AIR POLLUTION

### CHIHUAHUA

**Environmental services in well-managed rangelands of the Chihuahuan Desert**

**US \$41,388**

**Population** 2,000

**Objective** Implementation of a sustainable solution to mitigate dust control in the areas of Ascension and Palomas and a planned pasture process to grow grassland.

**Status** In progress

Monitoring of air parameters is being continued, data download from all 9 weather stations, vegetation coverage was determined for all 9 ranches.

**Comprehensive Program for Air Quality Basins in Northern State of Chihuahua**

**US \$25,000**

**Population** 1,500,000

**Objective** Establish measures for ProAire of the State of Chihuahua from carrying out thematic workshops with the participation of the federal, state and municipal government and the industrial, academic and social sectors.

**Status** Completed

In the two cities within the monitoring network (Chihuahua City and Ciudad Juarez), particles smaller than 10 microns (PM<sub>10</sub>) consistently exceed current regulations. This report included up to 20 measures, 12 of them are targeted or involved emission sources (industry, motor vehicles, shops and services), the last 8 corresponded to cross-cutting themes (health, education and environmental communication and institutional strengthening).

### TAMAULIPAS

**Workshop on Energy Efficiency in Public Lighting Systems**

**US \$9,385**

**Population** 88,799

**Objective** Trained at least 30 public officials from 10 municipalities with basic tools to achieve greater energy efficiency, reflected in a decrease in the emission of greenhouse gases into the atmosphere and in turn into economic savings for municipal utilities.

**Status** Completed

Technical training provided to 30 technical officials from 10 municipalities from Tamaulipas: Nuevo Laredo, Guerrero, Mier, Miguel Aleman, Camargo, Diaz Ordaz, Reynosa, Rio Bravo, Valle Hermoso and Matamoros; 30 energy efficiency guidelines distributed including maintenance recommendations to reduce Kwh electrical consumption.



# GOAL 2

## IMPROVE ACCESS TO CLEAN AND SAFE WATER

### TEXAS

#### Decision Making Tool for Storm water in the lower Rio Grande Valley

**US \$38,885**

**Population** 500,000

##### **Objective**

Promote specific research and educational topics emphasizing how green infrastructure strategies can be used to mitigate storm water runoff.

##### **Status In progress**

Currently four workshops are being planned for continuing education credits for storm water professionals in Brownsville, San Benito, Weslaco and Mission.

#### Rio Grande/Rio Bravo Water Quality Initiative

**US \$58,575**

**Population** 15,000

##### **Objective**

Providing information to local binational stakeholders about sources of water pollution to the Rio Grande/Rio Bravo and gathering information from key stakeholders about potential local solutions to water quality problems in the portion of the river between Falcon Dam and the Gulf of Mexico.

##### **Status In progress**

Project staff is currently working with CILA, CONAGUA and IMTA to identify Mexican Lower Rio Grande/Rio Bravo Water Quality Initiative project representatives.

#### Fat, Oil and Grease Public Outreach Campaign

**US \$25,000**

**Population** 20,000

##### **Objective**

Implementation of a public campaign targeting businesses with violations and providing education through community outreach and public awareness with four workshops.

##### **Status In progress**

Currently the outreach campaign is underway.

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### SONORA

#### Green Infrastructure in Nogales, Sonora

**US \$40,334**

**Population** 200

##### **Objective**

Perform a series of demonstration projects which can be replicated. Combined with training courses, give the population knowledge on good practices in the use of green infrastructure for management of rainwater, mitigation of flood and erosion control and its implementation on small scale projects.

##### **Status Completed**

Some of the results of this projects are: up to 1,964.8m<sup>3</sup> of rainwater collected per year; Stop 654m<sup>3</sup> of sediments and garbage if reaching the stream and / or streets and 224 attendees to training events

## TAMAULIPAS

### Comprehensive management project of solid waste

**US \$20,866**

**Population** 80,000

**Objective** Conducted a basic needs assessment of municipal solid waste management in Rio Bravo and Valle Hermoso.

**Status Completed**

Two waste generation and composition studies showed Rio Bravo and Valle Hermoso the type and amount of waste generated per inhabitant and how it could be marketed. The studies also calculated the areas required for the final disposal site according to their generation.

## CHIHUAHUA

### Green Infrastructure in Public Spaces on Valley del Sol Avenue

**US \$43,204**

**Population** 45,000

**Objective** Establish passive rainwater harvesting systems in a community park in Cd. Juarez

**Status: In progress**

The demonstration site is finished and operating. Monitoring of the rain water and sediments capture is underway. A training for local park employees and neighbors of the project site to explain the function and maintenance needs has been scheduled.

### Sustainable and resilient housing in Ciudad Juarez, Chihuahua

**US \$50,000**

**Population** 250

**Objective** Identifying and including green building and infrastructure elements for progressive home building projects in low-income communities of the western area of Ciudad Juarez.

**Status In progress**

Application of Eco-technologies are being applied to 25 selected homes. Additionally, a catalog with 31 eco-technologies that can be applied to local low-income houses has been drafted.



# GOAL 3

## PROMOTE MATERIALS MANAGEMENT, WASTE MANAGEMENT, AND CLEAN SITES

### CALIFORNIA

**Zero Waste Plan, and Transfer Station Implementation Plan in Campo Kumeyaay Nation**

**US \$65,331**

**Population** 1,000

**Objective** Develop comprehensive Zero Waste Plan to prevent open dumping of solid waste in Tijuana River watershed.

**Status In progress**

Currently the zero-waste plan is under development. Campo Kumeyaay Tribe is reviewing the proposal.

### TEXAS

**Clean-up Program in City of Pharr**

**US \$36,390**

**Population** 40,000

**Objective**

Educating residents on environmental sustainability and related proper solid waste disposal methods.

**Status In progress**

The City of Pharr attended the Environmental Summit meeting for Pharr schools, promoting recycling and tire collection in monthly clean sweep events. The Annual Tire Incentive Program for Pharr residents was held.

### BAJA CALIFORNIA

**Community and Institutional Alliance for Environmental Sanitation of Drains in Mexicali**

**US \$100,000**

**Population** 13,000

**Objective**

The project is a replica of an ecological sanitation community model, whose objective is the permanent remediation of illegal dumps in the city of Mexicali.

**Status In progress**

A cleanup of five kilometers of 5 drains in Mexicali is in progress, started the process of building 4 green corridors in 3 drains. Educational Campaign is ongoing.

### CHIHUAHUA

**Sewage Sludge and Bio-solids for Agricultural Soils project in Valle de Juarez**

**US \$48,51**

**Population** 20,000

**Objective**

Establishing a sustainable program that allows the proper disposal of bio-solids on agricultural soils in the region.

**Status Completed**

The project established a sustainable program on agricultural use of biosolids, through an area for demonstration of 15 hectares. The program promotes the adoption by farmers on the use of biosolids on agricultural land. A list of volunteer farmers to continue the application of biosolids on 100 hectares and three field demonstrations events were held for 150 producers and agricultural technicians in the region.

### COAHUILA

**Comprehensive Management of Electronic Waste in Piedras Negras/ Eagle Pass, Texas**

**US \$36,054**

**Population** 120,000

**Objective**

Environmental education and health program to collect electronic solid waste.

**Status In progress**

A permanent collection center has been established in a municipal location. The collection campaign of electronic waste focused in local industry and educational centers. To date, more than 50 tons of e-waste has been collected.

# GOAL 4

## ENHANCE JOINT PREPAREDNESS FOR ENVIRONMENTAL RESPONSE

### ARIZONA

#### HAZMAT Capacity Building in the Arizona-Sonora Border Region

**US \$50,000**

**Population** 2,500

**Objective** Facilitate data and information exchange, training and support for first responders in the border region.

**Status Completed**

Key personnel from Agua Prieta, Naco, Nogales, and San Luis Rio Colorado, Sonora were identified and invited to participate in the CAMEO/ALOHA/MARPLOT overview training and exercises. Total of 14 sessions that included three tabletop exercises.

### TEXAS

#### Binational Tabletop and Functional Exercises between the cities of Harlingen and Matamoros

**US \$44,683**

**Population** 20,000

**Objective** Implementation of a Hazmat tabletop training, and a functional exercise of a proposed scenario of a tanker trailer roll-over accident carrying a petro product and spilling into Mexico waterways. It will involve partnering with first responders from Matamoros and Cameron County.

**Status Completed**

Significant project results are: the training of 19 officers and students from Harlingen (2), Mission (2), Brownsville (1) and Matamoros (14). Harlingen and Matamoros have established the ability to implement standardized response and real-time communication in the event of hazardous materials incidents. A foundation for enhanced emergency response and cooperative incident management has been created.

### COAHUILA

#### Electronic Waste Management Project in Ciudad Acuña, Piedras Negras, and Guerrero

**US \$16,777**

**Population** 120,000

**Objective** Inform and educate residents about the benefits of reusing electronics and the need to practice responsible consumption, and disposal practices.

**Status Completed**

Collection of 56 tons of electronic waste (25 tons were programmed), which included campaigns of massive collection of e-waste in several municipalities. 38 public and private organizations were trained and supported the campaign. A permanent collection of electronic waste was opened in Ciudad Acuña.



# GOAL 5

## ENHANCE COMPLIANCE ASSURANCE AND ENVIRONMENTAL STEWARDSHIP

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### TAMAULIPAS

#### Law Reform and Environmental Education in Nuevo Laredo

US \$11,000

Population 120,000

**Objective** Improving the implementation of environmental legislation, strengthen the environmental cooperation and exchange of information between Nuevo Laredo, Tamaulipas and Laredo, Texas, and train environmental inspectors and staff of the municipal environmental unit.

**Status In progress**

Teaching efforts are underway with 856 students on 13 elementary schools in Nuevo Laredo; review of the municipal code and identification of improvements on 10 border cities in Tamaulipas being conducted. Development of a standard municipal code to be implemented in the state's border cities.



# STAKEHOLDER COLLABORATION

To support border communities, BECC builds relationships and partnerships with federal, state and local agencies, international organizations, academia, and the private and public sectors. These partnerships with other public and private organizations promote environmental initiatives and projects on the border and identify additional support for their development and implementation.

## IDB Multilateral Investment Fund (MIF)

In December 2014, BECC signed an agreement with the Inter-American Development Bank (IDB) to develop a sustainable e-waste management and recycling system in Mexicali, Baja California. The Massachusetts Institute of Technology (MIT), SEMARNAT, EPA, NADB, the Baja California Ministry of Environmental Protection and the Universidad Autonoma de Baja California are working together to promote the safe and efficient recycling of used electronic devices by training approximately 100 micro-businesses in the e-waste management industry to serve as collection points for workers in the field. Some components of the three-year project include an environmental awareness and public education campaign and training and certifying e-waste pickers and recyclers.

In 2016, MIT conducted several e-waste management workshops, and completed defining the baselines, an analysis of waste flows at the regional level as well as a proposal for project modeling. The project team also visited the facilities of CalRecycle in Sacramento, California, to learn more about e-waste recycling in that state and began preparing for the next phase which involves working with local universities to develop a business plan for creating a public-private recycling company. Additionally, the University of Baja California was hired to develop a manual for certification in electric-electronic waste recycling.

## KfW

In 2016, the German firm GITEC Consult GmbH was contracted to assist BECC in carrying out the following tasks:

- Performed climate screenings for the Ensenada and Rosarito desalination projects;
- Provided training on climate assessment of projects to water utilities in Sonora;
- Identified potential projects in communities in Baja California, Tamaulipas and Chihuahua; and
- Developed plans and scopes of work for potential projects to receive technical assistance funds from KfW

These efforts are being supported with technical assistance from KfW as part of the Municipal Environmental Protection Program (PROAMU) to promote climate proof investment in water projects.

## U.S. Agency for International Development (USAID)

In collaboration with the public-private partnership Green Hub/MDB Advisors LLC and USAID, through its Global Development Alliance, energy audits were completed for water utilities throughout the state of Baja California. BECC and NADB are working with those utilities, the Baja California state water commission and USAID to promote projects based on the audit recommendations. In 2016, USAID funded two additional studies in Tijuana and Mexicali aimed at developing a comprehensive plan for energy efficiency measures in their utilities, which could be financed by the Mexican National Water Commission (CONAGUA).

## Sonora Arizona Environmental Strategic Plan 2017-2021

The BECC and NADB provided assistance for the development of the Arizona-Sonora Environmental Strategic Plan 2017-2021, including participation in roundtable discussions and in preparation of the document. The plan was developed to enhance synergies and maximize the effective use of resources between the two states. Agreed to in June 2016 during the Arizona-Mexico Commission Plenary meeting, this strategic Plan is the latest effort on cross-border collaboration involving federal, state and local agencies, as well as private sector and non-governmental-organizations. Other participating agencies include the Arizona Department of Environmental Quality, Arizona Game and Fish Department, Arizona Department of Water Resources, North American Research Partnership, the State of Sonora Ecology and Sustainable Development Commission, and the State of Sonora Water Commission.

The Plan, presented through the signing of an MOU between both governors in June 2017, includes a set of 15 priority binational environmental projects: 4 for water, 3 for air, 3 for waste management and 5 for wildlife. In addition, the Plan recommends a set of 14 environmental projects for future consideration. Finally, every project describes the environmental, health, social and economic impacts that are expected to be addressed.

# EMERGING TOPICS

BECC's focus on institutional capacity building helps enhance project sustainability and address emerging issues. By strengthening institutional capacities through technical assistance, training and shared information, BECC and its partners develop strategic studies with the goal of

identifying needs and project opportunities, and improving the effectiveness of infrastructure program investments that could be supported by BECC and NADB. During 2016, BECC and NADB organized 14 seminars and forums on several topics attended by 714 participants.

## Energy Efficiency for Water Utilities

BECC and NADB have continued promoting energy efficiency to water utilities in Tamaulipas, Coahuila and several U.S. border communities. These efforts are supported through synergies with KfW, the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH, Mexico (GIZ) and programs such as Border 2020 and the U.S.-Mexico Border Water Infrastructure Program. GIZ is a German non-profit

corporation funded by the German government to provide technical assistance to states and municipalities for activities related to sustainable development and environmental awareness and participated in the development and funding of a Learning Energy Efficiency Network for water utilities in the State of Coahuila.

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In 2016, the Learning Energy Efficiency Network in Coahuila was operating with 14 water utilities from various parts of the state. GITEC presented the results of the water audits, and GlZ presented the results of the energy audits conducted for the participants in the network, including proposed efficiency measures that would improve utility operations. Some of the proposed efficiency measures were implemented during 2016 with good results that had a positive impact on the utilities finances. Other activities undertaken in 2016 included various training workshops for water utility personnel in Coahuila to obtain certification in 4 Technical Standards for Professional Competence.

In 2016, several utilities in Baja California and the utility in Piedras Negras, Coahuila, reported savings resulting from measures adopted based on audit recommendations.

## Building Resiliency

To continue supporting border communities in building resiliency through the use of Low-Impact Development (LID) utilizing natural systems, as a way to mitigate the impacts of inadequate stormwater management, in 2016 BECC and NADB continued strengthening institutional capacity through carrying out several events: a border-wide forum held in Coahuila with the participation of more than 200 people; three practical training workshops in Monterrey, Nuevo Leon and Saltillo, Coahuila and in Hermosillo, Sonora, for government municipal and state officials; and a meeting with the private sector, where developers and construction professionals dialogued with international LID experts. These events focused on sharing the latest strategies and planning tools on incorporating sustainable infrastructure, primarily for its environmental, economic and human health benefits.

The Coahuila forum featured key presentation on public and community health benefits as well as the economic impact of implementing this type of infrastructure. The training workshops were geared toward municipal staff in identifying opportunities in public spaces. In addition, and as part of the strategic model being implemented, BECC and NADB supported four Mexican municipalities in the modification of their regulatory framework, to incorporate LID concepts utilizing natural systems onto construction codes and ordinances. In this sense, a Design Guidelines Manual was developed, to support border municipalities in the planning and development of urban projects, and as a complement to the reformed legal framework.

All the documents and presentations from events can be accessed at <http://www.becc.org/capacity-buildings>.

## Climate Planning

In February 2016, BECC presented the Identification of Mitigation Policies as part of the State Climate Action Plan (SCAP) to the Government of Tamaulipas. The study represents the outcome of efforts that were initiated in 2006 with the development of a Greenhouse Gas Inventory for Tamaulipas. This document focused on identifying priority Mitigation Policies for reducing greenhouse gas emissions throughout the state. This objective prompted one of the most comprehensive and robust efforts implemented to launch an open, transparent, and participative review process.

# BI-NATIONAL MANDATE AND BOARD

BECC, headquartered in Ciudad Juarez, Chihuahua, Mexico, is a bi-national institution created in 1993 through an agreement between the Governments of the United States and Mexico.

Together with its sister institution NADB, established by the same agreement and headquartered in San Antonio, Texas, BECC is charged with helping to improve the environmental conditions of the U.S.-Mexico border region to advance the well-being of residents in both nations. The mandate and the specific functions of BECC and NADB are defined in the agreement between the two governments, as amended in August 2004.

BECC and NADB work with border stakeholders, including federal, state, and local agencies, the private-sector and the public, to identify, develop, certify and implement environmental infrastructure projects primarily in six key sectors: water, waste management, industrial/hazardous waste, air quality, clean and renewable energy and energy efficiency.

The Charter also establishes a single, ten-member Board of Directors to govern the two institutions. The bi-national Board is comprised of three representatives from each government, a representative of a border state from each country, and a representative who resides in the border region from each country.

The BECC and NADB are expected to be fully integrated during 2017, under the legal structure of the NADB. This integration of BECC and NADB is being achieved in accordance with several principles, primarily: preserving their current mission, purposes and functions; preserving their environmental mandate, including through the newly created position of Chief Environmental Officer; preserving their geographic jurisdiction and bi-national presence; streamlining their core project development and implementation functions; increasing their organizational efficiency; and continuing to manage technical assistance programs.

## Organization

Under the direction of the joint BECC-NADB Board of Directors, day-to-day operations at BECC are overseen by an Executive Team which consists of a General Manager and four Directors. BECC staff is organized into four primary work groups or directorates charged with facilitating projects, implementing programs and coordinating initiatives related to its mission. The multi-disciplinary talents within each group allow for intra – and inter-directorate teams, resulting in synergies effective for responding to new demands posed by emerging environmental issues such as mitigating climate change and developing energy resources.

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## BECC Management

### General Manager

Maria Elena Giner, P.E.

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## BECC Directors

### Projects

Renata Manning-Gbogbo

### Environmental Programs Development

Mario Vazquez

### Administration

Gloria Melendez

### General Counsel

Donald Hobbs

# 2016 BECC-NADB BOARD OF DIRECTORS



## MEXICO

Secretary of Finance and Public Credit

Secretary of Foreign Relations

Secretary of the Environment and  
Natural Resources

Mexican Border States Representative

Mexican Border Public Representative

**\*\*Board Chair 2016**

## UNITED STATES

Secretary of the Treasury\*\*

Secretary of State

Administrator of the Environmental Protection Agency

U.S. Border State Representative

U.S. Border Resident Representative

# BUDGET AND FINANCIAL STATEMENTS

Based on its Charter, BECC's operating budget is funded by contributions from Mexico, through SEMARNAT, and from the United States, through the Department of State. In addition to its operating budget, BECC manages the PDAP, which is funded by EPA's U.S.-Mexico Border program, as well as several environmental management initiatives funded by EPA through the Border 2020 Program. To offset the resources required for managing these important border programs, EPA provides an administrative subsidy to BECC, which supplements its operating budget.

Sixty-nine percent of BECC's funds are allocated to productive activities developed under the four operating programs, with significant emphasis placed on the Technical Assistance and Certification Programs, which receives 54% of the funds. In contrast, BECC's general support and performance improvement activities require 31% of the total funding.

The annual operating budget is developed by BECC administration and reviewed and approved by the Board of Directors. For fiscal year 2016, the Board authorized a budget of US\$5.8 million, which included \$5 million to

support administrative expenses and US\$800,000 reserved for BECC's Technical Assistance program. The operating budget was subsidized by EPA funds, with US\$1.2 million to offset expenses related to administering PDAP and nearly US\$246,000 for Border 2020. Additionally, during 2016, BECC expended US\$797,000 of EPA funds through PDAP and nearly US\$990,000 through Border 2020 grants to support projects, technical studies, and activities.

## Audited Financial Reports

BECC's consolidated financial statements as of December 31, 2016, were audited by the accounting firm of KPMG Cardenas Dosal, S.C. in conformity with generally accepted auditing standards in Mexico. A summary of the financial statements is presented below. A copy of the auditor's report with the consolidated financial statements and accompanying notes is available on BECC's website at [www.becc.org](http://www.becc.org).



# BORDER ENVIRONMENT COOPERATION COMMISSION

## Statement of Financial Position

As of December 31, 2016 (US \$)

### Assets

Current Assets	\$	9,888,644
Furniture and equipment - net	\$	97,763
<b>Total Assets</b>	<b>\$</b>	<b>9,986,407</b>

### Liabilities and Fund Balance

Current Liabilities (Total)	\$	396,919
Employee Benefits	\$	19,721
Unrestricted Fund Balance	\$	9,569,767
<b>Total Liabilities and Fund Balance</b>	<b>\$</b>	<b>9,986,407</b>

## Statement of Activities

Year ended December 31, 2016 (US\$)

### Revenues

Contribution - USA	\$	2,400,000
Contribution - Mexico	\$	1,793,750
Contribution - EPA	\$	297,950
Contribution - NADB	\$	918,750
<b>Total</b>	<b>\$</b>	<b>5,410,450</b>

### Expenses

Salaries and benefits	\$	4,325,537
Travel and transportation expenses	\$	340,547
Technical Assistance and fees	\$	2,202,945
Other expenses	\$	1,063,180
<b>Total</b>	<b>\$</b>	<b>7,932,209</b>

**Interest income - Net** **\$ 10,509**

Decrease in unrestricted fund balance	\$	(2,511,250)
Unrestricted fund balance at beginning of year	\$	12,081,017
Unrestricted fund balance at end of year	\$	9,569,767

## MEXICO

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