Border Environment Cooperation Commission
Water Improvements Project in Anthony, New Mexico

1. General Criteria

1.a Project type

Project Name: Water Improvements Project in Anthony, New Mexico.

Project Sector: Water pollution.

1.b Project Category

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

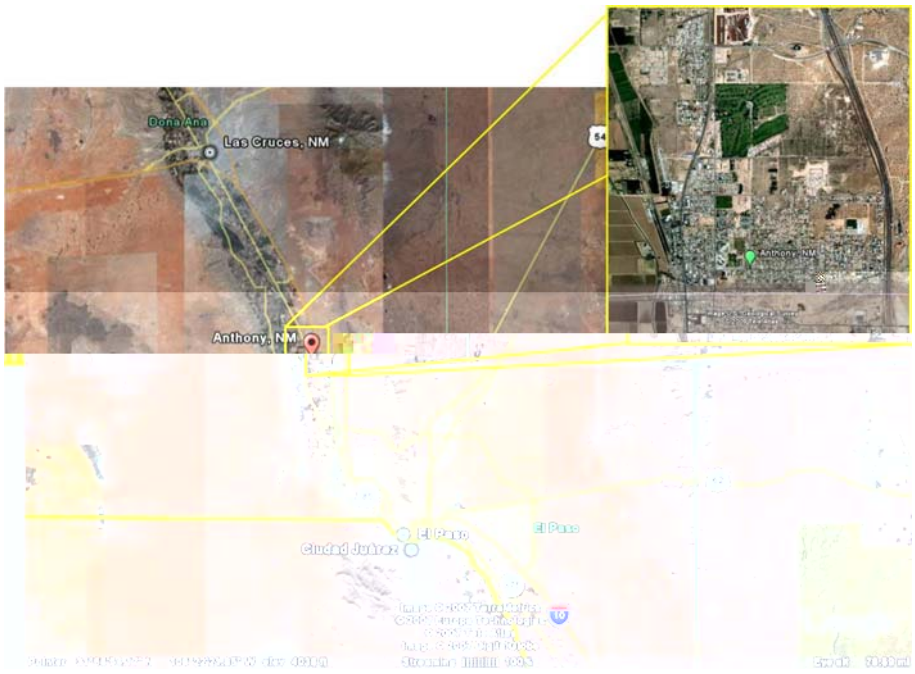
1.c Project Location and Community Profile

Community: Anthony, New Mexico.

Location: The State of New Mexico is located in the southwestern part of the United States. Anthony is located at the southern part of the State of New Mexico, in Doña Ana County, bordering the State of Texas.

Location in the border: The project is located within the 62.5 mi (100 km) of the US-Mexico border area.

Figure: The following figure shows the location of Anthony, NM.



Anthony, Doña Ana County, New Mexico.

Demographics[1]	
Current population:	8,388 residents
Growth rate:	3.00 % (Preliminary Engineering Report for Improvements to the Water Supply)
Economically active population:	2,551 residents
Median Household Income:	$ 22,547 Dollars
Predominant economic activity:	Production, transportation, and material moving occupations.
Percent below poverty:	38 %
Services	
Community:	Anthony
Water System[2]	
Water coverage:	100 %
Length of water pipelines:	22 miles (35.4 km)
Domestic hookups:	95 %
Commercial hookups:	5 %
Industrial hookups:	0 %
Water supply source:	Groundwater
Number of water hookups:	3,000
Wastewater Collection System[3]	
Wastewater collection coverage:	93 %
Length of sewage pipelines:	13 miles (20.9 km)
Domestic hookups:	97 %
Commercial hookups:	3 %
Industrial hookups:	0 %
Number of sewage connections:	2800
Wastewater Treatment[4]	
Wastewater treatment coverage:	93 %
WWTP and treatment technologies:	Activated Sludge; 0.98 MGD (42.94 lps) capacity
Solid Waste[5]	
Solid waste collection:	90% (private)
Final disposal:	Sanitary landfill
Street Paving[6]	
Street paving coverage:	85%

[1] Source: US Census Bureau Year 2000
[2] Source: AWSD
[3] Source: AWSD
[4] Source: AWSD
[5] Source: AWSD
[6] Source: AWSD

1.d Legal Authority

Project Sponsor:	Anthony Water and Sanitation District (AWSD)
Legal Representative:	Patrick Banegas, Superintendent
Legal instrument demonstrating legal authority:	AWSD Legal Document No. CV-77-311
Date of instrument :	January 30, 1978
Compliance with international 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

1.e Project Summary

Project description and scope:

The New Mexico Environment Department conducted testing at Well #4 in March 2004 and found levels of nitrates above the range and issued a violation notice with an order to stop production at the site. Consequently, the district placed the well offline and increased production on the remaining sources (six wells) and as a result the other wells went beyond their ground water pumping diversion allotments. Additionally, the District received violations with respect to arsenic levels. There are a total of seven wells in the system; all will require arsenic treatment, some to a greater degree than others.

<u>Water Treatment</u>
The project consists of the re-drilling of Wells #1 and 4 to provide water to the system. Part of the water from Well #1 will be treated using a Reverse Osmosis (RO) Unit with a capacity of 600 gpm. The treated water will then be blended with water from Wells #1, 3, and 4. Well #6 will be shut down until the pump size is reduced and a separate arsenic RO Unit will be constructed. The additional three wells (#2, 5, and 7) are not utilized for municipal use; those are either shut off or only used for construction purposes.

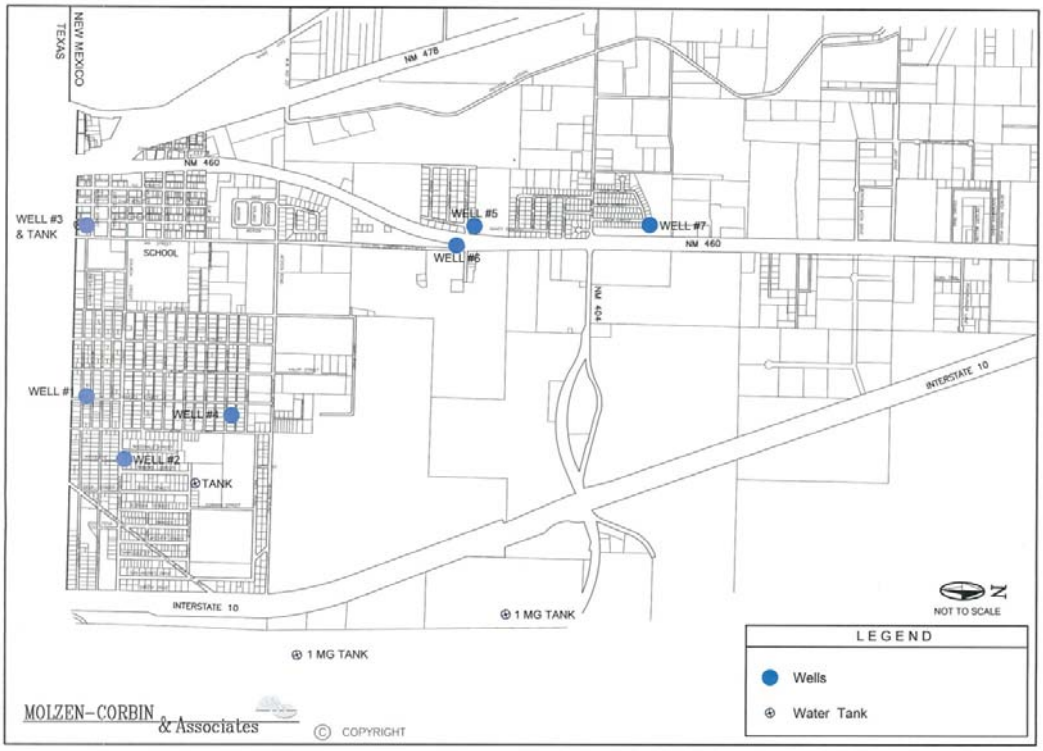
During the re-drilling process, water samples from the wells no longer contained high levels of nitrates and therefore the project was re-scoped to include arsenic removal only since the nitrate issue was resolved.

Population benefited: 8,388 people

Benefited connections: 3,100

Project Cost: $8.8 million

Project Map: The following figures show the location of the seven wells in the AWSD and the proposed project layout to provide improved water quality to Anthony residents.



Anthony Water Sanitation District Wells

Anthony Water Quality Project Area Map.

1.f Project Justification

Project justification:

- The proposed project will provide access to drinking water service that meets EPA's Primary Drinking Water Standards, thus benefitting approximately 8,388 residents.

- The current EPA standard for arsenic in drinking water is 10 ppb. Water analysis found levels of 12.6, 11.78, 8.5, and 16.55 ppb in wells # 1, 3, 4, and 6,

	respectively. The project includes treatment and operational practices necessary to address the elevated arsenic levels.
Urgency of the project or consequences of no action:	The implementation of the project will provide sufficient good quality water to meet the needs of the community. Without the construction of the new wells, the existing wells will continue to be stressed in order to meet this need. Additionally, the District has received a violation of the Clean Water Act from the New Mexico Environment Department with respect to arsenic levels; the RO system will eliminate the arsenic problem in the District's water.
Prioritization Process Category:	Category 1.

Pending Activities:

None.

Criterion Summary:

The project complies with BECC's General Criterion.

2. Human Health and Environment

2.a Compliance with Applicable Environmental Laws and Regulations.

Environmental and Human Health conditions addressed by the proposed project

Human health	EPA recently lowered the arsenic level standard from 50 ppb to 10 ppb due to studies that suggest a risk at this level. Due to this change, the AWSD received violations and now has the need to treat the well water prior to distribution to avoid the health risks associated with human intake of arsenic in drinking water. As shown in the health statistics section below, there are a relatively high number of cases per year in Doña Ana County of cancers that are sometimes associated with arsenic contamination. Non-cancer effects include thickening and discoloration of the skin, stomach pain, nausea, vomiting, diarrhea, numbness in hands and feet, partial paralysis, and blindness. Long term exposure has been linked to cancer of the bladder, lungs, skin, kidneys, nasal passages, liver, and prostate. Arsenic can cross the placenta increasing the likelihood of exposure to the fetus. It is expected that the project implementation will contribute to reduce the number of cases mentioned.
Environmental health	There is no evidence to show that reducing arsenic has an environmental benefit as it is naturally occurring and whose harm is more centered on humans.

Environmental and Human Health benefits the project is expected to achieve.

Human health	Using its authority under the 1996 Amendments to the Safe Drinking Water Act, the Environmental Protection Agency (EPA) revised the drinking water standard for arsenic from 50 parts per billion (ppb) to 10 ppb. This is a standard that maximized the health risk reduction benefits at a cost that is justified by the benefits to protect the public against the effects of long-term, chronic exposure to arsenic in drinking water, such as cancer and other health problems, including cardiovascular disease and diabetes, as well as neurological effects.

The project complies with the following applicable environmental laws and regulations:

Applicable environmental laws and regulations:	• The project complies with New Mexico Administrative Code, Title 20 Environmental Protection, Chapter 7 Wastewater and Water Supply Facilities. • In addition, coordination and approval of the following agencies is required for the development of the project: - Dona Ana County Public Works

- US Fish and Wildlife Service
- US Department of Agriculture
- NM Energy, Minerals, and Natural Resources Department, Forestry Division
- NM Environment Department (NMED), Surface Water Bureau
- NMED, Ground Water Bureau
- New Mexico Department of Transportation, Environmental Section
- US Department of the Interior, National Park Service Intermountain Region
- Navajo Nation

2.b Human Health and Environmental Impacts.

Human Health Impacts

Direct and indirect human health benefits: The project will reduce the risk for diseases associated to the intake of arsenic and nitrate; such as arsenicosis and methemoglobinemia.

Health statistics: Human exposure to arsenic has negative health effects. Non-cancer effects include thickening and discoloration of the skin, stomach pain, nausea, vomiting, diarrhea, numbness in hands and feet, partial paralysis, and blindness. Long term exposure has been linked to cancer of the bladder, lungs, skin, kidneys, nasal passages, liver, and prostate.

The following table shows annual cancer mortality rates for Doña Ana County, New Mexico, and the United States.

Annual Mortality Rates through 2006			
Type of Cancer	**Dona Ana County**	**New Mexico**	**USA**
Bladder	-	3.6	4.3
Kidney	4.0	4.5	4.1
Liver	4.6	6.2	5.1
Lung	33.0	37.4	53.4
Oral and Pharynx	3.1	2.0	2.6
Prostate	30	26.3	25.6
Skin	2.2	2.6	2.7

Table 2.1 – Annual Cancer Mortality Rates
Source: State Cancer Profiles

Environmental Impacts

Direct and indirect benefits:
- The implementation of the project will allow the AWSD to tactically draw water from all wells and lessen the local burden on the aquifer, thus having a reliable and sustainable water system.

- Since the current drinking water in the district is not optimal for human consumption, some people acquire their water through the purchase of bottled water. The bottles eventually reach the landfill, in the best of cases, and represent additional waste that could be avoided.

Environmental impacts:

Minor environmental impacts are anticipated from the construction of the different project stages, provided the project tasks are implemented in accordance with the specifications included in the Environmental Information Document (EID) and mitigation measures established in it are taken into account.

These impacts include:

Construction Phase

- Dust from construction activities at the site.
- Gas emissions from construction machinery.
- Disturbance of streets by construction traffic.
- Runoff from trenches and cleared areas.

Mitigation actions:

Mitigation measures will be:

- Exposed and disturbed soil surfaces will be watered at a frequency to avoid airborne dust.
- Earthmoving and other dust-producing activities will be suspended during periods of high winds when dust control efforts are unable to prevent fugitive dust.
- Stockpiles of debris, soil, sand, or other materials will be watered or covered.
- Materials transported on- or off-site by truck will be covered.
- Construction vehicles will use low or non-sulfurous diesel fuel.
- Limit unnecessary vehicle idling.
- Minimize construction activities requiring fuel.
- Use alternative fuel sources with low emissions such as biodiesel.
- Use newer vehicles with lower emissions.
- A National Pollutant Discharge Elimination System (NPDES) Construction General Permit to implement temporary and permanent erosion control measures.
- A Storm Water Pollution Prevention Plan (SWPPP) to minimize erosion and storm water pollution during construction.

- Standard Best Management Practices to prevent on- and off-site erosion and concurrent storm water pollution from construction would need to be followed. Efforts should be made to contain loose soil during construction. A variety of methods can be used for mitigation measure including silt fencing, rip-rap, wattles and tarps to prevent sediment deposition into local waterways.

Impacts: The environmental impact resulting from the project will be positive overall, given that:

- The project will provide adequate drinking water to the community and improve the quality of life of local residents by reducing risks associated with arsenic consumption.

Transboundary Impacts

Due to the proximity of the Anthony with various communities in the Doña Ana County and border communities in Mexico, there are frequent border crossings between cities. The construction of the treatment facility in the area will have a direct positive impact on the health of residents of cities such as Las Cruces, El Paso and Ciudad Juarez and the entire region, since these actions will reduce the risk of waterborne diseases caused by the intake of poor quality water.

Formal Environmental Clearance

Environmental clearance: A 30-day public review period was initiated on April 24, 2009 and concluded on May 25, 2009. A Finding of No Significant Impact (FONSI), establishing that the project will not result in significant environmental impacts that may affect the U.S. border area, was issued by the EPA on June 6, 2009.

Results Measurement Project Matrix Summary

Results Measurement

1. Provide access to adequate water quality	**Indicators and Targets** Improve service to water connections (Target= 3,100 improved connections) **Baseline Value: 0**
2. Elimination of arsenic to reach EPA set standard (10 ppb) through reverse osmosis.	**Indicators and Targets** Amount of water to be treated through reverse osmosis (Target= 600 gpm) **Baseline Value: 0**

Outputs: Goods and services that the project will deliver.	Improved water connections	3100
	Reverse osmosis system	600 gpm
	Construction of Well #1	600 gpm
	Construction of Well #4	1100 gpm
	Equipment of Well #3	600 gpm
	Equipment of Well #6	500 gpm

Pending Activities:

None.

Criterion Summary:

The project complies with BECC's Human Health and Environment Criterion.

3. Technical Feasibility

3.a Technical Aspects

The New Mexico Environment Department (NMED) conducted testing at well #4 in March 2004 and found levels of nitrates above the range and issued a violation notice with an order to stop production at the site. Consequently, the district placed the well offline and increased production on the remaining sources (six wells) and as a result the other wells went beyond their ground water pumping diversion allotments. Additionally, the District received violations with respect to arsenic levels. There are a total of seven wells in the system; all will require arsenic treatment, some to a greater degree than others.

Project Development Requirements

Design criteria: The project was developed following guidelines established by the Environmental Protection Agency (EPA)/NMED for the construction of this type of infrastructure. The final design has been reviewed by EPA, BECC, the North American Development Bank (NADB) and NMED.

Components: **The projects includes the following components:**

Water Supply

- Construction of water wells: Well #1 with a capacity of 600 gpm and Well #4 with a capacity of 1100 gpm.
- Equipment to change Well #3 from a 1200 gpm pump to a 600 gpm pump.
- Equipment to change Well #6 from a 1200 gpm pump to a 500 gpm pump.

Water Treatment: Installation of a Reverse Osmosis Unit with a capacity of 600 gpm.

Appropriate Technology

Assessment of Alternatives: As part of the project development, various alternatives were evaluated based on the following parameters:

- Present Worth Cost
- Cost to Implement Alternative
- Operation and Maintenance
- Hours of Operator Training
- Percent Water Loss
- Contaminants Removed
- Land Acquisition
- Right-of-Way Acquisition
- Construction Problems
- Property Acquisition Time
- Property Acquisition Cost
- Condemnation Time

- OSE Permit
- Space
- Alignment Distance to Treatment
- Proximity to Water Quality
- Proximity to Potential Plume

Alternative I. Alternative I includes on-site treatment using reverse osmosis to treat the water before putting it into the system.

Alternative II. Alternative II includes the on-site treatment using ion exchange to treat the water before putting it into the system.

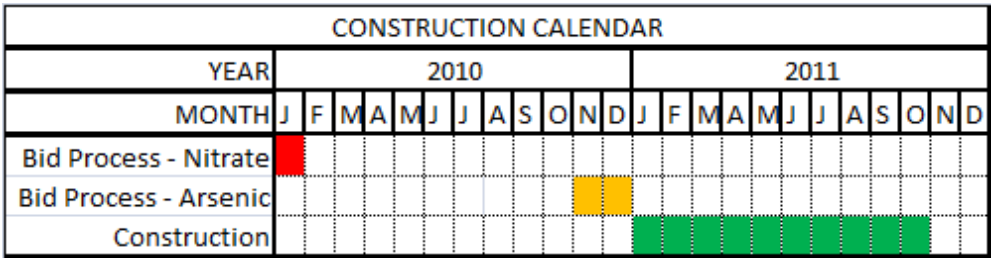
Alternative III (Selected Alternative). Alternative III consists of drilling a new well to replace Well #4. This consists of locating a new site for the well and replacing Well #4 with a new well. This will also include the line work to connect the new well to the existing system and the use of reverse osmosis to treat water before going into the system.

Property and Right-of-Way Requirements

Requirements: The well will be constructed in land already owned by AWSD.

Projects Tasks and Timelines

The construction of the proposed water treatment system began in January 2010 with the bid process for the drilling of the test wells. Water samples from those wells were used to finalize the design. The project is estimated to be completed by October 2011.



3.b Management and Operations

Project Management

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

Operation and Maintenance	
Organization:	The project sponsor serves 3,000 water hookups and 2,800 wastewater connections, and has an appropriate operation and maintenance program in place.
Pre-treatment:	The residents of Anthony, New Mexico have access to wastewater collection and the raw wastewater is treated at the local activated sludge wastewater treatment plant.
Operation plan:	The final design incorporates an operation and maintenance manual that includes the primary tasks needed to ensure a proper operation of the system and to prevent breakdowns in the proposed infrastructure.
Permits, licenses and other regulatory requirements:	The project applicant has obtained the necessary pre-construction permits.
Reviewing agencies:	BECC, NADB, USDA, EPA, NMED

Pending Activities:

None.

Criterion Summary:

The project complies with BECC's Technical Feasibility Criterion.

4. Financial Feasibility

4.a Verification of Financial Feasibility

Financial Conditions

Information Presented: Anthony Water and Sanitation District (AWSD) Audited Financial Statements.

Summary of Financial Analysis: AWSD has enough revenues to service the proposed debt.

Project Total Cost, Financial Structure and Other Capital Investment Plans

(Amounts presented in dollars)

Item:

Construction Cost:	US $ 6,450,520.00
Contingencies:	US $ 572,396.00
Supervision:	US $ 486,198.00
Allowances, mobilization and taxes:	US $ 1,315,294.00
Total Cost:	**US $ 8,824,408.00**

Financial Structure:

Source	Type	Amount US	%
NMFA*	Grant	$1,075,000.00	12.2%
NMFA	Loan	$175,000.00	2.0%
RD**	Grant	$3,284,654.00	37.2%
RD	Loan	$1,493,000.00	16.9%
NADB-BEIF-Construction Assistance	Grant	$2,796,754.00	31.7%
Total:		**$8,824,408.00**	**100.0%**

*New Mexico Finance Authority (NMFA) **United States Department of Agricultural Rural Development (RD)

Primary Source of Income

Revenue Source: AWSD's revenues.

4.b Legal Considerations

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

Financing status: Construction of these works will start once the project is certified and contracts awarded after correspondent bidding processes.

Pending Activities:

None.

Criterion Summary:

The project complies with BECC/NADB Financial Feasibility Criterion.

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 April 23, 2008 at a meeting held in the AWSD offices.

Local Steering Committee Members: The committee is comprised of the following members:

Name	Organization
Dan Darbyshire	Darbyshire Machine Shop
Sylvia Sapien	La Clinica de Familia
Tom Hernandez	Bank of the West
Elva Flores	Retired Gadsden Principal
Mary Carter	Women's Intercultural Center
Victor Montoya	Community Leader
Mari Lozano	Anthony Resident

Date of Approval of Public Participation Plan: The Comprehensive Community Participation Plan developed by the Local Steering Committee was approved by the BECC on July 10, 2008.

Public Access to Project Information

Public Notice: The project's environmental, technical, and financial information was made available for the public for review.

The Local Steering Committee, with assistance from the project sponsor, prepared the following to inform the community about the project:

- Flyers
- Newspaper adds
- Presentations

Additional outreach activities:

- Development and dissemination of a fact sheet
- Meetings with local organizations

Public Meetings

First Public Meeting: A 30-day public meeting notice was published in the Las Cruces Sun-News on November 25, 2008.

A public meeting was conducted to inform the public about the environmental and technical aspects of the project. The meeting was held on January 8, 2009. Approximately eight local residents attended the meeting held by the Local Steering

	Committee, AWSD, and BECC representatives. The eight exit surveys were completed and all demonstrated support for the project.
Second Public Meeting:	The public meeting notice was published in the Las Cruces Sun-News on January 22, 2011 for a public meeting to be conducted on January 31, 2011 at the AWSD's offices to inform the public of the financial aspects of the project. A public meeting was conducted to inform the public about the financial aspects of the project. The meeting was held on January 31, 2011. Two local residents attended the meeting held by the Local Steering Committee, AWSD, NADB and BECC representatives. The two exit surveys were completed and demonstrated support for the project.
Final Public Participation Report	
Final Report:	The Local Steering Committee and the sponsor will develop the Final Public Participation Report to demonstrate that the proposed objectives fully met BECC's criteria.
Post-Certification Public Participation Efforts	
Post-certification Activities:	The project sponsor, in coordination with the Local Steering Committee, will provide a general description of public participation activities that may be carried out after the project has been certifies supporting its implementation and long-term feasibility.

Pending Activities:

Public Participation Report.

Criterion Summary:

The project complies with BECC's Public Participation Criterion.
The general public comment period ended on March 20, 2011 with no comments received.

6. Sustainable Development

6.a Institutional and Human Capacity Building

Project operation and maintenance:

The project sponsor is the responsible institution for the operation and maintenance of:

- Water treatment system

In addition, the project sponsor has the necessary institutional and human capacity to operate and provide maintenance to this system.

Human and institutional capacity building:

Several actions within the scope of the project that contribute to the institutional and human capacity building of the Anthony Water and Sanitation District are:

- Provide training and continuing education to the AWSD operating staff throughout its different areas, in order to carry out an adequate maintenance to the new and existing infrastructure and offer essential services that meet the needs of the community.
- Optimize the use of scarce water resources, and raise public awareness about the importance of water conservation.
- Implement a rate structure to make the project affordable and sustainable.

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 project concurs with the plans and actions described in the following documents:

- Project's Facility Plan
- U.S.-Mexico Border 2012 Environmental Program by meeting Goal 1 (reducing water contamination), Objective 4 (promoting improved 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 project complies with state regulations applicable to water treatment.

6.c Natural Resources Conservation

The project contributes to reduce environmental deterioration by the installing a water treatment system and providing the necessary means to serve 100% of the project area with drinking water adequate for human consumption.

6.d Community Development

The improvement of the water service will promote community development, as it will reduce contamination in Anthony, New Mexico and improve the quality of life for local residents.

Pending Activities:

None.

Criterion Summary:

The project complies with BECC's Sustainable Development Criterion.

Available Documents:

- AWSD Legal Document No. CV-77-311.
- Well 1 & 4 Water System Improvements – Phase II. June 2010. Molzen-Corbin & Associates.
- Environmental Information Document for the Anthony Water Quality Improvements, Anthony, New Mexico. March 2009. Parametrix and Molzen-Corbin & Associates.
- Finding of No Significant Impact (FONSI) for the Anthony Water Quality Improvements. April 2009.
- Improvements to the Water Supply; Anthony, Dona Ana County, New Mexico. Preliminary Engineering Report. Molzen-Corbin & Associates.
- Final Public Participation Report of the Anthony New Mexico Water Improvements Project. February 2011.