CERTIFICATION PROPOSAL

WASTEWATER TREATMENT PLANT IMPROVEMENTS
WILLCOX, ARIZONA

Revised: May 11, 2015

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INDEX

EXECUTIVE SUMMARY

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Project: The proposed project consists of the rehabilitation and upgrade of the existing wastewater treatment plant (WWTP) in the City of Willcox, Arizona (the "Project").

Project Objective: The purpose of the Project is to eliminate inadequately treated wastewater discharges, which cause an immediate and significant threat to the environment and a potential for human contact. The existing non-compliant WWTP will be modified from a lagoon system to an oxidation ditch facility, contributing to the protection of aquatic ecosystems, the improvement of water quality in the receiving waters and the reduction of the risk of waterborne diseases.

Expected Project Outcomes: The Project is expected to generate environmental and human health outcomes related to the following:

- Improved wastewater treatment process for the existing 0.60 MGD plant to address inadequately treated wastewater discharges currently released to Cochise Lake, an impaired water body,
- Improved wastewater treatment service for 100% of the system's existing wastewater connections, including 1,032 residential connections,
- Improved wastewater effluent quality (fecal coliforms, Total Suspended Solids (TSS), Biochemical Oxygen Demand (BOD) and nutrients removal) to amounts below or equal to permit limits, and
- A wastewater treatment facility in full compliance with all applicable laws, rules and regulations.

Population Benefited: 3,757 residents of Willcox, AZ.[1]

Sponsor: City of Willcox, AZ.

[1] Source: US Census Bureau 2010.

Project Cost: US$ 11,329,056

Uses and Sources of Funds:

Uses	Amount	%
Construction, contingencies, supervision and other	$11,329,056	100
TOTAL	**$11,329,056**	**100**
Sources	**Amount**	**%**
USDA-RD (loan)*	$ 1,564,706	14
USDA-RD (grant)	5,146,168	45
NADB-BEIF (grant)	4,618,182	41
TOTAL	**$11,329,056**	**100**

* USDA-Rural Development is also funding US$440,294 in final design and other pre-development costs; awarding a total loan of US$2,005,000.

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1. ELIGIBILITY

Project Type

The Projects falls within the eligible sector of wastewater.

Project Location

The Project lies approximately 61 miles north of the U.S.-Mexico border. The Project is in the border region, defined as within 100 kilometers (62.5 miles) of the U.S.-Mexico international border.

Project Sponsor and Legal Authority

The public-sector Project sponsor is the City of Willcox, AZ (the "Sponsor"). Pursuant to Arizona Revised Statutes (A.R.S.) 9-511 and 9-514, the City of Willcox has the legal authority to operate and maintain water treatment, storage, and distribution systems, as well as the wastewater collection and treatment systems. The Public Works Department of the Sponsor is authorized to provide water utility services to the community and is responsible for developing infrastructure improvement projects.

2. CERTIFICATION CRITERIA

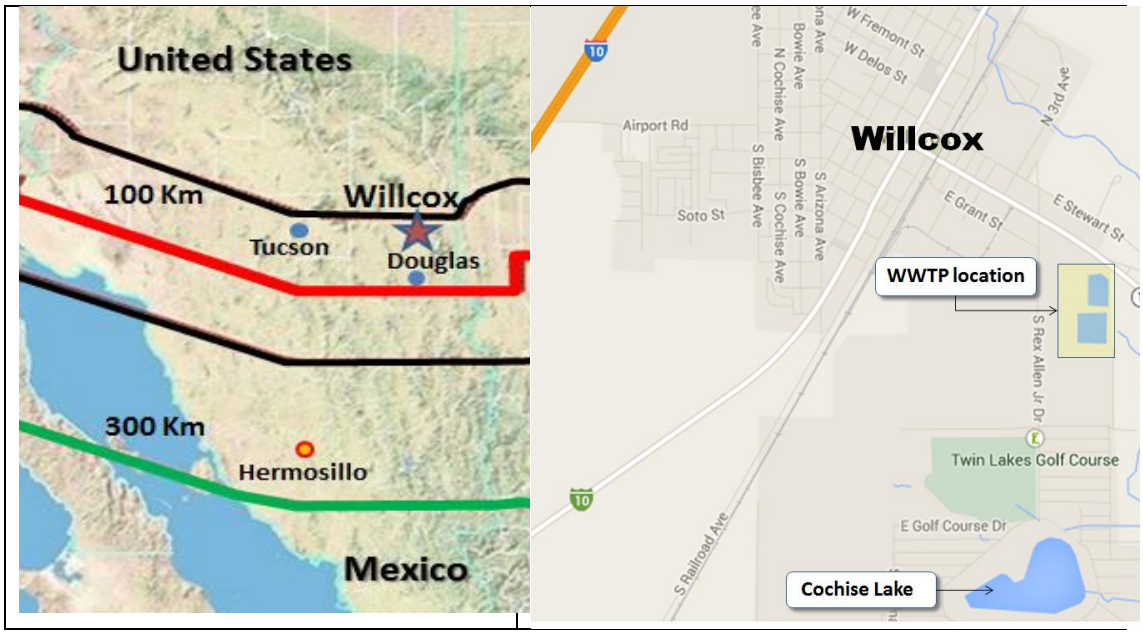
2.1 TECHNICAL CRITERIA

2.1.1. Project Description

Geographic Location

The City of Willcox is located in the southern portion of the Cochise Valley in the arid Sonoran Desert of southeastern Arizona. The City is located approximately 81 miles east of Tucson on U.S. Interstate Highway I-10.

Figure 1
PROJECT VICINITY MAP



General Community Profile

According to U.S. Census Bureau, in 2010, the city of Willcox had a population of 3,757 residents. Based on the existing 1,217 residential water service connections, translates to a density of 3.09 persons per household.[2]

Willcox, previously known as Maley, was the national leader in cattle production in the early 1900s. Now, it depends mainly on the tourism brought by highway I-10 and wineries. The community's major employer and primary driving economic force is agriculture, with 30% of the workforce employed in this sector. Retail trade, transportation, warehousing, and construction make up the next highest employment sectors at 8% each.

The status of public services in Willcox is described in Table 1.

[2] Source: City of Willcox, September 2014.

Table 1
BASIC PUBLIC SERVICES AND INFRASTRUCTURE

Water System	
Service coverage:	100 %
Water supply source:	Underground water
Number of hookups:	1,569 (1,217 residential/352 commercial)
Wastewater Collection System (WWC)	
Service coverage:	82 %
Number of connections:	1,290 (1,032 residential/258 commercial)
Wastewater Treatment (WWT)	
Service coverage:	100 %
Treatment facilities:	0.6 MGD capacity lagoon system
Solid Waste	
Solid waste collection:	83 %
Final disposal:	Landfill (Cochise County Transfer Station)
Street Paving	
Coverage:	98 % (alleys unpaved)

Source: City of Willcox, August 2014.

Project Scope

The proposed Project will improve the existing 0.6 MGD WWT facilities to meet wastewater effluent discharge requirements. The City of Willcox has entered into a Consent Order with ADEQ for violations of its Arizona Pollutant Discharge Elimination System (AZPDES) permit and the Aquifer Protection Permit (APP) for fecal coliforms, pH, TSS, BOD and nutrient removal. The wastewater treatment plant will be rehabilitated and upgraded from a lagoon system to an oxidation ditch process meeting the City's current and future needs. The WWTP effluent will be capable of meeting reclaimed water standards as provided by ADEQ. The improved WWTP will provide treatment of 100% of the wastewater collected in city of Willcox service area.

The WWTP is currently discharging non-compliant wastewater effluent into Cochise Lake, an impaired water body. In order to be able to comply with ADEQ permit discharge limits, the WWTP must be upgraded and rehabilitated extensively, which will include the construction of new components. These conditions allowed the Project to be selected under Category 2 requirements for U.S.-Mexico Border Water Infrastructure funding provided by EPA and administered by the Border Environmental Cooperation Commission ("BECC") and the North American Development Bank ("NADB").[3]

[3] The intent of this category is to identify projects that correct an immediate adverse environmental effect or the potential for an adverse human health effect. These projects are designed to improve a community's quality of life with adequate and safe services.

The final design has been completed. It is estimated that once procurement is completed and the notice to proceed given, it will take approximately 23 months to complete the Project — 15 months for plant construction and start-up, followed by an additional 8 months to complete the closure of Lagoon No. 2.

Table 2
PROJECT SCHEDULE

Key Milestones	Status
Procurement	Anticipated: 3rd quarter of 2015
Construction period	23 months from Notice to Proceed (NTP)

2.1.2. Technical Feasibility

Design Criteria

The average monthly flow rate is 0.340 MGD, and the maximum monthly average flow rate to the plant is 0.474 MGD. Since the City of Willcox samples influent flow on a monthly basis, a statistical analysis was conducted to determine organic and nitrogen loading.

Table 3 summarizes the influent wastewater design criteria for the City of Willcox WWTP improvements:

Table 3
Willcox WWTP Improvements

WWTP Characteristics	Current Effluent	Design		Remarks
		Influent	Effluent	
WWT System	Facultative Lagoon	Oxidation Ditch		
Flow (MGD)	0.34	0.6	0.6	Plant Capacity
BOD (mg/L)	48	360	<30	Using probabilty analysis 92nd percentile value on 2010-2012 monthly grab samples.
TSS (mg/L)	80	340	<30	Using probabilty analysis 92nd percentile value on 2010-2012 monthly grab samples.
TN (mg/L)	14	50	<10	No influent data. Used tyipical municipal values.

Additionally, the design considers the codes and regulations of the State of Arizona Administrative Code; Standard Specification for Public Works Construction (Green Book latest edition); and the Occupational Safety and Health Act.

Selected Technology

The Willcox WWTP is not currently in compliance with the effluent discharge requirements of its AZPDES and APP permits. As a result of this noncompliance, ADEQ and the City have agreed to a Consent Order that requires the City to improve the performance of the WWTP. A Preliminary Engineering Report (PER), prepared in 2012, outlined the results of an evaluation of the City's options. In the evaluation, it was determined that the existing facility was not capable of meeting permit discharge limits without significant improvements to the existing treatment process. For this reason, a detailed evaluation of secondary treatment alternatives was performed using the following 10 alternatives:

- Alternative 1 - No Action;
- Alternative 2 - Aerated Lagoon Improvements;
- Alternative 3 - Single Basin Activated Sludge;
- Alternative 4 - Sequencing Batch Reactors;
- Alternative 5 - Packaged Treatment Plant;
- Alternative 6 - Oxidation Ditch;
- Alternative 7 - Moving Bed Bioreactor;
- Alternative 8 - Integrated Fixed Film Activated Sludge;
- Alternative 9 - Advanced Integrated Wastewater Pond System; and
- Alternative 10 - Aero-Mod System (SEQUOX).

Based on the technical evaluation, the oxidation ditch process was recommended as the "best value" option for the City. The decision was made in consideration of factors such as operational complexity and reliability, maintenance and labor requirements, land requirements, energy consumption and effluent quality.

During the detailed design phase in 2014, it was determined that tertiary filters would be necessary to ensure that the WWTP can reliably meet the effluent requirements on a year-round basis. Tertiary filters are considered a Best Available Demonstrated Control Technology (BADCT) by ADEQ to meet Class B effluent requirements. By proposing a design to ADEQ that meets BADCT requirements, the permitting approval process is streamlined. In addition, by adding tertiary filters, the facility has the ability to meet Class A effluent requirements thereby providing the City with the flexibility to use reclaimed effluent for other beneficial uses in the future. A 2014 PER amendment documents the recommended changes to the WWTP improvements, as presented in the original PER.

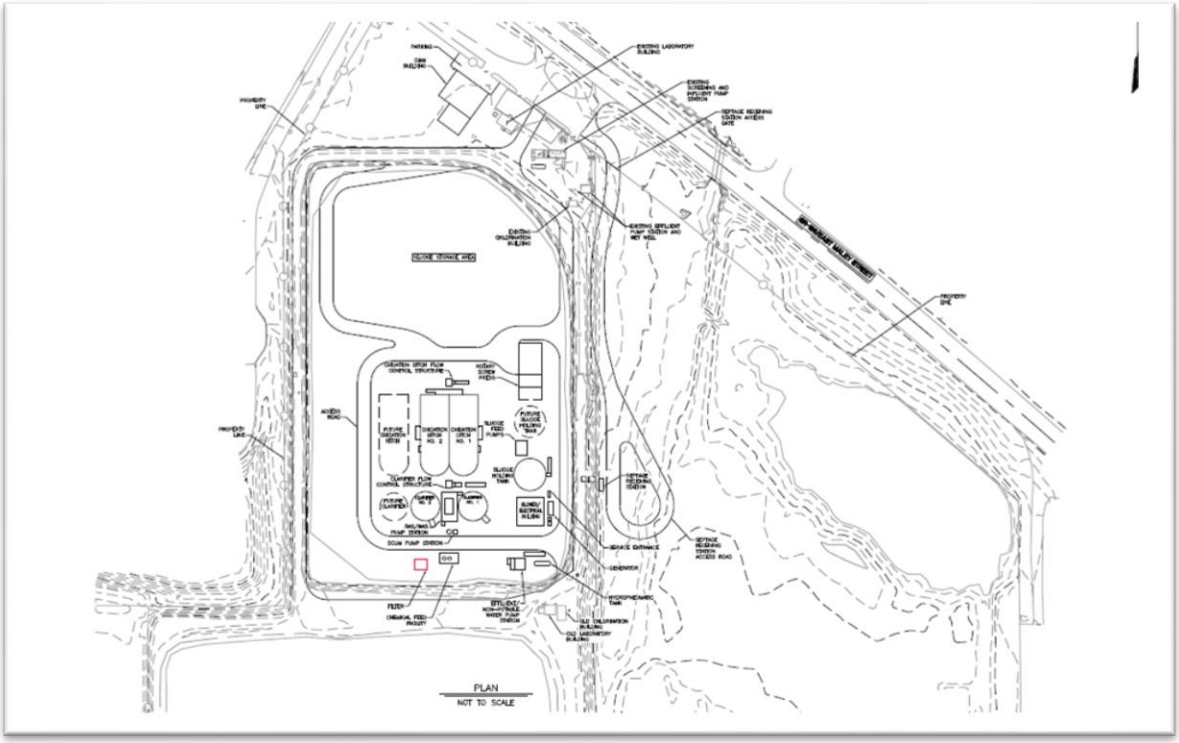
Project Description

The following is a list of the main design components for the WWTP upgrades:

- Headworks and influent pump station
- Oxidation ditches
- Secondary clarifiers
- Blower/electrical building
- Tertiary filtration
- Disinfection
- Effluent / non-potable water pump station
- Sludge holding tank
- Sludge dewatering
- Operation and maintenance (O&M) building

An overall site plan is presented in Figure 2, excerpted from the 2014 PER Amendment showing the locations of the components listed above.

Figure 2
SITE PLAN



The following list contains anticipated discharge permits required for the operation of the improved WWTP.

- *APP* – ADEQ prepared the draft APP and Fact Sheet for public notice which included the clean closure of Lagoon No. 1. A Significant Amendment to APP #102778 was issued on August 30, 2014.
- *AZPDES* – The City of Willcox is renewing the existing AZPDES permit for use throughout design and construction of the new plant. A new AZPDES permit application will be submitted for the new WWTP. The AZPDES will require clean closure of Lagoon No. 2.
- *Type 2 Reclaimed Water General Permit* - A new permit application will be submitted for the new WWTP.

Plant Decommissioning

The plant decommissioning will include the aerated lagoons (1 & 2), the three bioreactor ponds, and the three polishing ponds at the Twin Lakes Golf Course.

The decommissioning of Lagoon No. 1 "Clean Closure", including the bioreactor and polishing ponds, was obtained in June 2013. The decommissioning of Lagoon No. 2 is scheduled to commence after the WWTP improvements are commissioned.

2.1.3. Land Acquisition and Right-of-way Requirements

Since the recommended improvements will be constructed on the existing WWTP site, there is no need for additional land. There are no pending land acquisition or right-of-way requirements.

2.1.4. Management and Operations

As of 2013, the City of Willcox provides natural gas, drinking water and wastewater service to its residents. Additionally, it contracts for solid waste (trash) collection and disposal service. Electricity is provided via a franchise agreement with the local electric cooperative, Sulphur Springs Valley Electric Cooperative.

The Public Works Department is one of the largest departments in the City's organizational structure with 26 employees. The department has a Municipal Services Division and an Engineering Division that provide several services, including operation and maintenance of the WWTP.

The City operates and maintains the sanitary sewer collection system and Willcox Municipal WWTP. An updated O&M manual will be developed to guide future upkeep of the improved WWTP. Training will be provided to city staff during start-up of the new WWTP by the construction contractor.

In accordance with funding program requirements, the sponsor is responsible for demonstrating the regular application of a pretreatment program. The City of Willcox established its program

by Ordinance 13.14, Regulating Sewer Use, Sewer Construction and Industrial Wastewater Discharges, that was adopted by the City on April 22, 2013.

2.2. ENVIRONMENTAL CRITERIA

2.2.1. Compliance with Applicable Environmental Laws and Regulations

Applicable Laws and Regulations

The Project is subject to the following formal environmental clearance process and applicable State regulations:

- *National Environmental Policy Act (NEPA)*: In considering funding from the US-Mexico Border Water Infrastructure Program, the Project was reviewed in accordance with the U.S. National Environmental Policy Act (NEPA), 42 USC §§4321-4370f and Council of Environmental Quality regulations, 40 CFR § 1508.4.

- *Arizona Administrative Code (A.A.C.)*: Aquifer Protection Permit (APP), A.A.C. R18-1-503 regulation stipulates the requirements to protect the water quality of the State of Arizona.

- *Arizona Administrative Code (A.A.C.)*: The minimum treatment requirements for reuse of reclaimed water for irrigation of the golf course are Class B (A.A.C. R18-11-306). This regulation states that four of the last seven daily samples must be lower than 200 CFU/100 mL with no sample greater than 800 CFU/100 ml.

- Arizona Revised Statutes (A.R.S.): A.R.S. §49-255.01(A) shall not discharge to a water of the U.S. except under conformance with an AZPDES (APP) or NPDES permit.

Environmental Studies and Compliance Activities

The City of Willcox is proposing to rehabilitate and upgrade its existing WWTP to meet the wastewater discharge requirements of Consent Order P-16-1, issued by ADEQ on January 3, 2011. USEPA Region 9 developed an Environmental Assessment (EA) and determined that the proposed project will not result in significant impacts to the environment. The EA and draft Finding of No Significant Impact (FONSI) were published for public comment on May 18, 2012. With no comment received, NEPA was completed and the final FONSI was issued on July 3, 2012.

The City's proposal to add a tertiary filters to the Project (proposed action) is eligible for exclusion from detailed environmental review under Title 40, Chapter 1, Subchapter A, Part 6, Subpart B, Section 6.204 of the Code of Federal Regulations (40 CFR §6.204(a)(1)(ii)). The Categorical Exclusion was signed by the EPA on August 7, 2014, completing the NEPA process for proposed WWTP design modifications.

ADEQ issued a Consent Order to the City of Willcox on January 3, 2011, for effluent discharge limit violations and established a compliance schedule. The Consent Order originally established a timeline requiring the WWTP to be in compliance with its AZPDES permit by August 2014; this deadline has been extended to December 31, 2015. Although the construction of the new WWTP will not be completed by this date, the on-going implementation of the Project will be considered sufficient to address the Consent Order requirements.

Pending Environmental Tasks and Authorizations

There are no formal environmental clearance authorizations pending.

Compliance Documents

The following compliance documentation is available for the Project:

- ADEQ Consent Order Extension, Docket No. P-16-11, issued February 14, 2011 (i.e. APP; AZPDES)
- US EPA FONSI issued on July 3, 2012.
- U.S. EPA Categorical Exclusion issued on August 7, 2014 for tertiary filters.

2.2.2. Environmental Effects/Impacts

Existing Conditions and Project Impact-Environmental

The purpose of the Project is to improve the quality of the WWTP effluent by eliminating the discharge of inadequately treated wastewater. The WWTP has experienced persistent problems with high fecal coliforms, BOD, TSS and nutrient removal in its effluent. Also, the non-compliant effluent impacts the Twin Lakes Golf Course and Cochise Lake, an impaired water body.[4] This situation represents an environmental risk from direct discharge and/or infiltration into the existing water and groundwater resources.

The Project is expected to generate environmental and human health outcomes related to the following:

- Improved wastewater treatment process (0.60 MGD) to address inadequately treated wastewater discharges currently released to Cochise Lake, an impaired water body,
- Improved wastewater treatment service for 100% of the system's 1,032 existing residential wastewater connections,
- Improved wastewater effluent quality (fecal coliforms, TSS, BOD, and nutrients removal) to amounts below or equal to permit limits, and
- A wastewater treatment facility in full compliance with all applicable laws, rules and regulations.

[4] Source: Section 303(d) of the *Clean Water Act*.

Mitigation of Risks

Although implementation of the Project will have no significant long-term adverse impacts on the environment, mitigation measures will be established to address temporary, minor adverse impacts during construction. Potential impacts during construction include the following:

- The local air basin will be temporarily impacted by fugitive dust and emissions of carbon monoxide, nitrous oxide and sulfur dioxide emissions due to vehicles and equipment used during construction.
- Noise levels may be elevated during construction activities. This impact will be short in duration and concentrated in the work area and will include temporary roadway blockages.

Based on the results of the Clean Closure of Lagoon No. 1, the soil beneath and the material within Lagoon No. 1 were left in place and no remediation was required. Likewise, it is expected that the Clean Closure of Lagoon No. 2 will not require further mitigation. Both Clean Closures will be included in the new APP permit.

Natural Resources Conservation

The Project contributes to natural resource conservation by reducing environmental deterioration and risks of groundwater and surface waters contamination by improving the wastewater treatment process and effluent discharge. The Project also allows the city to continue reuse of treated wastewater at the golf course, rather than using potable water resources for this purpose.

No Action Alternative

The No Action alternative was not considered viable since the existing effluent from the WWTP does not meet permit requirements necessary to discharge to the Twin Lakes Golf Course and Cochise Lake, which is designated as an impaired water body. Additionally, the City must comply with the ADEQ Consent Order by December 31, 2015.

Existing Conditions and Project Impact – Human Health

The construction of the Wastewater Treatment Plant Improvements Project in Willcox will reduce any health risks that may be associated with exposure to inadequately treated wastewater discharges. According to the World Health Organization, sanitation projects can have the following benefits to human health:

- Improved sanitation reduces diarrhea morbidity by 32%.
- Access to safe water and sanitation facilities and better hygiene practice can reduce morbidity from Ascariasis by 29%.

Water-borne diseases are caused by pathogenic microorganisms that are transmitted as a result of inadequate wastewater disposal practices and unsafe water supplies. An individual can become ill after drinking water that has been contaminated with these organisms, eating uncooked foods that have been in contact with contaminated water, or through poor hygiene

habits that contribute to the dissemination of diseases by direct or indirect human contact. Table 4 shows waterborne statistics for Cochise County in Arizona.

Table 4
WATERBORNE STATISTICS FOR COCHISE COUNTY, ARIZONA

Disease	Number or Annual Cases				
	2008	2009	2010	2011	2012
Amebiasis	0	0	0	0	0
Campylobacteriosis	11	22	32	18	32
Cryptosporidiosis	0	0	0	0	0
Giardiasis	0	1	2	2	1
Shigellosis	15	10	8	11	18

Source: Arizona Department of Public Health, Office of Infectious Disease Services

Transboundary Effects

Willcox is located 61 miles (98 km) north of the U.S.-Mexico Border. The effluent is discharged south to the Twin Lakes Golf Course and excess flow is directed to Cochise Lake. Therefore, no transboundary impacts are anticipated from the Project. The environmental impacts resulting from the implementation of the Project will be positive overall, since the Project will upgrade the WWTP and replace deteriorated infrastructure, reducing the risk for water resource contamination and improving the quality of life of the residents by reducing potential health risks.

2.3. FINANCIAL CRITERIA

The total estimated cost of the Project is US$11,329,056 which includes the funding for construction, supervision, and contingencies. The Project meets all BEIF program criteria and has been approved by EPA for a BEIF grant of up to US$4,618,182 to complete the financing of the Project. Table 5 presents a breakdown of total Project costs, as well as the source of funds.

Table 5
USES AND SOURCES OF FUNDS
(US$)

Uses	Amount	%
Construction, contingencies, supervision and other	$11,329,056	100
TOTAL	**$11,329,056**	**100**
Sources	**Amount**	**%**
USDA-RD loan*	$ 1,564,706	14
USDA-RD grant	5,146,168	45
NADB-BEIF grant	4,618,182	41
TOTAL	**$11,329,056**	**100**

* USDA-Rural Development is also funding US$440,294 in final design and other pre-development costs, awarding a total loan of US$2,005,000.

3 PUBLIC ACCESS TO INFORMATION

3.1. PUBLIC CONSULTATION

BECC published the draft certification proposal for a 30-day public comment period beginning April 10, 2015. The following Project documentation will be available upon request:

- ADEQ Consent Order Extension, Docket No. P-16-11, issued February 14, 2011 (i.e. APP; AZPDES).
- Preliminary Engineering Report (PER) for Wastewater Treatment Plant Upgrades for the City of Willcox, April 2012.
- PER Amendment for tertiary filter addition to the City of Willcox WWTP, August, 2014.
- Finding of No Significant Impact (FONSI) issued by EPA Region 9 on July 3, 2012
- Categorical Exclusion issued by EPA Region 9 on August 7, 2014.
- Final Design Wastewater Treatment Plant Improvements Project, City of Willcox, AZ, prepared by Wilson Engineers, September 2014
- Public Meeting Minutes, pictures, articles and materials.

The public comment period ended on May 11, 2015, with no comments received.

3.2. OUTREACH ACTIVITIES

The city of Willcox conducted extensive outreach efforts to communicate the Project's characteristics, including cost and fees and to obtain the support of the residents of the Project's service area. In accordance with the public outreach requirements of the U.S.-Mexico Border Water Infrastructure Program, activities such as the use of a local Steering Committee, public meetings, and appropriate project information access were conducted as described in the Public Participation Plan (PPP).

The Local Steering Committee was formed on July 23, 2013. The Steering Committee included members of the sponsor's staff, planning commission and city council. The Steering Committee developed a public participation plan and periodically met with the Project team throughout the development period to help the project sponsor to disseminate information regarding the Project. The Project's technical and financial information was made available to the public for review. The Local Steering Committee, with assistance from the Project sponsor, prepared a fact sheet and a presentation on the Project. Information on the Project was presented to the community during two public meetings.

A notice of first public meeting was posted on September 3, 2013 and the meeting was held at the City Hall, on October 14, 2013. The purpose of the meeting was to present the anticipated project benefits, potential environmental impacts and other technical information. The meeting

gave citizens the opportunity to comment on the proposed Project. Nine Willcox residents attended, and they all expressed their support of the Project.

A second public meeting was held on April 2, 2015 at City Hall in the city of Willcox, AZ and during the meeting, the community was informed of the Project's financial structure and corresponding commitments. The meeting was attended by 18 residents which posed several comments on the construction schedule; overall the consensus was that the project was long overdue and necessary for the community.

The steering committee carried out several meeting with social and professional organizations to provide project information. Activities conducted by the Project sponsor and Steering Committee demonstrate that the public outreach requirements for the funding programs have been met.

BECC conducted a media search to identify potential public opinion about the Project. No articles related to the project were identified and no opposition to the Project was detected in the media search.