CERTIFICATION PROPOSAL

WASTEWATER COLLECTION SYSTEM FOR THE COMMUNITY OF TINTOWN BISBEE, ARIZONA

Submitted: October 29, 2012

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INDEX

EXECUTIVE SUMMARY

WASTEWATER COLLECTION SYSTEM
COMMUNITY OF TINTOWN, CITY OF BISBEE, ARIZONA

Project: The Project consists of the construction of a wastewater collection and the conveyance system to connect to an existing treatment plant, for the community of Tintown, in Bisbee, AZ (the "Project").

Project Objective: The purpose of the Project is to eliminate exposure to untreated wastewater discharges by expanding the wastewater collection system to this unserved area, contributing to the reduction of pollution and the risk of waterborne diseases.

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

- Wastewater collection system expansion to support adequate collection and conveyance for 32 new residential service connections.
- Eliminate untreated wastewater discharges of approximately 12,300 gallons per day (gpd).

Population Benefited: 112 residents of the community of Tintown, in Bisbee, AZ.

Sponsor: City of Bisbee, Public Works Department

Project Cost: US$1,461,309

Uses & Sources of funds:
(Millions of dollars)

Uses	Amount	%
Construction, contingencies and supervision	$1.46	100.0
TOTAL	**$1.46**	**100.0**
Sources		
USDA - RD	$0.70	47.9
NADB-BEIF construction assistance grant	$0.76	52.1
TOTAL	**$1.46**	**100.0**

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1. ELIGIBILITY

Project Type

The Project falls within the eligible category of wastewater.

Project Location

The Project is located in the community of Tintown, within the limits of the city of Bisbee and Cochise County, and 5.5 miles north of the U.S.-Mexico Border.

Project Sponsor and Legal Authority

The public-sector Project sponsor is the Public Works Department of the City of Bisbee. Pursuant to the Arizona Administrative Code, Title 18, Chapter 9, Article 3, Part E; Bisbee has legal authority to operate and maintain water and wastewater infrastructure.

2. CERTIFICATION CRITERIA

2.1 TECHNICAL CRITERIA

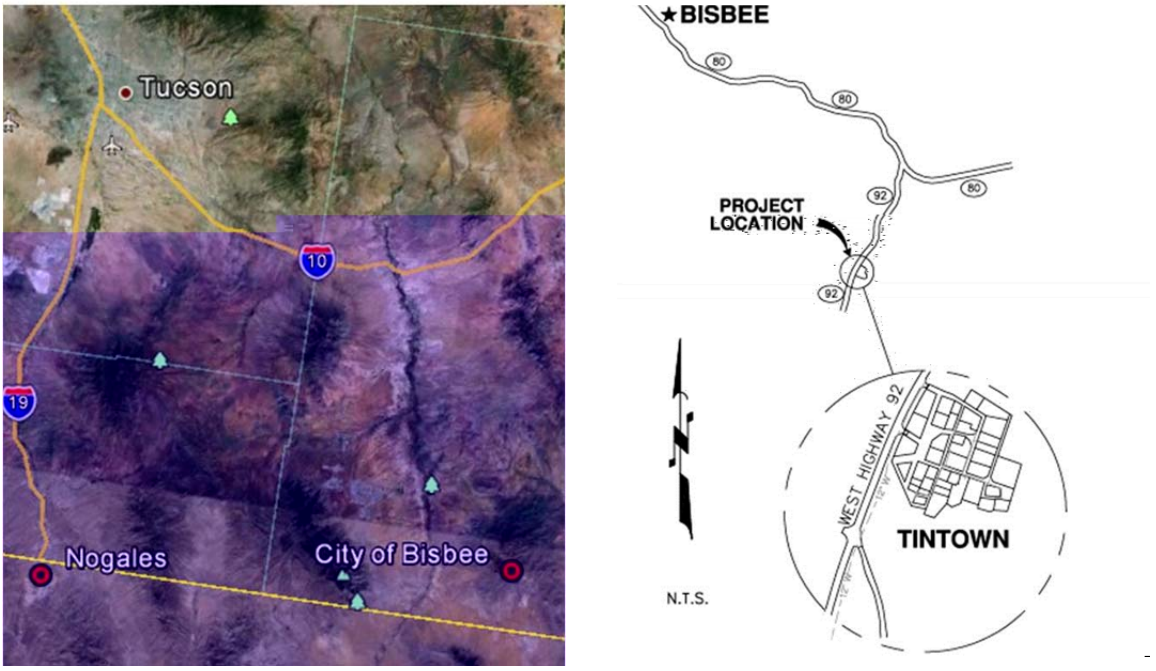
2.1.1. Project Description

Geographic Location

Tintown is located approximately 5.5 miles north of the international border with Mexico. The community is nestled between Highway 92 and an old mining road, which surrounds a portion of the community. The community and the City have an average annual rainfall of 18.6 inches, classified as a semi-arid environment. The winter months bring an average snowfall of 10 inches and the temperatures remain fairly mild. The ground elevations within the community range from 5,106 feet to 5,140 feet above mean sea level (msl). The mountains to the east of the town, with average slopes of 10% produce runoff, some of which is routed around the town to an arroyo on the southern edge of the town. However, some of the off-site runoff, in addition of the runoff produced from the imperious areas of the town, flows through the middle of

Tintown. South of Tintown, an arroyo crosses under an old mine service road. The approximate coordinates for Tintown are 31o42'51"N and 109o53'54"W.

Figure 1
PROJECT VICINITY MAP



General Community Profile

The City of Bisbee was founded in 1880 as a mining community with one of the richest mineral deposits in the world, producing 8 billion pounds of copper, 102 million ounces of silver, and nearly 3 million ounces of gold, not to mention the manganese, lead, and zinc that came from this area. The town is spread out across the Mule Mountains of southeastern Arizona, approximately 90 miles southeast from Tucson. In 1902 a city charter was approved and the City of Bisbee was incorporated. By 1910, the city had grown to be the largest city in the territory, with a population of over 25,000 people. In 1929, the Cochise County seat was relocated from Tombstone to Bisbee, where it still sits today.

In 1974 the Phelps Dodge Corporation, now Freeport McMoran (FMI), announced that the Bisbee mines would be closed. Tintown was established by Phelps Dodge Corporation as a colony to house mine workers. Phelps Dodge Corporation donated the dwellings in Tintown to terminated workers when it stopped operations of the Bisbee mines.

According to U.S. Census Bureau, the city had 5,575 residents during 2010, which represents an average annual decrease rate of 8.5% over the last ten years from the 2,000 population of

6,090. Current estimates have the city's population remain similar to that documented for 2010.[1]

The city's economic activities are based primarily on educational services, health care, social assistance, and tourism. The poverty level1 is estimated at 15 % with an unemployment rate of 10.5%. The median household income is estimated at $35,524 U.S. dollars.

The status of public services in Bisbee is described below.

Table 1
BASIC PUBLIC SERVICES AND INFRASTRUCTURE

Water System	
Service coverage:	100%
Water supply source:	Groundwater (Naco Water Treatment Plant)
Number of hookups:	3,362
Wastewater Collection System	
Service Coverage:	98%
Number of connections:	2,700
Wastewater Treatment	
Service coverage:	100%
Treatment facilities:	San Jose Wastewater Treatment (WWT) Facility with 1.22 mgd of capacity. The facility provides treatment to the city of Bisbee and has sufficient capacity to treat the estimated wastewater flows from the Tintown community.
Solid Waste	
Solid waste collection :	100%
Final disposal:	Landfill
Street Paving	
Street paving coverage:	42 miles, 90%

Source: City of Bisbee, May 2012.

Project Scope

The Project consists of the expansion of the City of Bisbee's wastewater collection system to serve the community of Tintown. Currently, most of the developed lots in the community utilize nonconforming cesspools. The community contains 40 lots, including 32 residential, 1 park, and 7 commercial lots, it's anticipated that two commercial lots will serve as parking lots. The Project will serve 112 residents.

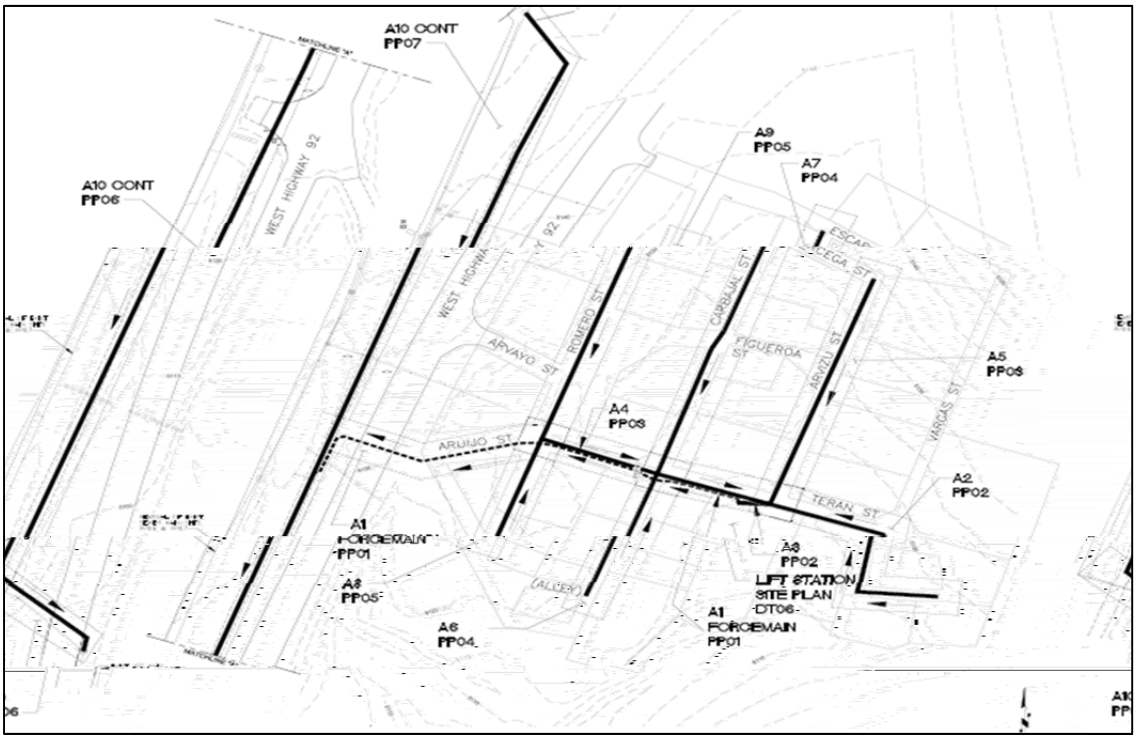
[1] Source: U.S. Census Bureau, 2005-2009 American Community Survey.

The Project was approved under the FY 07/08 PDAP-BEIF Prioritization Process, ranked as a Category 1, the highest ranking in terms of the environmental and human health needs intended to be addressed by the Project. The Project will help eliminate the use of failing septic tanks and nonconforming cesspools, thereby reducing the risk of exposure to untreated wastewater for Tintown residents and the surrounding environment.

The wastewater collection system improvements will connect all of the Tintown dwellings to the City of Bisbee wastewater collection system. The aging cesspools and septic tanks will be decommissioned once the wastewater collection system is brought online. The Tintown wastewater flows will be conveyed through the City of Bisbee wastewater collection system and will be treated at the San Jose WWT Facility.

The San Jose WWT Facility is rated at 1.22 MGD and currently provides services to approximately 2,250 connections and has sufficient excess capacity to treat the estimated average daily flows of 12,300 gpd from Tintown. The WWT Facility treats wastewater through Huber Technology for liquid/solid separation in the headworks prior to being conveyed to a dual train Sequencing Batch Reactor (SBR) with aerobic digesters. The treated wastewater effluent is rated as Class B+ reclaimed water, currently reused for golf course irrigation purposes. Effluent not needed for reuse is conveyed approximately 1.5 miles southwest to an outfall in Greenbush Draw pursuant to Arizona Pollutant Discharge Elimination System (AZPDES) Discharge Permit No. AZ0025275. The Greenbush Draw is a tributary to the San Pedro River in the San Pedro River Basin.

Figure 2
PROJECT FIGURE



It is estimated that once the Project receives the notice to proceed, it will take approximately 10 months to complete its construction, or a total of 224 calendar days to construct and complete. The main construction milestones include mobilization and demobilization, construction of wastewater gravity mains and manholes, one single force main pipeline, a lift station, solar photovoltaic panel to support power needs of the lift station, laterals and house connections, as well as decommissioning of septic systems and cesspools.

Potential factors affecting the Project completion where taken into account, such as, issues with the weather or delivery of the materials, and the following milestone dates were estimated:

Table 2
PROJECT MILESTONES

Key Milestones	Status
Procurement	Anticipated: Quarter 4 2012
Construction period	10 months from initiation

2.1.2. Technical Feasibility

Design Criteria

The proposed Tintown wastewater collection system final design was completed in accordance with Arizona Department of Environmental Quality (ADEQ) standards as outlined in the Arizona Administrative Code Title 18, Article 9 (ACC R18-9). In addition to ACC R18-9, an exception matrix with design criteria was developed in 2005 specifically for Bisbee in regards to sewer and water line separations; this matrix was also followed throughout the final design development.

As a conclusion of the design review, the proposed system has received a Construction Authorization under Type 4.01 General Aquifer Protection Permit (A.A.C. R18-9-E301) from ADEQ on April 5, 2012.

Selected Technology

As part of the Project development for the Tintown wastewater collection system, a Preliminary Engineering Report was completed during the planning phase, for which different alternatives were evaluated based on the following attributes:

- Constructability
- Capital cost
- O&M
- Environmental impacts
- Social/community acceptance
- Green building practice
- System reliability

The alternatives included composting toilets, a vacuum system, above and below ground gravity conveyance and a gravity conveyance with a lift station option. After evaluating the attributes and each of the alternatives capital and O&M (operation & maintenance) costs along with the 20 year life cycle, it was determined that the best fit solution was the gravity conveyance with a lift station option.

Materials such as polyvinylchloride (PVC) and ductile iron pipe (DIP) were selected for the conveyance system.

A package lift station was selected to collect the wastewater flowing from Tintown. The lift station will be setup with a total of two grinder pumps, each with a rated capacity of 75 gallons per minute (gpm) and 3 HP engine. New electrical equipment will be installed at the lift station, including control panels, remote monitoring system, automatic transfer switch and a 25-KW diesel generator for emergency situations. A 5-Kilowatt high efficiency photovoltaic on-grid system will generate sufficient energy to operate the lift station; the solar generated energy will be injected to the energy grid system, permitting a reduction in energy costs to operate the lift station.

The force-main will be a 3-inch PVC line conveying wastewater from the lift station to a proposed manhole across highway 92. The force-main will be approximately 558 linear feet (LF) following the natural topography along its alignment; it will have a 6-inch diameter HDPE casing for the highway crossing. Wastewater velocity in the force-main will be maintained at 3 feet per second.

Additionally, the Project scope includes the replacement and realignment of a 6-inch offsite main with approximately 1,970 LF of new 8-inch belowground gravity main. This new main will follow an alignment parallel to Highway 92. Approximately 720 LF of the new main will be located upstream from the proposed Tintown tie-in location, and approximately 1,250 LF of the new main will be located downstream from the proposed tie-in location. The proposed improvements will connect the City of Bisbee Fire Station No. 81 to the City's collection system by gravity. The upstream portion will be constructed by the City of Bisbee, and will not utilize any BEIF.

2.1.3. Land Acquisition and Right-of-way Requirements

The pipe route and lift station location were chosen based on the potential to minimize the acquisition of additional easements or rights of way. As a result, only two easements were identified and agreements for donation have been signed between the two responsible parties. The collection system layout was designed to use existing right of ways and City of Bisbee property when allowable, and was based on the established urban land use plan. However, since FMI is the legal owner of the vacant lots in Tintown, an easement agreement was set for the lift station site, lot 33. Under the same easement agreement, the tie in from the force main to the offsite gravity main was included; one more easement agreement between the City and FMI was completed for the offsite gravity main. There are no pending acquisitions.

2.1.4. Management and Operations

The Public Works Department has an Operation and Maintenance Manual that includes the essential tasks necessary to ensure the proper operation and maintenance of the system. The plan includes information and instructions applicable to system operation, preventive tasks and breakdown repairs for the proposed infrastructure. The City of Bisbee follows the general guidelines of the Water Environment Federation's (WEF), Manual of Practice No. 7 for the operation and maintenance of all gravity sewer collection systems within the City's sanitary sewer system.

Public Works provides sewer line cleaning and inspection at a minimum interval of approximately three years. However, this is an average target cleaning rate. In practice, older, more issue-prone sections of the City's overall sewer system will receive more frequent attention than newly constructed portions of the sewer system. The manholes are inspected in conjunction with the gravity sewer mains. Manholes are also inspected and treated when necessary. Public Works has a vactor truck and video inspection equipment for trouble shooting and assisting with scheduled maintenance to identify system issues.

2.2 ENVIRONMENTAL CRITERIA

Tintown residents have drinking water service but currently lack wastewater collection services, relying on failing septic tanks or nonconforming cesspools for their wastewater disposal. Consequently, there are untreated wastewater discharges and runoffs that could potentially reach surface waters such as an existing wash just south of Tintown, and/or infiltrate to reach the ground water table. Without Project implementation, there is a potential for human contact with raw wastewater and organisms which are vectors for infectious diseases.

With the wastewater collection system construction, up to 12,300 gpd of untreated and inadequately treated wastewater discharges will be eliminated. The risk for waterborne diseases transmission and the level of environmental contamination will be reduced as a result of the implementation of the Project. The inappropriate discharge of untreated wastewater in the Project area results in wastewater runoff, a portion of which eventually reaches the San Pedro River Basin.

2.2.1. Compliance with Applicable Environmental Laws and Regulations

Applicable Laws and Regulations

The Project and associated infrastructure meet the following applicable environmental laws and regulations:

- Surface Discharge Permit, under the Arizona Pollutant Discharge Elimination System (AZPDES) Permit Program (A.A.C. R18-9-A9).
- Aquifer Protection Permit (A.A.C. R18-9-A2).
- 4.0 General Permit: Sewage Collection Systems (A.A.C. R18-9-E301).

- Sludge Disposal Permit, under the Arizona Pollutant Discharge Elimination System – Disposal, use, and transportation of biosolids (A.A.C. R18-9-A10).
- Council on Environmental Quality (CEQ) regulations found at Title 40 Code of Federal Regulations Parts §1500-1508 (40 C.F.R. Parts 1500-1508).

Environmental Studies and Compliance Activities

An environmental review of the Project was done in accordance with the U.S. National Environmental Policy Act (NEPA), adhering to the Council on Environmental Quality (CEQ) regulations found at Title 40 Code of Federal Regulations Parts §1500-1508 (40 C.F.R. Parts 1500-1508), and EPA's regulations implementing NEPA at 40 C.F.R. Part § 6.204(a)(1)(ii). The analysis indicated no significant impacts on the quality of the human environment and no extraordinary circumstances involved in accordance with 40 C.F.R. §6.204(b)(1-10). Therefore a Categorical Exclusion (CatEx) was approved for the Community of Tintown.

U.S. Environmental Protection Agency's (EPA) issuance of a CatEx to the Tintown wastewater Project was consistent with 40 CRF §6.204(a)(1)(ii) as it is directed towards "minor actions relating to an existing infrastructure system that involves minor upgrade or minor expansion of the system capacity". A 30-day public review started on June 26th, 2009 to receive comments related to the CatEx. By July 27, 2009 the EPA issued the final CatEx establishing that the Project will not result in significant environmental impacts that may affect the Project area.

USDA-RD accepted the EPA ruling for the Project to complete their environmental clearance determination.

Pending Environmental Tasks and Authorizations

There are no formal environmental authorizations pending.

Compliance Documentation

The following formal authorizations have been obtained for the Project:

- CatEx Authorization signed on July 27th, 2009.
- ADEQ Construction Approval signed on April 5, 2012.

2.2.2. Environmental Effects/Impacts

Existing Conditions and Project Impact-Environmental

By eliminating the use of failing septic tanks, and nonconforming cesspools, the proposed Project will reduce the potential for groundwater and surface water contamination resulting from the inappropriate disposal of untreated wastewater.

The following are the expected Project environmental benefits:

- Wastewater connections with collection and treatment: 32 new sewer connections
- Capacity to collect and treat wastewater: 12,300 gpd

Mitigation of Risks

Although the Project anticipates some direct or indirect adverse impacts in the long and the short term these are not considered to be significant in regards to the construction of and operation of the Project. Potential impacts include the following:

- The local air basin will be temporarily impacted by emissions of carbon monoxide, nitrous oxide and sulfur dioxide emissions.
- Surface water resources could be temporarily impacted by construction storm water runoff.
- Groundwater and the subsurface will be positively impacted by reducing the potential infiltration of contaminants to reach the water table.
- Noise levels may be elevated during construction activities. This impact is short in duration and concentrated to the work area and will include temporary roadway blockages; as well as presence of workers in the area.

Minor environmental impacts are anticipated from implementation of the Project, some of the mitigation measures consist of:

- Best Management Practices (BMP) to control storm water spillage.
- All work related to excavation would be stopped if previously unidentified or hazardous material is encountered. ADEQ will be contacted to further investigate and implement proper actions.
- Construction and related noise will be mitigated by imposing standard procedures such as specific days and hours of operation and the use of mufflers on construction equipment.
- A traffic control plan will be developed and followed by the building contractor firm, including placement of warning signs preventing potentially hazardous situations.

Natural Resources Conservation

The final design includes the implementation of Green Building practices as an appendix to the technical specifications, such as:

- All sewer collection lines within the community will be located within existing roadways to minimize landscape disturbance. The offsite sewer main will be located along an old railroad bed to also minimize landscape disturbance.
- Approximately 2,000 linear feet of 6-inch asbestos concrete offsite sewer main, which is currently in very poor condition, will be replaced with new 8-inch PVC and DIP sewer main. This will greatly reduce the potential for raw sewage leaks and other contamination from the main.

- A solar powered generation system has been included in the lift station design. It is anticipated that the solar powered generation system will produce sufficient energy to offset the energy demand of the lift station improvements (i.e. 100% energy savings), thereby reducing the carbon footprint of the Project.
- Nonconforming cesspools will be abandoned and septic tanks that typically do not work well in rock-like material, such as that found in Tintown, will be removed.
- The Project will use existing manholes and pipe that are currently being stored in the City of Bisbee storage yard, where feasible.
- The Project will use regional materials within a 500 mile radius of the construction site for building materials permanently installed in the Project.
- Project will chip seal coat the unpaved roadways for storm water stabilization once the sewer lines are installed. The chip seal will reduce dust from foot and vehicular traffic on the unpaved roadways and will protect the roadway surface against erosion, thereby lengthening its useful life.

Existing Conditions and Project Impact – Health

According to the "World Health Organization Water, Sanitation and Hygiene Links to Health FACTS AND FIGURES – November 2004 edition", 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%.

The construction of a new wastewater collection system in Tintown will reduce the health risks associated with inadequate on-site wastewater treatment or lack of proper wastewater treatment.

The Project will reduce the possibility of human contact with improperly disposed and partially treated or raw wastewater; as a result, it will reduce the transmission of water borne diseases.

Water borne diseases are caused by pathogenic microorganisms that are transmitted as a result of inadequate wastewater disposal practices and unhealthy water supplies. Discharges of raw sewage in the community, either from failing septic systems or open cesspools, are a current health concern in Tintown. An individual may become ill after drinking water that has been contaminated with these organisms, eating uncooked foods that have been in contact with contaminated water, or having bad hygiene habits that contribute to the dissemination of diseases by direct or indirect human contact.

Water borne diseases may be caused by protozoans, viruses, bacteria, and intestinal parasites. Projects that provide wastewater collection, such as the Tintown Wastewater Collection System, contribute to improving the community's public wellbeing. Table 3 shows waterborne statistics for Cochise County in Arizona.

Table 3
WATERBORNE DISEASE STATISTICS

Disease	Number or Cases per year				
	2011	2010	2009	2008	2007
Amebiasis	0	0	0	0	0
Campylobacteriosis	18	32	22	11	17
Coccidioidomycosis	72	48	39	17	32
Cryptosporidiosis	0	0	0	0	2
Giardiasis	2	2	1	0	1
Shigellosis	11	8	10	15	9

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

Transboundary Effects

Significant direct or indirect transboundary impacts are not anticipated to the natural, historical and anthropological resources within or around the region. The environmental impacts resulting from the implementation of the Project will be positive overall, since the Project will increase the wastewater collection to a currently unserved area, reducing the water resource contamination and improving the quality of life of the border region by reducing potential health risks. The small amount of wastewater generated from the Project area will be treated at the San Jose WWT facility which discharges effluent for irrigation purposes. Effluent not used for irrigation is discharged to a system which eventually flows north to the San Pedro River.

2.3 FINANCIAL CRITERIA

The total estimated cost of the Project is US$1,461,309, 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 for up to US$761,309 to complete the financing of the Project. Table 4 presents a breakdown of total Project costs, as well as the sources of funds.

Table 4
PROJECT COST AND USES
(US$ Millions)

Uses	Amount	%
Construction, contingencies and supervision	$1,461,309	100
TOTAL	**$1,461,309**	**100**
Sources	**Amount**	**%**
USDA-RD	$700,000	47.9
NADB-BEIF Construction Assistance (grant)	$761,309	52.1
TOTAL	**$1,461,309**	**100.0**

3 PUBLIC ACCESS TO INFORMATION

3.1 PUBLIC CONSULTATION

BECC published the Project Certification Proposal for a 30-day comment period beginning on September 28, 2012. The following list of Project documents is available for public access:

- US EPA, 2003. A landscape Approach for Detecting and Evaluating Change in a Semi-arid Environment, San Pedro Watershed (U.S./Mexico). Principal Investigator: William G. Kepner. U.S. Environmental Protection Agency, Office of Research and Development, Las Vegas Nevada. December 4, 2003. URL: http://www.epa.gov/nerlesd1/land-sci/san-pedro.htm
- AMEC, 2012. Final Design Report, Wastewater Collection System for the Community of Tintown, AZ. AMEC Earth & Environmental, Inc. January 2012.
- AMEC 2011. Revised Addendum to the Preliminary Engineering Report for the Wastewater Collection System for the Community of Tintown, Bisbee, AZ. AMEC Earth & Environmental, Inc. February 2011.
- AMEC, 2010. Tintown Sewer Upgrade Geotechnical Investigation and Analysis Report. Bisbee, AZ. AMEC Earth & Environmental, Inc. May 2010.
- ZIA 2008. Preliminary Engineering Report for Wastewater Collection System for the Community of Tintown, Bisbee, AZ. Zia Engineering and Environmental, August 2008.
- CatEx, 2009. Categorical Exclusion for the Community of Tintown, City of Bisbee, AZ. Prepared by Elizabeth Borowiec, U.S. Environmental Protection Agency, Water Division, WTR-4. July, 2009.
- Arizona Administrative Code. Title 18, Chapter 9.
- Title 40 Code of Federal Regulations Parts §1500-1508 (40 C.F.R. Parts 1500-1508).

The 30-day public comment period ended on October 28, 2012 with no comments received.

3.2 OUTREACH ACTIVITIES

In accordance with PDAP/BEIF standard operating procedures, a broad public outreach effort was conducted for the Tintown Wastewater Collection System Project. Activities such as the use of a local steering committee, meetings with local organizations, public surveys, and appropriate project information access where conducted as described in the Public Participation Plan (PPP). The following information provides a summary of the outreach activities as described in the PPP and carried out for the Project.

The Local Steering Committee was formed on June 4, 2010 at a meeting held at City of Bisbee City Hall. At this meeting, the committee was selected by the Public Works Director, and it is formed by the following individuals:

- Chair: Bennie Scott, City of Bisbee Councilman
- Secretary: Ana