Border Environment Cooperation Commission
Construction of the Wastewater Collection System for the B & C Colonia in Yuma County, Arizona

1. General Criteria

1.a Project Type

Project Name:	Construction of the Wastewater Collection System for the B & C Colonia in Yuma County, Arizona.
Project Sector:	Wastewater Collection System and Household Hookups

1.b Project Category

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

1.c Project Location and Community Profile

Community:	B & C Colonia (Yuma County Improvement District 07-09) in Yuma County, Arizona. An Improvement District has been formed under the State of Arizona Statutes to perform infrastructure improvements for the unincorporated community.
Location:	The project is located northwest of the City of Yuma within Yuma County in the far southwestern region of Arizona, a region bordering the states of California in the US, and the States of Sonora and Baja California in Mexico. The project area is delimited by Avenue B on the east and Avenue C on the west, and 1st Street on the north and 8th Street on the south.
Location within the border:	The project is located within the 100 km (62.5 mi) of the US-Mexico border area. The B & C Colonia is situated approximately 17 miles north of the border with the Mexican State of Sonora and 5 miles east of the border with Baja California.
Figure:	The following figure shows the location of the B & C Colonia in Yuma County Arizona:

Figure 1. Location of Yuma County

Demographics

Current population:	6,149 residents (B&C Colonia)
Growth rate:	2.45% (County)
Reference:	2008 Population estimate by Hanzen-Sawyer 2003 Population Projection # 6 with 22% Growth by 2010and 1% thereafter based on the 2000 US Census.
	Growth Rate by US Census Bureau
Employed population:	43,995 residents (County)
Reference:	2006 US Census Bureau
Median household/per capita income:	$ 39,781 (2007) ; $ 14,802 (1999)
Reference:	2008 US Census Bureau
Economic activity:	Agriculture, military, manufacturing industry, trade, and services.
Population below poverty level:	17.8% (County Wide)

Services

Community:	B & C Colonia
Water System	
Water coverage[1]:	96 %
Water supply source:	Colorado River
Number of water hookups[2]:	782

[1] Source: City of Yuma, 2008

Wastewater Collection System

Wastewater collection coverage[3]: 4 %

Number of sewer connections[4]: 32

Wastewater Treatment

Wastewater treatment coverage[5]: 100%

Wastewater Treatment Plant (WWTP) and treatment technology:

Plant Name	Type	Capacity
Figueroa	Activated Sludge	12.0 MGD

The Figueroa WWTP provides treatment to the City and County of Yuma wastewater systems and will provide for the necessary capacity for the treatment of the B & C Colonia wastewater flows.

Solid Waste

Solid waste collection coverage: 100%

Final disposal: Landfill

Street Paving

Street paving coverage: 72%

1.d Legal Authority

Project sponsor: Yuma County Improvement District 07-09

Legal representative: Yuma County Board of Supervisors

Legal instrument to demonstrate legal authority: Order Establishing Improvement District, Yuma County Board of Supervisors Regular Meeting (3-12-2007) under the provisions of ARS Title 48, Chapter 6 for County Improvement Districts.

Date of instrument: March 12, 2007

Compliance with agreements:

- 1889 International Boundary Convention
- 1944 Water Treaty
- 1983 La Paz Agreement, or Border Environment Agreement

[2] Source: City of Yuma, 2008
[3] Source: City of Yuma, 2008
[4] Source: City of Yuma, 2008
[5] Currently the B & C Colonia wastewater does not received treatment, however the Figueroa WWTP has the required treatment capacity necessary to provide service to the B & C Colonia new residents being connected to the sewer system that currently lack this service.

- 1990 Integrated Border Environmental Plan (IBEP)
- 1994 North American Free Trade Agreement (NAFTA)
- 2003 Border 2012: US-México Environmental Program

1.e. Project Summary

Project description and scope:

The project area, the B & C Colonia, is an unincorporated community delimited by Avenue B on the east and Avenue C on the west; 1st Street on the north and 8th Street on the south. This area covers approximately 512 acres (0.8 sq miles), including right of ways and a 5,195 ft section of the Yuma County Water User's Association West Main Canal. The proposed project involves construction of a wastewater collection system and decommissioning of the existing on-site septic systems to provide basic public wastewater service to the residents who currently rely on septic tanks and cesspools for wastewater disposal. The project approach calls for the installation of approximately 43,705 linear feet of PVC pipe ranging from 8-16 inches, 145 manholes, one lift station and 2,189 linear feet of 6 inch PVC force main. The flows generated from this proposed construction will be conveyed, via an agreement with the City of Yuma, through City-owned interceptor lines to an existing wastewater treatment plant named the Figueroa Avenue Water Pollution Control Facility, which has enough capacity to treat the additional flows. The project is one of those approved under the FY05/06 PDAP-BEIF Prioritization process. The project is ranked as a Category 1, the highest ranking in terms of the environmental and human health need intended to be addressed. The project will help eliminate the need for septic tanks and cesspools that allow a risk of exposure of untreated or inadequately wastewater to community residents and the environment including seepage into the groundwater and the Colorado River.

Wastewater Collection System

Item Description	Quantity	Material/ Diameter (inch)	Capacity (MGD)
Sewer Pipe	2,582 lf	PVC/16"	
Sewer Pipe	5,732 lf	PVC/12"	
Sewer Pipe	35,391 lf	PVC/8"	
Manholes	102 ea.	Precast-Concrete/4'	
Manholes	43 ea.	Precast-Concrete/5'	
Force Main	2,189 lf	PVC/6"	
Lift Station	1 ea.	n/a	0.770
Service connections	601 ea.	PVC/4"	

Population served: 6,149 (2008 Population estimate based on 2000 Us Census)
7,686 (20-year planning horizon of the population)

Number of household connections: 716 (current project scope)

Project cost:

Description	Cost US$
WW System Construction*	12,903,448
City Connection Fees	7,000,000
Incidentals**	2,105,000
Total	22,008,448

* Includes septic tank abandonment and contingency
** Includes construction and assessment administration, and property & easement acquisitions.

Project map: The following figure shows the location of the project area:

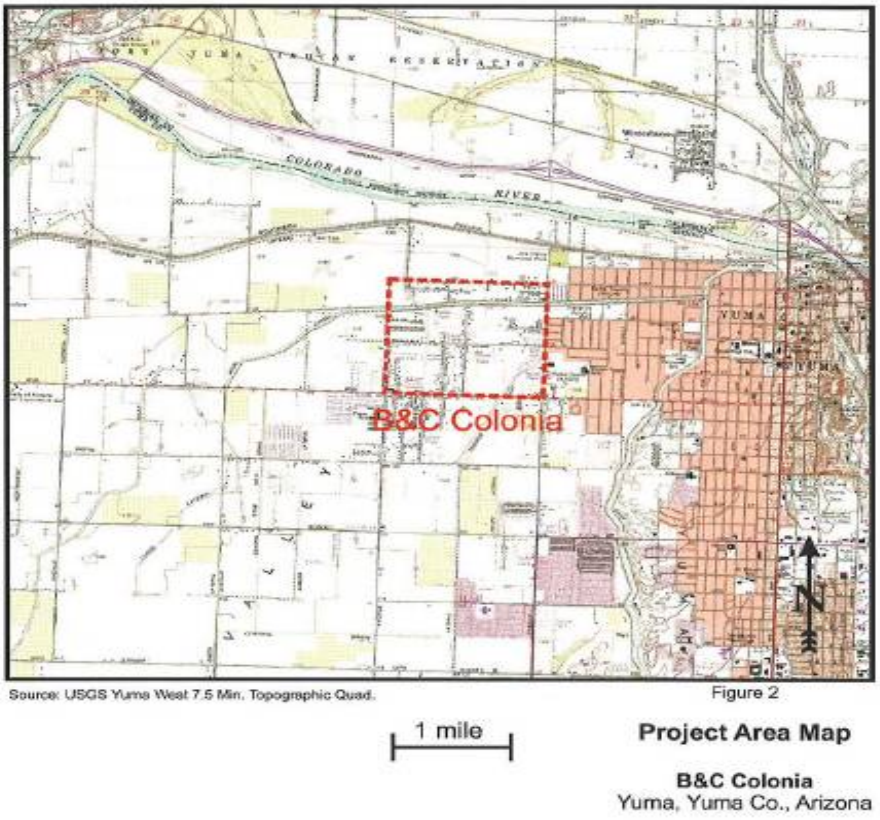


Figure 2. B & C Colonia location with respect to the City of Yuma, AZ.

1.f Project Justification

Project justification:	The County of Yuma through the Department of Development Services has assisted the B & C Colonia residents in forming an Improvement District to support the development of adequate sewer services to the designated project area. The existing coverage of the sanitary sewer collection system serves approximately 4% of the households within the project area. The remaining 96% of the residences area rely on septic tanks or cesspools for their wastewater disposal. This project will focus on the 716 households that are estimated to be without a sewer service collection system and rely on a septic system or cesspool. There is great concern with the existing septic tanks and cesspools within this densely populated area since the wastewater may already be potentially contaminating the shallow groundwater and migrating off-site, potentially affecting the quality of the water in the Colorado River. The overall goal and purpose of the project is to provide a reliable collection system and sanitary sewer services for all properties within the Avenue B & C Colonia Improvement District. The implementation of the proposed project will provide access to appropriate wastewater collection services to approximately 6,149 residents (100% of residents in the projects' area) and reduce untreated and/or inadequately treated wastewater discharges, estimated to be 200,000 gpd (calculated based on an average wastewater disposal assumption of 280 gpd per household), from the use of cesspools and sub standard onsite septic systems serving existing households in the project area. This action will reduce human contact with contaminated water as well as with vectors of waterborne diseases such as pests and other organisms. By eliminating the use of septic tanks or cesspools, the proposed projects will contribute to reduce the potential for groundwater and surface water contamination resulting from the deficiencies in the treatment of wastewater.
Urgency of the project or consequences of no action:	The lack of sewer collection service endangers the health of residents in the projects' area, since they might be exposed to untreated wastewater due to overflows, and tanks or cesspool failure, and thus are at risk of acquiring associated diseases due to having contact with wastewater. The inappropriate disposal and treatment of wastewater in the projects area may result in wastewater migrating off-site to the shallow groundwater contributing to aquifer and water supply contamination, and potentially affecting the quality of the water in the Colorado River.

Prioritization Process category: Category 1

Pending Issues:

None

Criterion Summary:

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

2. Human Health and Environment

2.a Compliance with Applicable Environmental Laws and Regulations.

Environmental and Public Health needs addressed by the proposed project:

- Suitable wastewater collection and treatment. Residents in the project areas currently lack wastewater collection service and rely upon inadequate on-site septic systems, septic tanks and cesspools to dispose of the wastewater.

- Reduce the risk for communicable waterborne diseases caused by potential contact with the surface pooling of untreated wastewater accumulated as a result of overflows and backups in the project area.

- Reduce the potential of surface and groundwater contamination due to infiltration to the high water table by untreated or inadequately treated wastewater. The City of Yuma provides drinking water to City and County residents originating from surface water in the Colorado River. The B&C Colonia is located within a mile of the Colorado River. Leaking cesspools and overloaded septic systems have the potential to contaminate surface water and ground water with human pathogens, creating a health risk for users of these important water resources.

The project meets the following applicable environmental laws and regulations:

- Federal Water Pollution Control Act –National edict established to regulate the pollution of water bodies and wastewater discharges.
- Clean Water Act - National law that determines the minimum level of treatment for municipal wastewater discharges.
- National Pollutant Discharge Elimination System Permit – Permit issue to discharger, which establishes effluent standards for the maximum contaminant concentrations allowable for a specific wastewater discharge.
- National Environmental Policy Act – National edict that ensures that all environmental factors are given the same consideration as all other factor in decision-making by federal agencies.
- Resource Conservation and Recovery Act – Official Federal Regulation that establishes the general framework for controlling the management of nonhazardous solid waste. Municipal sludge from Wastewater Treatment Plants is considered nonhazardous waste once stabilized.

- Aquifer Water Quality Standards - Official ADEQ Standard which establishes the maximum permissible levels of contaminants for wastewater discharges into bodies of water in Arizona.

2.b Human Health and Environmental Impacts.

Human Health Impacts

Direct and indirect benefits:

- The construction of the new wastewater collection systems in the B & C Colonia will reduce health risks associated with inadequate wastewater collection and lack of wastewater treatment.
- The project will lessen the likelihood of human contact with improperly disposed and treated wastewater, and as a result, avoid the transmission of waterborne diseases.

Health statistics:

Waterborne diseases are caused by pathogenic microorganisms that are directly transmitted as a result of inadequate wastewater disposal or water supply procedures. Discharges of raw sewage in the community, either from failing septic systems or open cesspools, are a current health concern in the B&C Colonia, as bacterial, viral and parasitic infections in human populations may occur. Untreated wastewater has the potential to support a variety of microscopic and submicroscopic organism that can cause infectious disease, including E. Coli, Giardia, cholera, hepatitis A, Cryptosporidium, and helminth eggs. An individual may become ill after direct contact with improperly disposed wastewater; 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.

Supporting figures:

Waterborne diseases may be caused by protozoan, viruses, bacteria, and intestinal parasites. Projects that improve wastewater collection and treatment services, such as the B & C Colonia Wastewater Collection System, contribute to improve the communities' public health. The following figure shows waterborne disease statistics for the County of Yuma:

No. of Cases				
Disease	**2005**	**2006**	**2007**	**2008**
Amebiasis	0	0	0	0
Campylobacteriosis	10	22	17	27
Cryptosporidiosis	0	1	0	0
Giardiasis	2	3	2	3
Shigellosis	14	17	15	18

Table 2.1 – Waterborne Disease Statistics for Yuma County, AZ.
Source: Arizona Department of Health Services, Reported Cases of Notifiable Diseases by County.

Environmental Impacts

Direct and indirect benefits:

- The construction of the new wastewater collection system in the B & C Colonia will lessen environmental hazards associated with inadequate wastewater collection and treatment.
- The project will reduce the potential of groundwater and surface water contamination.
- The project will diminish potential soil contamination due to surface pooling of untreated wastewater.
- The proposed project will collect and treat wastewater generated in the project area in compliance with existing federal and state laws and regulations.

Environmental impacts:

The construction of this project will reduce potential wastewater open air discharges due to overflows and backups, which may negatively impact ground and surface water bodies, human health and the general environment. Considering that the wastewater produced in the project area will be collected and treated at the Figueroa Avenue Water Pollution Control Facility (WPCF), this will prevent contamination of the groundwater and surface waters, including the Colorado River, and safeguard the area's water supply.

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

- Air resources might be impacted by emissions of

	carbon monoxide and nitrous oxide emissions from construction machinery and re-routed traffic, as well as idled emissions. Also increased carbon monoxide, hydrocarbons, nitrous oxide and fugitive dust from the additional traffic due to the minor increase in population. - Surface water resources could be impacted by construction storm water runoff. - Ground water resources will be positively impact by reducing the potential conveyance of pollution to the high water table. - Noise levels might be elevated during construction activities. This impact is short in duration and concentrated to the work area. No significant long term impact is expected.
Mitigation measures:	Some of the mitigation measures consist of: - Application of non-potable water to reduce fugitive dust emissions - Best Management Practices to control storm water spillage - Provide a 20 feet physical buffer from of any canal structure, if previously unidentified cultural resources are discovered, all work will be stop immediately and a State Historic Preservation Officer will be notified. - All work related to excavation would be stop if previously unidentified or suspect hazardous material is encountered. ADEQ will be contacted to investigate and implement proper actions. - Removal of all empty containers of hazardous chemicals such as sealers paints and oil lubricants from site and proper disposal. - Construction 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. - Efficient traffic control and placement of warning signs to prevent potentially hazardous situations.
Impacts:	Significant direct or indirect adverse impacts are not anticipated to the natural, historical and anthropological resources within and around the project area. Additionally there are no anticipated adverse impacts to soil or land use due to the project

	area already being heavily disturbed, and to vegetation communities since human use has eliminated the natural vegetation. Other minor environmental impacts are anticipated due to project implementation and operations, but no significant negative long terms effects are expected. Provided that the construction tasks are implemented in accordance with the approved Storm Water Pollution Prevention Plan (SWPPP) requirements, and considering the mitigation measures established by the plan and the use of construction best management practices, long term environmental consequences are not estimated from the different building phases during the construction of the project. The environmental impacts resulting from the implementation of the project will be positive overall, given that the project will increase wastewater collection coverage, reduce water resource contamination and improve the quality of life of area residents by curtailing potential health risks.
Transboundary Impacts	
	The project implementation will have a positive impact on the health of residents of cities such as San Luis Rio Colorado, Sonora and Mexicali, Baja California as well as the surrounding region, including all areas impacted by the waters of the Colorado River, since these actions will reduce the risk of waterborne diseases caused by inappropriate wastewater management. The implementation of the project will reduce the potential for contamination of this shared water source. According to the environmental assessment significant negative transboundary impacts are not expected due to the implementation or operation of the project.
Formal Environmental Clearance	
Environmental Clearance:	Pursuant to the U.S. National Environmental Policy Act (NEPA), an environmental assessment was developed and submitted for consideration to the United States Environmental Protection Agency (EPA). The assessment follows NEPA and EPA regulations Title 40 Code of Federal Regulations (CFR) Part 6 for environmental impacts in the U.S. from projects located in the U.S. or Mexico (EPA1997a). It was prepared using the Council of Environmental Quality (CEQ) regulations as guidance. A 30-day public review started on September 21, 2006 to receive comments related to the environmental assessment and a Finding of No Significant Impact (FNSI) ruling was established. On October 27, 2006 the EPA issued the final FNSI establishing that the projects will not result in significant environmental impacts that may affect the U.S. border area. Additionally, according to the provisions of the Arizona

	Department of Environmental Quality regarding the environmental impacts of the project due to its operation, t the project must comply with the requirements stated in the City of Yuma's ADEQ 408 Plan.

Pending Issues

None

Criterion Summary:

The project complies with BECC's Human Health and Environmental criteria.

3. Technical Feasibility

3.a Technical Aspects

The projects consist of the construction of the wastewater collection system for the B & C Colonia located in Yuma County. The project area covers close to 512 acres and includes approximately 782 properties varying in size from hundreds of square feet to several acres, with a vast majority of first time users; the properties occupy an area of approximately 361 acres. The project area sewage flows will be conveyed to the Figueroa Water Pollution Control Facility (WPCF) for treatment using the Avenue C Interceptor.

Project Development Requirements

Design criteria:

The project's final design was developed applying the wastewater collection technical requirements, standards, and specifications as established by EPA, ADEQ and the City of Yuma. The design of sewage system flows was based on the population density and land use plan as specified in the Section 208 Wastewater Facilities Plan Update (WFPU) for the City of Yuma. The project meets the minimum requirements of the Arizona Administrative Code—Department of Environmental Quality (ADEQ)—Water Pollution Control Title 18, Ch. 9, Part E (Appendix I). The sanitary sewer system was designed to meet the requirements for the County of Yuma Design and Construction Standards. The Final designs were reviewed by the City and County of Yuma, USDA, BECC and NADB, and endorsed by EPA and ADEQ. The following table lists the general wastewater system minimum design criteria as established by the Arizona Department of Environmental Quality:

Condition	Criteria
Minimum Pipe Flow Velocity	2 feet per second
Maximum Pipe Flow Velocity	10 feet per second
Minimum Pipe Diameter	6 inch
Minimum Slope	0.0033 feet per feet
Manning Coefficient	0.013
Force Main Flow Velocity	3.0-7.0 fps
Manhole Diameter/Invert Depth	4 feet/10 feet
Manhole Spacing Distance	500 feet
Lift Station Minimum Pump Size	7.5 HP
Lift Station Minimum Wet Well Size	96 inch diameter
Lift Station Pumps	2 pump minimum

The wastewater collection system in the project consists mainly of the installation of sewer lines, manholes, collectors and one lift station that will discharge by gravity to an existing interceptor that will convey the wastewater flows generated in the area at full build out conditions (approximately 0.80 MGD) to the Figueroa Wastewater Pollution Control Facility (WPCF), which has sufficient treatment capacity. The table below details the projects components and the estimated cost of the improvements:

B & C Wastewater Collection System Cost Estimate

Component	Quantity	Unit	Unit Cost (Dollars)	Total Cost (Dollars)
6" Force Main Pipe	2,189	lf	65	142,285
8" Sewer Pipe & Fittings	35,391	lf	90	3,185,190
12" Sewer Pipe & Fittings	5,732	lf	120	687,840
16" Sewer Pipe & Fittings	2,582	lf	160	413,120
Standard 4' Manholes 10' Depth	102	ea	7,500	765,000
Standard 5' Manholes 10'-15' Depth	43	ea	10,000	430,000
Lift Station Const. & Controls	1	ea	206,250	206,250
4" Sewer Service Connections	601	ea	4,000	2,404,000
Septic Tank Abandonment	645	ea	2,000	1,290,000
Connection Fees	601	ea	11,650	7,000,000
Incidentals & Supplementary Tasks (Includes Assessment Administration, Licenses, Permits, ROW Acquisition, Contingency and Interest)	1	ea	n/a	5,484,763
			Total	**$ 22,008,448**

The Figueroa WPCF is located in the northwest part of the City of Yuma on Figueroa Avenue near the Colorado River, approximately 0.5 miles from the B & C Colonia. The plant treats wastewater by a conventional activated sludge treatment process, which removes suspended solids, organic matter and carbonaceous biological oxygen demand. The treatment is classified as secondary due to extended aeration and activated sludge digester, oxidation ditch system treatment, chlorination, UV light disinfection and filtration before discharge to the Colorado River through a land outfall. The solids that are removed as thickened primary and waste activated sludge are anaerobically digested (stabilized). The Figueroa WPCF has a design capacity to treat up to 12 MGD. Currently the WPCF is

treating and average flow of 9.6 MGD, and has sufficient treatment capacity to accommodate the additional flows, 0.80 MGD, resulting from the project area at full build out. It is estimated that the existing households will disposed an estimated 200,000 gpd (calculated based on an average wastewater disposal assumption of 280 gpd per household) resulting from the use of cesspools and sub standard onsite septic systems. The Figueroa WCPF complies with the National Pollution Elimination Permit (NPDES) No. AZ00020443, which was issued on July 1999. Additionally the Figueroa Avenue WPCF complies with Aquifer Protection Permit No. 100799 by meeting ADEQ's Aquifer Water Quality Standards. The sludge generated in the treatment plant is stabilized and dispose by land application, according to the provisions of federal Regulation 40 CFR 503 and all applicable state and local requirements, by a private contractor. The digested sludge is hauled by tanker truck and applied to nearby agricultural lands, which benefit from nutrients contained in the sludge.

In addition the project includes the abandonment of septic systems once a connection to City sewer system is made. Abandonment procedures must be performed and a "statement of septic tank abandonment" form must be filed with the Yuma Department of Development Services when the connection to the system is made.

Additionally a Value Engineering (VE) Analysis of the project design was performed in order to verify the design decisions and technical approach, as well as recommend the implementation of sustainable practices to the design and construction. Moreover the analysis reviewed the project cost, including the long term operation and maintenance costs and the project construction funding limitations. The recommendations to the design are listed in the Final VE Report.

During the development of the final design the BECC's Green Building Design Guidelines were applied resulting in several green building strategies that have been incorporated into the project construction specifications. The technical specifications include recommendations regarding the implementation of green building practices as part of the construction.

Appropriate Technology

Assessment of Alternatives: Several alternatives were identified and evaluated prior to deciding on the specific system arrangement. The alternatives were evaluated based on the following parameters:

- Construction Cost
- O & M Cost

- Material and Equipment Reliability
- Technology and Sustainable practices
- Environmental Impacts

In order to analyze the alternatives, the B & C Colonia was divided into several collection zones or basins. The initial analysis considered four main alternatives plus the no action alternative (Hazen and Sawyer 2003). The following are the alternatives:

- Gravity collection system connecting to existing interceptors
- Gravity and lift stations collection system connecting to existing interceptors
- Gravity and lift stations collection system connecting to a new interceptor
- Septic Tank Replacement
- No action

Due to the uniformity of the terrain elevation, high water table, current land uses, and in order to minimize the project cost, an alternative based on gravity collection with minimal lift station requirements, and conveyance of the waste flows using the existing interceptor was selected for further development.

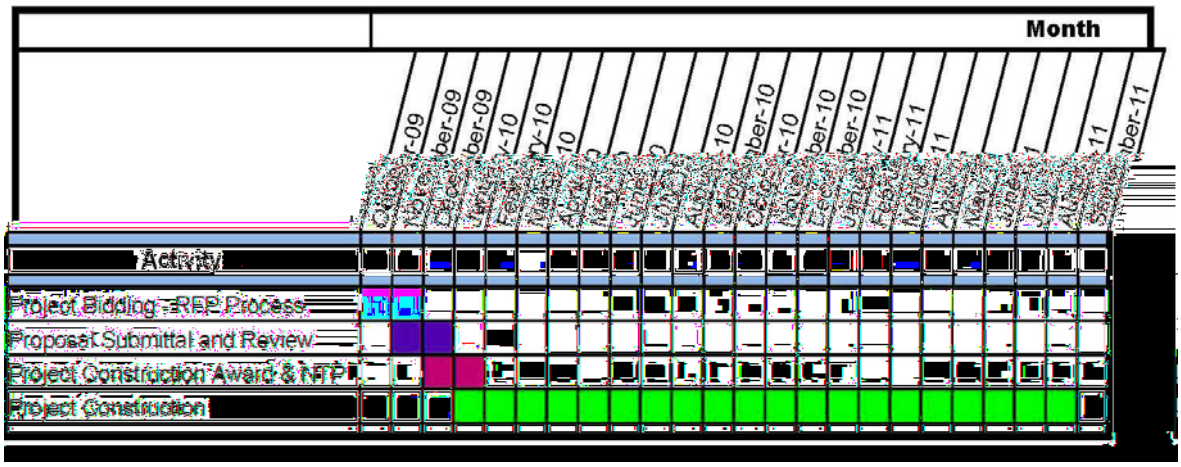
A detail cost estimate, an analysis of right of way requirements and permit requirement evaluation were developed to further support the upgrading of the selected alternative. These additional tasks produced an alternative with revised sewer routes that involved the most efficient pipe slopes, least amount of pipe length, fewer right of way purchases, and minimum need of lift stations as well as minimal capacity requirement. Upon consultation with the City of Yuma and based on the availability of interceptor capacity, the alternative was fine-tuned applying the design criteria previously mentioned and was selected to proceed for final design.

Property and Right-of-Way Requirements

Requirements:

The collection system layout was designed to use existing right of ways and county property when allowable, and based on the established urban land use plan. The pipe route and lift station location was chosen based on the potential to minimize the acquisition of additional right of way. As a result several easements were identified and agreements for purchase have been signed.

Project Tasks and Timelines



The project will be bid out in November 2009 and construction initiated no later than February 2010. The project construction completion is expected by August 2011.

3.b Management and Operations

Project Management

Resources:

Construction management of the wastewater collection system will be under the supervision of the B & C Colonia Improvement District Engineer. The operation of the wastewater collection system and treatment of the sewer flows will be the responsibility of the City of Yuma Utilities Department, which holds the required resources, experience and staff for this purpose.

Operation and Maintenance

Organization:

The City of Yuma Utilities Department is comprised of three sections: Water Transmission and Distribution, Wastewater Collection and Customer Services Sections. The Utilities Department serves approximately 350,000 water hook-ups and wastewater connections in the City and County of Yuma metropolitan area. The Wastewater Collection Section is structured by different departments, including: Wastewater Treatment, Operation, Maintenance, Pretreatment, Construction, and Laboratory.

Pretreatment:

The City of Yuma enforces a federally approved pretreatment program under the requirements of the NPDES National Pretreatment Program in order to control commercial and industrial discharges in coordination with the Arizona Department of Environmental Quality. The program issues permits and enforces compliance in order to meet environmental

	regulations established by EPA and ADEQ. Additionally the city has a Cross Connection Control Program to address actual or potential source of contamination of the drinking water supply due to leaks and infiltration from contaminated sources.
Operation plan:	The Utilities 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.
Permits, licenses, and other regulatory requirements:	The project operator, City of Yuma, has been issued the following permits for the operation of the system and treatment of the flows: - Surface Discharge Permit (NPDES/ADEQ) - Aquifer Protection Permit (APP/ADEQ) - 4.01 General Permit (ADEQ) - Sludge Disposal Permit (ADEQ)
Reviewing agencies:	- ADEQ, BECC, COY, County of Yuma, EPA, NADB, USDA.

Pending Issues:

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: Yuma County Improvement District #07-09 projections.

Summary of Financial Analysis: The District and residents through the assessment fees have the capacity to service the debt.

Project Total Cost, Financial Structure and Other Capital Investment Plans

Concept: The following financial structure was proposed for the project: Construction of the Wastewater Collection System for the B & C Colonia in Yuma County, Arizona.

Total Cost: $22,008,448 USD

Financial Structure:

Source	Type	Amount (USD$)	%
Rural Development*	Grant	$16,308,448	74.10%
Rural Development	Loan	2,000,000	9.09
WIFA**	Loan	1,450,000	6.59
NADB-BEIF	Grant	2,250,000	10.22
Total:		**$22,008,448**	**100.00%**

*United States Department of Agriculture Rural Development.
**Water Infrastructure Finance Authority of Arizona.

Dedicated Revenue Source

Revenue Source: The District through the assessment fee structure has the capacity to service the debt.

4.b Legal Considerations

Project Administration: The project will be managed by the Yuma County Improvement District #07-09, who has adequate staff to construct and, through an intergovernmental agreement with the City of Yuma, Arizona, will also have adequate staff to operate and maintain the project.

Financing Status: Loan and Grant contracts to be signed once project is certified.

Pending Issues:

Intergovernmental Agreement regarding system connection with City of Yuma.

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 for the B & C Colonia Improvement District Wastewater Collection System Construction Project was officially established on March 12, 2008 at a meeting held in the Yuma County Department of Development Services.

Local Steering Committee Members: At this meeting the Officials for the Steering Committee were selected. The B & C Colonia Improvement District Steering Committee Executive Board consists of the following persons:

President:	Gayle Castricone
Vice President:	Toni Corea
Secretary:	Nancy Ngai
Alternates:	Arlinda Gilmore
	Bonnie Foster
	Candelina Escamilla
	Dolores Duran

Date of approval of Public Participation Plan: A Comprehensive Public Participation Plan was developed by the Local Steering Committee and approved by the BECC on May 7, 2008. The Plan comprises the procedure and guidelines for informing the general public of the anticipated benefits and consequences of the implementation of the project.

Public Access to Project Information

Public access to project information: The projects' environmental, technical and financial information was made accessible to the public for review. The Local Steering Committee, with assistance from the Yuma County Development Services personnel, made available the following documents at their offices and at the public library to inform the community about the project's details:

- Feasibility Study
- Environmental Assessment
- Preliminary Engineering Report
- Design Concept Report
- Final Design Notebook
- Construction Specifications
- Final Design

Additional outreach activities:	- Distribution of a fact sheet (project summary) to District members and neighboring areas. - Newspaper advertisement regarding availability of project information, planning and design documents. - Implementation of project surveys to record the Public/District members concerns and/or support of the project.
First Public Meeting:	The notice was published in regional and local newspapers to advertise the date and location of the proposed public meeting. Additionally the meeting notice was placed on the County Government Web page. The purpose of the first meeting was to inform the district members and general public about the technical and environmental aspects of the project. The meeting was held at the County of Yuma Development Services offices with the presence of the County Board of Supervisors, the local Steering Committee, City of Yuma Representatives, USDA, ADEQ, WIFA, BECC, NADB and EPA representatives. The meeting was attended by more than 150 residents of which 100 responded to an opinion survey. Eighty five percent of those surveyed said they were able to fully understand the project and explicitly expressed their support.
Second Public Meeting:	The public notice for the second meeting was published 10 days prior to the meeting, set for September 24th, 2009. Additionally the public notice was publicized on the County Government Web page. During the meeting the community was informed of the projects' financial structure, loan components, assessment procedures and estimated assessment fees. The meeting was held at the County of Yuma Development Services offices with the presence of the County Board of Supervisors, the local Steering Committee, USDA, Improvement District Bond Counsel, EPA, ADEQ, WIFA, NADB and BECC representatives. The meeting was attended by more than 125 residents. Following presentations by the agencies a question and answer session was carried out for the district members and general public. In general the public expressed support for the project and felt that the grant to loan ratio was favorable.
Final Public Participation Report	
Final report:	The Local Steering Committee and the sponsor have prepared a Final Public Participation Report to demonstrate that the objectives of the public participation plan were fulfilled as well as the BECC's certification criterion requirements.
Post-Certification Public Participation Activities	
Post-Certification Activities:	The project sponsor, in coordination with the Local Steering Committee, has included additional public participation activities that will be carried out after the certification of the project as part of the approval tasks for the district's property assessments and

	also during the construction of the project, as means to support the project's implementation and long-term feasibility.

Pending Issues:

None

Criterion Summary:

The project complies with BECC's Public Participation Criterion.

6. Sustainable Development

6.a Human and Institutional Capacity Building

Project operation and maintenance:

The City of Yuma Utilities Department will be the agency responsible for operating and maintaining the system as it relates to the:

- Wastewater Collection System and
- Treatment of Sewer Flows

The Utilities Department has the institutional capacity and human resources to implement, operate and maintain the following infrastructure:

- Wastewater Collection System
- Wastewater Conveyance
- Pretreatment Program Enforcement

Human and institutional capacity building:

Actions within the scope of the projects that contribute to institutional and human capacity building for the City of Yuma Utilities Department include:

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

Additional plans or programs:

The City of Yuma has implemented water conservation measurements that include an educational campaign known as "Water – Use it Wisely". The programs are a partnership with several cities, and agency partners such as the Arizona Municipal Water Users Association, Global Water Resources, Arizona-American Water Company, Central Arizona Project, and Bureau of Reclamation. The program was established in 1999 and aims to promote water conservation ethics among Arizona's rapidly growing population with an efficient use of water resources by promoting an ongoing water conservation consciousness among the community. Additionally the City's utility is developing a water reclamation and reuse program. The program will include the usage of treated wastewater for non-drinking purposes such as irrigation,

landscaping purposes, parks and unpaved streets watering, building and infrastructure uses.

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

Local and Regional Plans addressed by the project:

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

- City of Yuma Master Plan for Improvements to Water, Wastewater and Collection Services
- County of Yuma Development Plan
- The projects adhere to the U.S.-Mexico Border 2012 Environmental Program by meeting Goal 1 (Reducing water contamination) and Objectives 1 (promoting an increase in the number of household connections to wastewater collection and treatment services). 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 meets applicable federal regulations pursuant to wastewater collection, treatment, and final disposal.

Impacts to neighboring communities in the U.S.:

The project will prevent untreated wastewater from contaminating the aquifer and avoid underground infiltration of untreated sewage to the Colorado River. The implementation of the project will eliminate the risks inherent to inappropriate wastewater management by preserving the quality of the region's drinking water resources and protecting public health.

6.c Natural Resource Conservation

- The final design includes the implementation of green building practices as part of the technical construction specifications.
- The projects contribute to reduce environmental deterioration by expanding existing wastewater collection lines and providing the necessary means to connect unserved households to the City's sewer collection service. Wastewater will be collected and conveyed to the existing Figueroa Avenue WPCF to improve its quality, so as to reduce aquifer contamination and human health hazards resulting from the discharge of raw wastewater to soils, streams or agricultural drains.

6.d Community Development

The completion of the project is fundamental for the socioeconomic development of the community. The construction of the project will result in the appropriate disposal of wastewater, which in turn will reduce the conditions that favor the proliferation of water-borne and arboviral diseases and as result improve the quality of life for local residents. Additionally the access to wastewater collection service will promote appropriate development and growth in the community. This will result in an increase on property and assessment values and will promote the development of other infrastructure such as street paving.

Pending Issues:

None

Criterion Summary:

The project complies with the Sustainable Development Criterion.

AVAILABLE DOCUMENTS:

- Engineering Design of Sewer System for the B&C Colonia – Task 1 Feasibility Analysis and Cost Estimates. Hazen & Sawyer, January 2003.
- Environmental Assessment – Provision of a Wastewater Collection System for the B&C Colonia in Yuma County, Arizona. Stantec Consulting Inc., September 2006.
- Soils Investigation for the B&C Colonia Sewer Collection System Yuma County, Arizona. NEI Geotechnical, June 2008.
- Identification of Land Requirements for the proposed Sewer System for the Avenue B&C Colonia in the County of Yuma, Arizona. Huitt-Zollars Inc., August 2008.
- Preliminary Engineering Report for the Avenue B&C Colonia in the County of Yuma, Arizona. Huitt-Zollars Inc., September 2008.
- Design Concept Report – Sewer Collection System for the B&C Colonia in Yuma County, Arizona. Stantec Consulting Inc., February 2009.
- B&C Colonia Wastewater Collection Improvements Value Engineering Report. CDM Inc. May 2009.
- Avenue B&C Colonia Sewer Collection System Improvements Final Design Notebook. Stantec Consulting Inc., July 2009.
- Avenue B&C Colonia Wastewater Collection System Project Manual. Stantec Consulting Inc., September 2009.
- Final Design Plans for the B&C Colonia Wastewater Collection System. Stantec Consulting Inc., September 2009.