CERTIFICATION AND FINANCING PROPOSAL

WATER SUPPLY AND DISTRIBUTION SYSTEM IMPROVEMENTS IN WHETSTONE, ARIZONA

Revised: June 11, 2018

CONTENTS

EXECUTIVE SUMMARY

WATER SUPPLY AND DISTRIBUTION SYSTEM IMPROVEMENTS IN WHETSTONE, ARIZONA

The proposed project consists of improvements to the drinking water system, including the construction of a new well (Well No. 3), installation of a redundant pipeline interconnection across Highway 90, and electrical and minor equipment upgrades at Wells No. 1 and 2 within the Whetstone Water Improvement District (WWID), serving a portion of Whetstone, Arizona (the "Project").

The purpose of the project is to increase access to sustainable drinking water service by assuring adequate water supply, service reliability and system redundancy, as well as reduce incidents of low pressure and/or service interruption, which will help reduce health risks associated with waterborne diseases.

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

- Improve access to a safe and reliable drinking water service to 459 existing residential service connections.
- Assure sufficient water supply (quantity).
- Eliminate service interruptions, as well as conditions of low pressure and stagnant water.

940 residents of Whetstone, AZ.[1]

Whetstone Water Improvement District (WWID).

US$706,000.

US$500,000 from the Community Assistance Program (CAP).

[1] Based on the number of residential connections (459) multiplied by the number persons (2.05) per household according to the 2010 U.S. Census.

Construction*	$ 636,000	90.1
Well-site property acquisition	70,000	9.9

WWID	$ 206,000	26.2
NADB-CAP grant	500,000	70.8

* Estimated costs include construction and 10% for contingencies.

Final design	Completed in July 2015
Approval to Construct from ADEQ*	Obtained in August 2015; updated in November 2017
Procurement	Anticipated in 3rd quarter of 2018
Construction period	Estimated period of 9 months
Well drilling permit – ADWR**	Notice of Intent filed within 60 days of drilling

* Arizona Department of Environmental Quality (ADEQ).
** Arizona Department of Water Resources (ADWR).

CERTIFICATION AND FINANCING PROPOSAL

WATER SUPPLY AND DISTRIBUTION SYSTEM IMPROVEMENTS IN WHETSTONE, ARIZONA

The purpose of the project is to increase access to sustainable drinking water service for 459 existing residential connections by increasing water supply, service reliability and system redundancy, as well as reducing incidents of low pressure and service interruptions, which will help reduce health risks associated with waterborne diseases.

The Project falls within the eligible category of drinking water.

The proposed project consists of the construction of a new well (Well No. 3) and the installation of a redundant pipeline interconnection across Highway 90, as well as electrical and minor equipment upgrades at Wells No. 1 and 2 within the Whetstone Water Improvement District (WWID), which serves a portion of Whetstone, Arizona (the "Project").

The Project will be implemented in the unincorporated community of Whetstone, located in Cochise County in the southeastern part of Arizona. It is approximately 48 miles southeast of Tucson, 44 miles northeast of Nogales and approximately 25 miles from the U.S.-Mexico border at the geographical coordinates: 31°42'14"N and 110°20'53"W. The Project is in the border region, which in the U.S. is defined as the area within 62 miles (100 km) of the U.S.-Mexico international border. Figure 1 shows the approximate location of the Project.

The public-sector Project sponsor is Whetstone Water Improvement District (WWID or the "Sponsor"), which was assigned Identification No. 04-02038 by the Arizona Department of Environmental Quality (ADEQ). WWID was formed as a Domestic Water Improvement District (DWID) in 1988. Pursuant to Arizona Revised Statutes (A.R.S.) 11-702, 11-706, and 11-709, WWID has the legal authority to operate and maintain water treatment, storage and distribution infrastructure. WWID is governed by a five-member elected board and has two employees that oversee the day to day operation of the system.

As an unincorporated community, Whetstone is categorized as a census-designated place (CDP) by the U.S. Census Bureau for statistical purposes. According to the 2010 Census, the Whetstone CDP had a population of 2,617. The WWID water system provides service to an estimated 940 residents within the community of Whetstone.[2]

[2] Based on the number of connections (459) served multiplied by the number persons (2.05) per household according to the 2010 U.S. Census.

The general population commutes to work in nearby Huachuca City, Sierra Vista or Benson. For the 2010-2014 period, the poverty level in Cochise County was estimated at 25%, higher than the state average of 18.2%. The median household income (MHI) for the county was estimated at US$30,268, which is 39.4% less than the state MHI of US$49,928. However, Cochise County officials estimate that the MHI for residents within the WWID service area is US$18,250, significantly lower than the state MHI.

The following table summarizes the status of public services and infrastructure in WWID service area.

[1]	
Coverage:	92% within WWID limits
Water supply source:	2 wells
Number of hookups:	462 (459 - residential; 3 - commercial)
[2]	
Coverage:	100%, through individual on-site disposal systems
Number of residential connections:	Not applicable
Solid waste collection:	100%, through a private company
Final disposal:	Cochise County Landfill
Coverage:	90% (estimated)

[1] Source: WWID, 2018.
[2] Source: Cochise County, 2018. Individual on-site wastewater disposal systems are in full-compliance.
[3] Source: WWID, 2018.
[4] Source: WWID, 2018.

Local Drinking Water System Profile

WWID, located along Arizona State Route (SR) 90, currently serves about 462 active customers. The original system infrastructure was installed more than 30 years ago. WWID replaces aging distribution lines and in the process has created a network of varying line sizes along the primary streets in the distribution area. Several small-diameter pipelines, built with materials that are no longer approved for drinking water system, still exist and are typically located at dead-end connections. Additionally, the water system network has insufficient waterline looping, specifically along the eastern portions of the distribution system. Bottlenecks caused by small lines and a lack of system looping create conditions that allow water to become stagnant, leading to potential bacteria growth or high chlorine residuals, which may result in water quality dangerous for consumption.

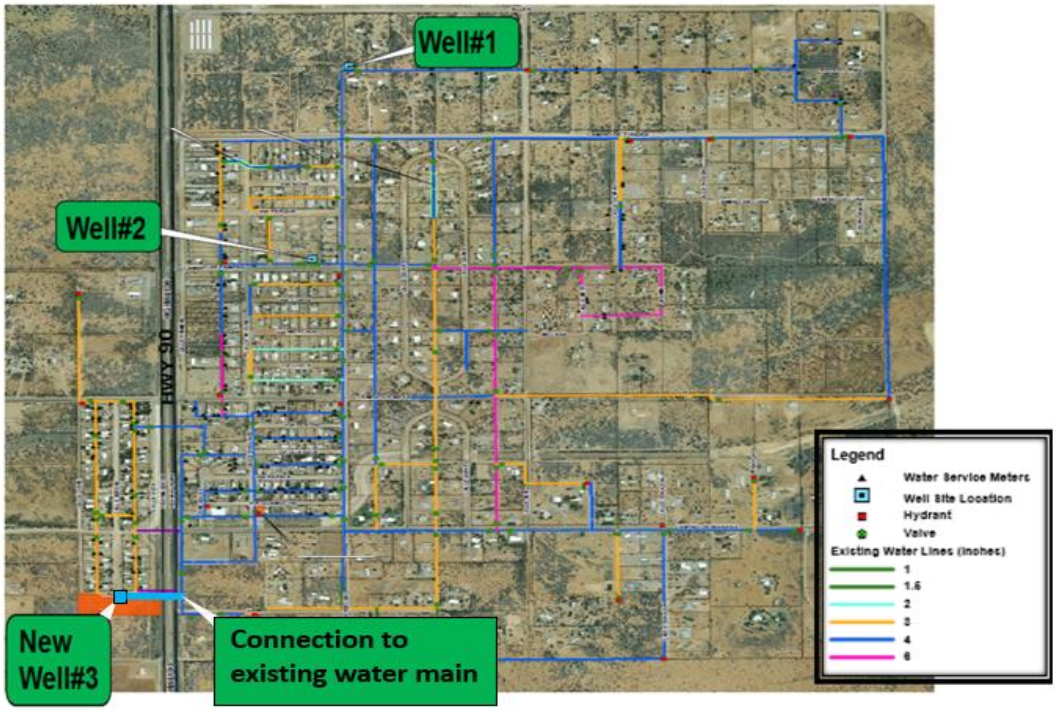
Other system facilities, including wells, ground storage tanks and boosters, do not have sufficient capacity to support the water system during peak demand. The utility utilizes two groundwater wells located on two different sites within the service area on the east side of SR90. Approximately 80% of the connections are located on the east side of the highway, while the others are located on the west side. There is one 4-inch waterline that currently connects the water system on the east and the west sides. A survey of water system customers on the west side of SR90 documented issues related to water pressure and water deliveries in the service area. Out of 35 residential connections surveyed, 23 households were experiencing low water pressures on a daily basis.

Through typical operation and maintenance practices, WWID will continue to replace undersized pipelines in the system and is working to complete system looping needs. The current priorities for system improvement relate primarily to addressing conditions of low pressure and insufficient system redundancy, as well as enhancing WWID's ability to supply safe and reliable water to all of its customers.

The community currently does not have access to sanitary sewer services, and residents rely upon compliant on-site systems such as septic tanks to manage their wastewater. Cochise County Health and Social Services Department has provided a letter confirming the acceptable conditions in the community for individual on-site wastewater disposal systems.

Figure 2 shows the location of WWID's water infrastructure, including existing Wells No. 1 and 2 and proposed Well No. 3.

Figure 2
LOCATION OF DRINKING WATER SYSTEM INFRASTRUCTURE



The main components of the Project are:

- Well No. 3, including drilling the new well, construction of the structure to house the well, and installation of pump equipment and chlorine disinfection;
- A 615-foot water main to connect the new well to the distribution system serving both the west and east sides of SR90; and
- Electrical upgrades at the two existing well sites.[3]

Well No. 3 will be installed on a parcel of property that borders Calle Alegre on the west side of SR90, a location which will address pressure deficiencies. The new water supply will become the primary water source for the entire system, with the Well No. 1 and No. 2 functioning as backup supply.

Well No. 3 will be connected to the existing water system with a new 615-feet water main. The 6-inch polyvinyl chloride (PVC) pipe will run north from the well and connect to an existing 3-inch water main in Calle Alegre to serve residents west of SR90, improving service to those connections by eliminating system pressure problems.

From the west-side, the 6-inch water main will then run east crossing SR90, using an Arizona Department of Transportation (ADOT) right-of-way to serve the area east of the highway. Crossing the ADOT easement will require the installation of a new 6-inch mechanically jointed ductile iron pipe (DIP) inside a 16-inch steel casing pipe installed by jack and bore method. On the east side of SR90, the 6-inch water main will connect to an existing 4-inch distribution line.

WWID has obtained the construction permit for the well and infrastructure improvements, which was issued by ADEQ on August 28, 2015. ADEQ issued an extension in October 2017, requiring construction to initiate prior to August 28, 2018.

During the final design process, multiple alternatives were considered to provide additional well capacity and increase water system reliability, while meeting local, state and federal health and safety regulations. To identify the most appropriate solution, technical alternatives were evaluated pursuant to the following factors:

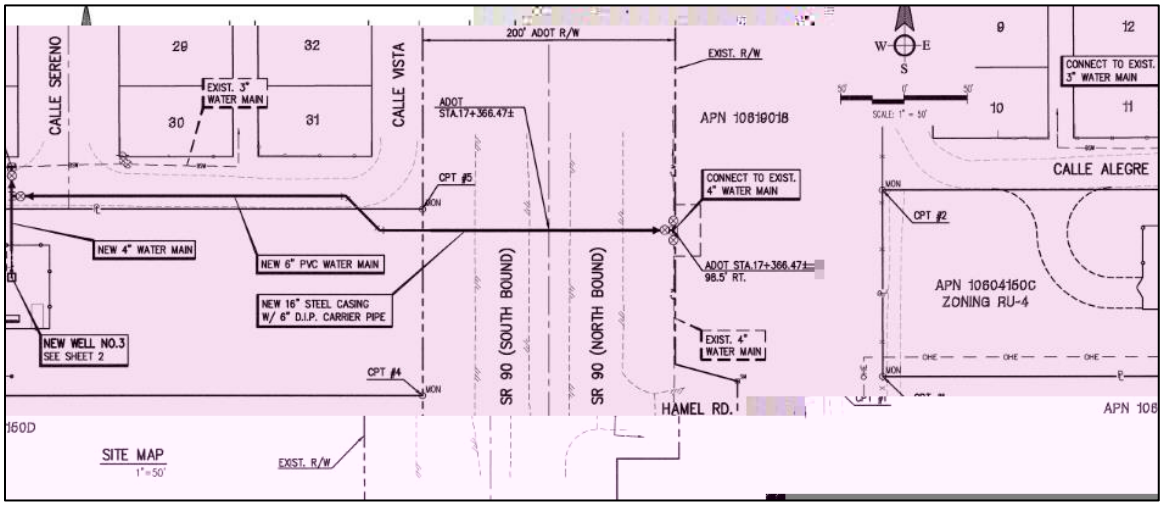
- Required connection points for the system components;
- Investment cost;
- Operation and maintenance cost; and
- Reliability of the materials and equipment.

[3] The electrical upgrades will be procured as an alternate bid item. Should the availability of funding be insufficient to cover this bid item, the upgrades will be delayed or removed from the Project scope.

Based on the results of the evaluation, WWID determined that all on-site well piping will be ductile iron American Water Works Association (AWWA) C150 Class 350 with polyethylene wrap or welded steel with 36-inches of cover. The offsite piping will be PVC AWWA C900 Class 235 (DR-18) with 60-inches of cover.

The geohydrologic report prepared for WWID provides the technical specifications for Well No 3, which is expected to achieve a minimum yield of 150 gallons per minute (gpm). The drilling specification requires a depth of about 600 feet to penetrate fully into the local basin-fill aquifer to maximize yield. The well will have a 16-inch diameter surface casing and cementing. Similar to the other system wells, groundwater quality found in the local aquifer meets enforceable Arizona Primary Drinking Water Quality Standards with chlorine disinfection as the only requirement for treatment.

Figure 3 shows the proposed Project components.



The final design of the proposed Project was completed in accordance with the minimum design criteria established by ADEQ, as outlined in the Arizona Administrative Code (ACC). The ACC requires that the Project be constructed in accordance with the following regulations:

- *Arizona state law, A.R.S. 49-104.B10*, establishing construction requirements according to ADEQ;
- *Arizona Administrative Code, Section R18-4-119*, which establishes required fittings and valves; and
- *Arizona Administrative Code, Title 18, Chapter 5, Article 5 (ACC R18-5-502,504)*, which specifies the minimum design criteria and the requirements for obtaining approval to construct.

The design drawings for both Well No. 3 and the 6-inch main include requirements that materials and workmanship be performed in accordance with ADEQ's Engineering Bulletin No. 8 developed by the Arizona Department of Health Services (ADHS), the Standard Specifications for Public Works Construction published by the Maricopa Association of Governments (MAG), AWWA standards, and NSF/ANSI Standard 61.[4]

Before the new water main is placed into service it will be pressure tested for leakage. The new well and pipeline will be disinfected by chlorination, and bacteriological sampling will be performed to verify the absence of coliform organisms. The sampling results of the new water source will be provided with the application for Approval of Construction (AOC) to ADEQ prior to service.

Management, construction and operation of the proposed Project will be the responsibility of the WWID staff, which include a general manager and assistant. Both are certified operators and provide customer service. The Project Sponsor has an operation and maintenance manual that includes the primary tasks needed to ensure proper operation of the new infrastructure.

The Sponsor estimates that operation and maintenance expenses related to the new well will be approximately US$12,800 a year, which is offset by the limited production required from Wells No. 1 and No. 2, after Project implementation. Based on WWID's budget history, revenue generation from existing customers is sufficient to support the new costs. Additionally, the Sponsor expects that the water system improvements will result in some cost savings due to less frequent maintenance requirements compared to the previous supply and distribution scheme. An adjustment in user rates is not required as a result of the Project.

WWID purchased the property for the new well site, considered as part of its contribution towards the Project cost. Right-of-way use permits have been acquired from Cochise County and ADOT for all new infrastructure installment. Construction permits from both entities will also be required at the time of Project implementation and will be obtained by the construction contractor.

It is estimated that once the Project receives the Notice to Proceed, it will take approximately 9 months to complete its construction. Table 2 provides a summary of the critical Project milestones and their respective status.

[4] NSF/ANSI Standard 61 is a set of national standards that relates to water treatment and establishes stringent requirements for the control of equipment that comes into contact with either potable water or products that support the production of potable water. It was developed by the National Sanitation Foundation (NSF), a global independent public health and environmental organization, and the American National Standards Institute (ANSI), which oversees the consensus for developing standards for manufacturing and procedures in the United States.

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i) Existing Conditions

At present, water production capacity and transmission does not comply adequately with the standards necessary to meet the service demand on the east side of the highway. As a result, these households experience low water pressures on a daily basis, creating a risk for backflow and cross-contamination problems in the distribution system. This condition along with existing bottlenecks and a lack of system looping increase risks related to potential bacteria growth or high chlorine residuals, which may result in water quality dangerous for consumption. Additionally, there is insufficient redundancy in the system, making the infrastructure and service vulnerable to interruption and poor reliability.

ii) Project Impacts

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

- Improve access to a safe and reliable drinking water service for 459 existing residential service connections;
- Assure sufficient water supply (quantity); and
- Eliminate service interruptions, as well as conditions of low pressure and stagnant water.

The no-action alternative was not considered viable, since addressing insufficient well capacity and achieving compliance with current federal, state and local regulations for adequate pressure is necessary for public health and safety. Insufficient water supply, low pressure and service interruptions pose a major public health risk since these conditions increase the vulnerability of the distribution system to water quality problems that could expose residents to waterborne diseases. Therefore, the Project is considered a high priority. As a reference for existing health statistics in the area, Table 3 shows waterborne disease incidents for Cochise County, Arizona.

Amebiasis	5	8	3	0
Campylobacteriosis	18	19	23	17
Cryptosporidiosis	0	0	0	0
Giardiasis	1	1	1	0
Shigellosis	12	10	10	7
Vibriosis	0	0	2	1

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

The Project will help prevent health problems by ensuring the reliable transmission and distribution of safe drinking water throughout the WWID service area.

iii) Transboundary Impacts

No negative transboundary impacts are anticipated.

The Project will comply with the following regulations of ADEQ:

- *Arizona Revised Statutes (A.R.S.), Title 49, Chapter 2*, water quality control; and
- *Arizona Administrative Code (A.A.C.), Title 18, Chapter 4 (ACC R18-4)*, relating to primary drinking water regulations.

i) Environmental Clearance

There are no formal environmental clearance laws applicable to the Project.

WWID obtained an Approval to Construct (ATC) from ADEQ (File No. 20150191-2). This certificate gives the City permission to improve the water system, as long as notice is given to ADEQ as required in A.R.S. Section 49-104.B.10. In accordance with the ATC issued by ADEQ, the Project must be constructed following all applicable laws, including Title 49, Chapter 2, Article 9, of the Arizona Revised Statutes and Title 18, Chapter 5, Article 5 of the A.A.C., which describes disinfection and testing requirements to be documented in the Engineer's Certificate of Completion and submitted to ADEQ. Upon review and acceptance of this information, an Approval of Construction (AOC) will be issued by the agency.

ii) Mitigation Measures

Only minor environmental impacts are anticipated during construction of the Project, provided that the tasks are implemented in accordance with best management practices. Typical mitigation measures to be practiced include:

- Application of water to reduce fugitive dust emissions;

- Vehicle tune ups to reduce emissions; and
- Placement of warning signs to prevent potentially hazardous situations.

iii) Pending Environmental Tasks and Authorizations

There are no environmental authorizations pending.

The total estimated cost of the Project is US$706,000, which includes property acquisition, construction and contingencies. The Sponsor requested a US$500,000 grant from NADB though its Community Assistance Program (CAP) to support implementation of the Project. Table 4 presents a breakdown of total Project costs, as well as the sources of funding.

Construction*	$ 636,000	90.1
Well-site property acquisition	70,000	9.9
WWID	$ 206,000	26.2
NADB-CAP grant	500,000	70.8

* Estimated costs include construction and 10% for contingencies.

The proposed Project complies with all CAP criteria. It is located within the U.S.-Mexico border region served by NADB, is being sponsored by a public-sector entity and is in an environmental sector eligible for NADB financing. Additionally, as a water project, it is considered a priority under the CAP program. As shown in the above table, the Project Sponsor has agreed to cover more than 26% of the Project costs, which is above the 10% minimum required under the program.

Completion of the final design and procurement documents was supported by a grant from the Technical Assistance Program funded jointly by NADB and the Border Environment Cooperation Commission (BECC). Additionally, all necessary pre-procurement permits and authorizations have been obtained, and the Project Sponsor is ready to initiate bidding for construction once funding has been approved.

NADB published the Draft Certification and Financing Proposal for a 14-day public comment period beginning May 25, 2018. The following Project documents were made available for public access:

- Approval to Construct Water Facilities, ADEQ File No. 20150191-2, re-issued November 1, 2017; and
- WWID, Whetstone Water, New Production Well 3 and 6-inch Water Main Plans prepared by Westland Resources, Inc., of Tucson, AZ, dated July 22, 2015.

The public comment period ended on June 8, 2018, with no comments received.

The Sponsor promoted the Project at several of its monthly board meetings, keeping the Board up-to-date on Project progress. The meetings were open to the general public, and meeting agendas were made available beforehand. The WWID Board invited NADB staff to attend a special board meeting on September 13, 2017, that was open to the general public. At this meeting, the Board reaffirmed its request for funding support and addressed concerns over institutional capacity identified because of recent staff and Board conflicts. Additionally, a media search related to the Project was conducted by NADB; however, no articles were found. No opposition to the Project has been detected.