Well Booster Station Meter Project

Coldwater Booster Station

Financial Assistance for FY 2018 (BOR-DO-18-F009)

Avondale, AZ

Applicant

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Address: 11465 W. Civic Center Drive
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Project Manager

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1.0 Technical Proposal and Evaluation Criteria

Submission Date: July 31, 2018
Applicant: City of Avondale
Applicant City, County, State: Avondale, Maricopa County, Arizona
Project Location: Coldwater and Gateway Production Facilities
Project Duration: 24 months
Estimated Project Completion Date: March 29, 2019
Funding Group: BOR-DO-18-F009

1 Executive Summary:

The goal of this project is to ensure Avondale remains in compliance with the Arizona Department of Water Resources (ADWR) Management Plan and Conservation Requirements to limit the amount of lost and unaccounted for water in our delivery system. The Third Management Plan requires large municipal providers to limit the amount of lost and unaccounted (L&U) for water to no more than 10%. The state defines L&U as the difference between the total water withdrawn, diverted or received for use within the water provider's water service area and the sum of the residential and non-residential metered deliveries to customers. In 2018 the City completed its Integrated Utility Master Plan and identified a sharp increase in L&U, also known as non-revenue water. With this increase Avondale is consistently riding the line of ADWR's 10% rule since 2012. Over the last five years the City has had an aggressive meter replacement program to ensure accurate recording of consumed water. Staff has identified the need to ensure that recording of water production is accurate as well.

The City has identified that five treatment/booster stations wells within our system have outdated propeller meters and are not connected to the City's Supervisory Control and Data Acquisition (SCADA) system. If the City is awarded with the project funds, it will provide adequate funding to convert two of the five treatment/booster stations with updated technology such as the Endress + Hauser Model 400 Series meters and to connect the site to the City's SCADA system. We are confident that this project will remedy inaccurate flow readings, rather than an actual physical loss of water. The City will move forward to convert the remaining three treatment/booster stations. The City will also present the results at the Arizona Municipal Water Users Association (AMWUA's) meetings, West Valley Water Association (WVWA), American Water Works Association (AWWA) M36 program, AZ Water Association annual conference, and any other platform the information can be shared and used by other water providers statewide who are struggling with high non-revenue or L&U water numbers.

1.2 Technical Project Description/ Project Narrative

BACKGROUND DATA: The City of Avondale (Figure 1.2) was incorporated in December 1946 and is located sixteen miles west of downtown Phoenix in Maricopa County, Arizona. Avondale currently serves all the land areas north of the Estrella Mountains. The City of Avondale has an official area of 55 square miles, 29 of which are located north of the Gila River and remaining 26 square miles are located south of Gila River in a mountainous area. Of the 29 miles, 19 square miles are available for long-term development.

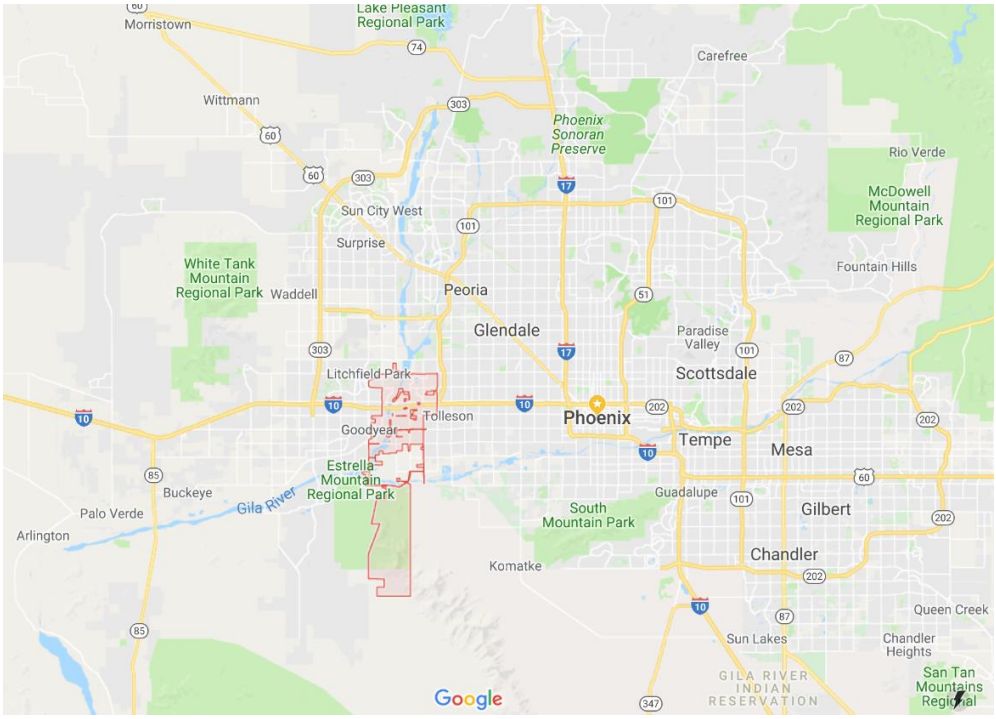

Figure 1.2 City of Avondale location, West of metropolitan Phoenix along U.S. Highway 1-10

The City of Avondale is a growing city with a diverse water portfolio that consists of Salt River Project (SRP) water, Colorado River water, and effluent recharged at the City's McDowell Underground Storage Facility (USF). Avondale has been a proven leader throughout the years embracing new technologies and exploring innovative ways to increase water efficiency. For example, 20 years ago, the City built a one of a kind wetlands project that consists of 72 acres of treatment cells designed to treat the City's Colorado River Water and SRP water to aquifer water quality standards. After wetland treatment the water is transferred via a dedicated pipeline to join the Water Reclamation Facility's effluent discharged at the McDowell USF. Once the surface water and effluent reach the McDowell USF the water percolates into Avondale's aquifer through four recharge basins. Avondale's drinking water system is linked to this aquifer through 17 active recovery wells. Sixteen of those active recovery wells are piped to five centralized treatment/booster stations.

The purpose of this project is to convert two of the five treatment/booster stations with Endress + Hauser Model 400 Series from Endress + Hauser meters replacing outdated propeller meters and connecting the meters to the City's SCADA system to allow for real-time, remote monitoring, and totalizing of flows. This project a is a critical component to Avondale staying in compliance with ADWR's Third Management Plan requiring large municipal water providers to keep L&U water under 10%. The City completed its Integrated Utility Master Plan in 2018 which highlights the City's struggle to keep L&U numbers under the required amount. Avondale's water customer billing database includes over 24,500 individual accounts and provides a record of monthly water use by location. The City's water production records were compared to the water billing records to verify the completeness of the billing database. The goal of this project is not only to reduce the

City's L&U or non-revenue water, but also to provide accurate ground water/recovered water numbers to the State and water providers such as SRP, to demonstrate responsible management of groundwater that is linked to strained surface water supplies, and to invest in modernized infrastructure and technology.

In 2016 the City of Avondale contracted with Wilson Engineers to evaluate and provide designs for upgrading the metering at the City's water production and booster station sites. The goal of the study was to identify the steps needed to ensure that the City has accurate metering data at all sites and that this data can be monitored and collected by the City's SCADA system.

The City currently has over ten different models of flowmeters installed in the system from six different manufacturers. Some of the manufacturers no longer provide local support to service the meters, as some of these existing models have been or are currently being phased out. The study recommends the City move forward in this program to upgrade and replace the flow meters and standardize on a specific manufacturer and model of flowmeter to provide for consistency with operation and maintenance requirements.

The City's water is highly mineralized, which causes excessive wear on the propellers and plugging of bearings of the propeller type meters. As this type of meter ages, the rotational speed is further compromised by the lack of bypass meters. The City intends to replace the propeller meters with the Endress + Hauser 400 Series meter that has both readouts and data logger capabilities. These meters have a major advantage over the existing propeller type meters, as they are better suited for Avondale's source water.

Based on the City's experience with meter reliability and local support from various flowmeter manufacturers and Wilson Engineers local experience, it is recommended that the City standardize on the Endress + Hauser Model 400 Series meter. These meters are the latest technology and will serve to better manage the City's water supply and provide more accurate readings for better accountability of production water.

Wilson Engineering recommended metering equipment and developed project cost estimates for each meter location. The meter improvement cost estimates include the following major items: New flowmeter (size to be confirmed during detailed design); new 110v power for flowmeter, if necessary; piping modifications for recommended meter size; piping modifications to achieve recommended straight run distances; Modbus TCP/IP to HART Analog Gateway; Modicon M340 PLC, if necessary; PLC and SCADA programming.

It is estimated that by replacing all the water system booster site flow meters the City will be able to reduce the L&U or non-revenue water to 5% of its total water supply through improved efficiency and better water management.

Meter Improvement cost estimates

Coldwater Booster / Treatment Site/ **$ 95,180**

Gateway Booster / Treatment Site	**$103,160**
Total Cost	**$198,340**

2.0 Evaluation Criteria for Demonstrating Conservation Project Technologies

100 Points Available

2.1 Evaluation Criterion A – Project Benefits

*Up to **35 points** may be awarded based upon evaluation of the benefits that are expected to result from implementing the proposed project. This criterion considers a variety of project benefits, including the significance of the anticipated water management benefits and the public benefits of the project. This criterion prioritizes projects that modernize existing infrastructure in order to address water reliability concerns, including making water available for multiple beneficial uses and resolving water related conflict in the region.*

Describe the expected benefits and outcomes of implementing the proposed project.
This project will serve as a critical component to Avondale staying in compliance with ADWR's Third Management Plan requiring large municipal water providers to keep L&U water under 10%.

In 2016 the City of Avondale contracted with Wilson Engineers to evaluate and provide designs for upgrading the metering at the City's water production and booster station sites. The goal of the study was to identify the steps needed to ensure that the City has accurate metering data at all sites and that this data can be monitored and collected by the City's SCADA system. The study recommends the City move forward in this program to upgrade and replace the flow meters and standardize on a specific manufacturer and model of flowmeter to provide for consistency with operation and maintenance requirements. These meters are the latest technology and will serve to better manage the City's water supply, provide more accurate readings for better accountability of production water.

It is estimated that by replacing all the water system booster site flow meters the City will be able to reduce the L&U or non-revenue water to 5% of its total water supply through improved efficiency and better water management. If the results of this project show increased reporting accuracy and reliability with this technology, then the City will move forward with to convert the remaining three treatment/booster stations.

Extent to which the proposed project will increase collaboration and information sharing among water managers in the region.
If successful the City plans on presenting this information at the Arizona Municipal Water Users Association (AMWUA's) meetings, West Valley Water Association (WVWA), American Water Works Association (AWWA) M36 program, AZ Water Association annual conference, and any other platform the information can be shared and used by other water providers statewide who are struggling with high non-revenue or L&U water numbers.

2.2 Evaluation Criterion B – Planning Efforts Supporting the Project

Up to 35 points may be awarded based on the extent to which the proposed on the ground project is supported by an applicant's existing water management plan, water conservation plan, System Optimization Review (SOR), or identified as part of another planning effort led by the applicant. This criterion prioritizes projects that are identified through local planning efforts and meet local needs.

The City's water conservation program complies with the goals and planning efforts of the Phoenix Active Management Area and the statewide conservation plan as it has incorporated 35 of 47 best management practices as delineated in the ADWR System Water Plan 2nd Five Year Update dated January 1, 2017. The city is part of the Phoenix Active Management Area (AMA). The management goal of the Phoenix AMA is to maintain a safe-yield condition in the active management area and to prevent local water tables from experiencing long term declines. In addition, the City of Avondale has a Drought Ordinance in place for water conservation during drought periods or declaration by City Council.

Avondale's City Council approved the Public Works Capital Improvement Plan (CIP) from fiscal years 2018-2019 through 2022-2023 funding the total conversion of each site (see CIP page 201 attached) which demonstrates a commitment from the highest level of our organization. This aligns with the general plan for the City of Avondale. The City of Avondale is committed to meet the objective of this BOR Funding Opportunity of leveraging funds and resources not only to complete the work, but also evaluate the results.

2.3 Evaluation Criterion C – Project Implementation

*Up to **10 points** may be awarded based upon the extent to which the applicant is capable of proceeding with the proposed project upon entering into a financial assistance agreement. Applicants that describe a detailed plan (e.g., estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates) will receive the most points under this criterion*.

The 2017 study by Wilson Engineers provided a detailed cost breakdown for each well and booster site. Site visits were conducted at each of the meter site with members of Wilson Engineers staff and City of Avondale Operations staff. Based on the site visits and the recommended metering equipment, project cost estimates were developed for each meter location. Avondale's 2017 water production was recorded at 14,000 Acre Feet/year. At an average cost of $33.74 per Acre Foot (AF) of SRP water and $218 per AF for CAP water the cost of 5% of our overall water use can easily range from $45,000-$300,000. The detailed study conducted by Wilson Engineers and the City provides a highly accurate analysis of work that needs to be completed to convert the sites to the new meter and projected costs. Avondale spoke to Jessica and Dominic from the Bureau of Reclamation Phoenix office regarding the environment compliance requirement. Per this conversation, we have included the estimate of $2,500 to meet this requirement.

The City of Avondale does not anticipate that permits will be required as all meter will be installed in the place of existing City of Avondale water meters. All project-related approvals will be handled by City staff and executed in a timely and efficient manner. Capability of purchasing meters and equipment are established through the City's purchasing procedures and contracts with vendors or provide the equipment, engineering, contract management and installation services. Procurement activity and site work will proceed according to the project table below.

Milestone/Task/Activity	Planned Start Date	Planned Completion Date
Procurement of Meters	September 2018	November 2018
Secure JOC for Site Work	September 2018	November 2018
Installation and Site Work	December 2018	February 2019
SCADA Integration	January 2019	March 2019

2.4 Evaluation Criterion D – Nexus to Reclamation

Up to 10 points may be awarded based on the extent that the proposal demonstrates a nexus between the proposed project and a Reclamation project or activity. Describe the nexus between the proposed project and a Reclamation project or activity, including

The City of Avondale has a diverse water resources portfolio consisting of surface water supplies from the Salt and Verde Rivers within Arizona, and from the Colorado River. The water is delivered through Salt River Project (SRP) and the Central Arizona Project (CAP). Avondale also owns and operates numerous potable groundwater production wells. Avondale utilizes 100% of its reclaimed water supply, primarily for recharge to offset groundwater pumping and accrue long-term storage credits for drought protection.

The following water resources are the major components of Avondale's existing water resources portfolio:

1. Salt River Project Water Delivery Use Agreement (SRP)
2. Colorado River Supplies consisting of the Central Arizona Project (CAP) Municipal & Industrial (M&I) allocation (Contract No. 07-XX-30-W0511), and the White Mountain Apache Tribe (WMAT) lease
3. Groundwater that can be legally pumped consisting of a "Phase-In" groundwater
    a. allowance, and an Incidental Recharge allowance as determined by the ADWR, and
    b. primarily annual recovery of same year SRP or CAP recharge
4. Reclaimed water consisting of direct, non-potable reuse, and recharge
5. Long-term storage credits derived from recharge of reclaimed water and CAP water.
6. The yield and delivery capability of each of Avondale's water resources is impacted by the following conditions:
    a. Hydrologic/climatologic effects, i.e., drought impacts and climate change
    b. Institutional restrictions on the location of use
    c. Location of service area demand in relation to source delivery
    d. Capacity of infrastructure to deliver the resource.

Figure 2.1 shows the water right jurisdictions within Avondale's planning area. The SRP area is referred to as "on-project" (pink area in figure 2.1) lands with SRP water supplies being appurtenant to those lands. A substantial portion of Avondale's planning area is not part of the SRP service area, and these lands are considered "off-project" lands and must be served with other water supplies such as CAP water or reclaimed water credits.

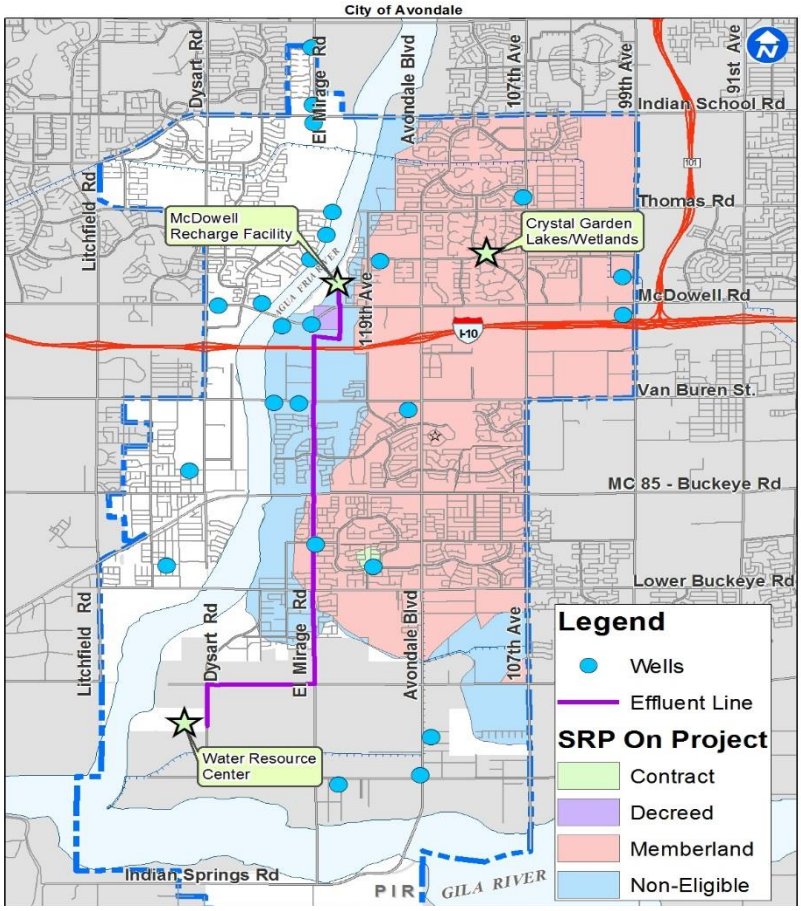

Figure 2.1 City of Avondale Water Rights Jurisdictions

Water stored on an Annual Storage and Recovery (AS&R) basis must be recovered in the same calendar year as it was stored, although the SRP water is on Monthly Storage & Recovery (MS&R) schedule. Water stored in these types of underground storage facilities requires a recovery well permit to recover the stored water credits. An existing well may be permitted as a recovery well if it is demonstrated that other wells in the vicinity will not be harmed by the recovery of the stored water. The water recovered from the well retains the identity of the water when it was stored, for example it would be labeled either SRP, CAP, or effluent/reclaimed. Avondale currently recharges all its reclaimed water at the City's McDowell USF. This Facility is also used to store SRP water on a monthly basis. The City also owns recharge capacity in the New River Agua Fria River Underground Storage Project (NAUSP-operated by SRP) and in both the Hieroglyphic Mountain and Agua Fria Constructed recharge facilities operated by the Central Arizona Water Conservation District (CAWCD).

The City of Avondale is dedicated to improving water conservation through proper water accounting and other measures. In this 19-year drought and the current outlooks from the Bureau of Reclamation forecasting over 50% chance of a CAP (Colorado River) shortage by 2020, and in 2021-2023 to exceed a 60% chance. Avondale is not only preparing for shortages on the CAP side, but also on the SRP side of our portfolio. In 2015 the SRP allocation mix of surface water was not going to cover all of Avondale's on-project demand. This project is critical not only to our water accounting, but also proper management of our strained surface water supplies.

2.5 Department of the Interior Priorities - **Up to 10 points** may be awarded based on the extent that the proposal demonstrates that the project supports the DOI priorities. Please address those priorities that are applicable to your project. It is not necessary to address priorities that are not applicable to your project. A project will not necessarily receive more points simply because multiple priorities are addressed. Points will be allocated based on the degree to which the project supports one or more of the Priorities listed, and whether the connection to the priority(ies) is well supported in the proposal. The following are the DOI priorities:

1. *Creating a conservation stewardship legacy second only to Teddy Roosevelt -*

a. Utilize science to identify best practices to manage land and water resources and adapt to changes in the environment;

This project is an innovative application of an existing science/technology. With the installation of this technology, for the first time, the City will be able to monitor real time water production numbers from SCADA. This technology enables the City to manage its water by only ordering water from SRP as it's needed rather than rough estimations. The City is adapting to changes because of the looming shortage declaration over the Colorado River and projected decreased allocations from SRP. The City sees this technology as a best management practice over our water resources.

c. Revise and streamline the environmental and regulatory review process while maintaining environmental standards

The City has been working with SRP to streamline our data collection of water production and water consumption, so that our regulatory reporting to SRP of water used "on project" land is accurate. The City understands the importance of maintaining a regulatory review process over all surface water and ground water used from sources that are strained.

3. Restoring trust with local communities -

a. Be a better neighbor with those closest to our resources by improving dialogue and relationships with persons and entities bordering our lands;

The City of Avondale knows that in times of severe drought that regional collaboration is extremely important. We share our water with cities and private water providers all over the State. Through the conversion of our meters, we are demonstrating to our neighbors that we are collecting and reporting accurate data. As our neighbors, we report our annual water use through ADWR, and most major water providers look at what their neighbors report to the State. It is important that not only our neighbors, the State, and our water providers such as SRP and CAP feel confident in the data that we are reporting.

5. *Modernizing our infrastructure -*
a. Support the White House Public/Private Partnership Initiative to modernize U.S. infrastructure;

The City of Avondale, as a public agency, frequently hires private consultants and contractors to implement projects like this production meter conversion. This project has already initiated public/private partnership with the contract awarded to Wilson Engineers whom conducted the study. The City of Avondale and Wilson Engineers also outlined through a detailed budget items like meters, piping, electrical equipment, and installation which will be purchased through private companies.

3.0 Environmental and Cultural Resources Compliance

To allow Reclamation to assess the probable environmental and cultural resources impacts and costs associated with each application, all applicants must respond to the following list of questions focusing on the NEPA, ESA, and NHPA requirements. Please answer the following questions to the best of your knowledge. If any question is not applicable to the project, please explain why. The application should include the answers to:

- **Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.**

The project will not require any earth-disturbing work or any work that will affect the air, water, or animal habitat in the project area nor any impacts on the surrounding environment. Project includes funding for minimal environmental impact studies that may need to be conducted, i.e. nesting birds.

- **Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project**

area? If so, would they be affected by any activities associated with the proposed project?

The project area is the City of Avondale. There are no species listed or proposed to be listed as a Federal threatened, or endangered species, or designated critical habitat in the project area.

- **Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the proposed project may have.**

No, there are not.

- **When was the water delivery system constructed?**

There are water lines dated back to 1950's however most of the water delivery system was constructed in the period between 1970 and present time.

- **Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., head gates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.**

The project will not result in any modification of or effects to individual features of an irrigation system.

- **Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.**

The City of Avondale is unaware of the status of eligibility or listing on the National Register of Historic Places. There are no buildings, structures, or features within the city limits that may be eligible for historic preservation.

- **Are there any known archeological sites in the proposed project area?**

There are no known archeological sites in the proposed project area.

- **Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?**

The project will not have an adverse effect on low income or minority populations.

- **Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?**

The project will not limit access to and ceremonial use of Indian sacred sites or result in any impact on tribal lands.

- **Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?**

The project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area.

4.0 Required Permits or Approvals

The City of Avondale does not anticipate that permits will be required as all meters will be installed in the place of existing City of Avondale water meters. All project-related approvals will be handled by City staff and executed in a timely and efficient manner.

5.0 Project Budget

5.1 Funding Plan and Letters of Commitment

Describe how the non-Federal share of project costs will be obtained. The City of Avondale has budgeted for this project through its Capital Improvement Plan. No additional non-Federal funds will be obtained.

How you will make your contribution to the cost share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant (e.g., reserve account, tax revenue, and/or assessments). The City of Avondale will use Capital Improvement Plan funds for this project the in-kind contribution will be made by city staff.

Describe any donations or in-kind costs incurred before the anticipated project start date that you seek to include as project costs. For each cost, identify: No included project costs have been incurred prior to anticipated project start date.

Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment. The City of Avondale is not relying on outside funding partners to fund this project. All matching funds will be provided by the City of Avondale. Commitment letters are not applicable.

Describe any funding requested or received from other Federal partners. Note: other sources of Federal funding may not be counted towards your 50 percent cost share unless otherwise allowed by statute. No other funding requested or received from other Federal partners.

Describe any pending funding requests that have not yet been approved and explain how the project will be affected if such funding is denied. There are no pending funding requests for this project.

Table 1.—Summary of non-Federal and Federal funding sources

Funding sources	Funding amount
Non-Federal entities	

City of Avondale	$123,340
Non-Federal subtotal:	**$123,340**
Other Federal entities	$ 0
Other Federal subtotal:	**$ 0**
Requested Reclamation funding:	**$ 75,000**
Total project funding:	**$198,340**

5.2 Budget

Table 2.— Budget

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL COST
	$/Unit	Quantity		
Mechanical & Installation				
Coldwater Booster Station			Meter/Piping	$71,680
Gateway Booster Station			Meter/Piping	$79,660
Subtotal				**$151,340**
Electrical/Instrumentation & Installation				
Coldwater Booster Station			PLC/110v/ Programming	$21,000
Gateway Booster Station			PLC/110v/ Programming	$21,000
Subtotal				**$42,000**
Environmental Impact Studies				
Coldwater Booster Station			In House & JOC	$2,500
Gateway Booster Station			In House & JOC	$2,500
Subtotal				**$5,000**
GRAND TOTAL ESTIMATED PROJECT COSTS				**$198,340**

All non-reclamation funds will be provided by the city of Avondale. These funds will consist of in-kind costs for project management and monetary contributions from water revenues/capital fund. No other federal or state funds have been requested or received to complete the proposed project to date. Cost Share: City of Avondale is proposing to provide 62% cost-share for the proposed project.

5.3 Budget Narrative

Mechanical: Mechanical costs include the cost flow meters specific to the size required by each site and any piping removal or modifications required. The estimated cost of the mechanical work for all the sites is $151,340.

Electrical & Instrumental: The electrical and instrumental costs include technology at each site. The estimated cost of the Electrical and instrumental work for all the sites is $42,000.

Installation: The installation costs include City of Avondale staff costs and installations that require a JOC. These costs are programmed into each item.

Environmental & Regulatory Compliance Cost: Environmental study needs and associated costs are minimal and have been budgeted at $2,500 per site.

Other Expenses: No other expenses expected.

Indirect Costs: No indirect cost expected.

5.4 Total Cost- Federal & Non-Federal Cost Share

Total Federal Cost from Funding Opportunity No. BOR-DO-18-F009: **$ 75,000**

Total Non-Federal Cost Share- City of Avondale Capital Improvement Plan: **$123,640**

6.0 Unique Entity Identifier and System for Award Management (SAM)

APPENDIX A

Letter of Support From SRP

Delivering water and power'"

Sally K. Moore, Manager

Water Accounting, Communications, and Contract Administration

SSW302 1 P.O. Box
52025 Phoenix, AZ
85072-2025

P: (602) 236-2255

May 10, 2018

Bureau of Reclamation

Financial Assistance Support Section

Attn: Mr. Matthew Reichert

Mail Code: 84-27814

P.O. Box 25007

Denver, CO 80225

Subject: City of Avondale, Arizona Application - Funding Opportunity Announcement No. BOR-DO-18FOO9, Small-Scale Water Efficiency Projects for Fiscal Year 2018

Dear Mr. Reichert,

This letter is in support of the City of Avondale's ("Avondale") grant application for a conservation technology demonstration project. As we understand the application, Avondale proposes replacement of several antiquated or "service limited" flow meters measuring pumped water with new technologies that will improve measurement accuracy. SRP is highly supportive of Avondale's application for the reasons set forth below.

As you may be aware, the Salt River Valley Water Users' Association/Salt River Project Agricultural Improvement District ("SRP") and Avondale have entered into several water management agreements beginning in the early 1990's. [1] These interrelated agreements all serve Avondale's water management objectives to varying degrees, but critical to the administration of each of these agreements, either directly or indirectly, is the accurate measurement of pumped water. More specifically, SRP relies on accurate data provided by Avondale to administer the water delivery and water exchange provisions of

[1] Water Transportation Agreement (1991), Water Delivery and Use Agreement (1996), CAP/SRP Interconnection Facility Lease Agreement (1996), and New River and Agua Fria Underground Storage Project Intergovernmental Agreement (2004).

the Water Delivery and Use Agreement. In 2017, SRP delivered approximately 6,500 acre-feet of water to Avondale for municipal purposes, some of which was initially used outside of the SRP service territory, but later returned to SRP through the water exchange mechanism. Measurement accuracy of "on-Project" and "off-Project" water supplies ensures that SRP shareholders remain whole with respect to the water resources they are entitled to.

Somewhat related to the above, Avondale has experienced an increase in internal system water losses over the last few years. Although SRP has worked with Avondale in an attempt to isolate the cause of these losses, the answer remains elusive. Consequently, any possible impact to water accounting processes is unknown. SRP is hopeful that the installation of new technology will reduce Avondale's lost water issue and increase the accuracy of reporting pursuant to contractual and regulatory requirements.

Thank you for your consideration of Avondale's grant application and for SRP's opportunity to outline our interests in the project. If you have any questions, please contact me at (602) 236-2255 or sally.moore@srpnet.com.

Sincerely,

Sally K. Moore

Sally K. Moore

Cc: Lacey James, Water Resource & Regulatory Manager, City of Avondale

Appendix B

Budget Breakdown Per Site

Wilson Engineer's Detail & Avondale's Revised Budget

Overview of Site Meter Conversion

Site	Booster Site for Well	Cost Per Site
Coldwater BS		$ 95,180
Gateway BS		$ 103,160
Total		$ 198,340

Future Sites to Convert

Site	Booster Site for Well
Garden Lakes BS	
Well 17	**Garden Lakes**
Northside BS	
Well 6	**Northside**
Well 7	**Northside**
Well 20	**Northside**
Rancho Santa Fe BS	
Well 10	**Rancho Santa Fe**
Well 11	**Rancho Santa Fe**
Well 12	**Rancho Santa Fe**
Well 18	**Rancho Santa Fe**
Well 19	**Rancho Santa Fe**
Well 23	**Direct Feed**
Well 16a	**Coldwater**
Well 15	**Coldwater**
Well 25	**Coldwater**
Well 8a	**Gateway**
Well 24	**Gateway**

Coldwater Booster Station

City of Avondale Meter Upgrade- Opinion of Probable Costs: Coldwater Booster Station					
DESCRIPTION	QUANTITY	UNIT COST	AMOUNT	INSTALLATION	TOTAL AMOUNT
Mechanical					
Flow Meter	1	$ 15,120	$ 15,120	$ 7,560	$ 22,680
Piping Modifications	1	$ 49,000	$ 49,000	$ -	$ 49,000
Electrical/Instrumentation					
PLC-Modicon M340 w/HART	1	$ -	$ -	$ -	$ -
110v Power for Flow Meter Programming	1	$ 16,800	$ 16,800	$ 4,200	$ 21,000
Environmental Impact Study					$ 2,500
Subtotal					**$ 95,180**

Gateway Booster Station

City of Avondale Meter Upgrade- Opinion of Probable Costs: Gateway Booster Station					
DESCRIPTION	QUANTITY	UNIT COST	AMOUNT	INSTALLATION	TOTAL AMOUNT
Mechanical					
Flow Meter	1	$ 9,100	$ 9,100	$ 7,560	$ 16,660
Piping Modifications	1	$ 63,000	$ 63,000	$ -	$ 63,000
Electrical/Instrumentation					
PLC-Modicon M340 w/HART	1	$ -	$ -	$ -	$ -
110v Power for Flow Meter Programming	1	$ 16,800	$ 16,800	$ 4,200	$ 21,000
Environmental Impact Study					$ 2,500
Subtotal					**$ 103,160**

Capital Improvement Plan

Fiscal Years 2019-2028

Water Development

514 Water Development	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2024-28	Total
Non-Development Fee Eligible Projects							
WA1169-Rio Vista Waterline Replacement	400,000	0	0	0	0	3,500,000	3,900,000
WA1298-Well #7 Site Improvements	75,000	0	250,000	1,250,000	0	0	1,575,000
WA1343-Water System Line Replacements and Expansions	550,000	500,000	500,000	500,000	500,000	6,500,000	9,050,000
WA1344-System Pressure Reducing Stations	0	0	370,000	1,360,000	0	0	1,730,000
WA1372-Reservoir Coating Repairs and Rehabilitation	1,320,000	0	0	0	1,100,000	750,000	3,170,000
WA1392-Integrated Utility Master Plan	0	0	0	0	125,000	125,000	250,000
WA1473-Gateway Nitrate Treatment Equipment Replacement	0	500,000	2,500,000	0	0	0	3,000,000
WA1474-McDowell Rechange Basin Improvments	300,000	0	0	0	750,000	0	1,050,000
WA1475-Well and Booster Station Metering Upgrades	250,000	250,000	250,000	250,000	250,000	0	1,250,000
WA1476-Rancho Santa Fe Reservoir/Booster Electrical and Control Upgrades	0	0	0	150,000	0	0	150,000
WA1477-Northside Arsenic Treatment System Rehabilitation	0	0	0	0	0	1,000,000	1,000,000
Total Non-Development Fee Eligible	**4,345,000**	**1,250,000**	**4,670,000**	**3,510,000**	**2,725,000**	**13,475,000**	**29,975,000**
Total Capital Costs	**12,595,000**	**8,080,000**	**5,070,000**	**6,690,000**	**4,125,000**	**39,128,000**	**75,688,000**
Estimated Ending Balance	1,173,205	(94,609)	647,577	682,809	3,283,041	2,781,201	