

US Bureau of Reclamation WaterSmart:
Small Scale Water Efficiency Projects for
Fiscal Year 2018: FOA BOR DO 18 F009

Ultrasonic Water Meter Replacement

City of Rio Rancho, NM

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Technical Proposal and Evaluation Criteria

Executive Summary

Project: Ultrasonic Water Meter Replacement

Date: July 2, 2018

Applicant: City of Rio Rancho
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Sandoval County, New Mexico, USA

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The City of Rio Rancho is requesting funds to assist with replacing two-inch compound water meters with new Badger ultrasonic water meters. This project will result in measurable water savings by reducing the City's non-revenue water. Because sand and debris in the water tend to slow or stop the low end of the water meters, many of the compound meters are under-registering the amount of water used by customers.

This Ultrasonic Water Meter Replacement project will contribute to the Funding Opportunity Announcement goals of:

- Modernizing our Infrastructure.

This project will begin on October 1, 2018 and be completed by September 30, 2020. This project is not at a Federal Facility.

Background Data

The Water Resources Management Plan (WRMP), adopted by the City of Rio Rancho Utilities Commission in 2004, details water efficiencies and water conservation measures to be taken by the City to better manage the existing water supplies. Through grant assistance in 2012 by the Water Conservation Field Services Program of the Bureau of Reclamation, the WRMP was evaluated and an update was completed in 2014. The 2014 WRMP was approved by both the Utilities Commission and the Governing Body and a copy was sent to both Reclamation and the New Mexico Office of the State Engineer.

The City of Rio Rancho Strategic Plan was formally adopted by the City of Rio Rancho Governing Body on March 25, 2009 and updated August 2017. One important element of the Infrastructure Strategies section pertains to water sustainability and conservation to support growth and development of the City and leveraging/sharing resources, such as equipment.

The municipal water supply for the City of Rio Rancho consists of fifteen production wells that pump from the Santa Fe Group Aquifer. Applicable groundwater rights are permitted by the Office of the State Engineer (OSE) of New Mexico. Due to the age of the City, surface water rights are not available even though the Rio Grande runs through part of the City. The City of Rio Rancho has approximately 96,028 citizens (2016 US Census data) with approximately 34,000 metered water service connections. In 2017, the City pumped 10,879.1 Acre-Feet of water. The City's projected water demand is 31,000 Acre-Feet per year to serve over 150,000 residents by 2040. The City is mandated by OSE not to allow the groundwater level to drop more than 2.75 feet per year. To augment this most precious, natural resource, the City of Rio Rancho has installed an aquifer storage and recovery (ASR) system where highly-treated effluent reuse water is injected into the aquifer for removal and use at a later date.

Naturally occurring arsenic is found in the groundwater of most of the City's wells. The arsenic is removed by ferric chloride treatment in those wells containing arsenic above the U.S. Environmental Protection Agency's (EPA) Safe Drinking Water Act maximum contaminant level. The potable water is pumped to nineteen storage tanks ranging from one to four million gallons each for a total of 44 million gallons storage. The City has ten pressure zones and purchases electricity from the Public Service Company of New Mexico (PNM) for pumping and treatment of the drinking water at a cost of approximately \$2,000,000 a year.

The City of Rio Rancho has both past and current working relationships with the Bureau of Reclamation with several grants:

- Assistance with implementation of the Rio Rancho Children's Water Festival in 2009 to 2011. The Children's Water Festival is designed to bring over 1,400 fourth grade students to one location to learn about water conservation, watersheds, water quality, etc., with hands-on activities.
- Through grant assistance in 2012 by the Water Conservation Field Services Program of the Bureau of Reclamation, the Water Resources Management Plan was evaluated and an update was completed in 2014.

- The City currently has a Bureau of Reclamation grant to assist with customer water audits. This grant will end in 2018.
- The City was notified that it would receive a Bureau of Reclamation grant to assist with customer rebates for water efficient fixtures. The Agreement is currently in progress.

The Census Bureau’s population growth projections for New Mexico add 800,000 people to the state by 2030.¹ This is an increase of 40 percent over the state’s population in 2000. The municipal water supply in Rio Rancho, New Mexico is from groundwater. It has been recognized that this groundwater is being mined and this may increase the impact on Bureau of Reclamation projects such as the Middle Rio Grande Project Area. More efficient use of water supplies will provide better water quantity and quality for the fish and wildlife habitat, especially for endangered species such as the Rio Grande Silvery Minnow (*Hybognathus amarus*) and the Willow Flycatcher (*Empidonas traillii extimus*).

Project Location



FIGURE 1: LOCATION OF THE CITY OF RIO RANCHO IN RELATION TO ALBUQUERQUE, NEW MEXICO.

¹ U.S. Census Bureau, U.S. Census 2000

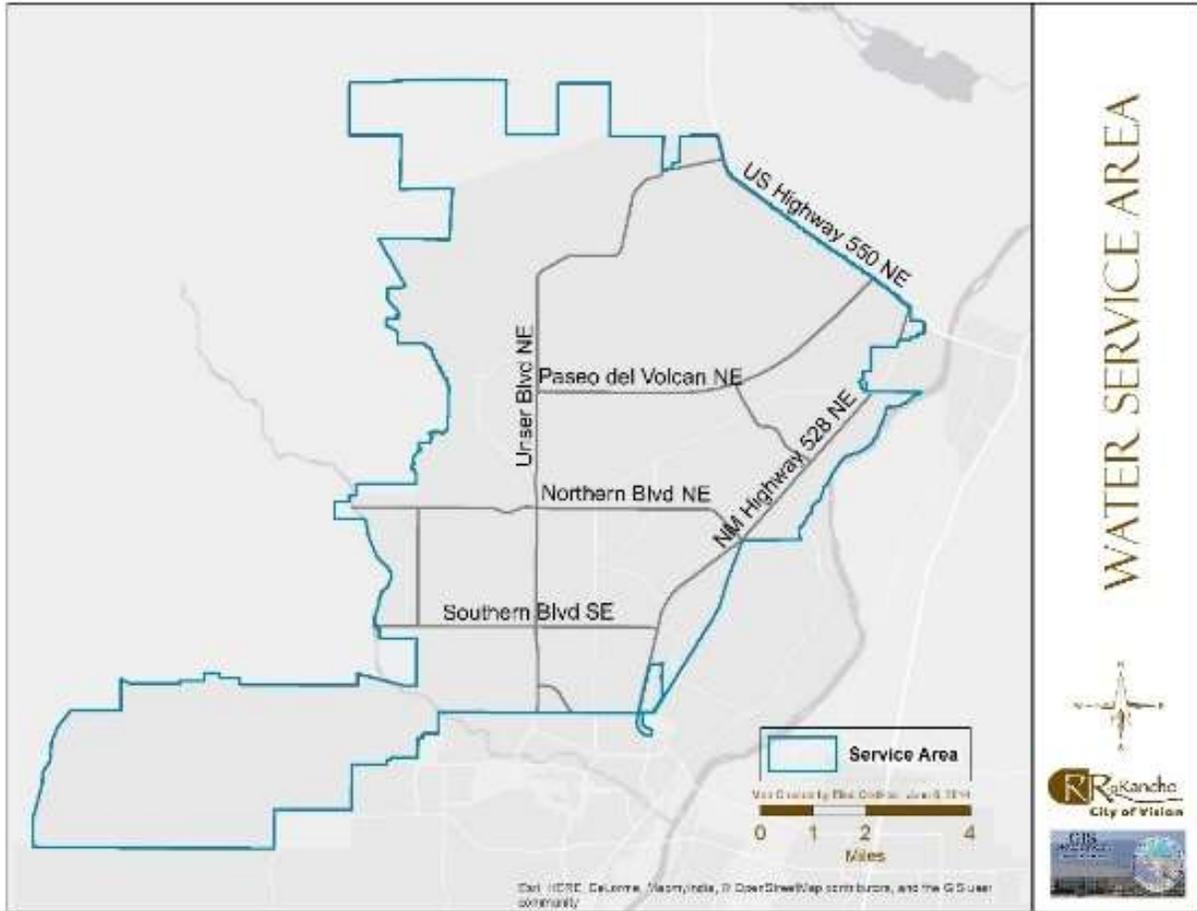


FIGURE 2: THE CITY BOUNDARY AND WATER SERVICE AREA OF THE CITY OF RIO RANCHO

The Ultrasonic Water Meter Replacement project is located within the municipal boundary of the City of Rio Rancho, New Mexico. Figure 1 shows the geographic location of the City of Rio Rancho just north west of the City of Albuquerque, New Mexico. Figure 2 shows the water service area in the City.

Technical Project Description

Beginning in late 2018, the City of Rio Rancho plans on replacing 179 two-inch Badger compound water meters to Badger ultrasonic water meters. The project is anticipated to be completed in two years.

The City’s groundwater source contains occasional sand and debris particles in it. When this sand enters the compound water meter, it can lodge in the low end of the meter, slowing down registration of the flow, and the sand or debris can also stop the water meter from registering. When the City started using the two-inch compound water meters, these meters were touted to be the best on the market for picking up both the low flows and the high flows in commercial and irrigation applications. The City found out the hard way that these type of meters do not work well for the local groundwater source. The Utilities Department spends time and money

repairing or changing out the compound water meters even though the same problem happens again and again. Two years ago, the City began a water meter test program and this past year, the program includes repairing the compound meters that are running either high or low.

Compound water meters combine two metering technologies in one package. A positive displacement chamber measures low flow, while a turbine chamber records high flow. These meters are ideal for facilities that experience rapid and wide fluctuations in water demand.

Ultrasonic water meters use solid-state technology in a compact, totally encapsulated, weatherproof, and UV-resistant housing, suitable for residential and commercial applications. The ultrasonic meter reports consumption, rate of flow, reverse-flow indication, and alarms. With no moving parts, an ultrasonic meter improves reliability and has greater extended low flow accuracy compared to mechanical meters.



FIGURE 3: COMPOUND METER



FIGURE 4: ULTRASONIC METERS

Evaluation Criteria

Evaluation Criterion A – Project Benefits

- Describe the expected benefits and outcomes of implementing the proposed project.

- What are the benefits to the applicant's water supply delivery system?

The City of Rio Rancho has only one drinking water source, the Santa Fe Group Aquifer. The customer water meter testing program has shown that there are issues with the compound water meters accurately measuring the amount of water that flows through them; generally, they under register the amount of water. Because of this, the customers do not know how much water they are really using and the City has incurred costs to pump and treat the water.

- If other benefits are expected explain those as well. Consider the following:
 - Extent to which the proposed project improves over all water supply reliability.

Customers whose water meters are accurate, not registering low, will conserve and use the water more efficiently. Again, Rio Rancho only has one water source.

- *The expected geographic scope benefits from the proposed project (e.g., local, sub-basin, basin).*

This Ultrasonic Water Meter Replacement project will benefit the Rio Grande basin. The water users in the basin have a history of working together to conserve water.

- *Extent to which the proposed project will increase collaboration and information sharing among water managers in the region.*

The City is a member of various regional and state water groups such as the New Mexico Water Conservation Alliance and Environmental Quality Association of the New Mexico Municipal League. Utilities personnel will share the information, benefits, and any issues concerning the Ultrasonic Water Meter Replacement project.

- *Any anticipated positive impacts/benefits to local sectors and economies (e.g., agriculture, environment, recreation, tourism).*

The Albuquerque metropolitan economy will have a slight positive impact by the purchase and installation of the ultrasonic meters. The City of Rio Rancho will have a fairly significant boost in revenue from the sale of water when the under-registering compound meters are replaced with ultrasonic meters.

- *Extent to which the project will complement work done in coordination with NRCS in the area (e.g., with a direct connection to the district's water supply). Describe any on-farm efficiency work that is currently being completed or is anticipated to be completed in the future using NRCS assistance through EQIP or other programs.*

The Ultrasonic Water Meter Replacement project will not complement any work performed with NRCS in the area.

Evaluation Criterion B – Planning Efforts Supporting the Project

- *Does the proposed project implement a goal or address a need or problem identified in the existing planning effort?*

As stated earlier, the 2014 WRMP update, approved by both the Utilities Commission and the Governing Body, details water efficiencies and water conservation measures to be taken by the City to better manage the existing water supplies. The Ultrasonic Water Meter Replacement project will enhance Implementation Strategy C.1 of the WRMP to “reduce per capita water use” and Implementation Strategy C2 to “Reduce non-revenue water”.

- *Explain how the proposed project has been determined as a priority in the existing planning effort as opposed to other potential projects/measures.*

The Strategies in the WRMP were set at a public meeting of stakeholders and Priority 1 Strategies are more important to the stakeholders than Priority 2 Strategies in the WRMP. Implementation Strategy C1, “Reduce per capita water usage” was rated as a Priority 2, and Implementation Strategy C2, “Reduce non-revenue water” was rated as a Priority 1.

Evaluation Criterion C – Project Implementation

- *Describe the implementation plan for the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.*

The Ultrasonic Water Meter Replacement project will be broken into the following tasks:

1. Review the list of two-inch compound water meters based upon the customer's water usage to determine which compound water meters should be replaced first. (estimated time frame of October 2018)
 2. Order the ultrasonic water meters from Baker Utility. (estimated time frame beginning late October 2018)
 3. Enter work orders for water meter replacement into the Computer Maintenance Management System (Maintenance Connection). (estimated time frame beginning late October 2018 and continuing through June 2020)
 4. Jacobs, Inc., the water and wastewater contractor to the City, install ultrasonic water meters as they are received and as time allows with other transmission and distribution duties such as leaks and main breaks. (estimated time frame of November 2018 through June 2020)
 5. Report Ultrasonic Water Meter Replacement project progress and metrics. (as required by the grant)
- *Describe any permits that will be required, along with the process for obtaining such permits.*

No permits will be required for the Ultrasonic Water Meter Replacement project.

- *Identify and describe any engineering or design work performed specifically in support of the proposed project.*

There are no engineering or design work performed specifically in support of the Ultrasonic Water Meter Replacement project.

- *Describe any new policies or administrative actions required to implement the project.*

There are no new policies or administrative action required for implementation of the Ultrasonic Water Meter Replacement project.

- *Describe how the environmental compliance estimate was developed. Have the compliance costs been discussed with the local Reclamation office?*

The environmental compliance was estimated using about 1% of the total cost of the project; this was not discussed with the local Reclamation office.

Evaluation Criterion D – Nexus to Reclamation

- *Is the proposed project connected to a Reclamation project or activity? If so, how? Please consider the following:*
 - *Does the applicant receive Reclamation project water?*

No, the City of Rio Rancho does not receive Reclamation project water.

- *Is the project on Reclamation project lands or involving Reclamation facilities?*

No, the Ultrasonic Water Meter Replacement project is not on Reclamation project lands or involving Reclamation facilities.

- *Is the project in the same basin as a Reclamation project or activity?*

Yes, the Ultrasonic Water Meter Replacement project is in the Rio Grande basin.

- *Will the proposed work contribute water to a basin where a Reclamation project is located?*

No, the Ultrasonic Water Meter Replacement project will not contribute water to a basin where a Reclamation project is located.

- *Will the project benefit any tribe(s)?*

No, the Ultrasonic Water Meter Replacement project will not directly benefit and tribe(s).

Evaluation Criterion E – Department of the Interior 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.*
5. *Modernizing our infrastructure*
 - b. *Remove impediments to infrastructure development and facilitate private sector efforts to construction infrastructure projects serving American needs.*

The Ultrasonic Water Meter Replacement project bests fits in categories 1.a. and 5.b. of the Department of Interior priorities. The new ultrasonic water meters are highly advanced and the mechanics are not impacted by any sand or debris in the water like the compound meters that were put into place. These ultrasonic water meters are modernizing the City’s Utilities Department.

Project Budget

Funding Plan and Letters of Commitment

The non-Federal share of the project costs will be funded through the City’s Utilities budget process. There are no other funding sources, therefore, there are no Letters of Commitment with this application. The City will not incur any costs prior to the anticipated project start date that will be included as project costs.

TABLE 1: SUMMARY OF NON-FEDERAL AND FEDERAL FUNDING SOURCES

FUNDING SOURCES	AMOUNT
Non-Federal Entities	
1. City of Rio Rancho	\$86,403.02
Non-Federal Subtotal	\$86,403.02
Other Federal Entities	

1. None	-0-
Other Federal Subtotal	-0-
REQUESTED RECLAMATION FUNDING	\$70,000

Budget Proposal

TABLE 2: PROPOSED BUDGET

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL COST
	\$/Unit	Quantity		
Salaries and Wages				
--None--				\$ -0-
Fringe Benefits				
--None--				\$ -0-
Travel				
--None--				\$ -0-
Equipment				
--None--				\$ -0-
Supplies and Materials				
Ultrasonic Meters	\$805.00	179	Each	\$144,095.00
Tax on Meters*	\$60.38	179	Each	\$10,808.02
Contractual/Construction				
--None--				\$ -0-
Other				
Environmental compliance costs				\$1,500.00
TOTAL DIRECT COSTS				\$156,403.02
Indirect Costs				
Meter Installation by Jacobs	\$35	179	Each	\$6,265.00

*Tax rate of 7.5%

Budget Narrative

Salaries and Wages

The project manager for this Reclamation grant is Henrietta Hughes, Utilities Services Division Manager for the City of Rio Rancho. Ms. Hughes is also the City's project manager for the Ultrasonic Water Meter Replacement project. Ms. Hughes salary will not be included in the grant.

Fringe Benefits

No fringe benefits will be used with the grant if awarded.

Travel

No travel will be included with the grant if awarded.

Equipment

Any equipment used with the Ultrasonic Water Meter Replacement project will be supplied by the City.

Materials and Supplies

All materials and supplies used with the Ultrasonic Water Meter Replacement project will be purchased by the City. The ultrasonic water meters are Badger AMR with Orion heads and are supplied by Baker Utilities. The estimated costs of the ultrasonic water meters included in the proposed budget were verified in June 2018.

Contractual

No contractors or consultants are needed for the Ultrasonic Water Meter Replacement project because Jacobs, Inc. is already under contract to provide the water and wastewater operations for the City. Replacing the water meters is part of their contract and it is estimated and included with Indirect Costs.

Environmental and Regulatory Compliance Costs

A small amount of money is budgeted in Other Costs of the Budget Proposal for any environmental and regulatory compliance costs that may be incurred during the Ultrasonic Water Meter Replacement project. The City does not anticipate that there will be any environmental and regulatory compliance costs because the work will be performed in the City's right-of-way with minor soil, air, and water disturbance.

Other Expenses

No other expenses will be included in the Ultrasonic Water Meter Replacement project.

Indirect Costs

Jacobs, Inc. is under contract with the City to provide the water and wastewater operations for the City and replacing the water meters is part of their contract and included in Indirect Costs.

Total Costs

The total cost of the Ultrasonic Water Meter Replacement project is estimated to be \$162,666.02 with the Indirect Costs included. Reclamation funding is 43% and City funding is 57%.

Environmental and Cultural Resources Compliance

- *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 Ultrasonic Water Meter Replacement project may have minor impact on the surrounding environment while the compound meter is removed and the ultrasonic meter is installed.

- *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?*

No species would be in the area during the Ultrasonic Water Meter Replacement project. The Rio Grande Silvery Minnow (*Hybognathus amarus*) and the Willow Flycatcher (*Empidonas traillii extimus*) are found near and in the Rio Grande and will not be affected.

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

There are no wetlands or surface waters that potentially fall under Clean Water Act (CWA) in the area.

- *When was the water delivery system constructed?*

The City of Rio Rancho is relatively new, incorporating in 1981. Many of the wells were drilled and water service lines were placed in the late 1970s and early 1980s. Residential construction, and the water delivery system, continued throughout the 1990s and then drastically slowed in 2008 because of the economy.

- *Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, 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.*

No, there is no irrigation system as defined above involved.

- *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.*

No, there are no buildings structures or features listed or eligible for listing in the National Register of Historic Places.

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

No, there are none.

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

No, it will not. The Ultrasonic Water Meter Replacement project will be replacement of commercial and irrigation water meters.

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

No, there are none.

- *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?*

No, it will not.

Required Permits or Approvals

No permits are required for the Ultrasonic Water Meter Replacement project.

Letters of Project Support

There are no other funding sources, therefore, there are no Letters of Project Support with this application.

Official Resolutions

A resolution of support is on the August 22nd agenda of the Governing Body of the City of Rio Rancho. The resolution will be sent to Reclamation after being signed. The resolution will contain language to identify the legal authority, support of the application, provide funding and/or in-kind support, and working with Reclamation to meet established deadlines for entering into this grant agreement.