

**Improving Water Efficiency
For the Gardner Public Improvement District
governed by Huerfano County**

by Adding AMI and Telemetry/SCADA

Submitted by:
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Technical Proposal

Executive Summary

January 16, 2024

Huerfano County, Colorado

Category A Applicant

The Gardner Public Improvement District (GPID) is located in Huerfano County (County), approximately 65 miles southwest of Pueblo Colorado on CO-69 about 22 miles west of I-25. Gardner is a census-designated place (CDP). The GPID is governed by Huerfano County, Colorado, The Gardner CDP has an area of 1,582 acres with a population of 206 persons. The Gardner electors voted to become of Public Improvement District in 2010 which gave governance to Huerfano County. The area is primarily residential with a couple of small businesses, a small school, and a community center. This application to the Bureau of Reclamation is for Advanced Metering Infrastructure (AMI), telemetry and SCADA which will enable the County to operate critical components of the system remotely which will include the wells, tank levels, and meter reading. It will thereby improve efficiency in water management, performance, and sustainability, and ensure health and safety. This project will take approximately 90 days and will be completed by October 31, 2026. This project is not located on a federal facility.

Project Location

The Gardner Public Improvement District (GPID) is located in Huerfano County, along Colorado Highway 69 approximately 65 miles southwest of Pueblo and 27 miles northwest of Walsenburg, the county seat. The coordinates for Gardner are 37.7833° N, 105.1656° W.

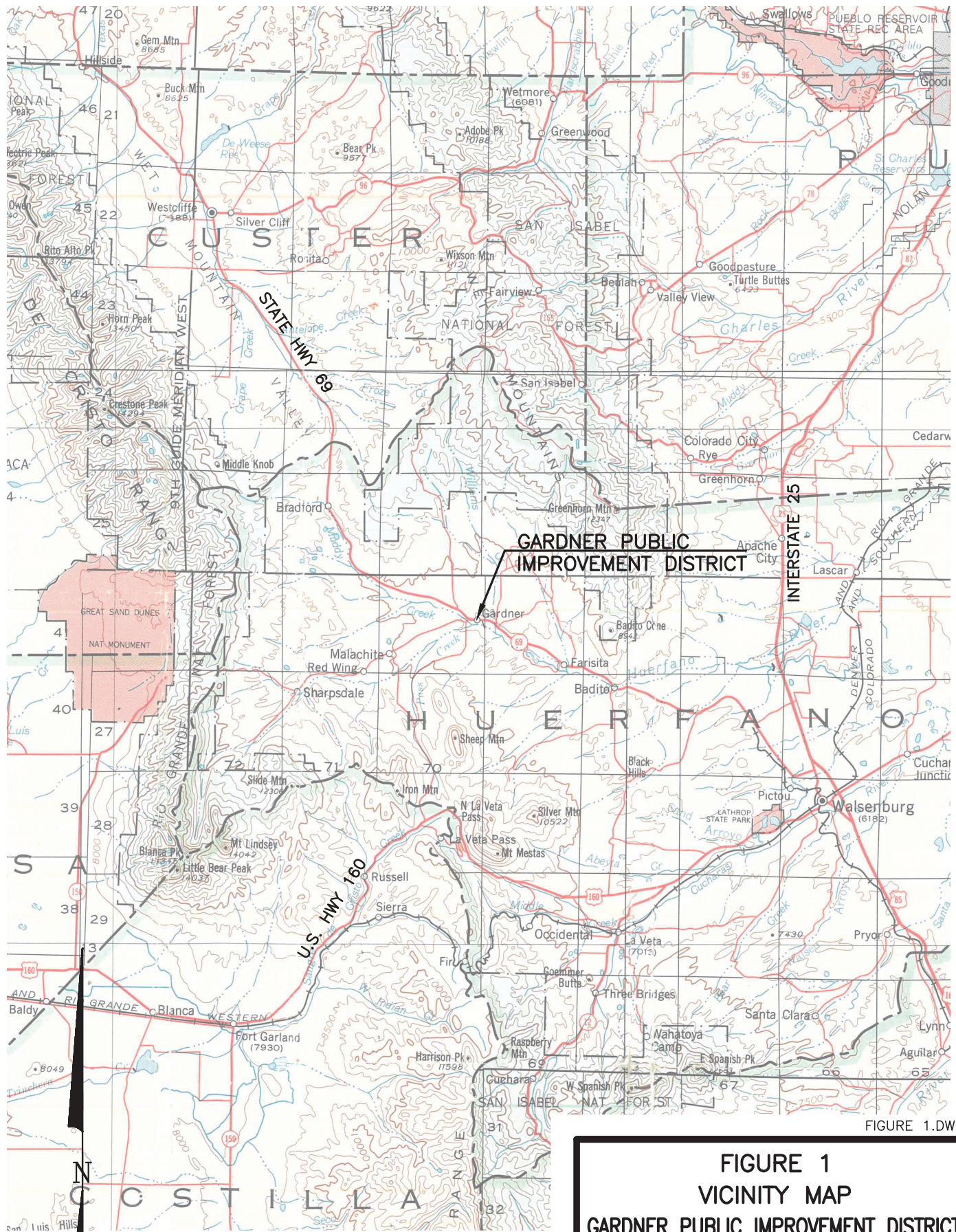


FIGURE 1.DWG

FIGURE 1
VICINITY MAP
GARDNER PUBLIC IMPROVEMENT DISTRICT

GMS, INC.

CONSULTING ENGINEERS
 611 N. WEBER, SUITE 300
 COLORADO SPRINGS, COLORADO 80903

MARCH 2022

SCALE: 1" = 8miles
 (approximate)

SOURCE: USGS MAP OF COLORADO

Technical Project Description

Gardner is a census-designated place (CDP). The GPID is governed by Huerfano County, Colorado. The Gardner CDP has an area of 1,582 acres with a population of 206 people. The GPID, which operates the water and wastewater systems for unincorporated Gardner, is governed by Huerfano County. Walsenburg, Colorado is the county seat and the location of public works employees, who manage the GPID and its water distribution system. Gardner is approximately 27 miles from Walsenburg.

Although no Preliminary Engineering Report has been completed recently for the GPID water system, GMS, Inc., Consulting Engineers (GMS, Inc.) has provided consulting services on the water distribution system for GPID for numerous years.

All customers are required to have water meters, which are located in the water meter pit at each location, either residence or business. The GPID has been systematically replacing meters as they have failed and have chosen to replace meters over five to ten years old in order to not have all the meters fail at once. Most of the meters are only ten years old and do not need replacing at this time. The meters are currently read via radio read which requires the operator to travel to Gardner from Walsenburg (1 hour round trip) and drive around to collect the data. Most of the existing meters and all of the new meters have the ability to connect to Neptune's AMI network which will provide real time water usage in Walsenburg; thus, allowing the customers to be billed remotely from Walsenburg.

The GPID wells do not have any telemetry or SCADA to operate it remotely. Increasingly, the wells will either not turn off (causing the water tank to over flow) or not turn on (causing the tank to empty). Either of these scenarios is not ideal for the operation of the system; one causes the waste of water while the other causes a water shortage. When this occurs, the operator is notified by the local customers and then the operator must drive to Gardner from Walsenburg (27 mile drive). The best alternative to reduce these occurrences is to install well control telemetry, which will allow the GPID to control its wells remotely in addition to monitoring the water tank levels.

In consultation with GMS, Inc., several priorities have been established to better manage the District's water distribution system:

- Telemetry and SCADA to be added to the wells to ensure its proper operation and monitor the tank level. This will allow the County to remotely monitor the system to ensure there is not a waste of water. There is a need to operate remotely in order to restart or stop the well pumps if they are not working properly. Additionally, there are times it will need to be turned on remotely, as when there is a fire in the area and the water tank needs to be continuously filled.
- AMI will be added as part of the water meter system. This will allow for real time water usage data from all the customers and allow for the customer leaks and breaks to be identified within 24 hours rather than on a monthly basis (what is done currently). The County can notify the customer without traveling to the location regarding the leak/break.

For this Bureau of Reclamation grant, Huerfano County is requesting funding for telemetry/SCADA for the wells and the water tank and AMI for the meters. Huerfano County will provide the match for this grant through local funds.

The area that will be used for mobilization on this project is the yard adjoining the wastewater treatment facility. The area is already heavily disturbed and no site preparation is required due to the limited requirements of adding telemetry to the system. Mobilization and storage of materials is anticipated to be extremely limited if needed at all given the nature of the project. Installation will require the following:

- AMI Gateway Collectors to include ethernet, outdoor UPS system and antenna for the metering system
- Cellular Telemetry unit at Well House 1
- Cellular Modem and antenna system at Well Site 2
- Enclosure with PLC and cell modem at tank
- Security items to include alarms

Once the funding is in place and the notice to proceed is granted, the County will solicit bids for the materials, equipment, and installation. The County does not have the manpower to implement this project on its own. This project will take approximately 90 days and will not proceed until after October 31, 2024, and will be completed prior to October 31, 2026.

Assisting the County in this endeavor is GMS, Inc. This firm will assist the County with the overall project as needed. GMS, Inc. will assist with the administrative requirements for the funding being pursued for the project. GMS, Inc. has undertaken these types of projects since 1978 and has successfully performed these services on projects across the state. Given GMS, Inc.'s experience, expertise and professionalism, the County is confident the project will be managed to the highest of standards.

Evaluation Criteria

Evaluation Criterion A—Project Benefits (35 points)

Benefits to Gardner Public Improvement District's Water Delivery System

The project of installing AMI and telemetry/SCADA will have many benefits:

- *Improved accuracy of water usage reading* – Unintended error while recording water usage at the point of reading the meter and manually entering the data for billing purposes will be eliminated. AMI will transmit the water usage of each customer over a defined period, ensuring precisely recorded consumption, while identifying anomalies in the system and identifying water leaks/breaks in real time.
- *Reduced man-hours* - The data collection from each customer will automatically occur through the AMI system, rather than manual meter reading once a month. This will save on the drive time to Gardner as well as time it currently takes to collect the data. Additionally, the system will not require someone to manually enter the usage data for billing purposes as all data will automatically be uploaded to the software. There will be a time reduction when there is a suspected leak as the County will have the ability to notify the customer within 24 hours. The customers will be able to address the leak quickly. Currently, prolonged leaks cause a high water bill which then causes a lot of administrative time for the County as the County works with the customer.
- *Improved performance of the water system* – Smart meters will alert the County when a meter is no longer measuring water usage, loses efficiency, or a leak is occurring on the customer side. Additionally, the telemetry/SCADA will improve the operation of the wells in conjunction with the water tank by allowing the system to be controlled and ensuring the water tank is not overflowing.
- *Improved efficiency* – Meter data will be downloaded directly into the water billing software and billing will occur automatically, reducing time and improving accuracy. Utilizing AMI will allow for customers to be billed remotely and will no longer require the operator to commute to Gardner to collect the data.
- *Reduced liability* – There will be less liability with public works employee's reduction in commuting the 30 miles each way to respond to and solve problems. There will also be a reduction in risk by having better control of the wells and water tank functions ensuring adequate water in the event of an emergency.
- *Consequences of status quo* – If this project is not funded, none of the above items will be realized. There will be no improvement in efficiencies of managing the system, meter reading will continue on a monthly basis rather than real time, control of the wells remotely will not be possible increasing the potential problems in the system of water overflows or the lack of water, and the risk of liability will climb over time.

Broader Benefits

The primary broader benefit of adding AMI to the customer metering system is to *improve efficiency and sustainability*. With telemetry/SCADA at the wells and water tank, the water supplier will have the advantage of quickly identifying anomalies in the system as it relates to the tank levels to minimize the tank from overflowing or being emptied. This in turn will reduce water waste, thereby improving sustainability. Colorado is chronically in drought conditions so having

the ability to detect leaks and breaks in the water supply means the repairs will be made more quickly, thereby minimizing waste and reducing water scarcity (though on a small scale).

Therefore, it will NOT

- Improve broader water supply reliability at the sub-basin or basin scale
- Increase collaboration and information sharing
- Benefit species, recreation, or economic development
- Complement work being done in coordination with NRCS.

Evaluation Criterion B—Planning Efforts Supporting the Project (25 points)

Plan Description & Objectives

The County has not conducted a Preliminary Engineering Report (PER) for the GPID's water distribution system recently, but the County Commissioners have concurred that the abovementioned improvements are necessary and have been included the project in the budget. The primary purpose of this project is to improve water efficiency and sustainability. The objective is to use technology to provide live data access and control of the water system as well as to collect data and prepare the billing to customers.

Plan Development

In cooperation with GMS, Inc., Huerfano County is taking action to improve the GPID's water distribution system. GPID has identified deficiencies in the water system and has presented this to the Huerfano County Commissioners whom are in full support of this project. To demonstrate its commitment to the project, the County Commissioners have added the match through local funds. The County will seek State funds as well for the match to minimize the burden of the project.

Support for the Project

- *Is the project identified specifically in the planning effort?* Yes, the County and GMS, Inc. agree to the improvements of adding AMI to customer metering system and adding telemetry / SCADA to the wells and the water tank. The GPID has included this in the budget thus this becomes the planning effort.
- *Is this type of project identified in the planning effort?* Yes, this project is identified in the planning effort and in the County budget.
- *Explain whether the proposed project implements a goal, objective, or addresses a need or problem identified in the existing planning effort.*
 - Adding the abovementioned items will address the problem of having no real-time data to manage the system if there is a customer water leak or break, power outage, and ability to control the well and tank remotely.
- *Explain how the proposed project has been determined as a priority in the existing planning effort as opposed to other potential projects/measures.* GMS, Inc., in cooperation with the County, have identified areas for improvement in the District's water distribution system. Huerfano County Commissioners are in full support of the improvement plan and this project. The only other identified project to address deficiencies is the replacement of

distribution system valves but this is outside the scope of what is applicable to this grant; therefore, it is not included.

Evaluation Criterion C—Implementation and Results (20 points)

The County will request for bids for equipment, materials, and installation since the County does not have the capacity to perform the work on its own. The following describes the nature of the work performed for the implementation and completion of the project.

- No design and engineering will be required for this project.
- The County will solicit bids for the AMI and the telemetry/SCADA. It will take approximately one month upon receipt of Notice to Proceed from Bureau of Reclamation.
- The County will advertise for the bid as required by local, state, and federal guidelines.
- No permits are required for this project.
- All other federal guidelines for construction projects will be followed.
- It is estimated that this project will be completed within 90 days of contract execution with the contractor to add the technology components. The work will begin after October 31, 2024, and will be completed by October 31, 2026.

Evaluation Criterion D—Nexus to Reclamation (5 points)

This project does not demonstrate a nexus with a Reclamation project or activity.

Evaluation Criterion E—Presidential and Department of the Interior Priorities (15 points)

Sub-criterion No. E1. Climate Change (15 points)

By utilizing well telemetry and SCADA, this project will help prevent, identify and repair unaccounted-for-water losses due to leaks and breaks in the distribution system. Therefore, this project strengthens water supply sustainability to increase resilience to climate change.

Sub-criterion No. E2. Disadvantaged or Underserved Communities

According to the White House Council on Environmental Quality's Interactive Climate and Economic Justice Screening Tool, Huerfano County is identified as disadvantaged in the following categories:

- Low Income – 90th percentile (above 65th percentile)
- Climate Change –
 - Projected Wildfire Risk - 94th percentile (above 90th percentile)
- Energy – Energy Cost – 92nd percentile (above 90th percentile)
- Legacy Pollution – Yes, Abandoned Mine Land
- Workforce Development – High school education 11% (above 10%)

Sub-criterion No. E3. Tribal Benefits

There are no tribal benefits to this project because there are no Tribes in this census tract.

Budget Proposal

Funding Plan and Letters of Funding Commitment

The total project budget for this project is \$90,000. This proposal request is for \$45,000 from the Bureau of Reclamation. The County will provide the matching \$45,000.

Table 1. – Summary of Non-Federal and Federal Funding Sources

FUNDING SOURCES	AMOUNT
Non-Federal Entities	
Local Match	\$45,000
Non-Federal Subtotal	\$45,000
REQUESTED RECLAMATION FUND	\$45,000

Table 2. – Total Project Cost Table

SOURCE	AMOUNT
Costs to be reimbursed with requested Federal funding	\$45,000
Costs to be paid by the applicant	\$45,000
Value of third-party contributions	
TOTAL PROJECT COST	\$90,000

Table 3. – Budget

BUDGET ITEM DESCRIPTION	\$/UNIT	QUANTITY	TOTAL COST
1. AMI Gateway Collectors			
a. V4 Ethernet	\$10,615	1	\$10,615
b. Outdoor UPS System	\$2,515	1	\$2,515
c. Antenna	\$444	1	\$444
d. Startup and Training	\$5,000	1	\$5,000
2. Telemetry Sites to Monitor Water in Well Houses and Tank			
a. Cellular telemetry unit at Well House 1	\$19,811	1	\$19,811
b. AB Micro 850 with cellular modem and antenna system at Well Site 2	\$11,700	1	\$11,700
c. NEMA enclosure with Micro 850 PLC and cell modem at tank	\$22,613	1	\$22,613
d. Security items including alarms	\$2,327	1	\$2,327
Subtotal			\$75,025
20% Contingency			\$14,975
TOTAL ESTIMATED PROJECT COSTS			\$90,000

Budget Narrative

The County has received quotes and will receive updated quotes for equipment and materials from suppliers. The County will request install prices from suppliers. The County will bid the project as required and needed for a successful installation. The County/GPID does not have the capacity to perform the work on its own.

- A 20% contingency is included in the budget proposal due to the increasing costs of goods and services at this time and to ensure adequate budget for installation.

- No design and engineering are required for this project.
- No permits are required for this project.
- Davis-Bacon wages will be utilized.
- It is estimated that this project will be completed within 90 days of contract with the construction contractor. The work will begin after October 31, 2024 and will be completed by October 31, 2026.

Following information demonstrates possible details to be requested in the bid for materials and installation:

- At Well House 1 (aka Well A): Supply and install a fully fabricated cellular telemetry unit receive the remote site data and instigate well-run commands. This telemetry enclosure will also house a Red Lion RC30007” operator display that will provide touchscreen control for the two wells, monitoring of tank level, text message alarming, a webhost for remote login/control, and a datalogger. A second cellular modem will provide access to the internet for the alarming and login, and a UPS will supply emergency power to the Red Lion and cell modems during power outages.
- At Well site 2 (aka PCPA3): Install a small controller inside the existing pump control panel. Provide a cellular modem and antenna system.
- At the tank: Provide Nema 3R painted enclosure with a PLC and cell modem. The solar system will consist of a 20’ Rohn Mast, two 120watt 24VDC solar panel and two 100Ah batteries with charge controller. Insulation against the cold. Labor includes time to erect rohn tower and install mimo antenna on tower.
- Security items: Provide a freeze alarm, intrusion alarm, and flood alarm for the two well sites. Add a power failure relay for Well house 1.
- Furnish and install new Neptune Gateway V4 Ethernet
- Furnish and install outdoor rated UPS system
- Furnish and install Neptune R900 Gateway RF Antenna

Environmental and Cultural Resources Compliance

The project will be fully within existing disturbed areas, which would most likely classify the project as a Categorical Exclusion (CE) to NEPA, as there will be no new ground disturbance related to this project specifically. If awarded this grant for this sub project, the County recognizes that Reclamation will complete its own environmental review process and determine the required compliance with NEPA.

It is also recognized that Reclamation will also consider if the project will cause effects to historic properties. In previous water projects of similar scope, SHPO determined there would be no adverse effect. As with the NEPA review, the County recognizes that Reclamation may require another Section 106 review.

Required Permits or Approvals

No permits or approvals are required for this project.

Overlap or Duplication of Effort Statement

At the time of submission, there are no potential conflicts of interest.

Conflict of Interest Disclosure

Per the Financial Assistance Interior Regulation (FAIR), 2 CFR §1402.112, the County does not have any known conflicts of interest. If during the award process a conflict arises, the County will inform Reclamation.

Uniform Audit Reporting Statement

The County recognizes that any organizations expending \$750,000 in U.S. Federal award funds within one year will require a Single Audit report. After the project is complete, the County will determine if a Single Project Audit is required and will complete if necessary.

Certification Regarding Lobbying

This request for funding is less than \$100,000 in Federal funding. No Certification Regarding Lobbying is required.

Letters of Support

Please see Appendix A.

Official Resolutions

The official resolution will be submitted under separate cover within 30 days.

Letters of Funding Commitment (if not above)

No letters of funding commitment are needed for the project. The County will be providing the matching funds for this project.

Unique Entity Identifier

Huerfano County UEI: DL84BCKRKZC7