

WaterSMART Grants: Small-Scale Water Efficiency Projects for Fiscal Year 2021

Bureau of Reclamation NOFO No. R21AS00300

City of Milpitas

Pressure Monitor Data Logger Program

March 17, 2021

City of Milpitas
Public Works Department
1265 North Milpitas Blvd
Milpitas, CA 95035

Project Manager: Tony Ndah
Director of Public Works
1265 N. Milpitas Blvd.
Milpitas, CA 95035
Phone: 408-586-2602
Email: tndah@ci.milpitas.ca.gov

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TECHNICAL PROPOSAL AND EVALUATION CRITERIA

Executive Summary

March 16, 2021

City of Milpitas

Milpitas, Santa Clara County, and CA

Project Manager:

Name: Tony Ndah

Title: Director of Public Works

Phone: 408-586-2602

Email: tndah@ci.milpitas.ca.gov

Applicant Category: Category A

Grant Funding Request: \$31,474

Non-Federal Matching Funds: \$31,474

Total Project Cost: \$62,948

Project Duration: (23 months) 02/2022 to 12/2023

Estimated Project Start Date: 02/2022

Estimated Project Completion Date: 12/2023

Located on Federal Facility: The Project is not located on a Federal Facility

Unique Entity Identifier: 038142642

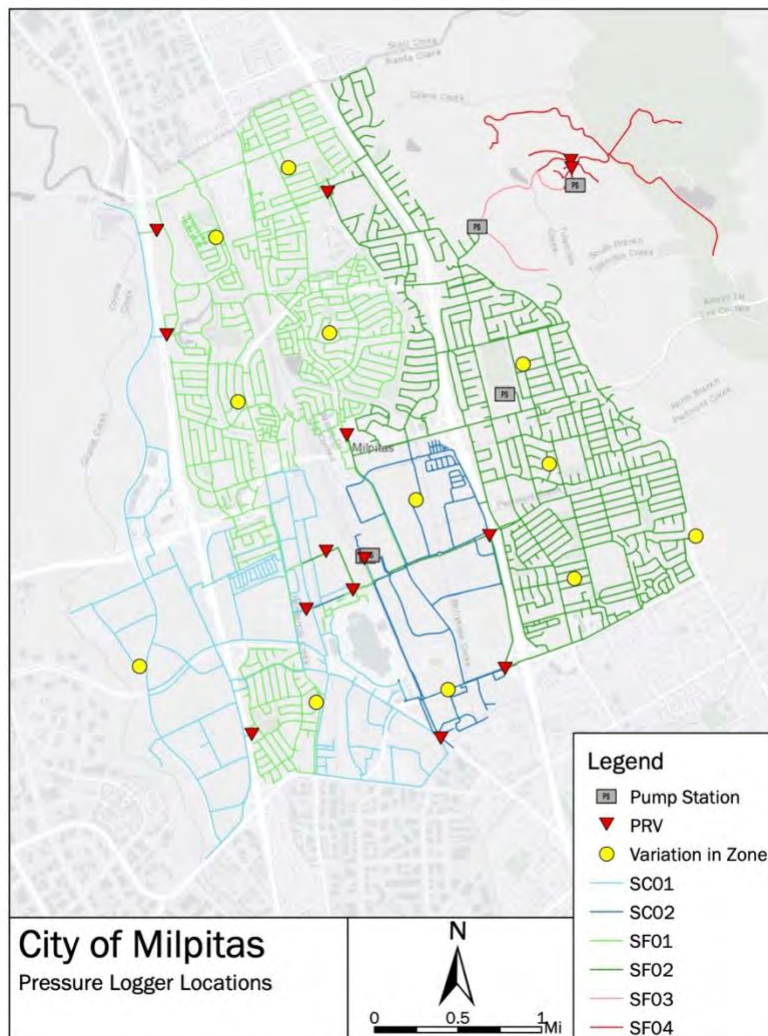
Project Summary

The City of Milpitas will improve the operational efficiency of its water distribution system by installing pressure monitoring equipment in the City's water system. Specifically, the City will install 31 pressure data loggers at critical pressure regulating valve infrastructure sites and distributed within larger pressure zones to monitor pressure variation in the system. The logger sites include locations near the 14 pressure reducing valve stations (PRVs) and 5 pump stations. Logger locations were selected to provide advanced warning on when and where large leaks begin, to identify locations with excessively high-water pressure, and to identify pressure transients, or high-frequency pressure waves traveling in the pipe network that can lead to leaks and breaks. This project will result in fewer water leaks and faster leak detection enabling the City to ensure optimal delivery of water throughout the entire system, increase water resiliency, and help to conserve the City's water supply for future generations. The project meets the goals of the City's Ongoing Leak Management Program, Urban Water Management Plan, Water Shortage Contingency Plan, Water Master Plan, Capital Improvement Plan, and Climate Action Plan. The proposed project is one element of a larger effort by the City to reduce water loss and maximize water reliability for residents.

Project Location

The Project Area is located in the City of Milpitas, Santa Clara, CA. The water pressure data loggers will be installed at 14 PRV stations, 5 Pump stations and at 12 critical points (these 12 points are termed “variation in zone” on the map legend below). A map of the location where the data loggers will be installed is provided below.

FIGURE 1: PROPOSED PRESSURE DATA LOGGER LOCATIONS



Additional background: Milpitas’ 14 square miles of land is situated between two major freeways (I-880 and I-680) and a county expressway. The City (pop. 80,000) has approximately 10 square miles of valley floor to the west and 4 square miles of hillside areas to the east. Industrial and commercial areas are located on the valley floor with residential areas on the valley floor and hillside.

Project Description

The City owns, operates and maintains a potable water distribution system which consists of approximately 245 miles of water main, 5 water tanks, 5 pump stations, 14 pressure regulating valves, an emergency supply well and emergency interties. As part of the City's Ongoing Leak Management Program, the City has identified critical sites where pressure data loggers can be installed to provide more comprehensive monitoring of pressure throughout Milpitas's potable water distribution system. This project will entail installation of 31 pressure data loggers at critical pressure regulating infrastructure sites to monitor. These include locations near the 14 pressure reducing valve stations (PRVs) and 5 pump stations. The following activities to be accomplished:

1. Acquisition of materials (pressure data loggers). The City will issue an RFP to collect bids both to purchase the pressure data loggers and for the installation. The City is purchasing dual channel loggers for the PRV locations and single channel loggers for all the other locations.
2. Installation of pressure data loggers by the manufacturer. City staff will work closely with the consultant to ensure the loggers are installed in the correct locations.
3. Monitoring of data to help better understand the water system. This would include investigating pressure anomalies that were observed from the data.
4. Identification and implementation of performance system adjustments as needed. Pressure adjustments would be based on investigation results and study of pressure anomalies that were observed from the data.

Evaluation Criteria

E.1.1 Evaluation Criterion A— Project Benefits

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

This project involves the installation of pressure data loggers to provide more comprehensive monitoring of water pressure throughout Milpitas' potable water distribution system. Logger locations were selected to achieve the following benefits:

Provide advanced warning on when and where large leaks begin: Pressure monitoring data may be used to flag sharp pressure drops in the system that could indicate that a large leak is occurring. Advanced warning will allow Milpitas to respond to and repair the leak faster, reducing leak duration and leakage volume.

Provide insight on pressure reduction opportunities: Pressure monitoring data may be used to identify areas with excessively high pressure. Higher pressures correspond with greater leak flow rates, more frequent leaks, and shortened infrastructure life. In these areas, the pressure monitoring data may then be used to refine settings on PRVs to reduce excessive pressures while

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maintaining minimum fire flow requirements. Distribution system pressure is a powerful factor in leakage management. Thus, even incremental reduction in pressure can provide numerous benefits.

Identify and minimize pressure transients: Pressure monitoring data may be used to identify pressure transients occurring in the system. Transients are high-frequency pressure waves traveling through the pipe network. They can be caused by pumps turning on and off, valves shutting too quickly, or even hydrant operation. These pressure events can directly cause leaks and breaks and leads to increased wear and tear on system infrastructure.

- *Extent to which the proposed project improves overall water supply reliability*

Pressure data loggers will help increase the reliability of the water system by allowing the City to take into consideration both the pressure the pipes are under and the age of pipes to help target replacement of the infrastructure prior to failing.

This project is part of a City-wide plan to manage an aging water distribution infrastructure to ensure reliability and efficiency. The City is deploying Advanced Metering Infrastructure (AMI) meters which will assist residents in identifying and fixing leaks on their properties. In addition, the City is installing a Supervisory Control and Data Acquisition (SCADA) system as part of a City-Wide Energy and Water Savings Project. This project will communicate with the SCADA system to operate remote changes to the system.

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

Given Milpitas buys water from Valley Water, which draws water from California's Central Valley, the geographic scope benefits extend beyond the Santa Clara County water basins, reaching to the Central Valley itself.

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

The City is already engaged in collaboration and information sharing among water managers in the region as a member of the Bay Area Water Supply & Conservation Agency (BAWSCA). As part of BAWSCA the City participates in a Water Loss Education and Knowledge Workgroup. At these meetings, the City will share best practices and also let other neighboring jurisdictions become aware of this grant opportunity.

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

This project will increase system efficiency and result in water savings for all water consumers across Milpitas.

E.1.2 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?*

The proposed project has been determined as a high priority in existing planning efforts as part of a City-wide plan to manage an aging water distribution infrastructure. Alongside the proposed project the City is converting all customer meters to Advanced Meter Infrastructure (AMI) technology and upgrading the water delivery communications by implementing SCADA. All of these efforts combined help the City reduce water loss and increase efficiency in the overall water system.

The City prioritizes annual leak detection efforts in its Capital Investment Plan (CIP). In addition, the proposed project also aligns with goals indicated in the City’s Ongoing Leak Management Program, City’s Water Master Plan, Urban Water Management Plan, Water Shortage Contingency Plan, and Climate Action Plan (CAP).

California has recently passed legislation related to Water Conservation and Proactive Leak Detection to help the state better prepare for future droughts, including:

- Senate Bill (SB) 555 requires Urban Retail Water Suppliers (URWS) to meet 2028 volumetric performance standards to minimize water loss. The proposed Project will help the City meet this standard.
 - AB 1668 & SB 606 “Water Conservation As A Way of Life” legislation requires URWS to develop a urban water use target which incorporates the above mentioned water loss performance standard.
- *Explain how the proposed project has been determined as a priority in the existing planning effort as opposed to other potential projects/measures.*

The City is required to report to the State on an annual basis through a Water Loss Audit which includes an analysis of pressure to the system. This project will address the component analysis required in the annual audit. This supplements other measures that the City is undertaking to conserve water and detect leaks.

E.1.3. 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.*

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Table 1 outlines the major tasks, milestones, and schedule for the proposed project. The project will be completed between February 2022 and December 2023.

TABLE 1: PROJECT TASKS AND MILESTONES

SCHEDULE	Year 1				Year 2			
	Feb-May 2022	Jun-Aug 2022	Sep-Oct 2022	Nov-Dec 2022	Jan-Apr 2023	May-Jul 2023	Aug-Oct 2023	Nov-Dec 2023
Milestone/Task								
Task 1 Acquisition of Materials								
Task 2 Installation of the Pressure Data Loggers								
Task 3 Ongoing Monitoring								
Task 4 Adjustments to the system as needed								
Submit Interim Performance Report								
Submit Final Performance Report								

- Describe any permits that will be required, along with the process for obtaining such permits.

No permits are required for this project.

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

The City hired a consultant to put together a plan to manage water loss across the City’s water system. The components of the plan include meter testing, leak detection, and pressure monitoring. Through this plan the City has determined the locations to place the pressure data loggers to achieve the largest benefit through a larger leak detection and pressure monitoring effort. No additional engineering or design work is needed to implement the project.

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

No new policies or administrative actions are required to implement this project.

- Describe the timeline for completion of environmental and cultural resource compliance. Was the timeline for completion of environmental and cultural resource compliance discussed with the local Reclamation office?

There is no compliance required because this project is an exempt project from NEPA and CEQA.

E.1.4. Evaluation Criterion D— Nexus to Reclamation

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

The City of Milpitas purchases water from Valley Water, which has water rights with the Reclamation's Central Valley Project (CVP). There are other projects in Santa Clara County that have received Reclamation Grant funding, as provided in the link below.

<https://usbr.maps.arcgis.com/apps/MapJournal/index.html?appid=043fe91887ac4ddc92a4c0f427e38ab0>

- *Does the applicant receive Reclamation project water?*

Yes, because Milpitas receives water from Valley Water from the Penitencia and Santa Teresa Treatment Plants. Most of the water that goes into the Santa Teresa treatment plant comes from the CVP.

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

Milpitas does not have a Reclamation project, as of March 2, 2021.
(<https://www.usbr.gov/projects/>)

- *Is the project in the same basin as a Reclamation project or activity? Will the proposed work contribute water to a basin where a Reclamation project is located?*

This project will benefit both the Sacramento and San Joaquin River Basins as it will allow City of Milpitas to become more resilient and help our wholesaler Valley Water limit its reliance on the CVP. As there are several Reclamation projects located in the two aforementioned basins, this project will support Reclamation's initiative to manage and protect water resources by its potential to protect limited water resources during periods of water shortage such as droughts or natural disasters that disrupt potable water distribution systems.

- *Will the project benefit any tribes?*

This project will not directly benefit any tribes.

PROJECT BUDGET

Funding Plan

The following section respond to the Funding Plan questions.

Please identify the sources of the non-Federal cost-share contribution for the project, including:

- *Any monetary contributions by the applicant towards the cost-share requirement and source of funds (e.g., reserve account, tax revenue, and/or assessments).*

Monetary contributions (read: cash from the City's operating budget) will be applied for: a) *equipment, supplies, and materials* (the channel data loggers, installation equipment, the data plan), and b) *contractual obligations* to install the loggers and associated training by contractors for City of Milpitas employees.

- *Any costs that will be contributed by the applicant.*

A total of \$31,474 in the form of in-kind and cash contributions by City of Milpitas include a) all salaries and wages, indirect fees, b) partial expenses of the materials and supplies, and shipping costs, and c) partial expenses associated with contractual obligations for installing equipment and associated training of City of Milpitas staff, who will help the contractors to install the equipment.

- *Any third-party in-kind costs (i.e., goods and services provided by a third party).*

Not applicable

- *Any cash requested or received from other non-Federal entities.*

Not applicable

- *Any pending funding requests (i.e., grants or loans) that have not yet been approved and explain how the project will be affected if such funding is denied.*

Not applicable

- *In addition, please identify whether the budget proposal includes any project costs that have been or may be incurred prior to award.*

Not applicable

Budget Proposal

Table 2 describes City of Milpitas’ sources of non-federal and federal funding sources of revenue

TABLE 2: SUMMARY OF NON-FEDERAL AND FEDERAL FUNDING SOURCES

SOURCE	AMOUNT
Costs to be reimbursed with the requested Federal funding	\$31,474
Costs to be paid by the applicant	\$31,474
Value of third-party contributions	\$0
TOTAL PROJECT COST	\$62,948

Table 3 provides the City of Milpitas’ proposed project budget.

TABLE 3: BUDGET PROPOSAL

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	Recipient Match	B. of Reclamation	TOTAL COST
	\$/UNIT	Quantity				
Salaries and Wages						
Public Works Director	\$ 84.62	3	Hourly	\$254	0	\$ 253.86
Public Works Manager	\$ 78.85	5	Hourly	\$394	0	\$ 394.25
Public Works Senior Lead	\$ 47.33	28	Hourly	\$1,325	0	\$ 1,325
Maintenance Worker	\$ 35.70	14	Hourly	\$500	0	\$ 500
Senior Analyst	\$ 51.78	2	Hourly	\$104	0	\$ 104
Fringe Benefits						
Public Works Director & Manager & Senior Analyst	47.85%	\$752	Percentage	\$ 360	0	\$ 360
Public Works Senior Lead & Maintenance Worker	48.35%	\$1,825	Percentage	\$ 882	0	\$ 882
Supplies and Materials						
2 Channel Pressure Loggers	\$ 1,195	14		\$ 8,365	\$ 8,365	\$ 16,730
1 Channel Pressure Loggers	\$ 995.00	17		\$ 8,458	\$ 8,458	\$ 16,915
Data Plan	\$ 350.00	31		\$ 5,425	\$ 5,425	\$ 10,850
Shipping	\$ 750.00	1		\$ 375	\$ 375	\$ 750
Materials to Install Pressure Loggers	\$ 6,002.00	1		\$ 1,801	\$ 4,201	\$ 6,002
Contractual/Construction						
Installation of loggers and Training	\$ 7,500.00	1		\$ 2,849	\$ 4,651	\$ 7,500.00
TOTAL DIRECT COSTS				\$31,092	\$ 31,474	
Indirect Costs						
Type of rate	10%	\$3,819		\$382	0	\$382
TOTAL ESTIMATED PROJECT COSTS				\$31,474	\$ 31,474	\$ 62,948

Budget Narrative

Salaries and Wages

- All salary and wages will be applied as matching funds. We anticipate a total of 52 hours of staff hours. The staff will oversee all aspects of the project including purchasing materials and supplies and managing the contractor to install the data loggers. Note the contractors will train City of Milpitas how to use the data loggers; some of the listed staff hours include time for staff to receive training.

Fringe Benefits

- All fringe benefits will be applied as matching funds. Fringe benefit rates of 47.85% were applied to the Public Works Director, Public Works Manager, and Senior Analyst. The benefit rate of 48.35% was applied to the Public Works Senior Lead and Public Works Maintenance Worker.

Travel

Not applicable.

Equipment

Not applicable

Materials and Supplies

- We will be purchasing two types of pressure data loggers and an associated data plan.
An additional \$6,002 will be expended towards the purchase of materials needed to install the data loggers including: 45 Coiled Hose 1.5m, 45 Quick release coupling 1/4" BSP Male Thread and Female adaptor, 31 LTE Antenna T-Bar with 3m of cable, 1 USB to IR reader cable for PC.

Contractual

- The manufacturer that will sell the City of Milpitas the pressure data loggers will also be contracted to install the data loggers; the contractor will also train City staff how to use the data loggers.

Third-Party In-Kind Contributions

Not applicable

Environmental and Regulatory Compliance Costs

Not applicable

Indirect Costs

- City of Milpitas proposed an indirect rate of 10%, which will be applied towards our cost share. The base for the indirect rate is the sum total of salaries and fringe benefits.

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.*
 - There will be no earth-disturbing work or other environmental impacts anticipated as the work will take place in an urban setting. (To emphasize our point, the data loggers will be installed in locations that can be easily accessed, an especially important consideration as we would want to ensure that the data loggers can be easily checked for reliability on a periodic basis.)
- *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 listed or proposed listed species or designated critical habitat will be impacted by this project as the pressure data loggers will be installed in urban areas of Milpitas. The work requires no ground disturbance and will be performed under a Categorical Exclusion/Categorical Exemption.
- *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 wetlands or other water bodies that fall under CWA jurisdiction as “Waters of the United States” lie within the project boundaries
- *When was the water delivery system constructed?*
 - The water delivery system was constructed in 1954
- *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.*
 - This project will not impact any irrigation system given the highly urban setting where the data loggers will be installed.

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- *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 buildings listed or eligible for listing on the National Register of Historic Places will be impacted.
- *Are there any known archeological sites in the proposed project area?*
 - No known archeological sites lie within the project area.
- *Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?*
 - This project will have no adverse impacts 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 impact Indian or tribal lands in any way.
- *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?*
 - This project will not have any adverse impacts on ecological communities or ecosystem dynamics.

OFFICIAL RESOLUTION

The Milpitas City Council will review and adopt an official resolution for this project on April 6, 2021. The resolution will be sent to the Bureau of Reclamation within 30 days of the application deadline.

UNIQUE ENTITY IDENTIFIER

038142642