COLORADO
Department of Public Health & Environment

Drinking Water Project Needs Assessment (PNA) Form

Water Quality Control Division

General Information

Facility Name:	PINEWOOD SPRINGS WATER DISTRICT			Original ID:	
Mailing Address 1:	183 Cree Court	Mailing Address 2:		County:	
City:	Lyons	State:	CO	Zip Code:	80540
Property Address 1:	183 Cree Ct	Property Address 2:		County:	
City:	Lyons	State:	CO	Zip Code:	80540
Latitude :	39.7517291	Longitude :	-104.992107		
Name of Project:	Pinewood Springs Water Main Infrastructure Replacement Project				

Type of Project (Check all that apply)

☐ Treatment ☑ Distribution / Transmission ☐ Water Supply ☐ Water Storage

Please enter the following information for your organization if you have it.

1. Applicant Information:

First Name:	Patricia	Middle Name:		Last Name:	Peritz
Phone Number:	720-201-5190				
Mailing Address1:	163 Apache	Mailing Address2:			
City:	Lyons	State:	CO	Zip Code:	80540
E-mail:	psychicreadingsbypatty@gmail.com				

Consulting Engineer Information:

First Name:	James	Middle Name:		Last Name:	Easter
Phone Number:	720-289-5168				
Mailing Address1:	286 Wichita Road	Mailing Address2:	P.O.Box 739		
City:	Lyons	State:	CO	Zip Code:	80540
E-mail:	easterj@alum.mit.edu				

Self-Certification:

☑ Yes ☐ No Does the system intend to self-certify all or a portion of the project?

If yes, please identify the portions of the project that the system will self-certify.

☑ Distribution system piping ☐ Pump station (without integral treatment) ☑ Valves, hydrants, and/or meters

Provide additional explanation, if necessary:

For the five sections targeted for improvement, in addition to the total 10,708 linear feet of water main to be replaced, hydrants and valves will be installed for each section, with pressure relief valves (PRVs) and upgraded service lines upstream of the meter for each service location.

2. Executive Summary

The PSWD water main infrastructure includes (5) sections needing to be replaced. These were installed in the 1970s. The aging and failing system compromises a productive economy in our community with the broken water main infrastructure affecting multiple areas including recurring, excessive, and costly repairs of leaks, causing pipe joints to break and valves to leak, excessive loss of water due to leaks, creating water outages and disruption to water services for our customers. The water mains failing also creates reported issues for customers with continual breakdown of their appliances, water heaters, toilets, and other fixtures due to low water pressure. In some cases, during leak repairs, the system is compromised; in these cases, customers may be notified to boil water for safety until the issue is resolved or otherwise notified. During those situations and in those specific areas, the water is not safe to drink, creating a temporary public health issue. Replacing these sections would resolve the recurring issues, provide an efficient and effective system where PSWD would be able to provide safe drinking water service our customers deserve, and satisfy the District's responsibility to bring the system up to code compliance in several areas . The PSWD proposes a project to improve the existing water system by replacing water mains with improvements such as hydrants, valves and operated Service Lines that will reduce or eliminate chronic, worsening leakage from the system. They will improve the District's ability to maintain the reserve of potable water stored and to assure every household served has a reliable source of safe, clean water, delivered a consistent, appropriate pressure. These improvements will enable the district to conduct routine water quality monitoring at an increased number of monitoring points and better achieve its goal of delivering water to the community in which its residents can have confidence in its quality and reliability.

3.System Structure and Operation

3.1 Legal Ownership of System (TMF: Managerial-1)

First Name: Pinewood Springs Water District

Mailing Address1: 183 Cree Court Mailing Address2:

City: Lyons State: CO Zip Code: 80540

Phone Number: 303-823-5345 Fax:

3.2 Organizational Chart

Include an Organizational Chart as Attachment 2.

3.3 Plans (TMF: Managerial-2)

Monitoring Plan - Include a copy of the Monitoring Plan as Attachment 3.
Cross Connection Control Plan - Include a copy of the Cross Connection Control Plan as Attachment 4.

Water Conservation Plan (if system sells over 2,000 acre feet of water annually) - Include a copy of the Water Conservation Plan as Attachment 5. ☑ Not Applicable

3.4 Current Operator in Responsible (ORC) Charge (TMF: Technical-14)

First Name: Robert Middle Name: Last Name: Longworth

Certification Number: 103631 Certification Expiration Date: 06/30/2025

Operator Certification Level (check one) ☑ Staff Operator ☐ Contract Operator

Treatment ☐ Class D ☑ Class C ☐ Class B ☐ Class A

Distribution ☐ Class 4 ☐ Class 3 ☑ Class 2 ☐ Class 1

Combined Treatment/Distribution ☐ Class S ☑ Class T

3.5 Operator Certification (TMF: Technical-15)

☑ Yes ☐ No Do the system operators have adequate operator certification levels for the proposed project as defined by Regulation 100 Water and Wastewater Facility Operators Certification Requirements?

Explain the impact of the proposed project on the required operator in responsible charge (ORC) certification level and other predicted staffing changes.

Operator Certification. The District's ORC has adequate operator certification levels ORC: Robert Longworth, Certification #: 103631, expires. 6/30/25, Treatment class: C, Distribution: 2, adequate certification: Yes, impacts: unknown. and will be monitoring the project, taking photos and daily summaries of work done. There are no predicted staffing changes. The project will be subcontracting the work to be done. The proposal received so far is from Temple Construction. Temple Construction is well equipped. We have complete fully owned lines of : Directional bores machines, large trenchers, excavators, loaders, backhoes, fusing machines and various other specialty equipment. Temple Construction can handle any type of project ranging from mountain construction and space limited urban settings. Temple Construction specializes in High Density Polyethylene Pipe (HDPE) and related fittings. Temple Construction is on the forefront of this industry using state of the art equipment from vendors such as ISCO industries and McElroy Fusion Equipment. All of Temple Construction's fusion equipment is well maintained to ensure quality performance. Temple Construction employees attend ISCO industries fusion schools and seminars every year. Temple Construction has the ability to fuse pipe diameters from 3/4" to 36".

3.6 Record Keeping (TMF: Managerial-3)

Describe the system's record retention policy that meets the requirements of the Colorado Primary Drinking Water Regulations (Regulation 11) including: record type, retention period, and record location.

Admin records and operations records are kept separately by each department head.
Admin keeps all the financial records, both hardcopy and digital, for 10 years at the Water Office located in the Pinewood Springs Fire Station.
Operations keeps all the water treatment and quality records, both hardcopy and digital, at the treatment plant.

3.7 Annual Budget (TMF: Financial-1)

☑ Yes ☐ No Does the system prepare an annual budget?

☑ Yes ☐ No Does the system prepare and maintain a Capital Improvement Plan?

Please provide a narrative of the process for annual budgeting and financial planning.

In July of each year a budget is prepared according to the suggested format, showing previous year actuals, current year actuals and proposed, and next year budget. As the current year progresses, the actuals are updated. In September, a preliminary budget is prepared. It is adjusted in early October and presented to the Board at the October Board meeting. The Board adjusts the figures if they see a need. The Proposed Budget for the next year is then presented to the residents at a public meeting in November. After the public meeting, the Board adopts the Budget at its regular meeting. They also adopt a resolution to appropriate funds and to set the mil levy. The adopted budget is continually updated with the current actuals until the end of the year at which time the adopted and certified budget and budget message is submitted to the State by Jan 30 of the new budget year.

3.8 Financial Status (TMF: Financial-2)

Describe the current financial status and multi-year financial planning for the system including O&M costs, existing debt, required reserve accounts, rate structure, other capital improvement programs, and the system's reserve policies.

In 2003 the District asked the resident to approve a mil levy increase to fund a raw water storage area. They approved a 3 Mil project that allowed an approximate 28acre raw water storage reservoir. The mil levy for Pinewood (this year 20.912) is very high for a community of this size. Because of this, we have only increased our rates by the standard 3 to 5 percent cost of living increase every year since 2010. This severely hampers our ability to make major capital improvements. We have a Base rate that covers day to day expenses. There is a system Improvement fee paid monthly by all of $36.00. this amount is deposited into our Water System Rep and Maintenance account and used for everyday repairs and any replacements that we manage to do.
In the last 20 years, we have added radio read meters, added the ability to view our entire system electronically with Scada, refurbished 3 of 5 of our oldest storage tanks and done several smaller line replacements.
We have paid off 2 loans (still have 3). Our total debt as of 12/31/22 is $2,300.110.00. We have two required reserve accounts. One has 3 months' worth of operating funds with a current balance of $126,334.96. The other has one loan payment of 162,600.25, a requirement of CWCB.

20-year cash flow projection
Include a copy of the 20-year cash flow projection as Attachment 8.

3.9 Audits (TMF: Financial-5)

Has the system submitted audits to the Department of Local Affairs or has the received State exemption of the statutory audit requirement?

☑ Yes - Provide a copy of the most recent audited financial statement or exemption from State as Attachment 9. ☐ No

3.10 Insurance (TMF: Financial-6)

Does the system maintain general liability insurance?

☑ Yes - Provide a copy of the most recent audited financial statement or exemption from State as Attachment 9. ☐ No

4. Project Purpose and Need

Discuss the issue or concern that the proposed project will address. Specific issues are outlined below. All issues must be discussed in each sub section below even if they are not the project driver.

4.1 Health and Compliance

Summarize the system's compliance status that necessitates the proposed project.

Currently, the system at the (5) designated sections is aging, failing, and is not code compliant at several levels. Improvements will bring the system up to code compliance at all levels, eliminating suspect material, possibly lead pipes, used 30+ years ago.
Newly installed mains will satisfy the frost protection level regulation for this altitude of 6500-7500 feet, requiring a minimum trench depth of 7 feet for depth and fill coverage surrounding a water main at a depth of 6 ½ to 7 ½ feet. This will ensure that the line will not freeze during the cold winter months. The current water main lines are at a depth of 3-4 ½ feet.
The total of 12,208 lineal feet of HDPE pipe in the (5) designated sections must be replaced with pipe at the 4-inch diameter code-compliant level. The current pipe is 1 inch in diameter.
Improvement of the (5) designated sections is necessary to stop water leaks and conserve our limited supply of water. Replacement of the failing and leak-prone sections is required to prevent breakage of pipe joints and leakage at valves and pipe sections, necessitating recurring and expensive repairs with frequent and lengthy water outages.These improvements will resolve the chronic issue of residents' low water flow by bringing the psig (pounds per square inch gauge) pressure up to recommended levels at this altitude of 6500-7500 feet.By replacing aging pipe sections with new, clean, and tested pipe, the improvements will help ensure that bacterial levels meet the state standard regulation levels.The improvements will help resolve residents' complaints of continual breakdown of appliances, water heaters, toilets, and other fixtures due to low water pressure. Included in the improvements are replacement of water line up to the code-compliant level of 5/8" upstream of the meter pit for existing houses. A bacterial test will be performed and all accepted regulation levels for water quality satisfied before the line is brought into service.

4.2 Existing facility limitations

Summarize existing water system facility(ies) limitations that necessitate the proposed project.

The PSWD strives to maintain a level of finished (potable) water in storage adequate to meet the community's needs for a substantial period even under conditions of high demand and low production. Available storage capacity can hold this buffer; however, the rate of leakage from the (5) sections targeted for improvement may jeopardize the system's ability to maintain it. To conserve water and keep levels of stored water adequate to meet demand, it is necessary to replace the failing and aging water mains in the (5) sections, stop the leaks contributing to the high loss of water threatening storage levels.Pinewood Springs lies in the mountainous terrain of Larimer County, an area of Colorado historically at risk of water shortages. The primary source of raw water for Pinewood Springs is the Little Thompson River. A highly variable stream in the best of times, the Little Thompson has been adversely affected by climate change across the region, with a trend of diminished mid-and late summer flows across the past two decades. This, along with high risk of wildfires in the dryer climate, has made it critically important that water supplies be assured and maintained. Conservation has become a central goal for the District and for residents. PSWD has strict rules and regulations to prevent excessive water consumption. Usage charges per gallon increase sharply beyond 3000 gal/mo/household, more steeply yet beyond 6000 gal/mo/household. Egregious usage offenses result in steep fines. Enforcement of usage limits is applied to any usage beyond the set limits, including leaks from customers' water lines, appliances, toilets, etc.The District remains responsible for conserving water on its side of the meter. The District spends a great deal of its budget continually finding and repairing leaks from these troubled sections.The District employs one ORC and a laborer in the field – a level of staffing inadequate to keep pace with the need.4.3 Operations and Maintenance Issues.

4.3 Operations and Maintenance Issues

Summarize operational and maintenance (O&M) issues with the existing water facilities.

Expedited replacement of the current water main infrastructure five (5) sections will resolve issues of recurring, expensive repairs, eliminate suspect material used decades ago, resolve issues of residents' complaints of low pressure, conserve limited water supply, and bring the infrastructure up to current code compliance at all levels.
All these improvements will help to reduce strain on the system and mitigate difficulties in operations and maintenance. For example, reducing or eliminating the chronic need for repairs will ease the burden on PWSWD maintenance staff, which currently only includes one fulltime operator who is also tasked with the day-to-day maintenance of the system. Replacing existing pipes with those of modern, code compliant material will reduce the likelihood of significant leaks in the future. With pressure consistently between desired limits, time will not be spent dealing individually with residents' issues involving low water pressure. Conserving limited water supply will enable storage to be maintained at desired levels, illuminating ad hoc actions to restore water storage lost to leaks. Bringing the water system up to code compliance at all levels will assure confidence among residents and make routine maintenance more efficient and predictable.

5. Existing Facilities Analysis

5.1 Existing Source Water– Section required for treatment and supply projects

☑ Not applicable (for distribution and storage projects, only)

5.1.2 Water Rights (TMF: Technical-3)

Names of water storage rights: Maure Hollow Reservoir, Crescent Lake/Powelson
Reservoir, Crow Lane Reservoir No. 1, Crow Lane Reservoir No. 2 and Pinewood
Springs Reservoir. Call records for senior water rights on the mainstem of the South Platte River located in Water Districts 1 and 64 were also evaluated to determine the impacts of senior calls from these two districts would affect the time period available to divert water in-priority from the Little Thompson River. The results of the analysis indicate there is water available in-priority during four years of the nine years evaluated to fill all five reservoirs annually which are sufficient to meet existing water demands.

5.2 Existing treatment– Required for treatment and supply projects only

☑ Not applicable (for distribution and finished water storage projects, only)

5.3 Distribution - Required for distribution and storage projects only

☐ Not applicable (for supply and treatment projects, only)

5.3.1 Overall Distribution System Description (TMF: Technical-11 and -12)
Discuss the existing finished water distribution system including: gravity vs. pumped pressurization, facility age, material type, condition of materials, amount of AC pipe, number of pressure zones, pump stations, and storage tanks.

The system employs both gravity and pumped pressurization to maintain desired pressure in the mains and to the service lines. There is a pumping station located at the treatment plant on Cree Court and also at May Ave. and Kiowa RD, Hwy 36 and Pinewood Drive. Gravity head is supplied by the respective elevations of five storage tanks in three storage locations. The pumped system maintains desired volumes in the storage tanks, and operates in concert with the storage tank gravity head to make up desired pressure to the service lines. There are three pressure zones for high (150 to 40 psi), medium (120 to 50 psi), and low (122 to 25 psi) pressure ranges. There are two pumps with two filters feeding the finished water system. The pumps and filtration system draw water from a river intake, and / or a supply line from the reservoir. The source(s) of raw water at any point in time are dependent upon river flow, and demand.

Discuss the estimated distribution system losses (i.e., the percent of water lost in the distribution system and not delivered/billed to customers).

5.3.2 Pressure (TMF: Technical-13)
Discuss if the existing distribution system is designed to maintain a minimum pressure of 20 psi at all ground level points in the distribution system under all conditions of flow as required in the CDPHE Design Criteria for Potable Water Systems (Design Criteria). The Design Criteria also recommends a normal working pressure in the distribution system of approximately 60 psi, and not less than 35 psi. Discuss how the distribution system meets the required and recommended distribution system pressures.

The system is designed to maintain a minimum pressure of 20 psi under worst-case conditions at all ground level points. The pump types and operating parameters of pump stations at filtrate building, May pumps and Cherry pumps (Hwy 36) are chosen to assure that a minimum of 60 psi will be achieved at 35 gpm. This, with expected head loss at maximum demand, will result in a minimum delivery pressure of 40 psi at all service locations and elevations. However, the five areas targeted for system improvement have been subject to multiple repairs over the course of the system's history, with the result that transitions of cross-section have unavoidably been introduced. These may introduce additional head loss in some locations which, under conditions of peak demand, may cause the delivery pressure to fall below the design minimum of 20 psi. It is intended that the proposed system improvements will minimize head loss in these locations, assuring that the desired pressure range of 35-60 psi is met under most conditions, and the minimum of 20 psi is met under all conditions.
Operating the system above a set minimum tank level allows for adequate system pressure above 45 psi and flow to maintain preferred system pressures through typical conditions. If tank levels drop low enough, the system will not maintain flow and/ or pressures to adequately supply the next zone, or higher elevations of the zone in discussion, without Pump operation.

Include a map illustrating any locations where a minimum pressure of 20 psi cannot be provided under all conditions of flow as Attachment 15. ☐ Not Applicable

5.3.3 Meters (TMF: Financial-4)
Discuss if the existing distribution system includes water meters.

The existing system does include water meters. See Attachment 24 for a listing of meters by pressure zone and associated replacement section.

6.Facility Planning Analysis

6.1 Planning Area Description

6.1.1 Project Area Map
Provide a map showing a minimum of a 3-mile radius around the project area that includes environmental features (lakes, streams, wetlands, floodplains). Map must include current and proposed service area, existing drinking water facilities (plants, major distribution lines, water sources, storage facilities), existing wastewater outfalls/permitted discharge points, and any new or affected sources with regard to the pertinent watershed. Include the map as Attachment 16.

6.1.2 Urban Growth Boundary

☐ Yes ☑ No Is the project within or near an urban growth boundary?

6.1.3 Local and Regional Issues

☐ Yes ☑ No Were local and regional planning efforts considered?

Please describe.

☐ Yes ☑ No Were local and regional water quality and/or quantity efforts considered?

Please describe.

☐ Yes ☑ No Was consolidation with another water system / treatment facility considered?

If yes, describe the consolidation considerations. If no, please indicate why consolidation was not considered.

6.2 Population and Water Demand Projections (TMF: Technical-2)

For a 20 year planning period, forecast the population growth, projected increase in Equivalent Residential Taps (ERT), and projected drinking water demands.

Current ERT - As Calculated in the Prequalification Form: _____

Population and Demand Projections - The department generally accepts two methodologies for projecting water flows over the 20 year planning period. Other methodologies are acceptable with a clear explanation and all assumptions and parameters listed:

☐ Method 1: Population based projections. Recommended for primarily residential systems and/or for systems without water meter data

☑ Method 2: Equivalent Residential Taps (ERT) Analysis. Recommended for systems with a high multifamily, commercial, industrial, irrigation demands.

Method 1 and 2 templates can be found at the end of this form.
Attach the population projection as Attachment 17.

Discuss supporting data and reasons for projected future growth during the 20 year planning period.
Note: Projects designed solely to serve future development or population growth are not eligible for State Revolving Fund financing.

See Attachment 24, PSWD Projected gallons_costs 2024_Average gallons 2022_2023

6.3 Source Water Planning

6.3.1 Overall Water Resource Management Description (TMF: Technical-2)
For a 20 year planning period, describe the system's water resource management plan.

See Attachment 24, Augmentation_plan_02-1976, for court filings and decisions regarding PWSWD's Overall Water Resource Management Plan.

6.3.2 Water Rights (TMF: Technical-3)
For the 20 year planning period, discuss how the system will be able to meet the projected population and increased industrial/commercial water demands.

See Attachment 18, App_for_water_rights_09-22-2003.pdf and Augmentation_plan_02-1976, for court filings and decisions regarding PWSWD's water rights.

Provide documentation supporting the system's water rights, if not provided in section 5.1.2 above, as Attachment 18.

6.3.3 Source Water Supply Capacity (TMF: Technical-4)
For the 20 year planning period, discuss if the source water supply infrastructure is capable of delivering adequate source water to meet projected needs.

The Pinewood Springs Water District (PWSWD) maintains a reserve of raw water in Pinewood Reservoir with a capacity of 32 acre-feet of water available for processing. Water from the Little Thompson river may be diverted into Pinewood Reservoir at times when the river is not on call by users with senior water rights. It is expected that usage will not exceed the average ability of the District to replenish the reservoir at times when the river water is available, thus assuring that an adequate reserve of raw water will be available for the next 20 years.
In addition, the PWSWD also maintains a reserve of finished water in five storage tanks with a combined capacity of 1.25 million gallons. If this reserve is maintained at desired levels, PWSWD will be able to supply potable water to the community for a period of several months when source water (river water and wells) is unavailable.

7.Assessment of Alternatives

7.1 Alternatives

For each alternative, please provide:
1. A description of the alternative addressing the issues identified in Section 4: Project Purpose and Need. (TMF: Technical-7)
2. Capital cost estimates and annual operation and maintenance costs.
3. Advantages and Disadvantages of each alternative.

Alternative 1 Title : Do Nothing

Alternative 1 Description (2000 character limit):

Doing nothing is an option; however, not a good alternative. Doing nothing would impact water supply, costs and most importantly quality.

Alternative 1 Capital and Operation and Maintenance Costs (2000 character limit):

Doing nothing would mean spending fewer funds; however, customers expect their fees be used for capital, operations and maintenance. Doing nothing would reduce O&M costs by an estimated $150,000 per year. The system would erode to the point of a non-useable service.
$0

Alternative 1 Advantages and Disadvantages (2000 character limit):

Advantages- There are no advantages of doing nothing.
Disadvantages-This would have a negative economic impact to individual property owners and this residential subdivision would be without a water system resulting in reduced property values. Property owners would have to consider an alternative water source: hauling water, which is extremely expensive. The Water District would cease to exist as it would be out of compliance as a special taxing district in the State of Colorado. This is an extreme alternative.
If the district did no repairs or upgrades, ultimately, the system would break down to a point that it would not be operational. The District would not be in a position to justify its fees and over a relatively short time the system would not be able to provide water.

Alternative 2 Title : Install a new water system, District-wide

Alternative 2 Description (2000 character limit):

Another option would be installing a completely new water system, in all areas. While the application for financial assistance focuses on five (5) specific, especially troublesome areas, it is likely other areas will need replacement and/or upgrades over time because of the aging infrastructure.

Alternative 2 Capital and Operation and Maintenance Costs (2000 character limit):

There would be a substantial decrease in the use of contract labor, maintenance, and excessive system and water line repairs potentially reducing O&M costs by a minimum of $150,000 per year. A completely new district wide system would cost an estimated $10,000,000.

Alternative 2 Advantages and Disadvantages (2000 character limit):

Alternative 2 Advantages and Disadvantages
Advantages - This would be an ideal option; however, the cost would be significant. Such a plan could result in new water systems that would be more efficient and effective, up to standards and codes, and reduce maintenance costs. Estimated costs $10M.
Disadvantages - This alternative method could substantially reduce O&M addressing the severe leakage issues currently experienced. A completely new district wide system would result in new pipes, and in compliance with how the system is installed. A completely new district wide system would provide the district the ability to produce water efficiently and be able to conserve water at a high level without continually losing tens of thousands of gallons of water monthly due to continuous leaks. It would also reduce O&M costs substantially without continually compromising critical system equipment. Utility costs would decrease with an efficient running system. System equipment would last longer as it is designed to.

Alternative 3 Title : Continued Repairs

Alternative 3 Description (2000 character limit):

This alternative is what Pinewood Springs Water District is currently doing now: continuous and constant short-term, repairs one leak at a time. This is neither efficient nor effective because with each repair, creates another weak link in the pipe. Rather what is being proposed in this application is replacing road length water line areas in areas with the greatest and highest needs based on leakage and repair data.

Alternative 3 Capital and Operation and Maintenance Costs (2000 character limit):

O&M costs according to 2022 expenses were $376,572. These costs would be expected to increase. According to the Colorado Department of Transportation over the past few years, costs for construction have increased by 40% and they use a rate of 7% per year for cost increases. If using a 7% inflation rate costs for O&M could increase by $$26,360 in 2023 to $402,932. If using a 3% inflation rate costs for O&M could increase by $11,297 in 2023 to $387,869. If using a 10% inflation rate costs for O&M could increase by $37,657 in 2023 to $414,229. Without water main replacements, cash out would increase at the varied 3%, 7% or 10% inflation rate. Cash out would decrease with water main replacements.

Alternative 3 Advantages and Disadvantages (2000 character limit):

Advantages- Replacing road length sections in high priority areas is important because of limited water supply. We need to be as efficient as possible and not continue to waste water through continued high leaking areas. Replacement is the right thing to do, the responsible thing to do for good stewardship of this limited resource: water.
Because of the limited water supply, water restrictions are in place and limited to 200 gallons per day per household. Water needs to be managed carefully and the proposed financial assistance will help with conserving this precious resource.
The water system was developed in the 1960s – 1970s. It is by definition an aging infrastructure and the water pipes have become brittle subject to more leaks. Completely replacing a road length section is a smarter way to approach these five (5) priorities areas.
Disadvantages- Over more time leak repairs could cost (5) times more than replacing the water mains. If using an outside contractor, and depending on the severity of the leak, can cost $1,200-$5,000 per leak if even successfully repairing the leak the first time without two more leaks following in the same water main. If repairs are conducted in-house (staff) the costs are substantially less; however, limited staffing resources are a challenge. The cost is about one-fourth of that for a contractor.

Provide discussions of additional alternatives as Attachment 19.

8. Selected Alternative

8.1 Justification of Selected Alternative (TMF: Technical-6)

Please demonstrate why the selected alternative best meets system needs based on both monetary and non-monetary considerations. For treatment facility projects, if the EPA-BAT technology is not selected then the report must include a treatment rational.

The selected alternative uses the existing technology, described in section 8.4. This best meets system needs for the following reasons: The selected alternative of replacing sections of water main will allow for a decrease in loss of treated water, resulting in lower run times at the filtration plant. Reduce the number of leaks in these given areas. Improve water quality and safety in these areas. And allow for more consistent system pressures in and outside the given areas decreasing the potential for backflow contamination throughout the system.
The replacement of sections of main will also prevent the need for frequent and recurring leaks in the areas of discussion. Reducing operations costs and emergency service interruptions. The five sections mentioned have been the cause of more than 50 Leaks in the past 24 months.
The proposed project is not for a treatment facility; hence, a treatment rationale is not applicable.

8.2 Technical Description and Design Parameters (TMF: Technical-5)

For the selected alternative, please describe all proposed project components and assumed design parameters.

The components making up the proposed system improvements are listed in Attachment 24, Description of Proposed System Improvements. Major categories are these:

- Mains Piping
- Valves
- Hydrants
- Pressure Regulating Valves

The system parameters to be achieved with the improvements are:

- Minimum 35 psi to be supplied at ground level under worst-case conditions
- Typical 45 psi to be supplied at section inlet under worst-case conditions
- Typical 65 psi to be supplied at service inlets under expected conditions
- Available flowrate minimum 62 gpm under expected conditions

8.3 Proposed Process Flow Diagram

Include a proposed treatment facility process flow diagram or map of the distribution system, as applicable as Attachment 20.

8.4 Appropriateness of Treatment Technologies (TMF: Technical-6)

Discuss appropriateness of the proposed treatment process(es) to meet Regulation 11 considering anticipated source water quality and potential sources of contamination.

Because the proposed project is for replacement of water mains and associated infrastructure only, this section is not applicable. It may be noted that the PSWD water system is code compliant and in conformance with EPA-BAT standards. See Attachment 24, O & M Manual Drawings and PWS WTP Exp Drawings.

8.5 Environmental Impacts

Describe direct and indirect impacts on floodplains, wetlands, wildlife habitat, historical and archaeological properties, etc., including any projected permits and certifications.

Because this project is replacing existing water pipeline, impacts are expected to be de minimus. There is one section of proposed water pipeline placement that is in the floodplain. Careful planning is proposed for construction to mitigate the floodplain impact. There are no pipelines in designated wetlands. Wildlife habitat will not be disturbed with the exception during construction which is temporary. There are no known impacts to historical and archaeological properties.

8.6 Land Requirements

Identify all necessary sites and easements, permits and certifications, and specify if the properties are currently owned, to be acquired, or leased by the applicant.

The proposed areas are owned and maintained by the Pinewood Springs Water District through utility easements.

8.7 Construction Requirements

Discuss construction concerns such as subsurface rock, high water table, limited access, or other conditions that may affect cost of construction or operation of a facility.

Because the proposed improvements will replace existing water mains, the impact of subsurface rock, high water table, limited access, or other conditions related to access, and operational difficulty will not be severe. The improvements involve some increase in depth for the water main trenches; however, this increase will not be as burdensome as creating new trenches in previously undisturbed soil. Similarly, the local conditions of water table and site access are the same as for original installation and will not impede operations significantly.

8.8 Operational Aspects

Discuss the operator staffing requirements, operator certification level requirements (including distribution), the expected basic operating configuration and process control complexities, and the operational controls and equipment that allows operational personnel to respond to routine and unanticipated treatment challenges, such as flow rate, chemical feed dosing, and process monitoring.

Water Distribution Operator- Under general supervision, monitors and controls water system facilities and equipment manually and/or using information technology to regulate raw water supply and treated water distribution, control hydroelectric power generation and monitor and control water quality; and performs related work as required.
Knowledge, Skills, and Abilities-Working knowledge of: The operation and maintenance of water distribution systems including major components of pumping plants, reservoirs and rate control valves; principles, methods and practices of water distribution and energy management within a multiple, complex cascade system; related equipment servicing and repair; mechanical, electrical and hydraulic principles; safety rules, codes, and regulations including confined space procedures.
General knowledge of: Uses and principles of computerized electronic equipment in the collection, storage and interpretation of operational data related to monitoring and control of raw water and treated water distribution facilities and equipment; routine operating report generation; principles and practices of servicing, repairing and calibrating water distribution system equipment; current technological developments in water distribution and water quality.
Skill in: Operating water distribution system equipment,automatic control devices and distribution system equipment using advanced SCADA systems techniques and complex analyses or water distribution system requirements; maintaining safe and reliable water supply to customers; servicing, repairing and calibrating plant equipment; actively participates in multi person operation by giving feedback and offering constructive recommendations for operational problems; operating without immediate or detailed supervision.
Ability to: Recognize unusual, inefficient, or dangerous operating conditions and take appropriate action,compile, evaluate and analyze operational data and information and take appropriate action.

8.9 Costs (TMF: Financial-2 and -3)

Summarize the capital costs associated with the selected alternative. The 20 year cash flow projection included in Attachment 7 must reflect the capital and operation and maintenance costs associated with the selected alternative. (No more than 2,000 Characters)

The 20 year cash flow projection estimates reflect the revenue inflow and capital and operation and maintenance outflows associated with the selected Alternative #3-Continued repairs.
According to the Colorado Department of Transportation over the past few years, costs for construction have increased by 40% and they use a rate of 7% per year for cost increases. If using this data, the 20-year cash inflow projected estimates of operations revenue are expected increase 7% per year. In the year 2022, operations revenue was $410,966. In the year ending 2044, operations revenue cash inflow projected estimate is expected to increase to $1,820,744. O&M cash outflows projected estimates are expected increase 7% per year beginning in 2022 with $376,572 and ending in the year 2044 increasing to $1,668,36. Capital cash outflow projections are expected to increase 7% per year in 2022 with $133,442 and ending in the year 2044 increasing to $165,622.
The 20-year cash flow projection estimates identify potential shortfalls in cash balances. Selecting Alternative #3-Continued repairs would create a never-ending loop of continuous and constant short-term repairs, one leak at a time. With each leak repaired it creates another weak link in the pipe. The aging and failing water main lines continue to be compromised with limitations to the number of repairs each main line can endure.

Cost Category Selection (Assign a percent to each applicable category)

Planning and Design Only (non-construction)	30
Construction - Treatment	5
Construction - Transmission and distribution	5
Construction - Source	60
Construction - Storage	0
Purchase of Systems	0
Restructuring	0
Land Acquisition	0
Water Rights	0
Other	0

Total: (must equal 100%)	100

Please include an estimate of the projected increase in and total average monthly user charges. Does the user charge system allow for billing, collection, and enforcement?

See projected increase in and total average monthly user charges, See attachment 24 PSWD Projected gallons_costs 2024_Average gallons 2022_2023.xlxs

8.10 Environmental Checklist

Include the Environmental Checklist for the Selected Alternative as Attachment 22.

8.11 Project Implementation

8.11.1 Proposed Schedule

Loan application	05/01/2024	Design Plans (60 day review period)	02/01/2024
Advertisement for bids	05/01/2024	Award Contracts	06/01/2024
Start Construction	06/24/2024	Complete Construction	11/16/2024

8.11.2 Public Meeting

Provide documentation of a public meeting held or describe when and where the meeting will be held. The meeting must be noticed for 30 days. Provide the public notice, proof of publication, sign in sheet, and agenda as Attachment 23 or provide to your project manager in the Grants and Loans Unit after the meeting has taken place.

☐ Include the public meeting documentation as Attachment 23.

Or, will be provided to the Grants and Loans Unit project manager after the meeting takes place.

9. Projecting Water Flows Method 1: Population based projections

Assumptions/Data			Information Source
Current System Population	1075	People	PSWD
Current Service Area Population (If providing water to neighboring community)	0	People	PSWD
Population Growth Rates	.2	% increase/year	
Average Daily per Capita Flow Rate	19884	Gallons per capita day	
Maximum Daily per Capita Flow Rate	21110	Gallons per capita day	
Peak Hour Factor		Gallons per capita day	

Year	System Population	Service Area Population (if different)	Average Daily Flow	Maximum Daily Flow	Peak Hour Flow
+0	0	0			

+5					
+10					
+15					
+20	1110				

10. Projecting Water Flow Method 2: Equivalent Residential Taps (ERT)

Current Equivalent Residential Taps (ERT)		
A	Number of active residential taps:	302
B	Total annual consumption (gallons per year) - Residential	6587040
C	Estimated equivalent residential tap water usage Annual flow per ERT = B / A	21811.3907284768
D	Total annual consumption (gallons per year) - Commercial / Industrial / Irrigation	264000
E	Estimated Commercial / Industrial / Irrigation flow in ERT # of commercial / industrial / irrigation ERT = D / C	12.1037673977993
F	Total ERTs = A + E	314.103767397799

Population and Flow Assumptions / Data			Information Source
Current System Population	302	People	PSWD
Current Service Area Population (If providing water to neighboring community)	0	People	PSWD
Population Growth Rates	.2	% increase/year	
Average daily flow per ERT	0.860558267	Gallons per capita day	
Maximum daily flow per ERT	26.17531395	Gallons per capita day	
Peak Hour Factor		Gallons per capita day	

Year	System Population	Service Area Population (if different)	Residential Taps (ERTs)	Multifamily Residential Taps (ERTs)	Commercial/ Industrial Taps (ERTs)	Irrigation Taps (ERTs)	Total Taps (ERTs)	Average Daily Flow	Maximum Daily Flow	Peak Hour Flow
+0	2023	1100	300	0	2	0	302	0.860558267	0.90558267	
+5										
+10										
+15										
+20	2043	1110	303	0	2	0	305	1.060558267	1.160558267	