



Water Pollution Control Project Needs Assessment (PNA) Form

Water Quality Control Division

1. Applicant Information:

Entity Name	Pagosa Area Water and Sanitation District			Original ID:	_____
Facility Name:	Pagosa Area Water and Sanitation District			County:	_____
Mailing Address 1:	PO Box 4610	Mailing Address 2:	_____	Zip Code:	81147
City:	Pagosa Springs	State:	CO	County:	_____
Property Address 1:	PO Box 4610	Property Address 2:	_____	Zip Code:	81147
City:	Pagosa Springs	State:	CO	County:	_____
Latitude :	39.7517291	Longitude :	-104.992107		
Name of Project:	Permit Compliance and I&I Reduction Improvements				

Type of Project (Check all that apply)

- New domestic wastewater treatment plant
- Construction project resulting in increase or decrease in design capacity of existing wastewater treatment plant
- Modification of wastewater treatment plant that will not result in a change to treatment capacity
- New or expansion of lift station
- Collection system (gravity sewer mains less than 24-inches in diameter)
- In-Kind Replacement (Replacement of any process or hydraulic treatment conveyance component with an identical or similar component. Usually in cases where equipment has reached end of life and replacement is necessary to maintain compliance)
- Stormwater
- Non-Point Source Discharge
- New or relocated wastewater treatment plant outfall
- New interceptor (24-inch diameter or larger pipeline)

Please enter the following information for your organization if you have it. Visit <http://fedgov.dnb.com/webform> and <https://www.sam.gov/portal/public/SAM/> for details. Note: you will be required to obtain both of these items prior to loan execution.

Owner Information:

First Name:	Aaron	Middle Name:	_____	Last Name:	Burns
Phone Number:	970-731-7631				
Mailing Address1:	100 Lyn Avenue	Mailing Address2:	_____		
City:	Pagosa Springs	State:	CO	Zip Code:	81147
E-mail:	aaron@pawsd.org				

Consulting Engineer Information:

First Name:	Steven	Middle Name:	_____	Last Name:	Omer
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Phone Number: 303-947-2699

Mailing Address1: 1485 Florida Road, Suite C206

Mailing Address2:

City: Durango

State: CO

Zip Code: 81301

E-mail: somer@plummer.com

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.

Collection system piping

Provide additional explanation, if necessary:

Inflow and Infiltration (I&I) control efforts may require renovation of service connections, manholes, and pipes smaller than 24 inches in diameter. The District will discuss I&I control with its connectors and it is likely that a sewer evaluation survey will be needed to identify specific targets to control I&I for the District's consecutive customers. The PAWSD also has records of many existing defects in their collection system that can help guide immediate repairs within the District's own system.

Streamlined Review:

Yes No Does the system intend to use the streamlined review process for all or a portion of the project?

If yes, please identify the portions of the project that the system will utilize streamlined review process.

Wastewater treatment new construction or modifications that do not include an alternative technology

Improvements to the Vista WWTP to comply with Total Inorganic Nitrogen (TIN) and Total Phosphorous (TP) permit limits, will be completed within the WWTF project. The WWTF project will not go through streamlined review, a site application amendment has recently been submitted to the CPDHE engineering review section.

The PAWSD also plans to pursue collection system (I&I) repairs that are not anticipated to require engineering section review; however if any should arise they are anticipated to qualify for a streamlined review process.

Yes No Does the system intend to use the streamlined review process for all or a portion of the project?

2. Executive Summary

The proposed project will replace major process equipment that is obsolete or unable to provide another 20 years of useful life, upgrade the treatment facility to enable compliance with upcoming permit limits for inorganic nitrogen and phosphorous removal, and seek to address collection system infrastructure deficiencies to reduce inflow and infiltration. The existing permit with the planned nutrient removal targets is included as Appendix A, a map of the Service area is attached is Appendix B.

The District received a compliance letter in 2023 related to sanitary sewer overflows during an especially heavy I&I season. Over the previous four to five years the PAWSD has made good progress with CCTV inspection of the collection system and documented many defects in the system within their GIS database. This provides a good starting point for planning and executing repairs to reduce I&I within the collection system. Plummer prepared a memo to help the District respond to parts of the compliance letter, it is included a Appendix C. The District has planned and budgeted to begin spending approximately \$1 million annually to address the known list of sewer repairs over the next four years.

Upgrades to the Vista Wastewater Treatment Facility are also planned (see OPCC in Appendix D) and a Site Application Amendment package was recently submitted for CDPHE engineering section review, the application package is included as Appendix E. The WWTF improvements are planned to include replacement of aging screening and grit removal equipment, sensor and control upgrades to the oxidation ditches to optimize them for biological denitrification, construction of a new secondary clarifier to replace the older 40-foot units, and installation of a dedicated wasting pump to improve sludge control. Estimated construction costs for the WWTF improvements project are \$8.2 million.

3.System Structure and Operation

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

First Name:	Pagosa Area Water and Sanitation District				
Mailing Address1:	100 Lyn Avenue		Mailing Address2:		
City:	Pagosa Springs	State:	CO	Zip Code:	81147
Phone Number:	970-731-7631	Fax:	970-731-2693		

3.2 Organizational Chart

Include an Organizational Chart as Attachment 2.

3.3 Current Operator in Responsible (ORC) Charge

First Name:	Joseph	Middle Name:	Christopher	Last Name:	Hewitt
Certification Number:	CWP-XA-01016-1016	Certification Expiration Date:	10/31/2025		
Operator Certification Level (check one)	<input checked="" type="checkbox"/> Staff Operator	<input type="checkbox"/> Contract Operator			
Treatment	<input type="checkbox"/> Class D	<input type="checkbox"/> Class C	<input type="checkbox"/> Class B	<input checked="" type="checkbox"/> Class A	
Distribution	<input type="checkbox"/> Class 4	<input type="checkbox"/> Class 3	<input type="checkbox"/> Class 2	<input type="checkbox"/> Class 1	
Combined Treatment/Distribution	<input type="checkbox"/> Class S				

3.4 Operator Certification

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.

The addition of phosphorous removal will impact the facility operator licensing requirements, raising it from a B to an A license requirement. The existing ORC already possesses an appropriate license certification.

3.5 20-year cash flow projection

Include a copy of the 20-year cash flow projection as Attachment 4.

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 Compliance

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

The existing discharge permit includes limitations for total inorganic nitrogen (10mg/L) and total phosphorous (1 mg/L), which come into effect in January of 2025 and 2026 respectively. The proposed treatment facility upgrade project is focused on replacing aging infrastructure and helping the facility meet the upcoming permit limits.

The planned collection system evaluation and repairs are also intended to help the facility meet compliance requirements associated with reduction of infiltration and inflow (I&I), and to keep the treatment facility influent flow rate within existing permit limits. The 2019 permit renewal included a requirement to reduce I&I by 25% annually; this requirement was renewed in 2023 after an especially heavy spring runoff led to several sanitary sewer overflows.

4.2 Existing facility limitations

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

The project is not intended to change existing facility capacity for flow of biological loading. The planned improvements will enable the Vista WWTP to meet upcoming permit limits of 10 mg/L of TIN and 1 mg/L of TP, while maintaining the existing permit limits.

4.3 Operations and Maintenance Issues

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

Some portions of the treatment facility have exceeded their planned service life and are in need of replacement. The step screen in the head works dates to 2002 and it allows significant pass through of solids to downstream processes. The aerated grit basin also dates to 2002 and newer technologies can provide much more efficient removal of grit. Aerating the raw influent is also considered counter productive to biological denitrification. The screening and grit removal equipment are planned for replacement within the existing concrete structures.

The two 40-foot diameter secondary clarifiers have exceeded their useful life and the concrete structures are also degraded. They will be replaced with a new secondary clarifier sized to meet CDPHE design limitations associated with chemical phosphorous removal. The new unit is planned to be an 80-foot circular clarifier.

Currently, the RAS pumps control both return sludge and waste sludge, necessitating an interruption in return in order to waste. Two further O&M related issues are planned to be addressed, each related to sludge wasting. First, a dedicated wasting pump is planned for installation to allow consistent return of activated sludge to the secondary process. Second, the sludge waste piping will be re-routed to waste directly to the aerobic digesters installed in 2009; allowing the system to abandon the older Oxigest tank and building. The Oxigest tank and the associated metal building show significant signs of deterioration and the tank does not provide any sludge treatment or significant storage as it is operated with only a few feet of sludge depth.

5. Existing Facilities Analysis

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

Not applicable (for collection system piping, lift stations, interceptors, only)

Existing Permitted Treatment Capacity: Flow: 3.7 (Jan to Mar) / 3.9 (Apr to Dec) MGD Loading: 3765 (Jan to Mar) / 3906 (Apr to Dec) Pounds per Day BOD5

5.1.1 Area Discharge Permits

Identify all other discharge permits for facilities discharging to the same stream segment as the existing treatment facilities.

The water quality assessment for the current discharge permit did not include any upstream facilities in CDPHE's derivation of effluent limits for the Vista WWTP.

5.1.2 Service Area

Describe the existing service area including residential, commercial and industrial users, as well as flows and loads from the service area.

See Appendix B - Service Area Map. The customer base is almost entirely residential, there are no regulated industrial dischargers, and the District has a grease trap requirement for commercial kitchens.

Flow records were analyzed from January 2021 through September 2023. During this period the annual average flow was 1.2 MGD, the maximum monthly flow was 3.4 MGD (recorded in Ppril 2023), and the peak hour flow was 6.2 MGD (recorded on March 22, 2023).

During the same period analyzed for flow data above, the organic loading averaged 2040 lbs/day and the peak organic loading was 3,096 lb/day (recorded in July 2021).

5.1.3 Facilities Layout and Description

Describe existing facilities including design capabilities and conditions of existing treatment processes including treatment processes used and major design parameters (e.g. process capacities, unit loading rates, side stream flows, and solids handling).

The Vista WWTP consists of three secondary clarifiers (one 60-ft units, two old 40-ft units), two aeration basins (oxidation ditches), aerobic digesters, and a solar thermal sludge drying facility. The process flow is as follows: wastewater enters a headworks building and is screened with a mechanical step screen, influent flow monitoring, aerated grit removal, and grit washing and dewatering equipment. Following the headworks are two oxidation ditch aeration basins operated in parallel and equipped with fine bubble, perforated membrane diffusers and three secondary clarifiers. Disinfection is accomplished via Wedeco open-channel UV equipment prior to final flow measurement and discharge to Stevens Draw.

5.1.4 Existing Process Flow Diagram

Provide a process flow diagram of the existing treatment system as Attachment 5.

5.1.5 Wastewater Flows

Please describe the existing wastewater flows and influent characteristics (including toxic pollutants), discharge permit limits, and overload conditions. Discuss and analyze the average, peak, dry, and wet weather flows. Describe flow contributions from residential, commercial, and industrial users, as well as infiltration and inflow.

The wastewater service area is almost exclusively residential in nature, with no regulated industrial dischargers. There has been a longstanding concern with seasonal I&I rates within the collection systems connected to the Vista WWTP. Clean water I&I peaks between February and April and declines to minimal amounts during the late fall and winter. Following a recent peak spring flow in March and April 2023, the District's objective is to reduce peak flows related to I&I below the rated plant capacity of 3.9 MGD. See Appendix D - Collection System Evaluation, prepared in response to the 2023 SSO compliance order for more information.

5.1.6 Appropriateness of Treatment Technologies

Discuss if the existing treatment process(es) are appropriate to meet the current discharge permit considering existing influent quality and discharge permit limits.

There will be no changes in the rated hydraulic and organic load capacity of the Vista WWTP as a result of the project. However, the 2019 permit renewal included compliance schedules for meeting TP limits and TIN standards. The project improvements will include biological denitrification and chemical phosphorus removal sufficient to meet the permit requirements.

5.1.7 Capacity of Treatment Technologies

Yes No Is the capacity of the existing wastewater treatment system appropriate to accommodate wastewater flows through the next 20 years?

Please explain:

The PAWSD is currently in discussion with the Town of Pagosa Springs Sanitation General Improvements District (PSSGID) on the potential to build a joint treatment facility at the site of the former PSSGID lagoon WWTP. The current project is intended to keep the Vista WWTF in compliance while the two districts continue the discussion and determine the best location for the community to invest in a treatment facility to meet future needs. Appendix C includes a review of current and projected population served in the PAWSD collection system.

5.1.8 Operational Controls

Describe if the existing treatment processes have appropriate operational controls.

The WWTF is operated manually or by local control panels. With the addition of online probes for ORP, DO, and ammonia, the current level of automation should be sufficient for operational control of the planned improvements.

5.2 Collection - Required for collection system, lift station, and interceptor projects only

Not applicable (for treatment and outfall projects, only)

5.2.1 Service Area

Describe the existing service area including residential, commercial and industrial users, as well as flows and loads from the service area.

See Appendix B-Service Area Map.

Influent flow records to the treatment facility were analyzed from January 2021 through September 2023. During this period the annual average flow was 1.2 MGD, the maximum monthly flow was 3.4 MGD (recorded in April 2023), and the peak hour flow was 6.2 MGD (recorded on March 22, 2023). During the same period analyzed for flow data, the organic loading to the WWTF averaged 2040 lbs/day and the peak organic loading was 3,096 lb/day (recorded in July 2021).

5.2.2 Overall Collection System Description

Discuss the existing collection system including: gravity collection pipelines, facility age, material type, condition of materials, and amount of AC pipe. Describe the location and capacities of all relevant lift stations and interceptor sewers and their relation to the proposed project. Provide a map of the existing collection system as Attachment 6.

Refer to Attachment 6 - Collection system map, and Appendix D - Collection System Evaluation for information regarding the overall age, and material composition of the collection system.

Provide information on current infiltration and inflow.

The PAWSD collection system experienced record setting I&I during the spring of 2023. A peak hour flow rate of 6.2 MGD was recorded and the District received a notice of violation letter and compliance schedule related to sanitary sewer overflows. Plummer helped the District respond to the requirements of the compliance schedule and the District has committed to spend significant funds over the next four years to correct sources of I&I. Over the past 5 plus years the District has collected data on a significant number of existing deficiencies within the collection system that will be targeted for repair.

6.Facility Planning Analysis

6.1 Planning Area Description

6.1.1 Project Area Map

Provide a map or maps showing the current and projected service area for the 20-year planning period; identify environmental features such as streams, lakes, wetlands, and floodplains for the entire planning area. On the map, identify the locations of municipal and industrial treatment plants, sludge management areas and facilities, pretreatment plants, lift station sites and any significantly developed areas served by onsite or unconventional systems. Include the map as Attachment 7.

6.1.2 208 Plan Coordination

Yes No Is the project within or near the boundaries of a 208 Agency or regional council of governments (COG)?

6.1.3 Local and Regional Issues

Yes No Were local and regional planning efforts considered?

Please describe.

Both the PAWSD and Town owned PSSGID have received I&I related letters requiring efforts to reduce I&I within their respective collection systems and are working toward system repairs. The PAWSD has a GIS database tracking known collection system issues, and it will be the basis for initial repairs.

Yes No Was consolidation with another wastewater system / treatment facility considered?

Please describe.

The PAWSD already receives and treats the sanitary sewer flow from the Town of Pagosa Springs' independently owned and operated collection system. PAWSD, the Town of Pagosa Springs, and other major connectors will maintain wastewater treatment agreements that are currently in place.

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 SFEs - 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 potable water meter data.
- Method 2: Equivalent Residential Unit (EQR) Analysis. Recommended for systems with a high multifamily, commercial, and industrial users.

Method 1 and 2 templates can be found at the end of this form.
Attach the population projection as Attachment 8.

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.

With ongoing I&I control, the existing Vista WWTP should have adequate hydraulic capacity to handle growth over the next 20 years, but may need an organic load capacity expansion at some point in the future, depending on whether Vista remains the primary treatment facility for the community or if a new treatment site is developed.

Even if a new treatment facility site is selected, the Vista WWTF is predicted to remain in operation as a peaking plant and also to help the District maintain water rights related flow requirements in the receiving stream.

Identify waste load projections for major effluent parameters such as BOD, TSS, ammonia, phosphorus, metals, etc.

It is anticipated that TIN and TP removal requirements will be significantly tightened when the Regulation 31 numeric nutrient standards are adopted; facility upgrades will be planned as needed at that time. The actual loading to the WWTF is predicted to increase slowly based on continued infill of residential growth and the supporting retail infrastructure. The District experiences growth at a long term annual average rate of 2%, and based on that the average BOD loading may exceed 80% of permit limit in approximately 2037; existing flow split boxes include planned connection to a third oxidation ditch should the facility still exist in that configuration at that time.

7. Assessment of Alternatives

This section should contain a description of the reasonable alternatives that were considered in planning a solution to meet the identified needs. If the proposed project includes new technology then the please discuss whether or not the technology is covered in the CDPHE Design Criteria.

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 : No Action

Alternative 1 Description (2000 character limit): _____

This alternative considers the merits of taking no action.

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

Taking no action would incur no capital costs or O&M costs.

Alternative 1 Advantages and Disadvantages (2000 character limit):

Taking no action could allow the District to save money for the future and possibly defer rate increases.

This could also have significant disadvantages. Without repairs to the collection system the level of I&I would not be reduced and the system could experience future SSO events and have the potential to hydraulically overload the WWTF. Not preparing the WWTF for the upcoming permit limitations would lead to non-compliance with the discharge permit.

Alternative 2 Title : WWTF Improvements

Alternative 2 Description (2000 character limit):

Improvements to the treatment facility are planned to include replacement of aging equipment in the head works area including the mechanical step screen and grit removal equipment. Each of these units will be replaced within the existing concrete structures.

The oxidation ditches will receive additional sensors to aid in process control for biological denitrification; the return activated sludge will be combined with the raw influent before it enters the ditch, and the control point for dissolved oxygen will be set at approximately 1 mg/L to enable simultaneous nitrification and denitrification. Chemical dosing will be included for phosphorous removal and a request for chemical evaluation has recently been submitted as part of the facility's permit renewal application. A new (replacement) secondary clarifier will also be constructed to replace the older 40-foot diameter units.

Yard piping updates will also be completed to route waste sludge directly to the aerated digesters and remove the oxigest unit from use. The oxigest tank and associated metal building show significant signs of rust the tank is currently operated at minimum level to allow gravity flow to the digesters.

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

See Appendix E for the opinion of probable construction cost for the planned WWTF improvements (capital costs). The impacts to O&M cost will come from reduced aeration demand due to denitrification and increased cost for supply of chemical to precipitate phosphorous, the annual chemical cost is estimated at \$28,000.

Alternative 2 Advantages and Disadvantages (2000 character limit):

The planned improvements to head works equipment may moderately reduce O&M costs by improving the efficiency of solids and grit removal. The Operations team reports need to remove significant accumulated solids from downstream tanks during maintenance procedures. The improvements to the secondary treatment process (oxidation ditches and clarifiers) are targeted to help the facility meet upcoming permit limits and to replace aging infrastructure.

The planned project does not prepare the facility to meet more stringent permit limits that are anticipated to be implemented with changes to Regulation 31. The planned approach does prepare the facility to meet current permit limits and provide time for the PAWSD and PSSGID to complete discussion of where the community's WWTF should be located into the future.

Alternative 3 Title : Collection System Improvements

Alternative 3 Description (2000 character limit):

The District is planning collection system repairs to address I&I and a compliance order received from CPDHE as a result of SSO events during the spring of 2023. Plummer assisted the District with responding to the requirements of the order and the collection system evaluation reports is included as Appendix C.

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

Based on the Evaluation Report and requirements to the compliance order, the district has budgeted to spend \$1,000,000 annually for the next 4 years to reduce I&I within the collection system, the total estimated capital cost is \$4,000,000 over the compliance period. Completion of the system repairs should lead to a moderate reduction in O&M costs as peak flows reduce through the lift stations and treatment facility.

Alternative 3 Advantages and Disadvantages (2000 character limit):

Completing repairs of the collection system to reduce I&I will benefit the District through reduced O&M costs. It will also benefit the District and the environment by reducing the potential for future SSO events.

The rate of repair required by the compliance order (25% annually for 4 years) has the potential to impact future District service rates, increasing customer costs. There are no real disadvantages to reducing I&I within the collection system, only potential rate tradeoffs due to the pace of planned repairs.

Provide discussions of additional alternatives as Attachment 19.

8. Selected Alternative

8.1 Justification of Selected Alternative

Please demonstrate why the selected alternative best meets system needs based on both monetary and non-monetary considerations.

Alternatives 2 and 3 are recommended for selection. Both project alternatives are targeted at maintaining permit compliance, reducing I&I in the collection system, or replacing aging infrastructure that is impacting O&M labor efforts and costs.

The proposed improvements meet the system needs as described in Section 7 and do not require any design criteria waivers from CDPHE.

8.2 Technical Description and Design Parameters

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

See Appendix A - The 2019 permit renewal included new effluent limits for TIN (a daily maximum of 10 mg-N/L) and TP (1.0 mg-P/L running 12-month median). The facility improvements are focused on meeting the limits set in the 2019 permit and replacing aging infrastructure. The design meets current engineering section requirements and the clarifier sizing is based on the requirements associated with chemical removal of phosphorous. An automated weir controller is planned at the MLSS splitter box to ensure that each clarifier will stay within current CPDHE Design Criteria at all anticipated flow rates. No new technologies or exceptions to department criteria are planned.

The collection system repair needs will be analyzed individually for trenchless or open excavation repair, with a preference for trenchless technologies where feasible. Trenchless technologies may include slip lining and grout injection, open trenching replacement may be used where required.

8.3 Proposed Process Flow Diagram

Include a proposed treatment facility process flow diagram or map of the collection system, lift station, or interceptor, as applicable as Attachment 10.

8.4 Appropriateness of Treatment Technologies

Discuss appropriateness of the proposed treatment process(es) to meet proposed discharge limits considering anticipated influent wastewater quality.

Oxidation ditches with appropriate controls are capable of simultaneous nitrification and denitrification; the existing system can meet the current TIN limit and Plummer has developed a GPSX model of the secondary treatment system to help confirm the design. Newer screening and grit removal equipment will minimize O&M requirements and increase reliability.

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. Indicate the need for a stormwater permit application, 401/404 permit applications, and CDOT and railroad permit applications.

The WWTF components of this project will be completed entirely within the boundary of the existing facility, all of which has been previously disturbed. Therefore, it is anticipated that CDPHE will prepare and issue a categorical exclusion for this project.

The collection system repairs will be completed within existing right of way easements and in a manner to minimize any potential environmental conflicts.

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.

No additional land or easements are needed to construct the wastewater treatment plant improvements, or complete the collection system repairs.

8.7 Construction Challenges

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

One of the most significant construction challenges can be seasonally high groundwater levels, which leads to elevated influent flows due to I/I between February and April. Below-grade excavation and concrete work will be planned for the summer through late fall, when groundwater levels are lower and air temperatures are more suitable for placing and curing concrete.

The Geotechnical Report found no groundwater, but did detect rock at an elevation that will impact clarifier construction. The cost of rock saw excavation is included in the OPCC. Since the geotechnical investigation was completed during a dry time of year, there is still a chance of encountering seasonal groundwater.

8.8 Operational Aspects

Discuss the operator staffing requirements, operator certification level requirements, 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, fluctuations in influent quality, process monitoring and chemical feed dosing.

The addition of chemical phosphorous removal will impact the facility operator licensing requirements, raising it from a B to an A license requirement.

8.9 Costs

Summarize the capital costs associated with the selected alternative. The 20 year cash flow projection included in Attachment 4 must reflect the capital and operation and maintenance costs associated with the selected alternative.

Please see Appendices C and D

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

Secondary Treatment (Category I)	34
Advanced Treatment (Category II)	33
Infiltration/Inflow (Category IIIA)	33
Sewer System Rehabilitation (Category IIIB)	0
New Collector Sewers (Category IVA)	0
New Interceptors (Category IVB)	0
CSO Correction (Category V)	0
Storm Sewers (Category VI)	0
Recycle Water Distribution (Category X)	0
Nonpoint Source Pollution Control Activities (Category VII)	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?

8.10 Green Project Reserve

Check one or more green category that applies to the project:

- Green Infrastructure Water Efficiency Energy Efficiency Environmentally Innovative

Describe any green components incorporated into the selected alternative.

not applicable.

The system must reference the most recent copy of the EPA Green Project Reserve guidance and procedures. These references are available on the CDPHE WQCD GLU website under “Green Project Reserve”: <https://www.colorado.gov/pacific/cdphe/wq-green-project-reserve>
 Include a business case for the project as Attachment 11, if applicable.

8.11 Environmental Checklist

Include the Environmental Checklist for the Selected Alternative as Attachment 12.

8.12 Project Implementation

8.12.1 Proposed Schedule

Request for WQPTs/PELs		Site Application Submittal Date	2/12/24
Process Design Report/Basis of Design Report Submittal Date		5/27/24	
Final Plans and Specifications Submittal Date (for Non-Streamlined Review only)		9/22/24	
Discharge Permit	1/31/24	Miscellaneous Permits	
Public Meeting Date		Loan Application Submittal Date	03/31/22
Advertisement for Bids Publication Date	3/1/24	Construction Contract Award Date	03/31/2024
Construction Start Date	09/23/2024	Construction Completion Date	06/12/2025

8.12.2 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 14 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 14.

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	9258	People	2.54x over PAWSD 2023 sewer customer list
Current Service Area Population (If providing water to neighboring community)		People	
Population Growth Rates	2	% increase/year	PAWSD records
Average Daily per Capita Flow Rate	143.7	Gallons per capita day	2021 - 2023 WWTF data
Average Day Maximum Month per Capita Flow Rate	366.2	Gallons per capita day	2021 - 2023 WWTF data
Maximum Daily per Capita Flow Rate	583.3	Gallons per capita day	2021 - 2023 WWTF data
Peak Hour Factor	4.7		2021 - 2023 WWTF data
Average Influent BOD5 Concentration	180	mg/L	2021 - 2023 WWTF data
Average Day Maximum Month Influent BOD5 Concentration	52	mg/L	2021 - 2023 WWTF data

Year	System Population	Service Area Population (if different)	Average Daily Flow	Maximum Daily Flow	Peak Hour Flow	Average BOD5 Loading (pounds per day)
+0	0	0	1.2	5.8	6.2	2040
+5	10221		1.3			2252
+10	11285		1.5			2487
+15	12460		1.6			2746
+20	13757		1.8			3031

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

Current Equivalent Residential Taps (ERT)			
A	Number of active residential taps:	0	Units
B	Total Annual Potable Water Use less Irrigation Usage (gallons per year) – Residential	0	
C	Estimated equivalent residential potable water usage Annual flow per EQR = A/B	0	Gallons per SFE
D	Wastewater flow from commercial users	0	Gallons per ft2
E	Equivalent EQRs per 1000 ft2 of commercial space EQRs per 1000 ft2=D*1000/C	0	SFEs per 1000 ft2
F	Commercial space in service area	0	1000 ft2
G	Commercial EQRs Commercial EQRs = F*E	0	SFEs
H	Wastewater flow from industrial users	0	1000 ft2
I	Equivalent EQRs per 1000 ft2 of industrial space EQRs per 1000 ft2 = H*1000/C	0	1000 ft2
J	Industrial space in service area	0	1000 ft2
K	Industrial EQRs Industrial EQRs = H*J	0	1000 ft2
L	Length of sewer pipe in collection system	0	1000 ft2
M	Infiltration/Inflow contribution per 1000 feet of sewer pipe	0	1000 ft2
N	Equivalent EQRs per 1000 feet of sewer pipe EQRs per 1000 LF=M/C	0	1000 ft2
O	Infiltration/Inflow EQRs Infiltration/Inflow EQRs = L/1000*N	0	1000 ft2
P	Total EQR = A + G + K + N	0	1000 ft2

Population and Flow Assumptions / Data

Current System Population _____ People

Current Service Area Population _____ People
(If providing water to neighboring community)

Population Growth Rates _____ % increase/year

Information Source

Average daily flow per ERT

Gallons per capita day

Maximum daily flow per ERT

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										
+5										
+10										
+15										
+20										