Infrastructure Capital Improvement Plan

2026–2035

Tranquillo Pines Mutual Domestic Water Consumers Association

I. Executive Summary

The Tranquillo Pines Mutual Domestic Water Consumers Association (TPMDWCA) Infrastructure Capital Improvement Plan (ICIP) establishes a coordinated, long-range roadmap to restore regulatory compliance, reduce system risk, and modernize critical infrastructure over a ten-year planning horizon. Following the Association's reorganization in 2025 as a Mutual Domestic Water Consumers Association and public body, TPMDWCA faces acute infrastructure failure, water quality violations, and financial strain that exceed the community's ability to self-finance without external assistance.

This plan integrates regulatory compliance actions, system rehabilitation, and phased capital investments into a unified strategy. While fluoride remediation remains an immediate compliance driver, it is only one component of a broader system stabilization effort. The Association's infrastructure—much of which exceeds 50 years in service life—requires coordinated replacement of pipelines, valves, tanks, wells, and instrumentation to reduce water loss, improve reliability, and protect public health.

This plan prioritizes capital improvements that:

- Address imminent public health and regulatory risks
- Reduce chronic water loss and hauling dependence
- Extend system life through asset replacement rather than repeated repair
- Position TPMDWCA for state and federal funding
- Support long-term financial and operational sustainability

II. Mission, Vision, and Values

Mission
To provide safe, affordable, and sustainable water service to the Tranquillo Pines community through responsible stewardship, sound governance, and long-term infrastructure investment.

Vision
A resilient rural water system with reliable infrastructure, regulatory compliance, financial stability, and transparent, member-driven governance.

Core Values
Stewardship • Accountability • Equity • Transparency • Public Health • Cooperation

III. Organizational and Regulatory Context

Tranquillo Pines is a Mutual Domestic Water Consumers Association and subdivision of the State of New Mexico, operating under the Sanitary Projects Act and subject to the Open Meetings Act, Procurement Code, and Audit Act. Governance is provided by a five-member elected Board of Directors.

The Association currently serves approximately 265 memberships (roughly 660 residents) and Bernalillo County Fire Station #41, supplying domestic water, hydrant service, and bulk water for fire protection.

TPMDWCA is under an Administrative Order from the New Mexico Environment Department (NMED) for fluoride exceedances and is listed as a high-priority system for Drinking Water State Revolving Fund (DWSRF) assistance.

IV. System Conditions and Challenges

A. Infrastructure Condition

The system includes pipelines, tanks, wells, valves, and pumphouses installed primarily in the mid-1970s. Key issues include:

- Widespread use of 2-inch SDR-26 PVC pipe that has proven leak-prone under local soil, rock, and ground movement conditions
- Inoperable or missing isolation valves that prevent effective leak isolation
- Aging tanks, including a 50-year-old fiberglass tank requiring full replacement
- Wells with limited production (3–7 gpm) and declining performance
- Pumphouses requiring mechanical, structural, and security upgrades

B. Water Loss and Reliability

System water loss exceeds 50 percent, with multiple leaks costing hundreds of thousands of dollars annually. Persistent line failures have forced the Association to haul water daily for more than two years, creating unsustainable operating costs and system stress.

C. Water Quality and Regulatory Compliance

One well exceeds fluoride standards, triggering an Administrative Order and requiring implementation of an approved mixing and treatment solution. Fluoride compliance is a near-term requirement but must be integrated with broader system upgrades to avoid duplicative excavation and costs.

D. Financial Constraints

Operating deficits, emergency hauling costs, and limited reserves constrain the Association's ability to self-fund capital improvements. Long-term sustainability requires external funding coupled with phased rate adjustments and improved asset management.

V. Capital Improvement Strategy

The Association's capital strategy is structured around **coordinated, multi-year investment**, emphasizing replacement over repair and aligning construction activities to minimize excavation costs.

A. Planning Horizons

- **1-Year (Immediate Stabilization)**
  Regulatory compliance actions, emergency repairs, design and funding readiness.
- **3-Year (System Stabilization)**
  Major pipeline, valve, and tank replacements coordinated with fluoride remediation.
- **5-Year (System Modernization)**
  New wells, storage optimization, pumphouse upgrades, and system instrumentation.
- **10-Year (Long-Term Resilience)**
  Full SCADA deployment, secondary storage and booster systems, and lifecycle asset replacement.

VI. Capital Improvement Priorities

1. Pipelines and Valves

- Replace the most failure-prone 51-year-old pipelines, prioritizing areas with repeated leaks
- Upsize and replace thin-walled 2-inch SDR-26 PVC with more durable materials
- Install new isolation valves to enable sectional shutdowns and leak testing
- Coordinate pipe replacement with fluoride remediation trenching to reduce excavation costs

2. Storage Tanks

- Preserve and continue maintenance of Tanks #2–4 (steel, well maintained)
- Evaluate installation of smaller satellite storage near the southern bypass with booster and backup pumping to reduce head pressure on deep wells and support mixing operations
- Remove and replace Tank #1 (50-year-old fiberglass)

3. Wells and Water Supply

- Drill at least one replacement well for Well #8, avoiding excessive depth to mitigate fluoride risk
- Redrill Well #6 to restore production
- Construct an additional well near the southern bypass where easements, power, and landowner support already exist

4. Fluoride Remediation Integration

- Implement NMED-approved mixing or alternative supply solutions
- Design fluoride remediation infrastructure to support long-term system hydraulics and storage strategy
- Align remediation construction with pipeline, valve, and tank upgrades

5. Instrumentation, SCADA, and IT

- Replace meters and pressure-reducing valves. (SCADA meters can aid in leak detection.)
- Install flow meters, pressure gauges, and remote-control valves throughout the system
- Instrument pumphouses with radio-read monitoring for pressure, flow, pump status, and power
- Develop IT infrastructure to support near real-time monitoring and leak detection

6. Pumphouse and Facility Upgrades

- Upgrade plumbing systems in three pumphouses
- Replace roofs, siding, doors, and locks as needed
- Install security fencing around all pumphouses

VII. Capital Phasing Plan

1-Year Horizon (2026)

Immediate Compliance and Risk Reduction

3-Year Horizon (2026–2028)

System Stabilization

5-Year Horizon (2026–2031)

Operational Efficiency and Redundancy

10-Year Horizon (2026–2036)

Long-Term Resilience

VIII. Implementation and Funding Approach

Capital improvements will be implemented through phased projects aligned with partner support and funding opportunities, including:

- New Mexico Finance Authority (NMFA)
    - Drinking Water State Revolving Fund (DWSRF)
    - Water Trust Board (WTB)
    - Capital Outlay
- USDA Rural Development
- EPA
    - Southwest Environmental Finance Center (SWEFC)
- Congressionally Directed Spending (CDS)
- Horrocks – Preliminary Engineering Report
- University of New Mexico (UNM)

Preliminary Engineering Reports, Asset Management Plans, and Capital Improvement Plans will be maintained and updated to ensure continued funding readiness.

VIIII. Governance, Transparency, and Community Engagement

The Board will continue to emphasize transparency through:

- Regular public meetings and compliance with the Open Meetings Act
- Publication of financial reports and capital project updates
- Biannual member communications and annual training sessions
- Strategic use of professional and volunteer expertise to support implementation

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X. Monitoring and Evaluation

Progress will be evaluated annually using key performance indicators including:

- Reduction in water loss and hauling dependence
- Regulatory compliance status
- Infrastructure condition and service reliability
- Financial reserves and funding awards
- Member engagement and participation

The plan will be updated as conditions, funding, and regulatory requirements evolve.

Capital Improvement Program Summary Table

Project ID	Project Name	Planning Horizon	Project Need / Problem Statement	Project Scope	Estimated Outcome / Benefit	Readiness Status	Potential Funding Sources
CIP-01	Fluoride Compliance & System Integration	1–3 Year	One production well exceeds fluoride standards, resulting in an active NMED Administrative Order and regulatory non-compliance. Current system configuration limits operational flexibility.	Design and construct NMED-approved fluoride remediation through blending, mixing, or alternative supply integration. Coordinate construction with pipeline, valve, and storage upgrades to minimize excavation costs.	Regulatory compliance, public health protection, removal of Administrative Order, improved system hydraulics. Pumphouse 7 upgraded and expanded as part of this project	PER complete; AMP substantially complete; NMED compliance roadmap established.	DWSRF, Water Trust Board, USDA RD
CIP-02	Priority Pipeline Replacement Program	1–5 Year	Over 50% system water loss due to aging, leak-prone pipelines, including widespread use of 51-year-old 2” SDR-26 PVC susceptible to soil movement and rock penetration.	Replace highest-failure pipeline segments with thicker-walled, durable pipe; prioritize areas with repeat leaks and high pressure; coordinate with fluoride trenching.	Reduced water loss, improved reliability, reduced hauling, lower O&M costs.	Asset inventory complete; leak detection ongoing; priority segments identified.	DWSRF, WTB, NMFA
CIP-03	Isolation Valve Additions & Replacement	1–3 Year	Inoperable or missing isolation valves prevent effective leak isolation and increase outage size and repair costs.	Install new isolation valves and replace failed valves in critical locations to enable sectional shutdowns and testing.	Faster leak isolation, reduced water loss, improved emergency response capability.	Asset inventory complete; valve deficiencies documented.	DWSRF, USDA RD
CIP-04	Tank #1 Replacement	5–10 Year	Tank #1 is a 50-year-old fiberglass tank at end of useful life, posing structural and water quality risk.	Remove and replace Tank #1 with modern storage meeting current standards; integrate instrumentation and security.	Improved storage reliability, reduced risk of catastrophic failure, compliance with modern standards.	Asset condition documented; replacement identified as priority.	DWSRF, WTB
CIP-05	Storage Optimization & Southern Bypass Tank(s)	3–5 Year	Existing tank configuration places excessive head pressure on deep wells and limits operational flexibility for blending and mixing.	Install smaller satellite storage tank(s) near southern bypass with booster and backup pumps to support mixing and reduce pumping head.	Improved system efficiency, reduced pump wear, enhanced fluoride mitigation flexibility.	Conceptual planning complete; easements available.	DWSRF, USDA RD

CIP-06	Well Replacement – Well #8	1-2 Year	Well #8 requires replacement due to performance limitations and system redundancy needs.	Drill a replacement well using existing easement, power, and pumphouse; avoid excessive depth to mitigate fluoride risk.	Increased production capacity, improved redundancy, enhanced water quality management.	Site control established; preliminary hydrogeologic considerations completed.	DWSRF, WTB
CIP-07	Well Rehabilitation – Well #6	2-3 Year	Well #6 production has declined over time despite favorable location.	Redrill or rehabilitate Well #6 to restore production capacity.	Increased supply reliability and system resilience.	Well condition documented; rehabilitation identified as cost-effective.	DWSRF
CIP-08	New Southern Bypass Well	5–10 Year	Long-term supply reliability requires additional well capacity in strategic locations.	Drill and equip new well near southern bypass where easement exists and landowner support is secured.	Long-term supply resilience and redundancy.	Site identified; easement secured.	DWSRF, USDA RD
CIP-09	Meter & Pressure Reducing Valve Replacement	1–5 Year	Aging meters and PRVs limit conservation, pressure control, and leak detection effectiveness.	Replace customer meters and PRVs; evaluate conversion from individual PRVs to mainline PRVs where feasible.	Improved pressure management, reduced leaks, better data for conservation.	System assessment underway; priorities identified.	DWSRF, NMFA
CIP-10	System Instrumentation & SCADA	3–10 Year	Limited real-time data restricts leak detection, system optimization, and emergency response.	Install flow meters, pressure gauges, radio-read monitoring, remote-control valves, and SCADA-ready IT infrastructure.	Near real-time system visibility, improved operational efficiency, reduced water loss.	Initial instrumentation installed; data systems in development.	DWSRF, USDA RD
CIP-11	Pumphouse Mechanical Upgrades	1–5 Year	Aging plumbing and mechanical systems reduce operational reliability and increase maintenance risk.	Upgrade plumbing systems in three pumphouses; install modern valves and controls.	Improved reliability, reduced downtime, safer operations.	Condition assessments completed.	DWSRF
CIP-12	Pumphouse Structural & Security Improvements	2–5 Year	Aging roofs, siding, doors, and lack of fencing expose facilities to security and weather risks.	Replace roofs, siding, doors, and locks; install security fencing around all pumphouses.	Asset protection, reduced vandalism risk, extended facility life.	Facilities assessed; improvements prioritized.	USDA RD, NMFA

CIP Implementation Notes

- Projects are **sequenced to minimize excavation costs** by coordinating pipeline replacement with fluoride remediation.
- The CIP emphasizes **replacement over repair**, reducing lifecycle costs and emergency expenditures.
- All projects align with the Association's **Asset Management Plan (AMP)** and **Preliminary Engineering Report (PER)**.
- The program is structured to support **phased funding awards** while maintaining system operations.
- Financial sustainability is supported through rate studies, reserve targets, and reduced hauling dependency.

Capital Improvement Program Table (with Priority & Scoring)

- Projects are prioritized based on regulatory urgency, system risk reduction, and implementation readiness, and are revisited annually.

Project ID	Project Name	Planning Horizon	ROM Cost Band	Priority Rank	Primary Drivers
CIP-01	Fluoride Compliance & System Integration	1–3 Year	High – Very High	**1 (Critical)**	Active Administrative Order, public health, regulatory compliance
CIP-03	Isolation Valve Additions & Replacement	1–3 Year	Low - Moderate	**2 (Critical)**	Leak isolation and reduction, emergency response, system control
CIP-02	Priority Pipeline Replacement Program	1–5 Year	High - Programmatic / Phased	**3 (High)**	>50% water loss, daily hauling, system failure risk
CIP-09	Meter & Pressure Reducing Valve Replacement	1–5 Year	Moderate (Programmatic)	**4 (High)**	Pressure control, leak reduction, conservation
CIP-06	Well Replacement – Well #8	1-2 Year	Very Low	**5 (Medium-High)**	Supply redundancy, aging infrastructure
CIP-07	Well Rehabilitation – Well #6	2-3 Year	Very Low	**6 (Medium-High)**	Cost-effective production recovery
CIP-11	Pumphouse Mechanical Upgrades (#6 and #9 only)	1–5 Year	Very Low	**7 (Medium)**	Reliability and operational safety. Pumphouse 7 upgrade included in CIP-01
CIP-12	Pumphouse Structural & Security Improvements	2–5 Year	Very Low	**8 (Medium-Low)**	Asset protection, vandalism prevention
CIP-10	System Instrumentation & SCADA	3–10 Year	Low	**9 (Medium-Low)**	Long-term optimization, data-driven management
CIP-08	New Southern Bypass Well	5–10 Year	Low	**10 (Medium-Low)**	Future supply resilience
CIP-05	Storage Optimization & Southern Bypass Tank(s)	3–5 Year	Low	**11 (Medium-Low)**	Pump stress reduction, operational flexibility
CIP-04	Tank #1 Replacement	5-10 Year	Moderate	**12 (Long-Term)**	End-of-life storage, failure risk

Rough Order of Magnitude (ROM) Cost Band Definitions

- **Very Low**: <$100,000
- **Low**: $100,000 - $250,000
- **Moderate**: $250,000 – $750,000
- **High**: $750,000 – $2.5 million
- **Very High**: $2.5 million – $7.5 million
- **Programmatic / Phased**: Costs distributed across multiple phases and funding cycles

All cost bands are preliminary, planning-level estimates subject to refinement through final engineering and procurement.