

To: Board of Directors
Bow Mar Water and Sanitation District

From: Cynthia Lane

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Armando Quintana, Platte Canyon WSD

Date: September 4, 2024

Subject: Capital Improvement Plan for Water & Sewer Infrastructure

Water Projects

Based on the previously accepted criteria for determining the need for water main replacements in the Bow Mar Water and Sanitation District, and pursuant to an extensive review of all remaining unprotected cast iron pipe water mains not yet replaced, four (4) water main replacement projects are proposed through 2037.

The priority and schedule for pipe replacements continues to be heavily weighted toward the number of pipe failures (main breaks) and water quality concerns. However, other factors such as hydraulic adequacy, age of pipe, potential property damage, and repair costs are also considered.

The total capital improvement costs for the proposed water main replacement projects is \$3,655,000. For financial planning purposes, the projects were scheduled to begin in 2025 and then occur every third year thereafter. However, due to ARPA funding being available from the Town of Bow Mar in 2024, the project scheduled for 2025 was brought forward into 2024 to take advantage of a significant cost share of \$125,000 offered by the Town.

Sewer Projects

The district's wastewater collection system is regularly inspected using the Pipeline Assessment Certification Program (PACP). This program provides for proper and consistent assessment condition coding of pipelines, laterals and manholes. As a result of the 2024 assessment activities, additional sewer rehabilitation areas were identified. These sewer main rehabilitation projects are now scheduled in 2026 along with the ones previously proposed.

The goal of using PACP is to create a comprehensive database to properly identify, plan, prioritize, manage, and renovate their assets based on condition evaluation. Segments of pipe are inspected and assigned a "condition grade" in two categories: structural or operations and maintenance. Scoring is on a numerical scale with the highest (5) denoting the worst conditions and the lowest (1) designating minor defects—and zero indicating no defects at all. Defects may include observations like cracks, fractures, or broken segments of pipe. They could also be deformed or collapsed pipe or even displaced joints.

In the district’s collection system, the primary defects observed were extensive cracks along the pipe and at joints causing severe root intrusion. In some cases, point repairs are the most appropriate approach and for other segments it is necessary to line/replace the entire segment. Additionally, there have been a number of sewer tap replacements within the district which may have caused additional cracks that can allow roots to infiltrate the pipe. At this time, it is not recommended to rehabilitate each manhole as part of this project. Instead, it is proposed to use the \$20,000 allocated to sewer remedial maintenance each year to rehab three to four manholes each year over a five-year period. This is a similar approach used for other smaller districts.

The total cost of the proposed sewer rehabilitation projects is \$384,000. We recommend these projects use the design-build process due to the shorter length of sewer rehabilitation work and potential cost efficiencies of the design-build process.

Summary of All Proposed Projects

The following table provides a detailed breakdown of the value of the water and sewer projects proposed through 2037. All costs presented in Table 1 and in the subsequent project summaries are in 2025 dollars and reflect anticipated construction and design engineering charges based on actual costs realized by Platte Canyon, Southwest Metropolitan, and Bow Mar in recent years.

Table 1 – Summary of Capital Projects by Type and Year

Year	Water Projects	Sewer Projects	Annual Total
2025	\$0	\$0	\$0
2026	\$0	\$384,000	\$384,000
2027	\$0	\$0	\$0
2028	\$1,365,00	\$0	\$1,365,00
2029	\$0	\$0	\$0
2030	\$0	\$0	\$0
2031	\$895,000	\$0	\$895,000
2032	\$0	\$0	\$0
2033	\$0	\$0	\$0
2034	\$398,000	\$0	\$398,000
2035	\$0	\$0	\$0
2036	\$0	\$0	\$0
2037	\$997,000	\$0	\$997,000
TOTAL	\$3,655,000	\$384,000	\$4,039,000

A summary of the location, rationale, and cost for each project follows. Additionally, maps are attached that depict the location of the proposed water and sewer projects.

Capital Improvement Plan Project Summary

(Project 2026-1S)

On Sombrero St. between Bow Mar Dr. and Sunset Dr. (8" VCP)
On Ridge Trail between Bow Mar Dr. and Sheridan Blvd. (8" VCP)
In Easement behind 5400 Beach Rd. (8" VCP)
On Yellowstone St. from Ridge Trail to the easement (8" VCP)
In Easement connecting Yellowstone St. to Longhorn & north of Longhorn (8" VCP)
On Bison Trail continuing to Longhorn (8" VCP)

Rationale

There have been no sanitary sewer backups on this segment of main.; however, there are a significant number of cracks and roots in the pipe. Rehabilitation includes the cured-in-place lining process for the pipe. This is proposed as a design-build project due to the size and potential for cost efficiencies associated with that approach.

4,259 feet of 8-inch CIPP with associated appurtenances	\$320,000
Contingency (20%)	<u>\$64,000</u>
TOTAL PROJECT COST	\$384,000

(Project 2028-1W)

On Bow Mar Dr. between Ridge Trail and S. Sheridan Blvd. (8" C.I.P.)

Rationale:

This section of 8" cast iron pipe has experienced three water main failure to date. The existing pipe is proposed to be replaced with 12-inch C-900 PVC pipe. This project is proposed to be placed in the existing asphalt as to reduce disruption of customer's private property and landscape.

2,397 feet of 12-inch PVC with associated appurtenances	\$1,079,000
Engineering (10%)	<u>\$108,000</u>
	\$1,187,000
Contingency (15%)	<u>\$178,000</u>
TOTAL PROJECT COST	\$1,365,000

(Project 2031-1W)

On Bow Mar Dr. between Quincy Master Meter Vault and Ridge Trail (12” C.I.P.)

Rationale:

There has been one water main failure on this section of water main. The criticality of this segment is a main feed into the district’s system. The proposed type of pipe for replacement is 12-inch C-900 PVC Pipe. This project is proposed to be placed in the existing asphalt as to reduce disruption of customer’s private property and landscape.

1,572 feet of 12-inch PVC with associated appurtenances	\$707,400
Engineering (10%)	<u>\$70,600</u>
	\$778,000
Contingency (15%)	<u>\$117,000</u>
TOTAL PROJECT COST	\$895,000

(Project 2034-1W)

On Yellowstone between Ridge Trail and S. Sheridan Blvd. (4” C.I.P.)

Rationale:

This section of 4” cast iron pipe has experienced one water main failure to date. Fire flows may not be met through 4 inch main in Yellowstone. The existing pipe is proposed to be replaced with 6-inch C-900 PVC pipe. This project is proposed to be placed in the existing asphalt as to reduce disruption of customer’s private property and landscape.

785 feet of 6-inch PVC with associated appurtenances	\$314,000
Engineering (10%)	<u>\$31,400</u>
	\$345,400
Contingency (15%)	<u>\$51,800</u>
TOTAL PROJECT COST	\$397,200

(Project 2037-1W)

On Sunset Dr. between Bow Mar Dr. and S. Sheridan Blvd. (6" & 8" C.I.P.)

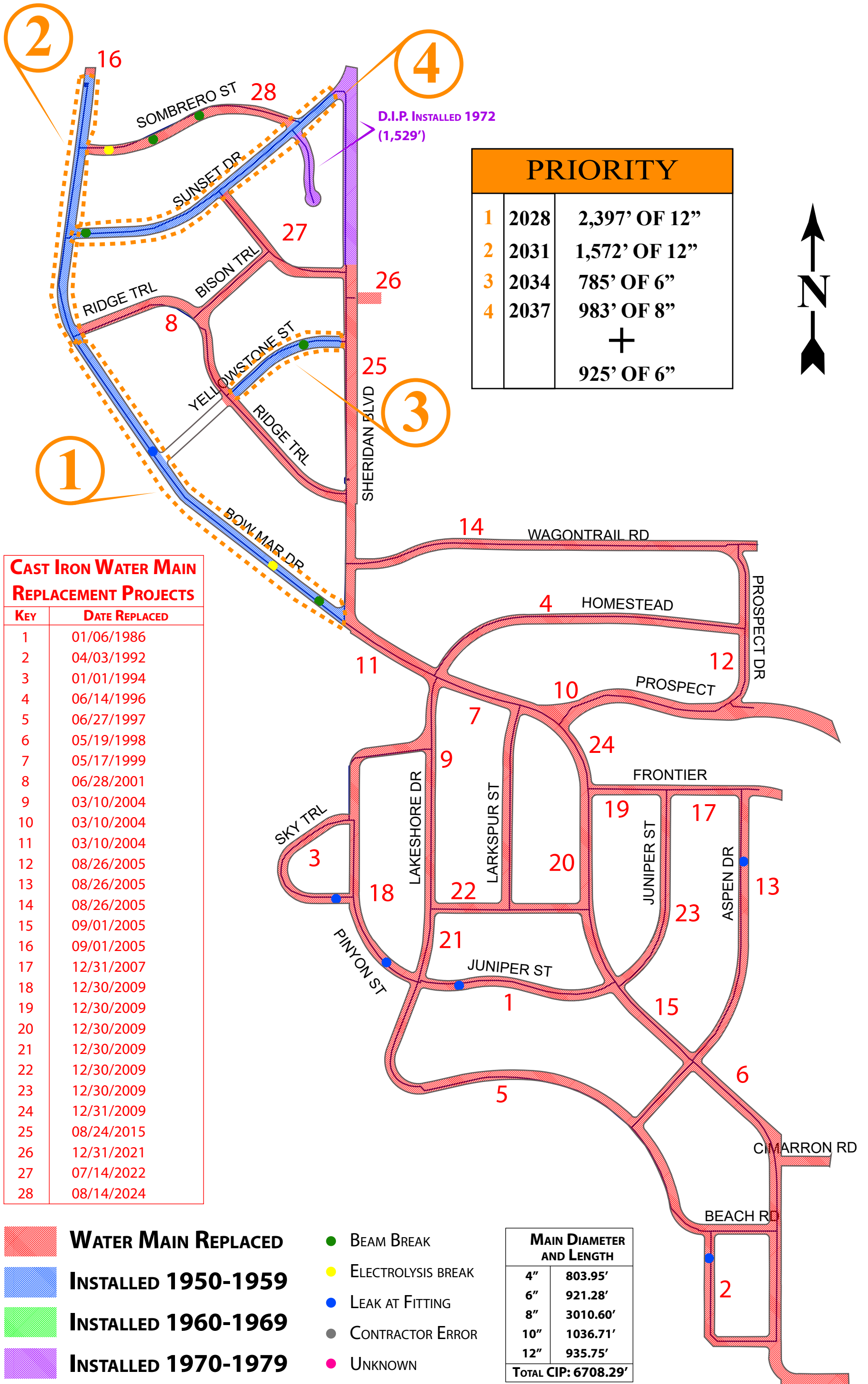
Rationale:

This section of 6" and 10" cast iron pipe has experienced one water main failure to date. The existing pipe is proposed to be replaced with 6-inch and 8-inch C-900 PVC pipe. This project is proposed to be placed in the existing asphalt as to reduce disruption of customer's private property and landscape.

925 feet of 6-inch PVC with associated appurtenances	\$370,000
983 feet of 8-inch PVC with associated appurtenances	\$418,000
	<u>\$788,000</u>
Engineering (10%)	<u>\$78,800</u>
	\$866,800
Contingency (15%)	<u>\$130,000</u>
TOTAL PROJECT COST	\$996,800

BOW MAR WATER & SANITATION DISTRICT

WATER MAIN REPLACEMENTS 1986-2024 & PROPOSED REPLACEMENTS 2028-2037



BOW MAR WATER & SANITATION DISTRICT

SEWER MAIN REHABILITATION PROPOSED REHABILITATION 2026

