Program 8056 – Meter Improvements

Photo of typical flow meter

Description

This program provides funding to upgrade Environmental Services' (ES) ability to measure flows for billing, operational, and planning purposes and standardize meter equipment at similar facilities. Meter improvements include meter rehabilitation or replacement, planning meter installation, and new meter installation.

Purpose and justification

Accurate flow metering is the basis of the ES's billing system. It is essential that our customers trust the reliability and accuracy of the flow metering system. The project provides a systematic approach for capital improvements to the flow metering system. Increases in flow, greater emphasis on capturing peak flows stemming from ES's infiltration/inflow program, normal facility rehabilitation needs, and the need for additional flow metering locations for system planning purposes are driving this meter improvements project.

Program location

The active projects within this program are in the following Council districts: All

Active projects in program

Project Number	Project Title
805600	Meter Improvements (Parent Project)
805603	Flow Meter Program Support
805607	Meter M127 Improvements
805608	Meter M500A Improvements
805609	Meters M413, M643A, and M657 Improvements
805611	Meter 112 Rehab
805612	Meters M641 and M644 Improvements
805613	Chanhassen Eden Prairie Meter M448 Improvements

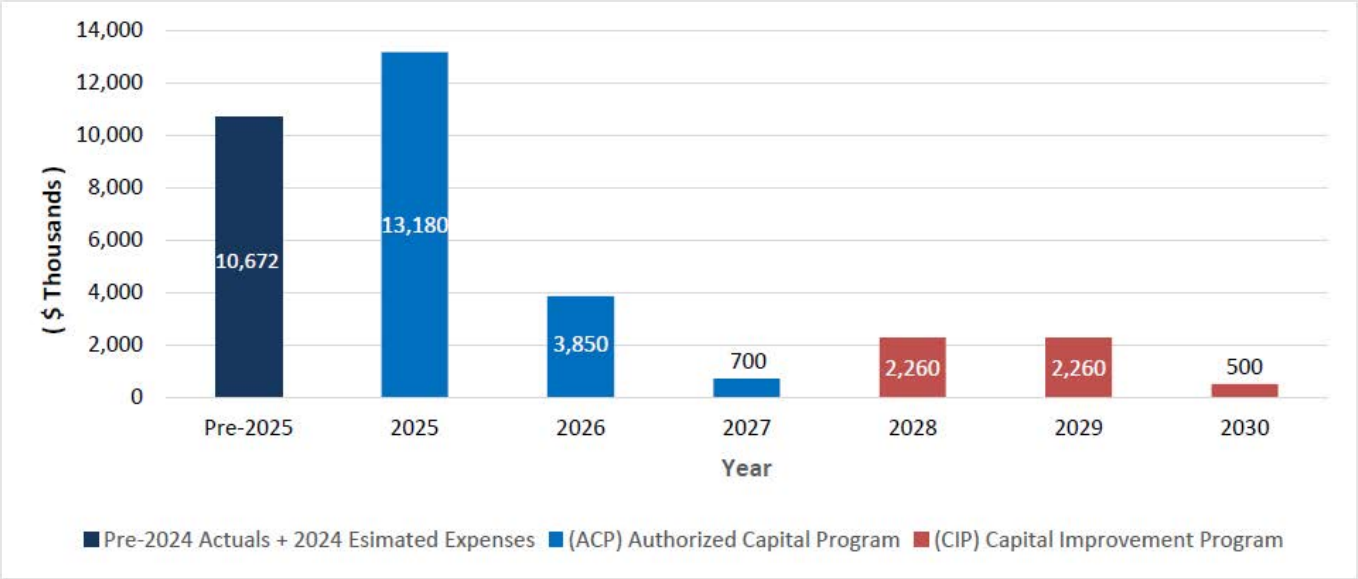
Project Number	Project Title
805615	Meter M106 Rehabilitation
805636	Replacement Meter Vault M228

Environmental Services 2025 through 2030 Capital Program

- Authorized Capital Program (ACP): $28,402,609
- Capital Improvement Plan (CIP): $5,020,000

Estimated program cash flow from 2025 through 2030

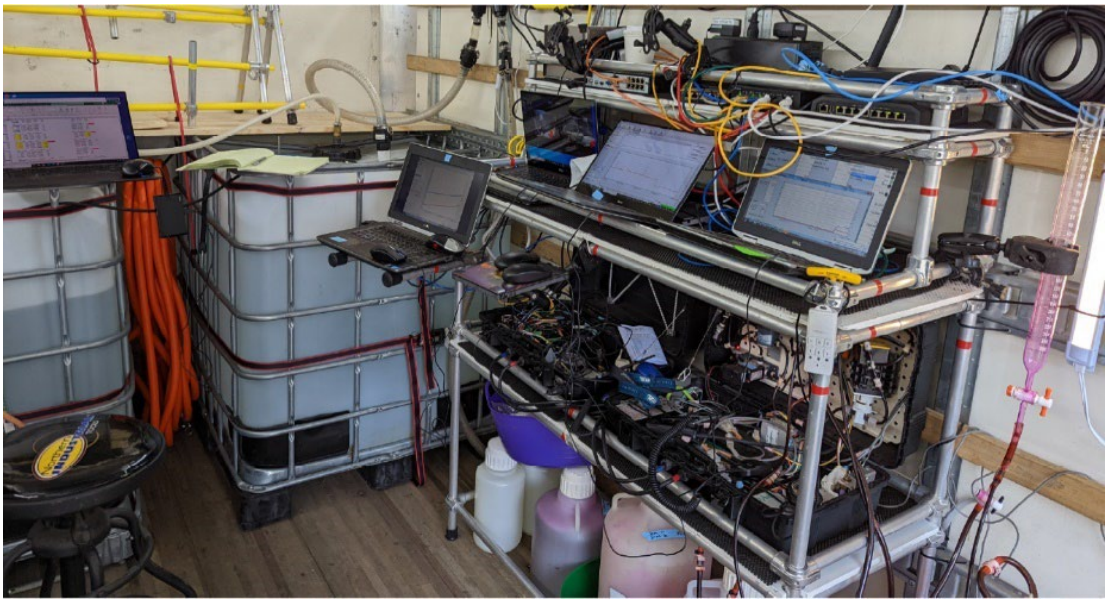
Note: the ACP is the total amount of all past and present authorizations including pre-2025 expenses.



Flow Meter Program Support

Program family 8056 **Project #805603**

Project location: Council districts #1 to 16, regional project



Dilution dye testing mobile laboratory for verification and calibration of ES Flow meters.

Project type
Condition Assessment and Study

Objectives
Asset Preservation

Scope
Perform annual flow meter calibration tests to verify accuracies.

Project need
The ES cost allocation program relies extensively on the performance and accuracy of wastewater flow meters for billing, and many meters have never had their accuracy tested.

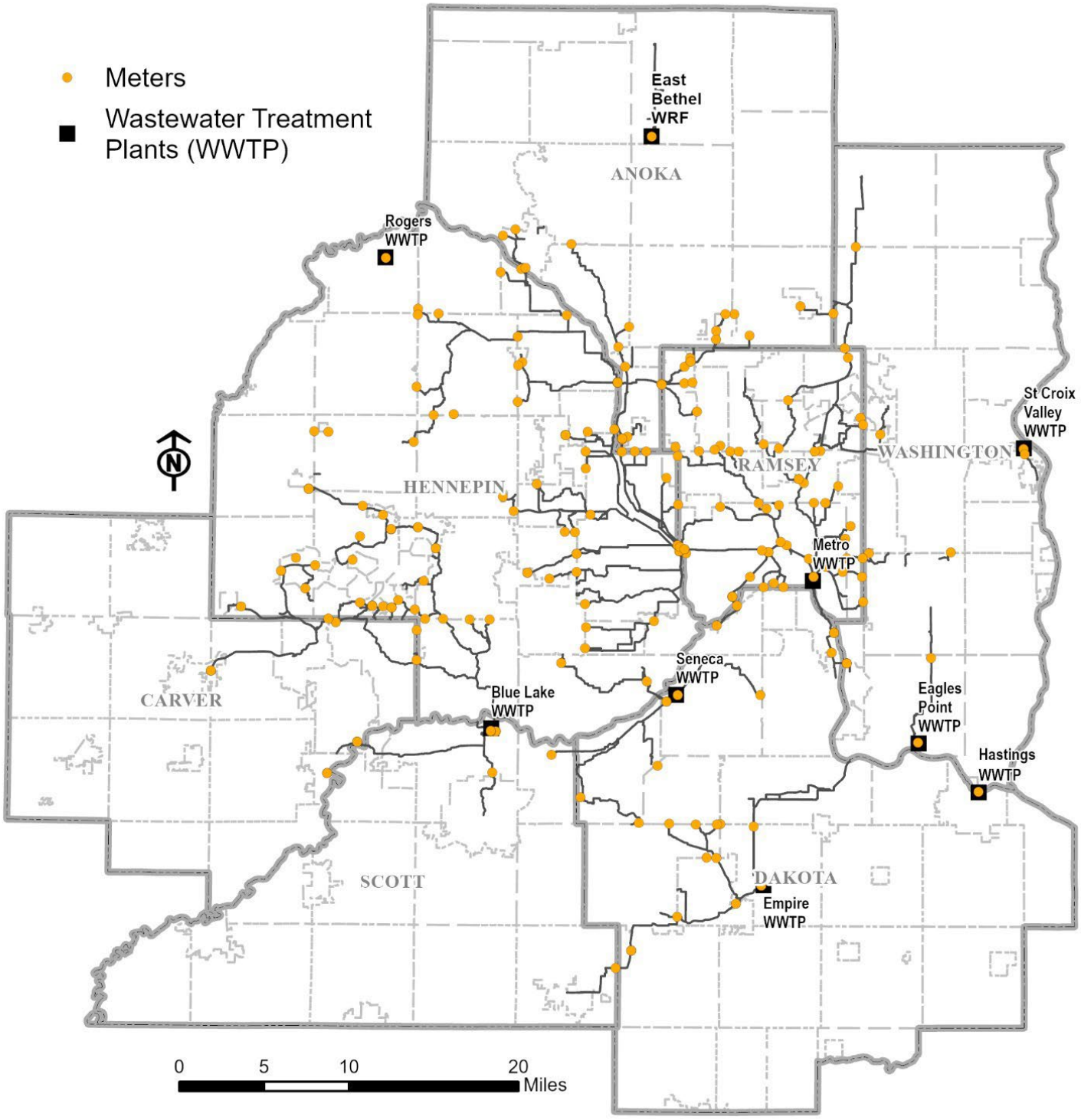
Project schedule:

Planning: 2020 through 2025	Design: N/A	Construction: N/A

Financial analysis

2025 cash flow:	$500,000
Current ACP:	$2,736,000
2025 through 2030 cash flow:	$3,000,000
Total project cost:	$5,661,000

MCES Project 805603



Meter M127 Improvements

Program family 8056 **Project #805607**

Project location: Council district #5, City of Edina, Xerxes Avenue South and 54th Street West

Map of project #805607 location near Minnehaha Creek in Edina.

Project type
Meter Improvements

Objectives
Quality Improvements

Scope
M127 is a Parshall flume meter that has known capacity issues. Because of this, the meter is intended to be replaced, and improvements are planned to be made to the upstream and downstream interceptors.

Project need
M127 was found to be improperly sized, which leads to consistent surcharging of the meter. Additionally, the upstream and downstream pipes were found to have a negative slope through the meter, which has worsened the surcharging issue. Both problems need to be addressed so that the meter can function properly without surcharge.

Planning: 2024 through 2025	Design: 2025 through 2026	Construction: 2026 through 2027

Financial analysis

2025 cash flow:	$150,000
Current ACP:	$835,000
2025 through 2030 cash flow:	$3,184,000
Total project cost:	$3,184,000

Meter M500A Improvements

Program family 8056 **Project #805608**

Project location: Council district #5, City of Bloomington, Near Old Shakopee Road East

Map of project #805608 location near Old Shakopee Road East in Bloomington.

Project type
Meter Improvements

Objectives
Quality Improvements

Scope
M500A will be replaced with a new Parshall flume meter to provide more accurate flow metering. Additionally, odor issues upstream of the meter will be addressed specifically through reconfiguring Special MH-3.

Project need
M500A is a Parshall flume meter that was found to be improperly sized. To provide better flow metering, the meter should be replaced with a flume that is appropriately sized for the flow conditions in the area. Additionally, there have been ongoing odor complaints in the area, which are likely caused by a drop in Special MH-3 that will be reconfigured to reduce the release of hydrogen sulfide (H_2S).

Planning: 2023 through 2025	Design: 2025 through 2026	Construction: 2027 through 2028

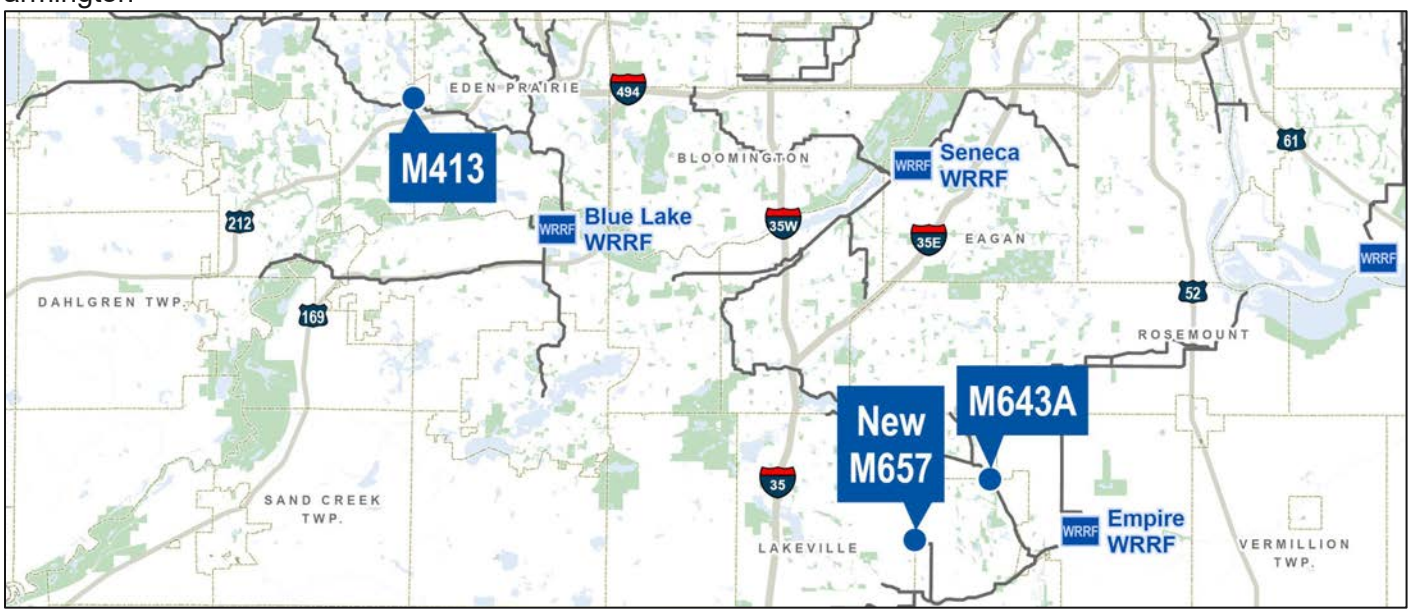
Financial analysis

2025 cash flow:	$75,000
Current ACP:	$1,050,000
2025 through 2030 cash flow:	$1,050,000
Total project cost:	$1,050,000

Meters M413, M643A, and M657 Improvements

Program family 8056 **Project #805609**

Project location: Council districts #3, Cities of Chanhassen and Eden Prairie; #16, Cities of Lakeville and Farmington



Map of Project #805609 locations in cities of Chanhassen, Eden Prairie, Lakeville, and Farmington

Project type
Meter Improvements

Objectives
Asset Preservation and System Expansion

Scope
The M413 site work will consist of meter vault and flume improvements, the addition of a new maintenance structure at the junction of interceptors 7138 and 7025-1, gravity sewer rehabilitations and replacement, and maintenance structure rehabilitation. The M643A site work will consist of meter vault and flume improvements, gravity sewer rehabilitation, and maintenance structure rehabilitation. The new meter M657 site work will consist of constructing a new billing meter vault with flume, driveway, and maintenance structure reconstruction.

Project need
Nest flumes in M413 and M643A are in poor condition, have poor hydraulics that make accurate measurement of flow impossible, and have inadequate max flow rate ratings for measuring forecasted future flows. This project is needed to improve these facilities so that ES meets its financial Customer Level of Service.

Planning: 2024	Design: 2024 through 2025	Construction: 2025 through 2027

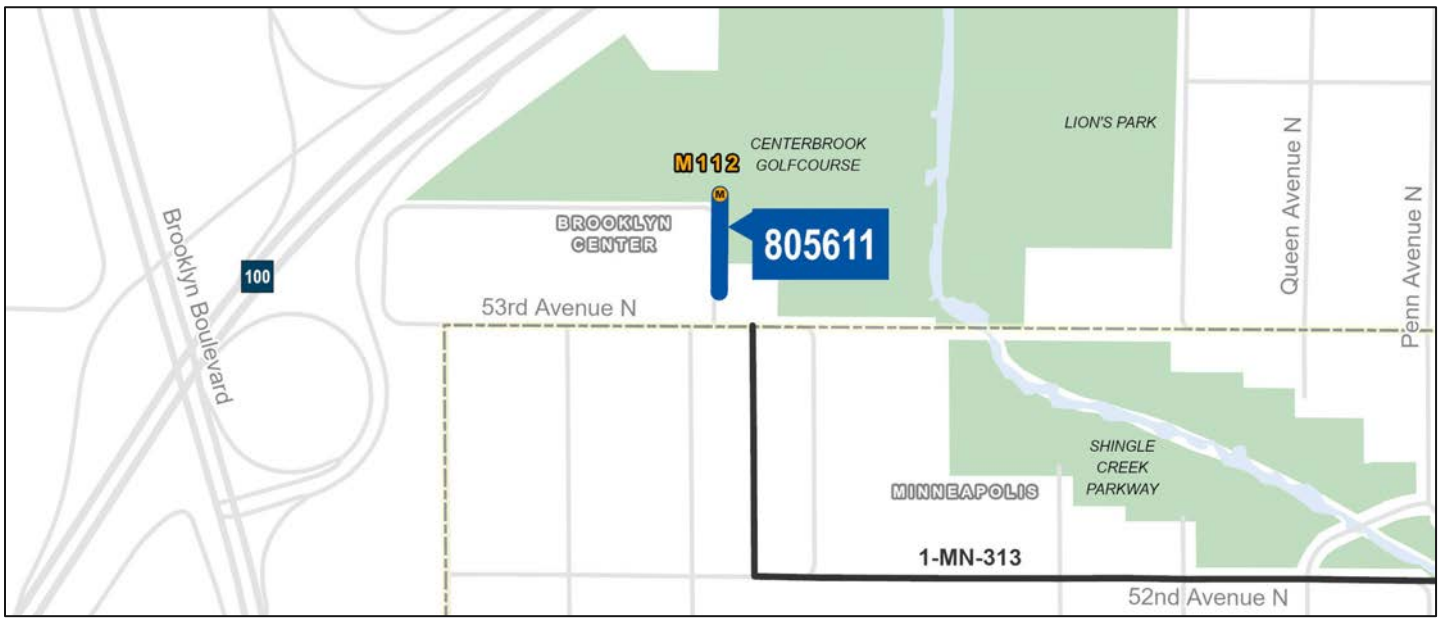
Financial analysis

2025 cash flow:	$150,000
Current ACP:	$1,925,000
2025 through 2030 cash flow:	$5,600,000
Total project cost:	$5,685,000

Meter 112 Rehab

Program family 8056 **Project #805611**

Project location: Council district #2, City of Brooklyn Center, in Centerbrook Golf Course



Map of Meter M112 in Centerbrook Golf Course.

Project type
Meter Improvements

Objectives
Quality Improvements

Scope
The Meter M112 project will replace the existing meter vault and Parshall flume and upstream and downstream piping. The city sewer upstream and downstream of the pipe replacement area will be rehabilitated with cured-in-place pipe (CIPP) as part of a cooperative agreement.

Project need
A 2021 condition assessment of the meter assessed the overall site condition as poor (condition 4). The condition assessment found the Parshall flume is not a standard size, is separating from the surrounding concrete floor and walls, and has suboptimal hydraulics, severe corrosion of the vault, and deteriorated upstream and downstream pipes. Metering problems resulting from these issues could result in reduced accuracy, extended loss of billing data, and damage to customer relations.

Planning: 2025	Design: 2025	Construction: 2026

Financial analysis

2025 cash flow:	$150,000
Current ACP:	$2,482,000
2025 through 2030 cash flow:	$2,850,000
Total project cost:	$2,892,000

Meters M641 and M644 Improvements

Program family 8056 **Project #805612**

Project location: Council districts 12 and 16, Cities of Rosemount and Lakeville

Location of Meters M644 and M641

Project type
Meter Improvements

Objectives
Asset Preservation and Quality Improvements,

Scope
Work to include vault rehabilitation and flume improvements.

Project need
Condition Assessments of M64 and M644 found significant grit deposits. A 2021 condition assessment of the meters assessed the overall site conditions as poor (condition 4). The condition assessment found significant grit deposits, suboptimal hydraulics, and corrosion of the vault. Metering problems resulting from these issues could result in reduced accuracy, extended loss of billing data, and damage to customer relations.

Planning: 2025	Design: 2026	Construction: 2027

Financial analysis

2025 cash flow:	$50,000
Current ACP:	$0
2025 through 2030 cash flow:	$3,000,000
Total project cost:	$3,000,000

Chanhassen Eden Prairie Meter M448 Improvements

Program family 8056 **Project #805613**

Project location: Council District #3, Cities of Chanhassen and Eden Prairie

Map of Project #805613 location

Project type
Meter Improvements

Objectives
Quality Improvements

Scope
M448 Improvements will include construction of a new meter maintenance structure in the immediate vicinity of existing meter M448.

Project need
Dye dilution testing and condition assessments confirmed poor hydraulics through the meter that make accurate measurement of flow in the existing setup impossible.

Planning: 2024 through 2025	Design: 2025	Construction: 2025 through 2026

Financial analysis

2025 cash flow:	$50,000
Current ACP:	$200,000
2025 through 2030 cash flow:	$450,000
Total project cost:	$450,000

Meter M106 Rehabilitation

Program family 8056 **Project #805615**

Project location: Meter station M106, Council districts #2 and 7, Cities of Columbia Heights and Minneapolis

Map of project # 805615, located at the intersection of 37th Avenue NE and Central Avenue NE in Columbia Heights.

Project type
Meter Improvements

Objectives
Asset Preservation and Quality Improvements

Scope
The project will involve removing and replacing the existing Parshall flume and flow measurement equipment, as well as replacing the ladder and other structural components within the structure, if necessary. It will also include temporary flow conveyance, traffic control, and improvements to any hydraulic deficiencies to ensure accurate flow measurements.

Project need
Meter M106 is equipped with a non-standard, metal-fabricated 6-inch Parshall flume that lacks a proper diverging section. The upstream measurement point has accumulated over 3 inches of grit, along with minor surface waves and undulations, which is not ideal for the flume performance. A dye test conducted in 2022 and 2023 revealed a discrepancy of over 11% between actual flow data and dye test results. To ensure accurate flow measurement, the flume within the structure should be replaced with a standard Parshall flume, and the underlying hydraulic issues must be addressed.

Planning: 2022 through 2023	Design: Spring 2025-Fall 2025	Construction: Winter 2025 through Summer 2026

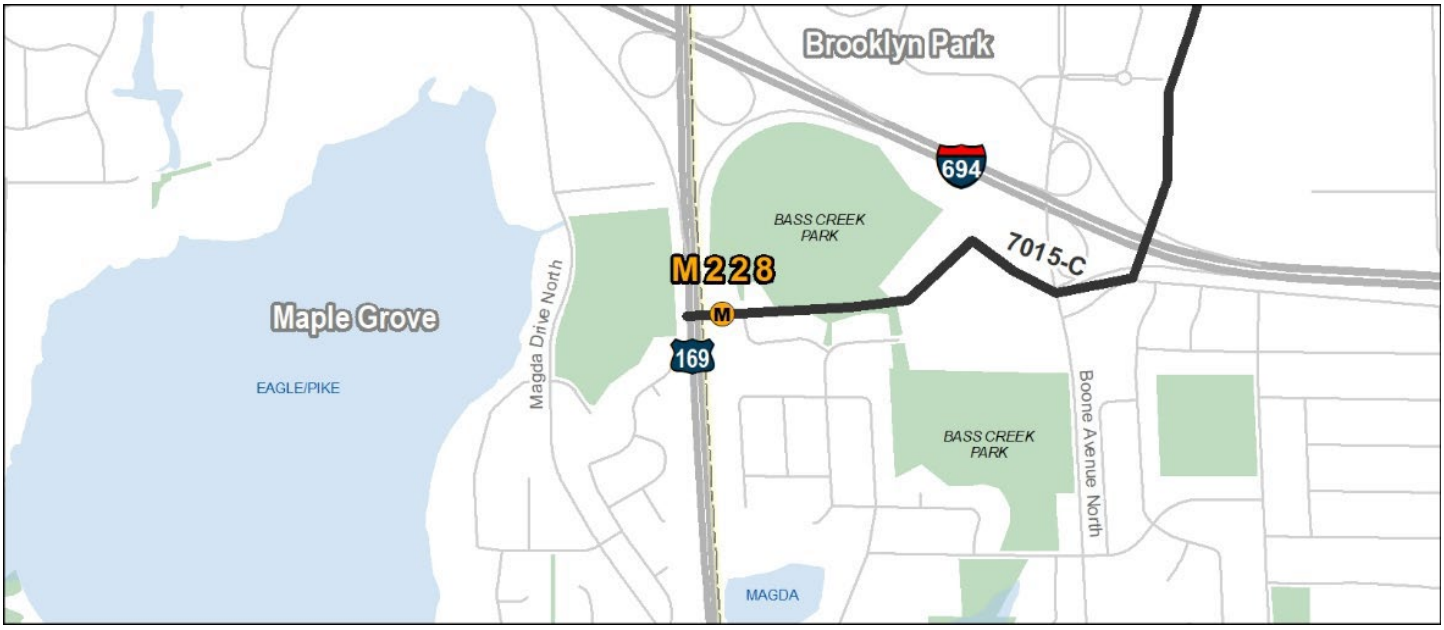
Financial analysis

2025 cash flow:	$200,000
Current ACP:	$274,000
2025 through 2030 cash flow: Total project cost:	$500,000

Replacement Meter Vault M228

Program family 8056 **Project #805636**

Project location: Council district #2, City of Brooklyn Park



Project #805636 location near Bass Creek Park in Brooklyn Park

Project type
Meter Improvements

Objectives
Asset Preservation

Scope
Replace existing Meter M228.

Project need
Replace and update meter due to corrosion and difficult access. The meter is important to ensure accuracy of cost distribution among communities.

Project schedule:

Planning: 2019	Design: 2020 through 2025	Construction: 2026 through 2027

Financial analysis

2025 cash flow:	$200,000
Current ACP:	$7,126,000
2025 through 2030 cash flow:	$12,700,000
Total project cost:	$13,950,000