



Consider Resolution Approving Plans and Specification and Authorization for Advertisement for Bid for the Water Treatment Plant Project

November 12, 2024

Agenda



- Introductions
- How water system works
- Background on manganese and water testing results
- Minnesota Department of Health – Manganese Health Effects
- Water System Study
- Overview of Why a Water Treatment Plant is needed
- Update on Federal Funding and Water Rates
- Water Treatment Plant Project Timing

MDH Manganese Water Guidance



Infants

100 $\mu\text{g}/\text{L}$

3 of 5 Northfield wells above 100 $\mu\text{g}/\text{L}$



Everyone Else

300 $\mu\text{g}/\text{L}$

Manganese in Northfield's Tap Water



- City conducted testing in 5 locations throughout 2020 at taps where people drank water
 - No documentation on what type of treatment, if any, took place prior to the tap
- 4 of 5 sites had tests over 100 ug/L.

Reverse Osmosis & Why Water Softening?



- Soft water prevents build-up of minerals inside pipes, helps dry skin and hair, cleaner dishes, cleaner laundry, protects appliance, etc.
- Removes PFAS (forever chemical) and other future or unknown contaminants.
- Provides high quality of water to all residents
- Provides softened water to all Northfield water users who currently do not have access to softened water in their rental units
- Residents will be able to remove their in-home water softeners and no longer have to haul softener salt bags into home
- Less chlorides discharged to the Cannon River by removing home water softeners
- City can provide softened water at roughly \$8 or slightly more than 1 bag of softener salt per month (typical amount used by residents)





Northfield Water Treatment Plant

Landscape Plan - 10/20/2024

version 10-29-2024



Quality of Life



Leadership



Natural World



Climate and Resilience

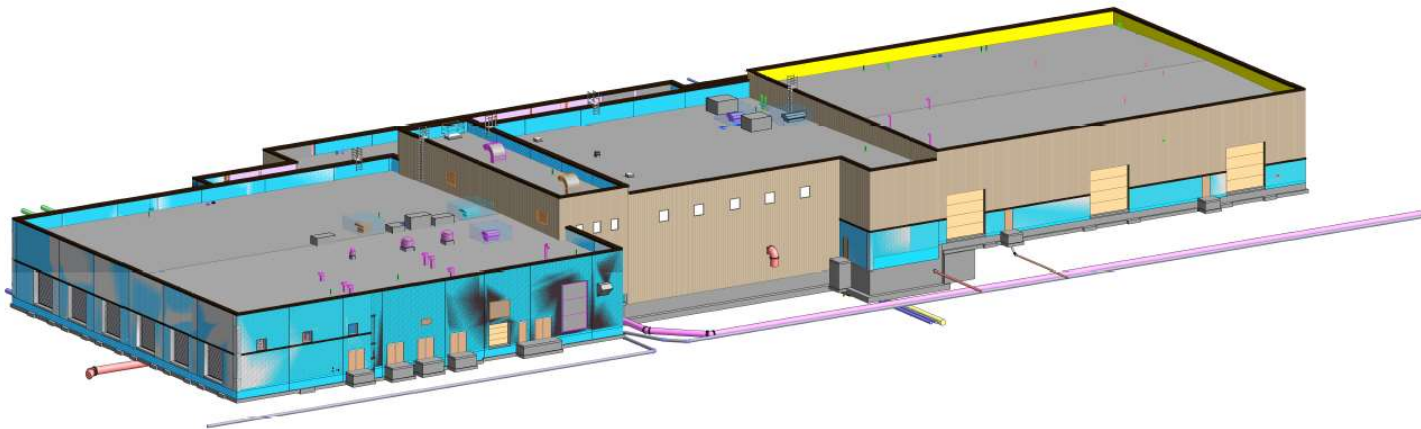
Legend: ISI Envision Performance Criteria

Quality of Life	Wellbeing	QL1.1	Improve Community Quality of Life
		QL1.2	Enhance Public Health & Safety
		QL1.3	Improve Construction Safety
	Mobility	QL1.4	Minimize Noise & Vibration
		QL1.5	Minimize Light Pollution
		QL1.6	Minimize Construction Impacts
Community	QL2.1	Improve Community Mobility Access	
	QL2.2	Encourage Sustainable Transportation	
	QL2.3	Improve Access & Wayfinding	
	QL3.1	Advance Equity & Social Justice	
Collaboration	QL3.2	Preserve Historic & Cultural Resources	
	QL3.3	Enhance Views & Local Character	
	QL3.4	Enhance Public Space & Amenities	
	LD1.1	Provide Effective Leadership & Commitment	
Leadership	LD1.2	Foster Collaboration & Teamwork	
	LD1.3	Provide for Stakeholder Involvement	
	LD1.4	Pursue Byproduct Synergies	
	LD2.1	Establish a Sustainability Management Plan	
Planning	LD2.2	Plan for Sustainable Communities	
	LD2.3	Plan for Long-Term Monitoring & Maintenance	
	LD2.4	Plan for End-of-Life	
	LD3.1	Stimulate Economic Prosperity & Development	
Economy	LD3.2	Develop Local Skills & Capabilities	
	LD3.3	Conduct a Life-Cycle Economic Evaluation	
	RA1.1	Support Sustainable Procurement Practices	
Materials	RA1.2	Use Recycled Materials	
	RA1.3	Reduce Operational Waste	
	RA1.4	Reduce Construction Waste	
	RA1.5	Balance Earthwork On Site	
Energy	RA2.1	Reduce Operational Energy Consumption	
	RA2.2	Reduce Construction Energy Consumption	
	RA2.3	Use Renewable Energy	
	RA2.4	Commission & Monitor Energy Systems	
Water	RA3.1	Preserve Water Resources	
	RA3.2	Reduce Operational Water Consumption	
	RA3.3	Reduce Construction Water Consumption	
	RA3.4	Monitor Water Systems	
Siting	NW1.1	Preserve Sites of High Ecological Value	
	NW1.2	Provide Wetland & Surface Water Buffers	
	NW1.3	Preserve Prime Farmland	
	NW1.4	Preserve Undeveloped Land	
Conservation	NW2.1	Reclaim Brownfields	
	NW2.2	Manage Stormwater	
	NW2.3	Reduce Pesticide & Fertilizer Impacts	
	NW2.4	Protect Surface & Groundwater Quality	
Ecology	NW3.1	Enhance Functional Habitats	
	NW3.2	Enhance Wetland & Surface Water Functions	
	NW3.3	Maintain Floodplain Functions	
	NW3.4	Control Invasive Species	
	NW3.5	Protect Soil Health	
Climate and Resilience	Emissions	CR1.1	Reduce Net Embodied Carbon
		CR1.2	Reduce Greenhouse Gas Emissions
		CR1.3	Reduce Air Pollutant Emissions
	Resilience	CR2.1	Avoid Unsuitable Development
		CR2.2	Assess Climate Change Vulnerability
		CR2.3	Evaluate Risk and Resilience
Community	CR2.4	Establish Resilience Goals and Strategies	
	CR2.5	Maximize Resilience	
	CR2.6	Improve Infrastructure Integration	

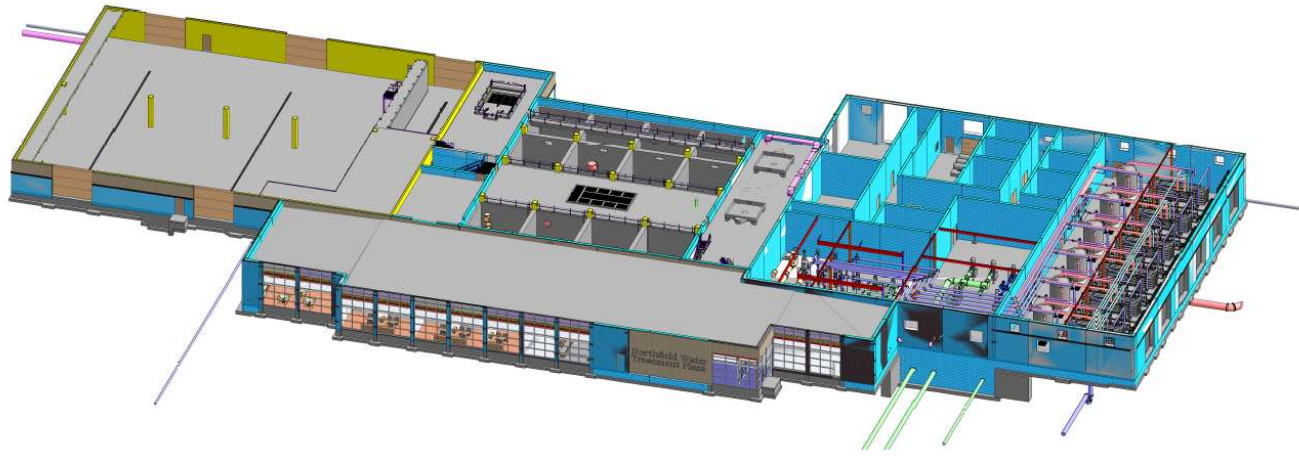
Front of Building 3D Model



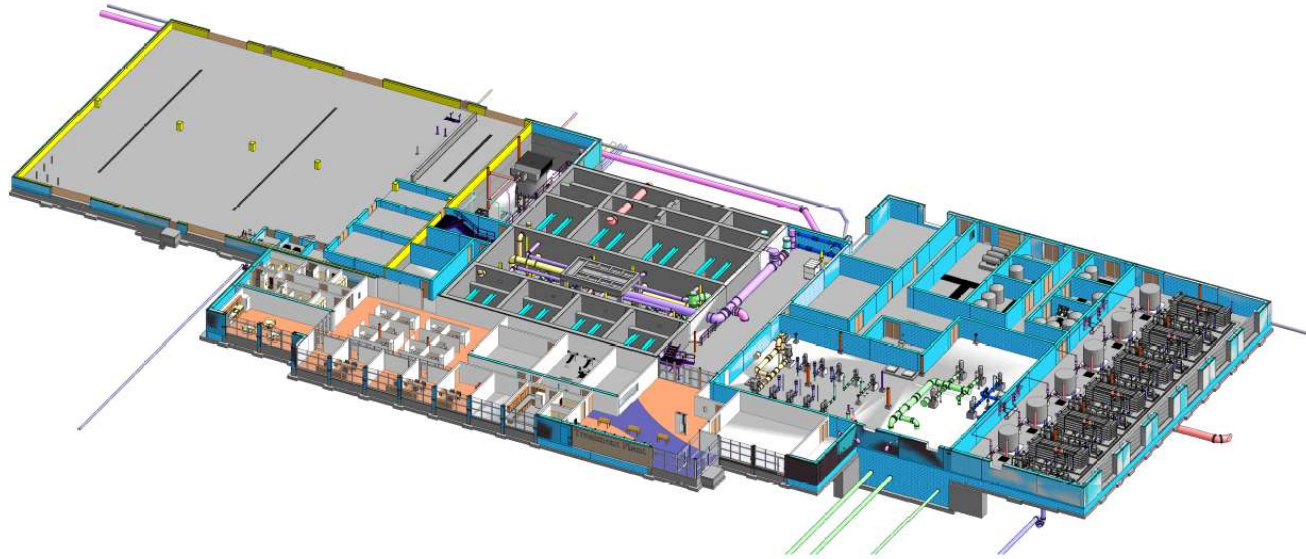
Back of Building 3D Model



Upper Level 3D Model



Lower Level 3D Model



Total Water Treatment Plant Projects Cost



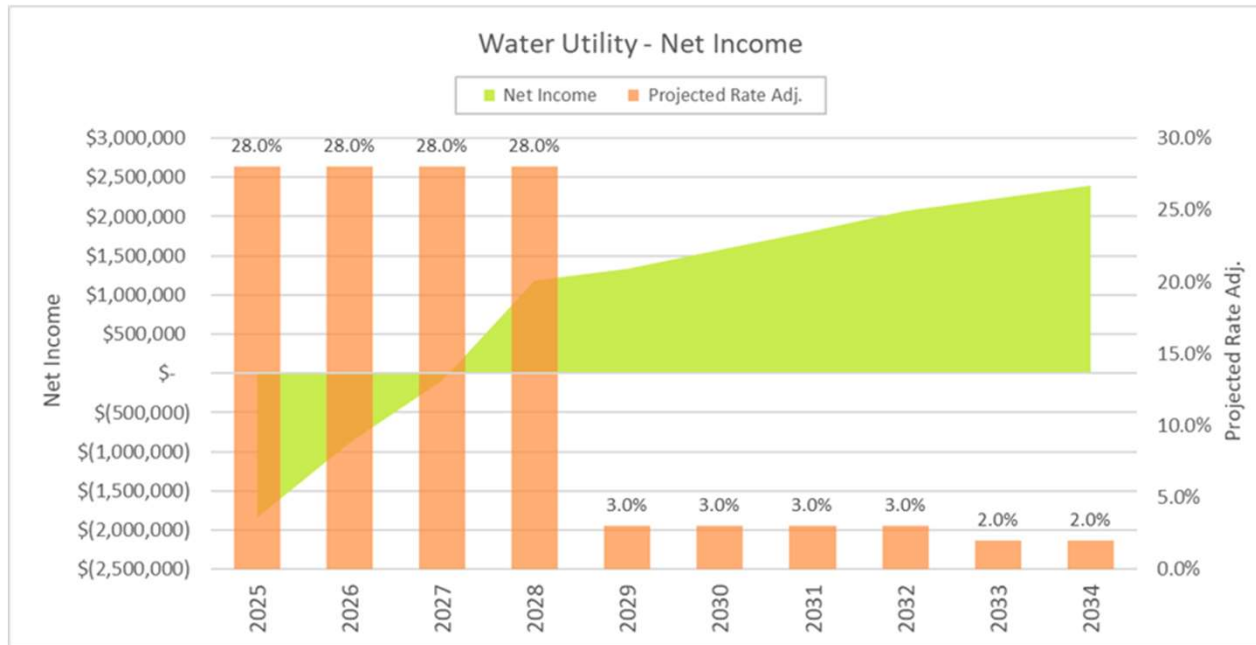
Construction Cost Estimate - Northfield WTP	
Item	Cost
General Conditions/Mobilization	\$ 1,600,000
Roads and Site Work	\$ 3,700,000
Raw Watermain	\$ 2,900,000
Trunk Sanitary Sewer	\$ 1,448,073
Garage	\$ 3,500,000
Solar - Rooftop	\$ 1,500,000
Water Treatment Facility including Gravity Filtration	\$ 22,500,000
Office/Conference Rooms	\$ 3,000,000
Reverse Osmosis Addition	\$ 11,000,000
Subtotal Estimated Construction Costs	\$ 51,148,073
Contingencies @ 10%	\$ 5,114,807
Total Estimated Construction Cost	\$ 56,262,880
Engineering	\$ 3,793,135
Land	\$ 572,000
Total Estimated Project Cost	\$ 60,628,015
FY24 Federal Funding	\$ 3,945,000
Estimate Project Cost minus FY24 Funding	\$ 56,683,015

Tonight's Water Treatment Plant Engineers Estimate



<u>Construction Cost Estimate - Northfield WTP</u>	
Item	Cost
General Conditions/Mobilization	\$ 1,200,000
Garage	\$ 3,500,000
Solar - Rooftop	\$ 1,500,000
Water Treatment Facility including Gravity Filtration	\$ 22,500,000
Office/Conference Rooms	\$ 3,000,000
Reverse Osmosis Addition	\$ 6,000,000
Subtotal Estimated Construction Costs	\$ 37,700,000
Contingencies @ 10%	\$ 3,770,000
Total Estimated Construction Cost	\$ 41,470,000

Projected Water Rates



Sample Utility Bill



Sample Bills - Residential							
Average Residential							
589	cubic feet						
0.33	acre lot						
	2024	2025	2026	2027	2028	2029	2030
Water	\$ 20.27	\$ 25.95	\$ 33.21	\$ 42.51	\$ 54.41	\$ 56.04	\$ 57.73
Sewer	\$ 40.42	\$ 42.24	\$ 44.14	\$ 46.13	\$ 47.51	\$ 48.94	\$ 50.40
Garbage (35 gal)	\$ 12.42	\$ 12.54	\$ 12.67	\$ 12.80	\$ 12.92	\$ 13.05	\$ 13.18
Storm Water	\$ 9.92	\$ 11.41	\$ 13.12	\$ 15.09	\$ 17.35	\$ 17.70	\$ 18.05
	\$ 83.03	\$ 92.14	\$ 103.14	\$ 116.52	\$ 132.20	\$ 135.73	\$ 139.36



How much
does 5
gallons of
Water cost?



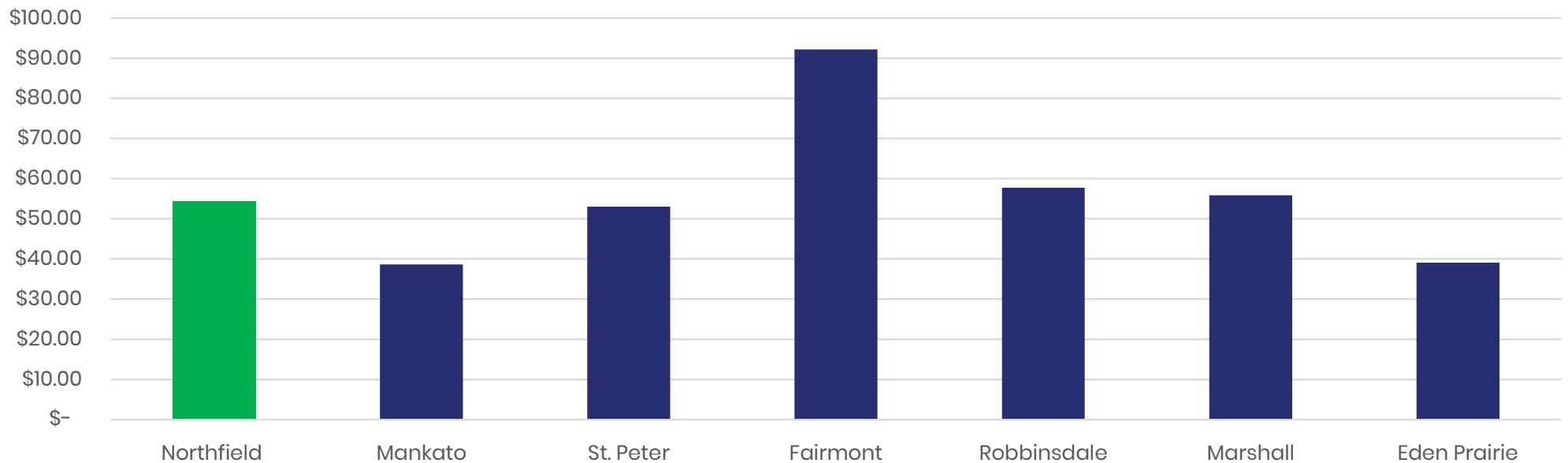
- Through your tap in 2024 ~3¢
- Through your tap in 2030 ~7¢
- At store or water supply company between \$6.00 and \$8.50

Comparable Cities



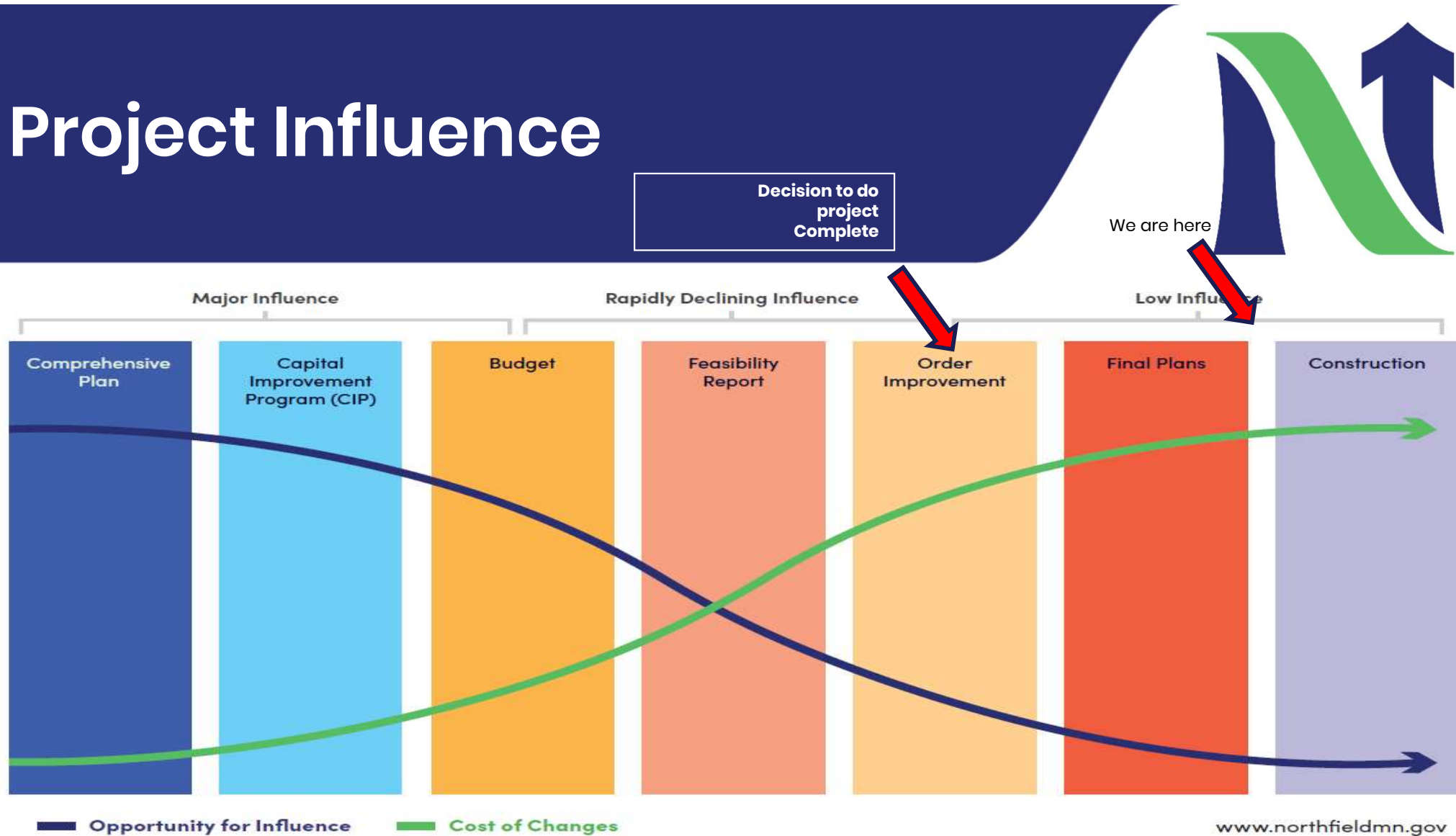
2028 Projected Rates for Softening Communities

Based on a 3% annual increase for other cities



Note: These are some examples and with 22 cities with PFAS exceeding limits there will be many more new similar plants being built to remove those forever chemicals.

Project Influence



Project Timeline



Water System Study recommending water treatment plant with gravity filtration and reverse osmosis

2021 – 2022



City Council Accepted Water System Study
April 5, 2022

Design of Water Treatment Plant

April 2023 –
October 2024



City Council Approved Contract with Bolton and Menk for Design
April 18, 2023

Open House on Water Treatment Plant

October 29, 2024



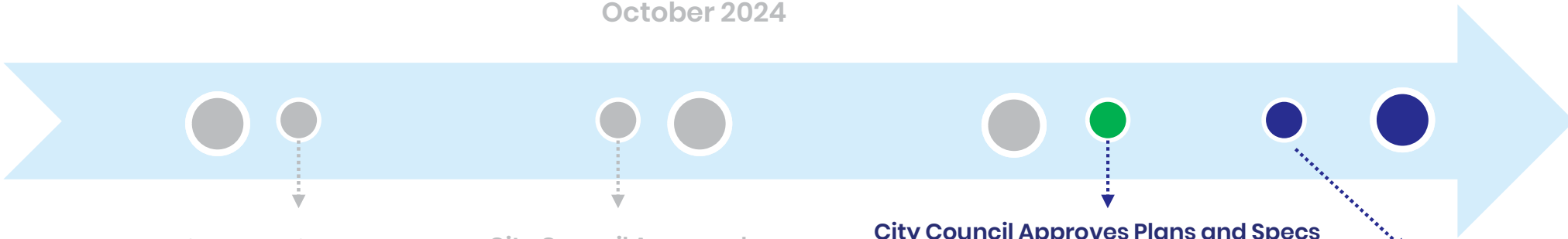
City Council Approves Plans and Specs Authorized Advertisement for Bid Project
November 12, 2024

Construction of Water Treatment Plant and Roadways

2025 – 2027



City Council Awards Project
January 7, 2025





Consider Resolution Approving Plans and Specifications and Ordering Advertisement for Bid for Water Treatment Plant Project

Thank you