



CITY OF ROCHESTER SANITARY SEWER MASTER PLAN

February 24, 2020

Matt Crawford – Project Manager

Ben Fulton – Sanitary System Supervisor

Presentation Overview

1. Sewer Master Plan

- Need, results, risk assessment, and project prioritization

2. Sewer Trunk Rates and Decision Making

- Proposed approach and decision making process

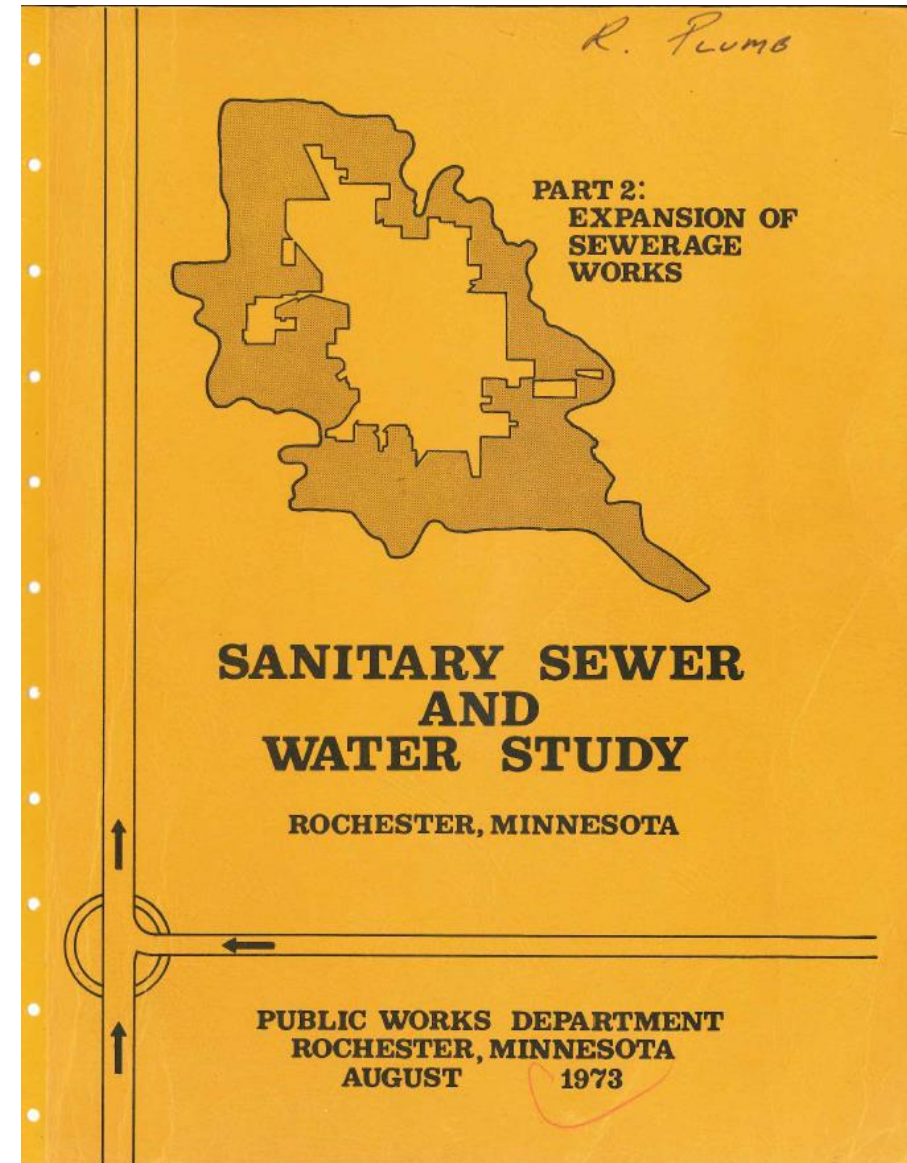
3. Next Steps for Council

SECTION 1

Sanitary Sewer Master Plan

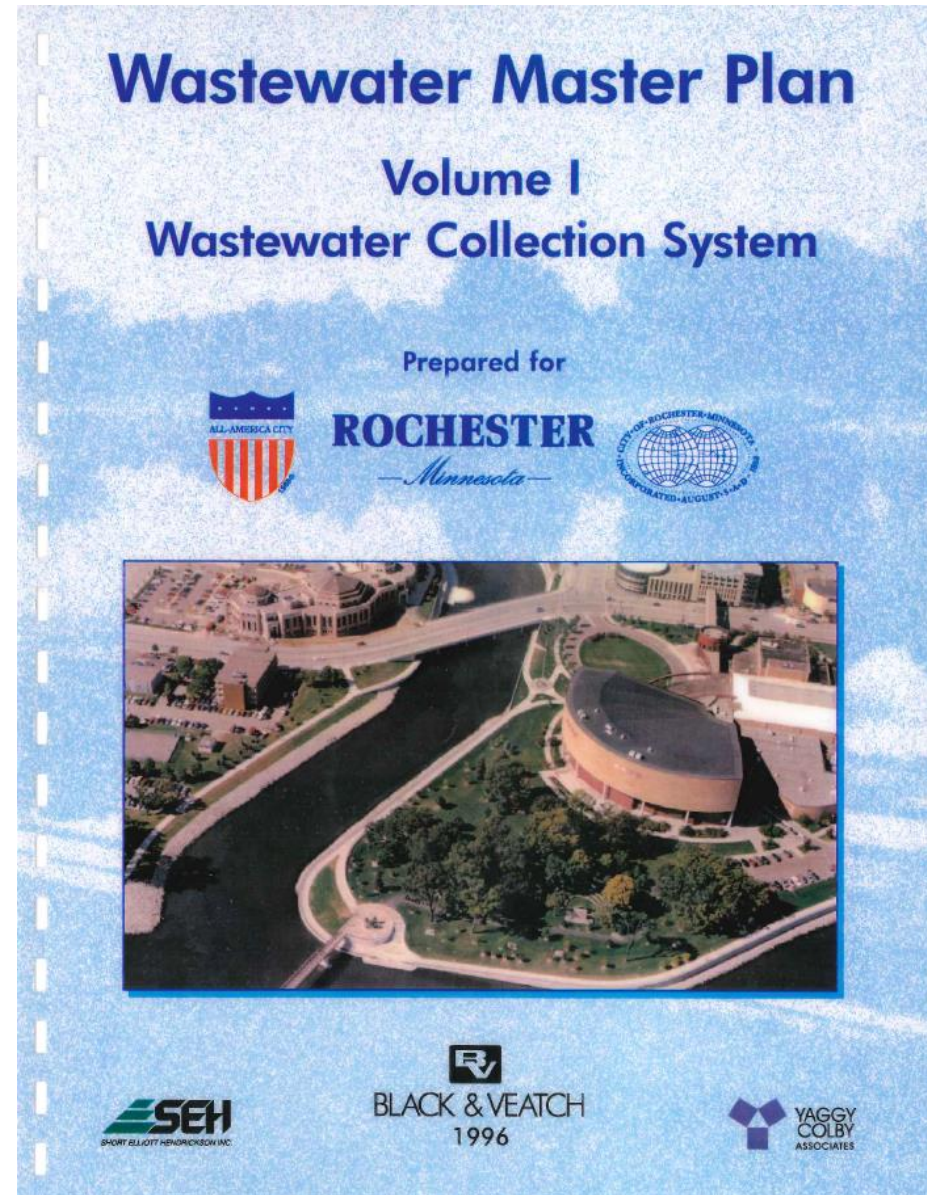
Sanitary Sewer and Water Study, 1973

- Plan Study Area
 - Approximate Population: 54,000
 - Approximate City Area: 7,400 acres



Wastewater Master Plan, 1996

- Plan Study Area
 - Approximate Population: 78,000
 - Approximate City Area: 25,000 acres



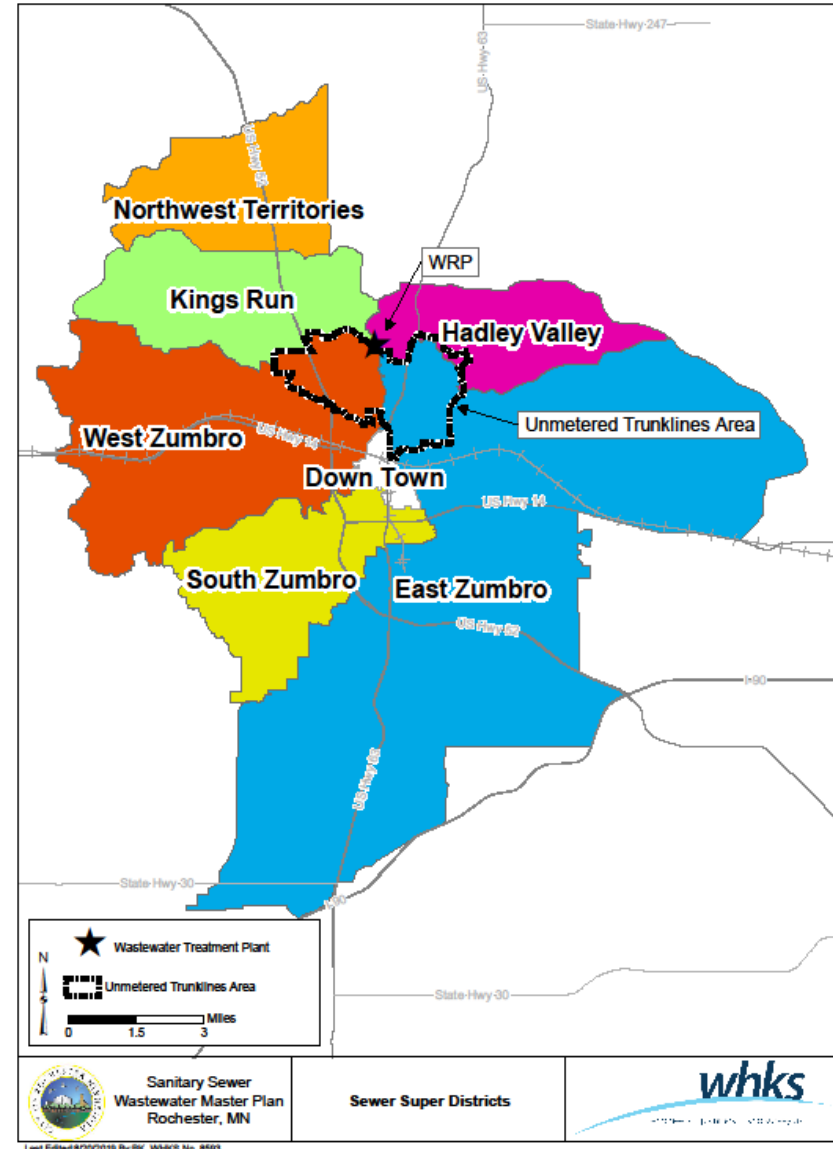
Sewer Master Plan Results, 2020

Current Service Area

- 2019 Approximate Population: 115,000
- 2019 Approximate City Area: 35,530 acres

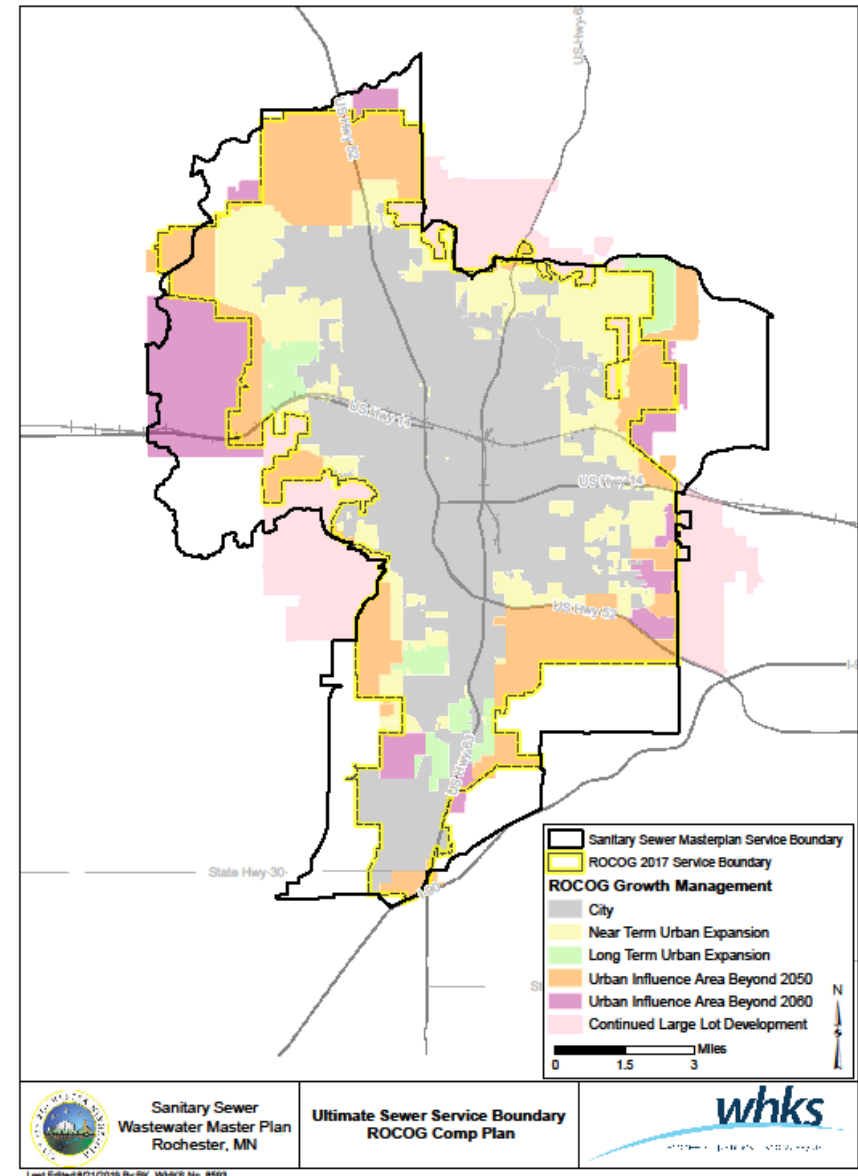
Plan Study Area

- Total potential service area build-out: 86,000 gross acres
- Divided into Super Sewer Districts
 - Determined by alignment of main trunk sewers.



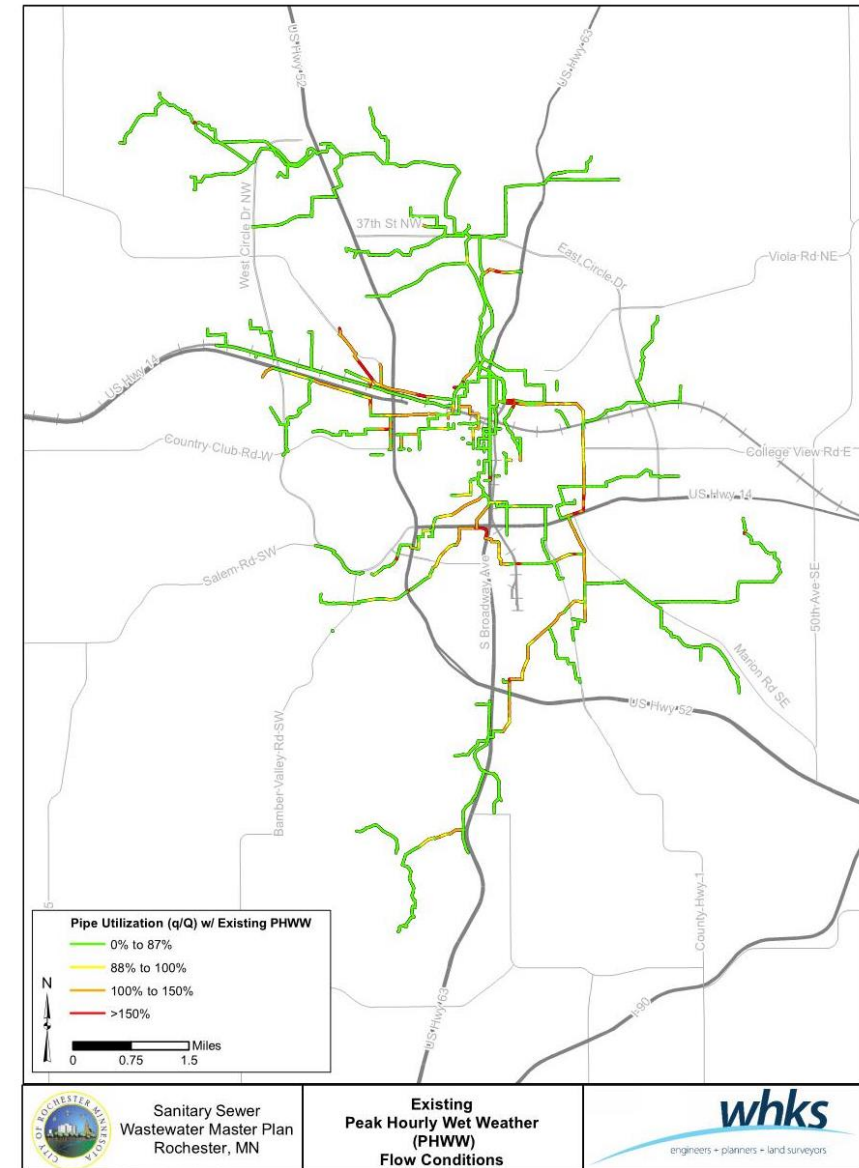
Land Use and Growth Projections

- Super Districts adjusted based on 2018 Comprehensive Plan (Plan To Succeed, P2S)
 - Political boundaries and previous studies also considered.
- Predicted future sewer needs
 - Growth predicted from Comprehensive Plan and existing zoning and agreements.
 - Development to edge of Super District service boundaries included for pipe sizing.

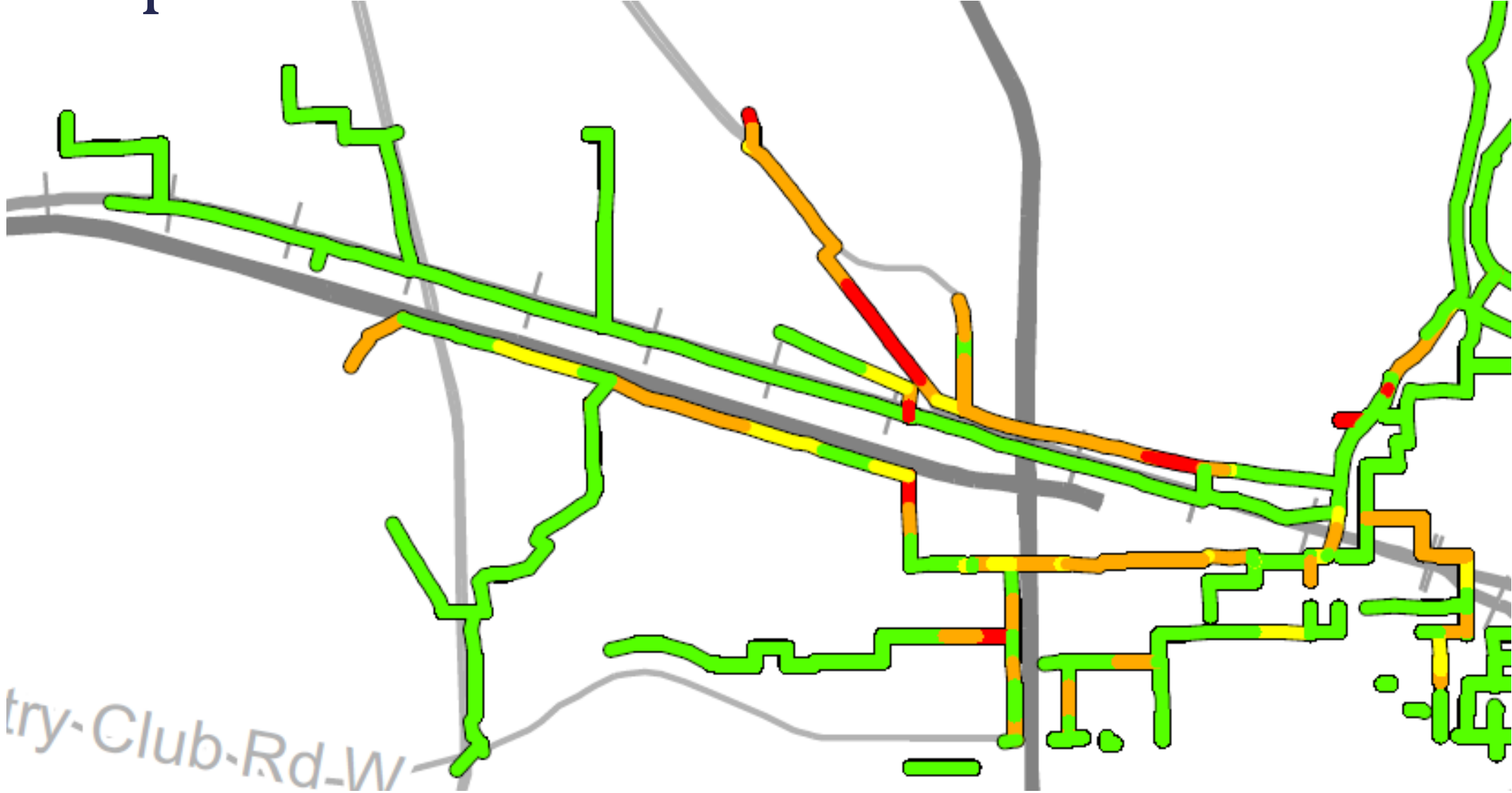


Sewer Modeling Results

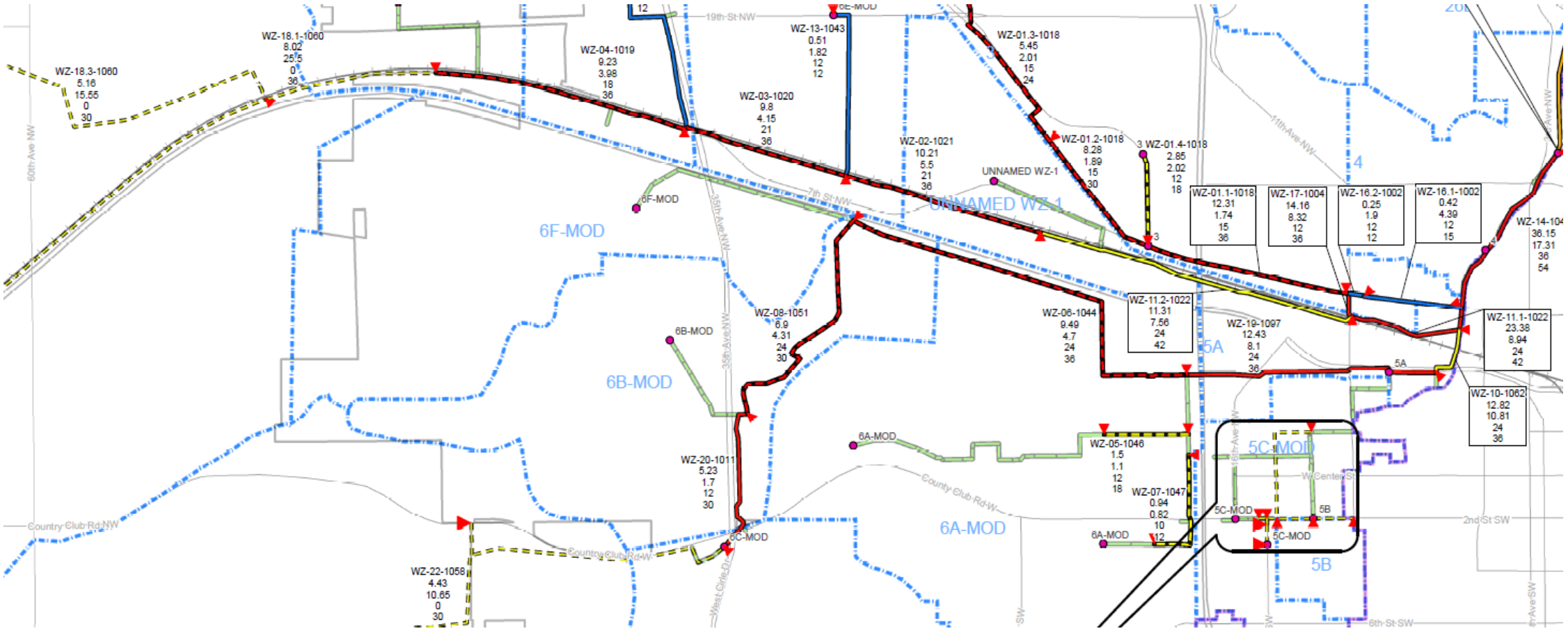
- Current capacity and limitations
- Flows include future development and infill
- Simulates 25-year storm events



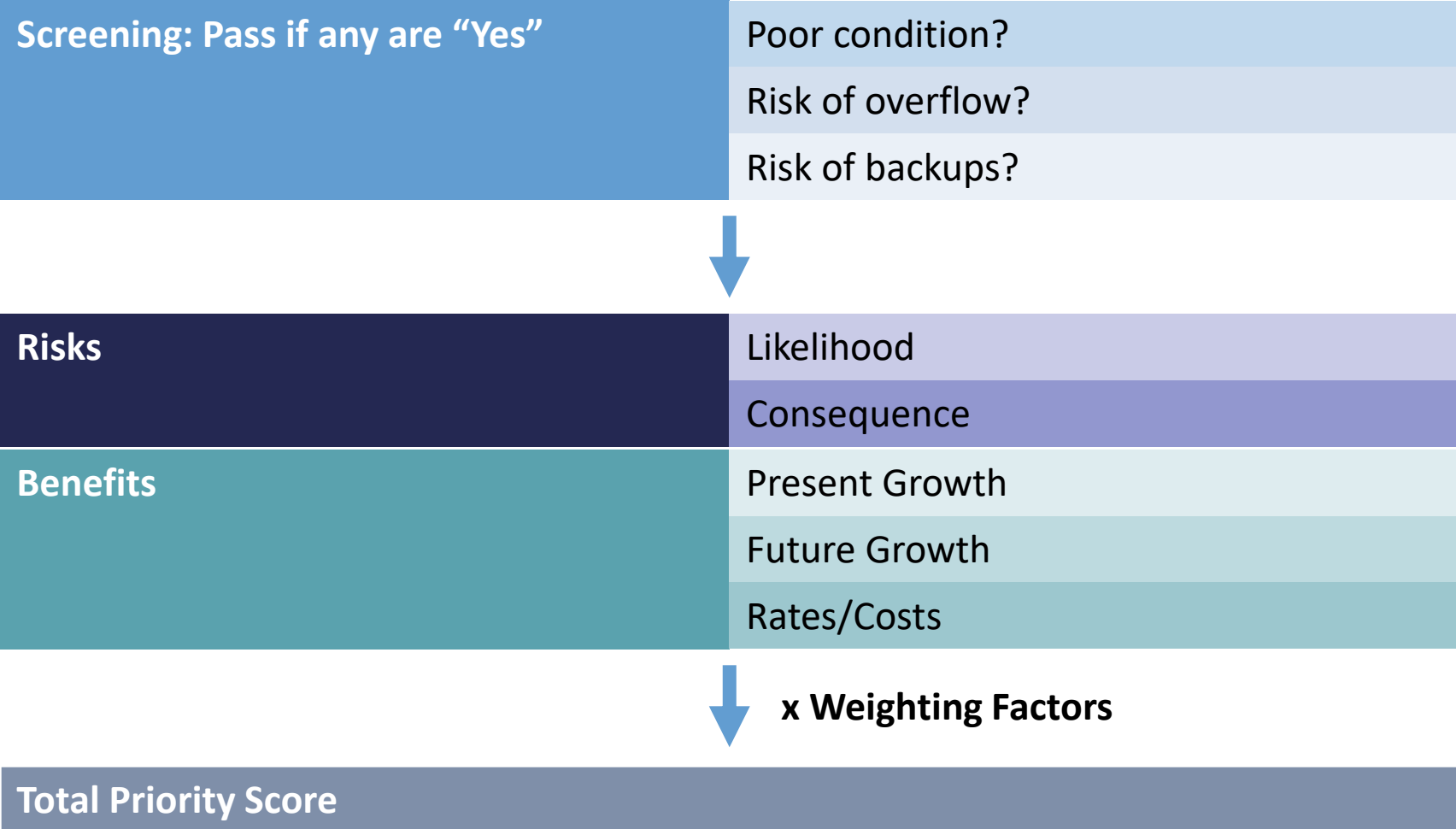
Example: West Zumbro 25-Year Storm Event Flows



Sewer Master Plan Results: Project Maps



Sewer Master Plan Results: Prioritization of Projects



Sewer Master Plan Results: Risk Assessment Matrix

Screening Criteria

| | |
|---|-----------------|
| Condition Score 5 or 6 Or Other Risks = Yes? | Advance or Stop |
| Existing SSO Risk = Yes? | |
| Existing Basement Backup Risk = Yes? | |
| If any screening criteria=Yes, advance to Detailed Criteria --> If no = stop | |

Detailed Scoring

| Scoring: | Weight: | Risk | | | | | Benefit | | | | | | | | | | | | | | |
|---|---------|---|--|---|-----------------------------------|---|---|--|--|--|--|---|--|---|---|---|---|---|---|------------------------|---|
| | | Consequence | | | Likelihood | | Future Growth | | | Rates | | Present Growth | | | | | | | | | |
| | | Impact to Major Users (Previously Consequence of Failure) | Existing SSO Risk or Basement Backup Risk | Quantity of SSO/BB's this pipe puts at risk during Q25 | Condition Score or Other Risks | Utilization | Qty of Trunkline Upsize Projects Upstream of This Project | Developable Acres to be gained by String of Projects | Developable acres to be gained by this project | Capacity to be gained by this project | Sewer Trunk Rate for this project: \$/ Dev. Acres Gained | Capacity Recovery Rate for this project: \$/ MGD gained | Availability of Other City Services for this project | DA's to be gained in Valid General Development Plan (GDP) by this project | | | | | | | |
| All others = '1' HWY or <=36" Dia = '3' SIU, RR, or >36" Dia = '10' | 15 | No = '1' Yes Q25 = '3' Yes Q10 = '10' | 15 | <10 (SSOs + BB) = 1 11-99 (SSOs + BB) = 3 >100 (SSOs + BB) = 10 | 10 | 0, 1, 2 = '1' 3, 4 or in need repair in 3-5 years = '3' 5, 6 or in need of repair in 1-2 years = '10' | 6 | 0 projects = 1 1-10 projects = 3 11+ projects = 10 | 4 | <200 Ac = '1' 2001-10000 Ac = 3 >10000 Ac = 10 | 4 | <200 Ac = '1' 200-500 Ac = '3' >500 Ac = '10' | 4 | > \$10,000 / DA = '1' \$5,000 - \$10,000 / DA = '3' <\$5,000 DA = '10' | 6 | > \$500,000 / MGD = '1' \$100,000-\$500,000 / MGD = '3' <\$100,000 / MGD = '10' | 6 | No = '1' Yes, Developed = '3' Yes, Completely Developed, Paved = '10' | 6 | No = '1' Yes = '10' | 4 |

Sewer Master Plan Results: Prioritization of Projects

Criteria and Scoring
7/29/2019
WZ Prioritization List

Elevation of trunk projects are laid out to provide 8-ft minimum cover to extensions. Users should review this assumption is appropriate for future extension areas prior to upsizing existing trunks and adjust elevations and order of projects if needed.

West Zumbro Only

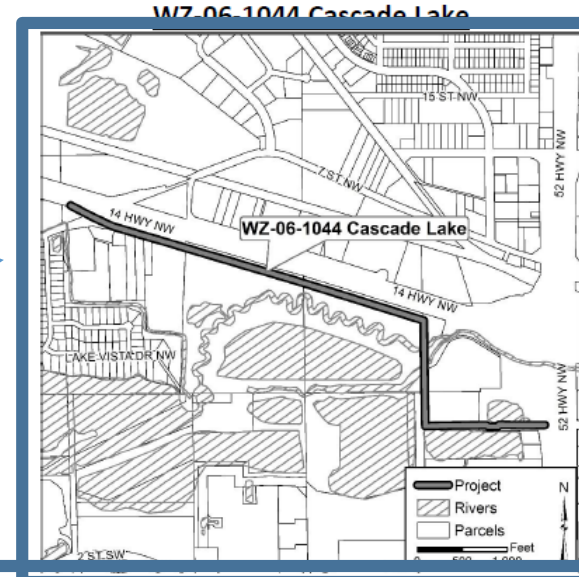
| Master Plan Project Name | GIS No. | Project Name | Screening Criteria | | | | Detailed Scoring | | | | | | | | | | | | |
|--------------------------|---------|--------------|--|---|---|---|---|--|---|---|--|--|---|---|------------------------|----------------------|-------------------------|------------------------|---|
| | | | Condition Score 5 or 6 Or Other Risks = Yes? | Existing SSO Risk = Yes? | Existing Basement Backup Risk = Yes? | Advance or Stop | Risk | | | | | Benefit | | | | | | | |
| | | | If any screening criteria=Yes, advance to Detailed Criteria -> If no = stop | | | | | | | | | | | | | | | | |
| | | | Scoring: | | | | | | | | | | | | | | | | |
| | | | 15 | 15 | 10 | 10 | 10 | 10 | 6 | 4 | 4 | 4 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | | | All others = "1" HWY or <=36" Dia = "3" SIU, RR, or >36" Dia = "10" | No = "1" Yes Q25 = "3" Yes Q10 = "10" | <10 (SSOs + BB) = 1 11-99 (SSOs + BB) = 3 >100 (SSOs + BB) = 10 | 0, 1, 2 = "1" 3, 4 or in need repair in 3-5 years = "3" 5, 6 or in need of repair in 1-2 years = "10" | <=100% Q25 = "1" >100% Q25 = "3" >100% Q10 = "10" | 0 projects = 1 1-10 projects = 3 11+ projects = 10 | <2000 Ac = 1 2001-10000 Ac = 3 >10000 Ac = 10 | <200 Ac = "1" 200-500 Ac = "3" >500 Ac = "10" | <10 MGD = 1 11-60 MGD = 3 >60 MGD = 10 | > \$10,000 / DA = "1" \$5,000 - \$10,000 / DA = "3" <\$5,000 DA = "10" | > \$500,000 / MGD = "1" \$100,000-\$500,000 / MGD = "3" <\$100,000 / MGD = "10" | No = "1" Yes, Developed = "3" Yes, Completely Developed, Paved = "10" | No = "1" Yes = "10" | Risk Total (Max 600) | Benefit Total (Max 400) | Total Score (Max 1000) | |

Projects that passed screening sorted by total score - Additional projects that did not pass screening will need to be completed to provide full capacity to the system

| WZ-01- 1018 | Valleyhigh Drive 08/0208 to 04/0102 | Yes | Yes | Yes | -> | 10 | 10 | 3 | 10 | 10 | 3 | 1 | 1 | 3 | 1 | 3 | 10 | 1 | 530 | 126 | 656 |
|-------------|--|-----|-----|-----|----|----|----|---|----|----|---|---|---|---|---|----|----|----|-----|-----|-----|
| WZ-02- 1021 | Cascade Meadows 03/0144 to 03/0125 | Yes | - | - | -> | 10 | 1 | 1 | 10 | 1 | 3 | 3 | 1 | 3 | 1 | 10 | 10 | 1 | 285 | 176 | 461 |
| WZ-03- 1020 | Kalleo/Whiting 03/0112 to 03/0144 | Yes | - | - | -> | 10 | 1 | 1 | 10 | 1 | 3 | 3 | 1 | 3 | 1 | 3 | 10 | 1 | 285 | 134 | 419 |
| WZ-04- 1019 | Redi-Mix 03/H268 to 03/0112 | Yes | - | - | -> | 10 | 1 | 1 | 10 | 1 | 1 | 3 | 1 | 3 | 1 | 3 | 10 | 1 | 285 | 122 | 407 |
| WZ-05- 1046 | Quarry Ridge 78/0365 to 78/0336 | Yes | Yes | Yes | -> | 1 | 3 | 3 | 10 | 3 | 1 | 1 | 1 | 1 | 1 | 3 | 10 | 10 | 220 | 142 | 362 |
| WZ-06- 1044 | Cascade Lake 78/0135 to 78/0273 | Yes | Yes | Yes | -> | 1 | 3 | 3 | 10 | 1 | 3 | 1 | 3 | 3 | 1 | 3 | 10 | 1 | 200 | 134 | 334 |
| WZ-07- 1047 | W Frontage Road 83/0119 to 78/0361 | Yes | Yes | Yes | -> | 1 | 3 | 3 | 10 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 10 | 1 | 220 | 94 | 314 |
| WZ-08- 1051 | Country Club Manor 78/0250 to 78/0135 | - | Yes | Yes | -> | 1 | 3 | 3 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 10 | 1 | 110 | 106 | 216 |

Priority Project Example: Cascade Lake

- Each project has a detailed breakdown including:
 - Path, connections, and map
 - Planning information



| | | | |
|---|--|---|----------------------|
| Description: | | Cascade Lake (Master Plan Project Number WZ-06-1044) runs along the south side of US Highway 14. The project consists of upsizing the existing pipe or adding a parallel pipe. This project has a large impact on future growth and supports development of the area South of Highway 14. This project will also reduce SSO and basement backup risks as well as address condition issues in the pipe. Elevation of trunk projects are laid out to provide 8-ft minimum cover to extensions. Users should review this assumption is appropriate for future extension areas prior to upsizing existing trunks and adjust elevations and order of projects if needed. | |
| Pipe Segment(s): | From: MH 78/0135 | To: MH 78/0273 | |
| Length: | 6,700 | Linear Feet | |
| Preliminary Project Cost: | \$ 3,912,000 | Sanitary Sewer Cost: | \$ 2,647,000 |
| Capacity: | Existing: 4.7 MGD | Future: | 16.9 MGD |
| SSO/BBs Avoided: | 13 | | |
| Additional Acres- | | | |
| Existing Available Acres in Pipe: | | 105 | Acres |
| Acres Gained with Upstream & Downstream Projects Completed: | | 1,847 | Acres |
| Total Upstream Developable Acres: | | 1,952 | Acres |
| Restrictions to Total Upstream Developable Acres - | | | |
| Acres Gained by this Project Alone: | | 218 | Acres at Interlachen |
| Acres Gained with Downstream Improvements Completed: | | 218 | Acres at Interlachen |
| Downstream Projects: | 4 Projects (Kutzky Park, Cooke Park E, Cascade Creek, Zumbro River West) | | |
| Upstream Projects: | 2 Projects (Country Club Manor, Interlachen) | | |
| Recovery Rate: | \$ 319,347 (Project Costs/Capacity Gained) | | |
| Trunk Sewer Rate: | \$ 16,062 (Costs/developable acres for West Zumbro) | | |

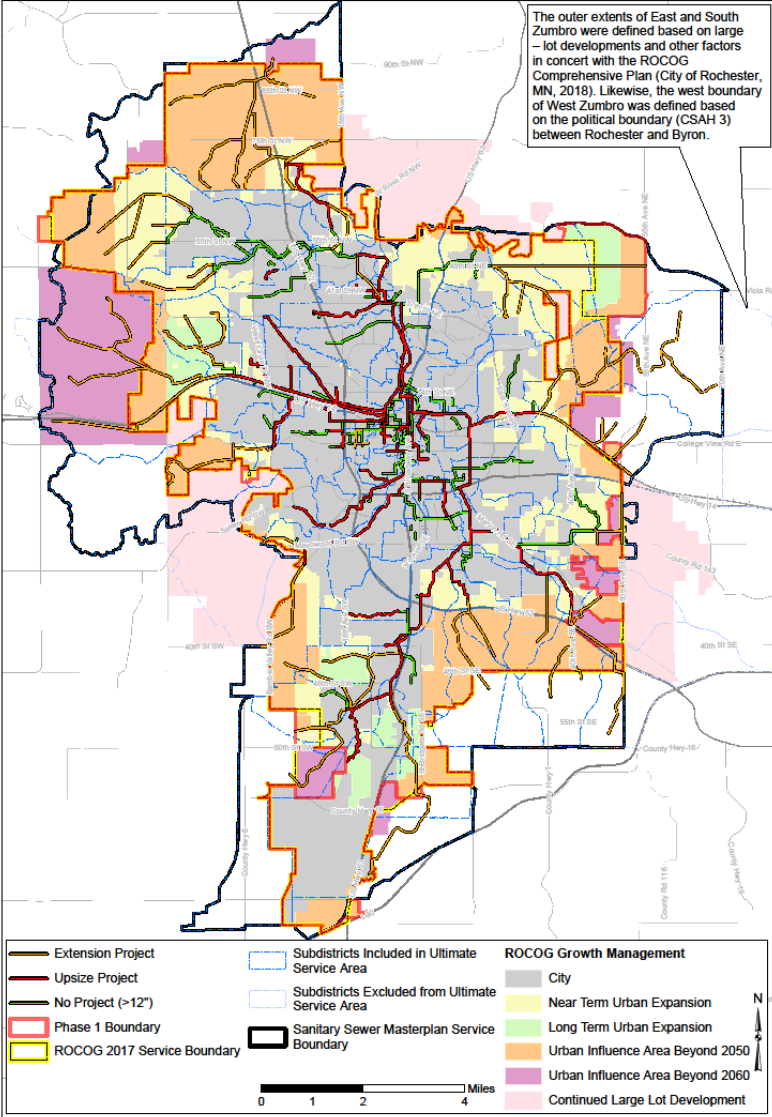
Priority Project Example: Cascade Lake

Design details include:

- Purpose of the project →
- Sewer path, size, and length →
- Costs and benefits →
- Project Timing →

| | | | |
|---|--|---|----------------------|
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Growth Management Map and Sewer Projects



SECTION 2

Project Funding

Sewer Trunk Rates: Existing Approach

| Sewer Availability Charge (SAC) per developable acre | |
|---|------------------------|
| Water | \$3,027.75 |
| Sewer | \$3,027.57 |
| • 18 th Avenue SW sewer district | \$5,049.14 (Phase I) |
| • 18 th Avenue SW sewer district | \$4,714.39 (Phase II) |
| • Kings Run East of 60 th Avenue | \$3,127.61 |
| • Kings Run West of 60 th Avenue | \$4,316.13 |
| • Kings Run 28F NH Golf Course | \$6,599.54 |
| • Main Street area | \$4,345.50 |
| • SE Trunk Sewer – 20 th Street/Valleyside | \$4,238.59 |
| • Hadley Valley | \$6,658.11 |
| • REA – TH14 Trunkline | \$6,040.77 (Estimated) |
| • KR6/19 th Street below reservoir | \$5,015.59 |
| • NW Territories | \$18,231.65 |
| • Downstream Capacity Improvements | \$1,211.03 |

Note: SAC rate includes two components: **trunkmain extension** (rate varies on area) and **downstream capacity improvements** (\$1,211.03)

Sewer Trunk Rates: Proposed Approach

| Super Sewer District | CIP + Extensions + Shared District Project Cost (\$) | Developable Acres (DA) | Sewer Trunk Rate (\$/DA) | Sewer Trunk Rate with Previous Balance Forward (\$/DA) |
|--|--|------------------------|--------------------------|--|
| East Zumbro Phase 1: Silver Creek Bear Creek Willow Creek | | | | |
| Hadley Valley | | | | |
| Kings Run | | | | |
| West Zumbro | | | | |
| Northwest Territory | | | | |
| South Zumbro | | | | |

Sewer Trunk Rates: Proposed Approach

| Super Sewer District | CIP + Extensions + Shared District Project Cost (\$) | Developable Acres (DA) | Sewer Trunk Rate (\$/DA) | Sewer Trunk Rate with Previous Balance Forward (\$/DA) |
|----------------------------|--|------------------------|--------------------------|--|
| East Zumbro | | | | |
| Phase 1: | | | | |
| Silver Creek | \$10,003,455 | 1,127 | \$8,878 | \$9,752 |
| Bear Creek | \$16,008,496 | 1,904 | \$8,407 | \$8,725 |
| Willow Creek | \$63,586,634 | 3,680 | \$17,279 | \$17,301 |
| Phase 2: | | | | |
| Silver Creek | \$11,915,794 | 2,129 | \$5,596 | \$5,596 |
| Bear Creek | \$19,129,860 | 1,218 | \$15,700 | \$15,700 |
| Willow Creek | \$10,034,882 | 3,502 | \$2,865 | \$2,865 |
| Hadley Valley | \$9,587,000 | 2,579 | \$3,717 | \$7,029 |
| Kings Run | \$28,855,087 | 2,987 | \$9,660 | \$11,559 |
| West Zumbro | \$88,728,270 | 5,862 | \$15,136 | \$15,330 |
| Northwest Territory | \$65,056,913 | 2,730 | \$23,830 | \$24,669 |
| South Zumbro | \$40,110,126 | 1,071 | \$37,438 | \$38,130 |

Wastewater Rate Study Impacts

- Next study to be conducted in 2021 for 2022-2027
- Includes:
 - Sewer Availability Charge (SAC)
 - Plant Investment Fee (PIF)
- Current Annual Average SAC Revenue
 - \$400k-\$800k
 - 1.2%-2.5% of Total Revenue
 - SAC Revenue comes after you invest in pipeline



Prepared for
City of Rochester

Wastewater Rates and Fees Study



October 2015 | FINAL

MUNICIPAL
FINANCIAL
SERVICES

Sewer Extension Process

Current Process:

1. Petition Council
2. Feasibility Study
 - a) Determine cost and feasibility.
 - b) 60% of benefitting land owner/developers sign agreements to pay.
 - c) Sewer Utility and SAC funds are bank for projects – can we afford it?
3. Council approves Feasibility Study.
4. Developers enter agreements.

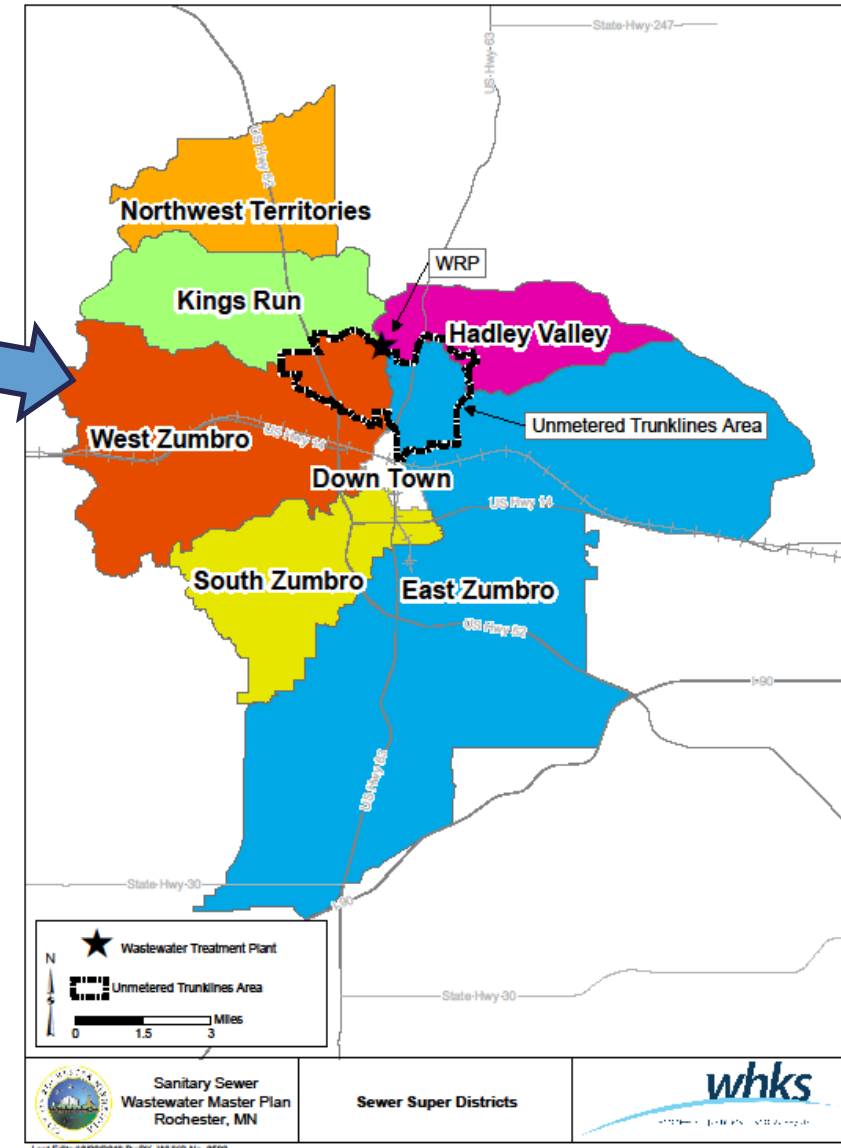
New Process:

1. Recommend projects from Master Plan priority list based on plan criteria.
2. Council/Admin direction and approval.
3. Funding sourced primarily from Trunk Rates.

Next Area(s) to Consider Developing Sewer Capacity

Option 1:

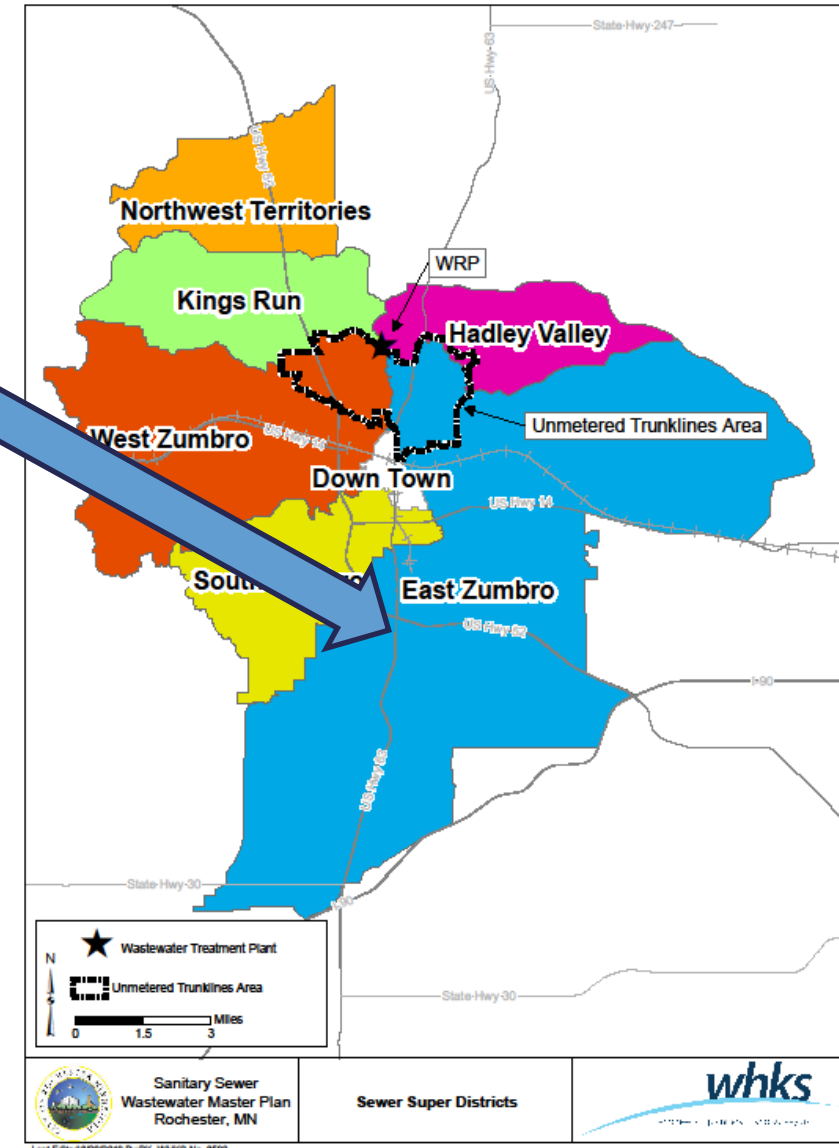
- Existing development and industry interest: West Zumbro
- Circle Drive completion will impact.



Next Area(s) to Consider Developing Sewer Capacity

Option 2:

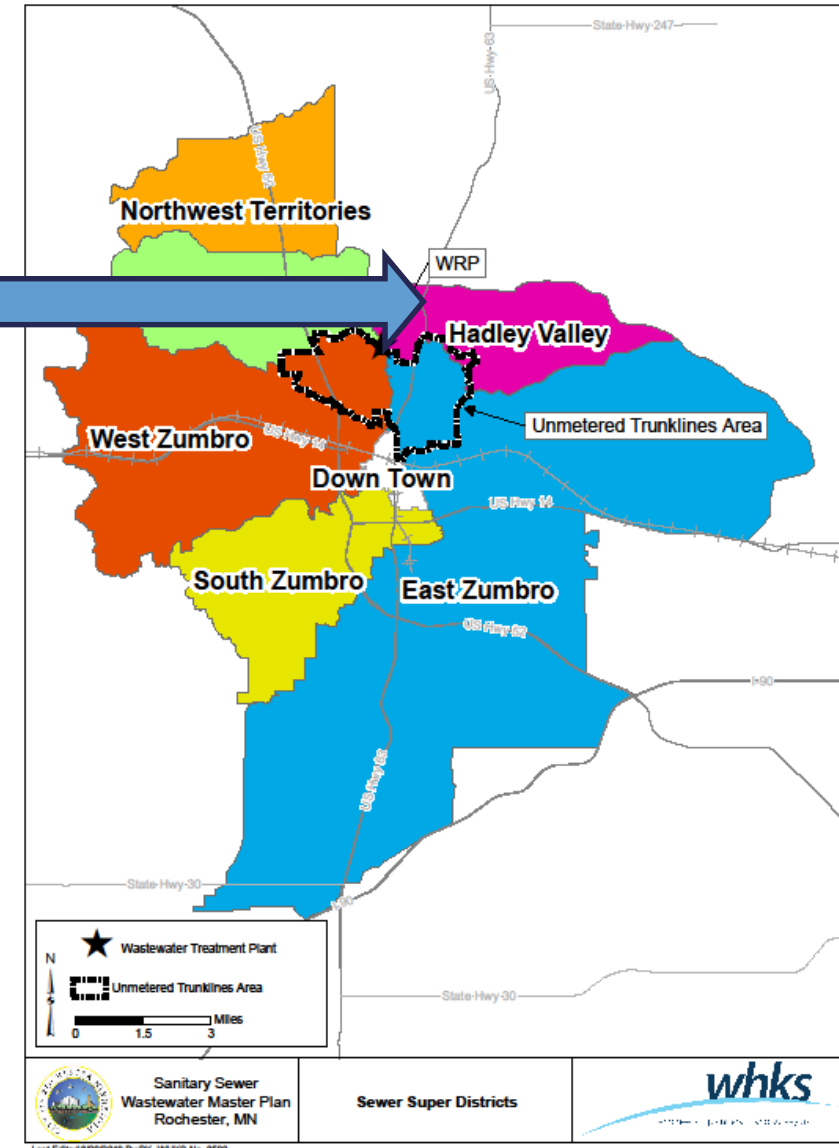
- Most Developable Acres (DAs) Gained per Dollar Spent: East Zumbro
- As low as \$9,637/DA in phase one of upgrades, and \$2,865/DA in phase two.
- 13,560 DAs available at full build-out.



Next Area(s) to Consider Developing Sewer Capacity

Option 3:

- Most Existing Sewer Capacity: Hadley Valley
- 2,579 DAs in this super district.
- Trunk lines already sized for full development, extensions are all that would be required as development occurs.



Next Steps

1. Approve Sewer Master Plan
2. Approve Sewer Trunk Rates
3. Provide direction for growth in unsewered areas