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City of Hayfield Infrastructure Management Plan



Infrastructure Management Plan
City of Hayfield, MN
November 2020

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Council Workshop Discussion November 19, 2020



Key Points

- Smart Infrastructure Planning
 - Prioritizing Needs
 - Maximize Value with dollars spent
 - Considering both street & utilities

Overall Goal

Provide city-wide understanding of infrastructure system
for informed Capital Improvement Planning

Intent of Plan:

~~Specific List of Projects~~ → Decision-Making Tool



Outline

- Pavements
 - Life Cycle Characteristics
 - Improvement Options
- Utilities
 - Water System
 - Sanitary System
- How to Use Infrastructure Management Plan with Capital Improvement Plan



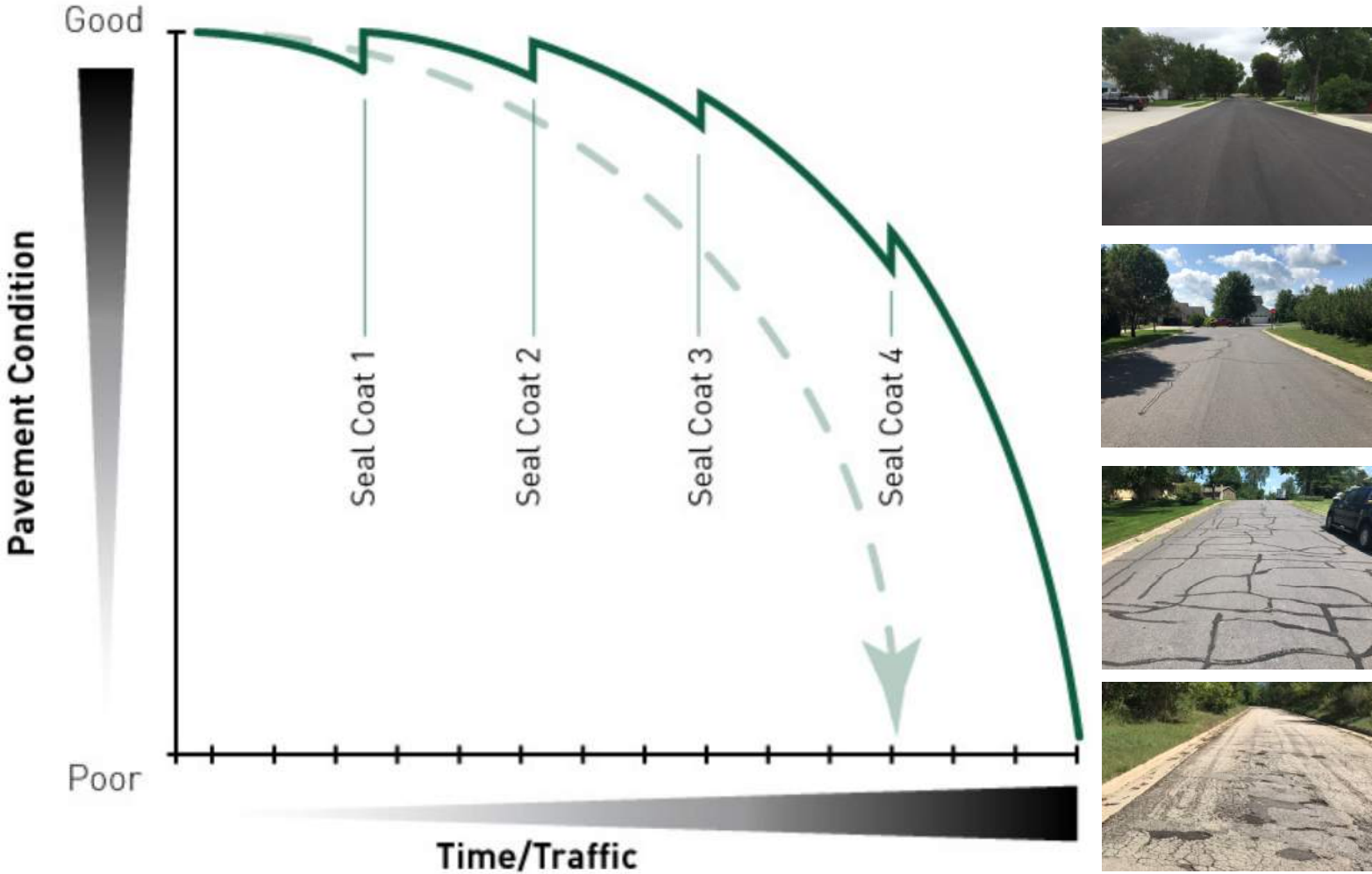
Pavement Life Cycle

Figure 1: Typical Pavement Lifecycle No Seal Coat, Crack Fill or Overlay



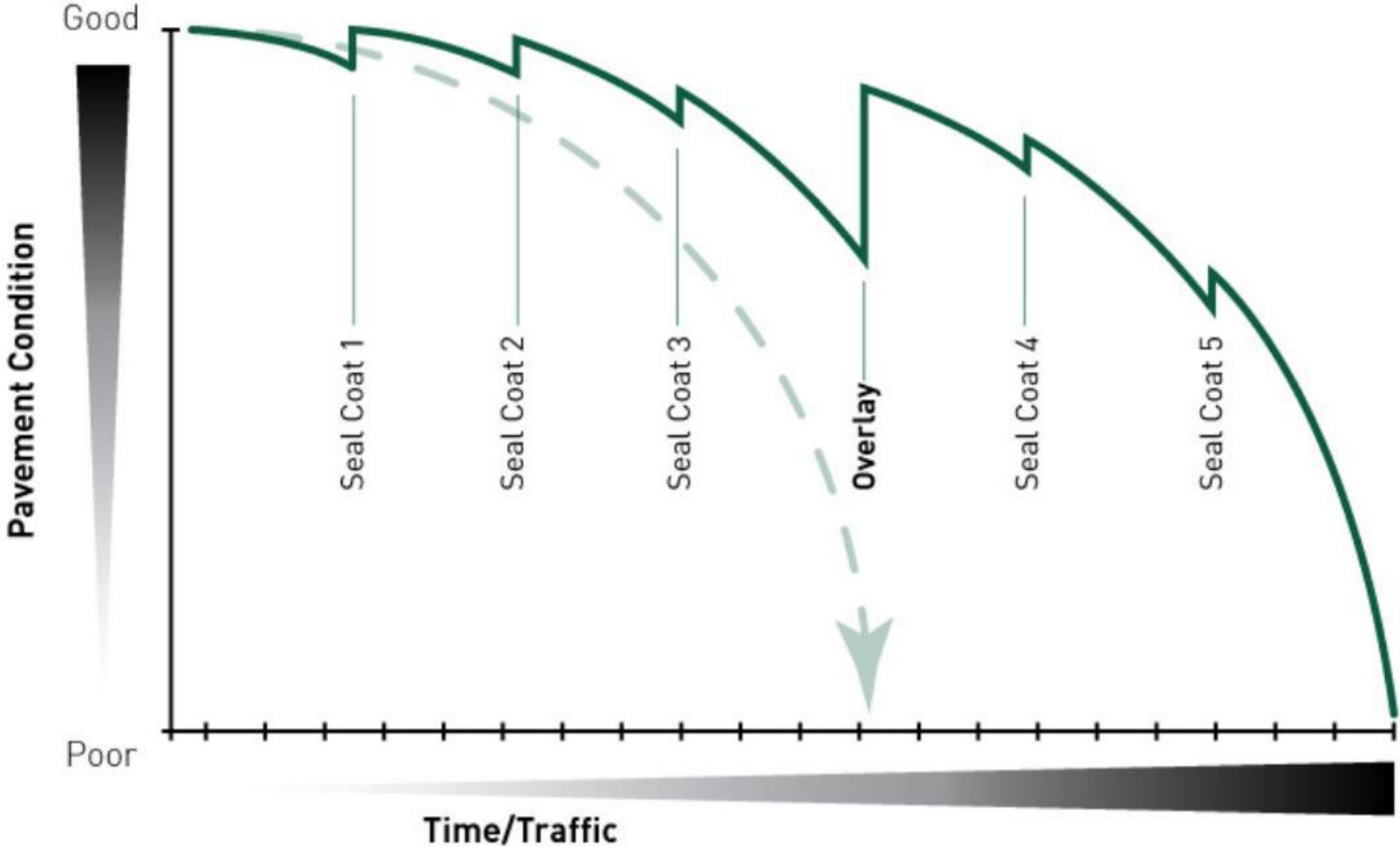
Pavement Life Cycle

Figure 2: Typical Pavement Lifecycle w/ Seal Coating & Crack Filling



Pavement Life Cycle

Figure 3: Typical Pavement Lifecycle w/ Seal Coating, Crack Filling and Overlays



Life Cycle Cost Analysis

Pavement Life Cycle Cost Example			
Item	Year	Approximate Pavement Cost (Per Foot)	
		With Maintenance	Without Maintenance
Initial Construction	0	\$300.00	\$300.00
Crack Fill & Chip Seal	5	\$12.00	
Crack Fill & Chip Seal	10	\$12.00	
Crack Fill & Chip Seal	15	\$12.00	
Mill & Overlay	20	\$100.00	
Crack Seal	22	\$2.00	
Reconstruction	25		\$260.00
Chip Seal	25	\$10.00	
Crack Fill & Chip Seal	30	\$12.00	
Crack Fill & Chip Seal	35	\$12.00	
Mill & Overlay	40	\$100.00	
Crack Fill	42	\$2.00	
Chip Seal	45	\$10.00	
Salvage Value Adjustment	50	\$200.00	\$300.00
Life Cycle Cost Per Foot		\$784.00	\$860.00
Difference		(-) \$76.00	-

- Good Pavement Condition
- Fair Pavement Condition
- Poor Pavement Condition

*Costs indicated above are based on typical costs for the area in 2020 dollars. Unit pricing per foot is based on an average 36-ft wide residential bituminous street pavement.



Pavement Conditional Ratings

Table 2 – Pavement Conditional Ratings Description		
Conditional Rating	Condition Description	Typical Recommended Maintenance Activity
7 – 10	Excellent to Good	Crack Fill & Seal Coat Program (every 5 years) ¹
5 – 6	Good to Fair	Mill & Overlay, Patching as needed
1 – 4	Fair to Very Poor	Full Depth Reconstruction

Note: Maximum recommended life of seal coat is 7-8 yers.

Goals

- ↑ Life of Pavement
- ↑ Street Ride Quality
- ↓ Life Cycle Cost



Pavement Conditional Ratings



3rd Ave SW
(South of Main Street)

Pavement Rating = 8
Very Good



Pavement Conditional Ratings



Pavement Rating = 5
Fair Condition

Main Street
(5th Ave NW – 4th Ave NW)



Pavement Conditional Ratings



1st Ave SE
(9th St SE – 8th St SE)

Pavement Rating = 3
Poor Condition



Pavement Conditional Ratings



Center Ave
(North of 2nd Street)

Pavement Rating = 2
Poor/Failed Surface



Pavement Conditional Ratings (2020)

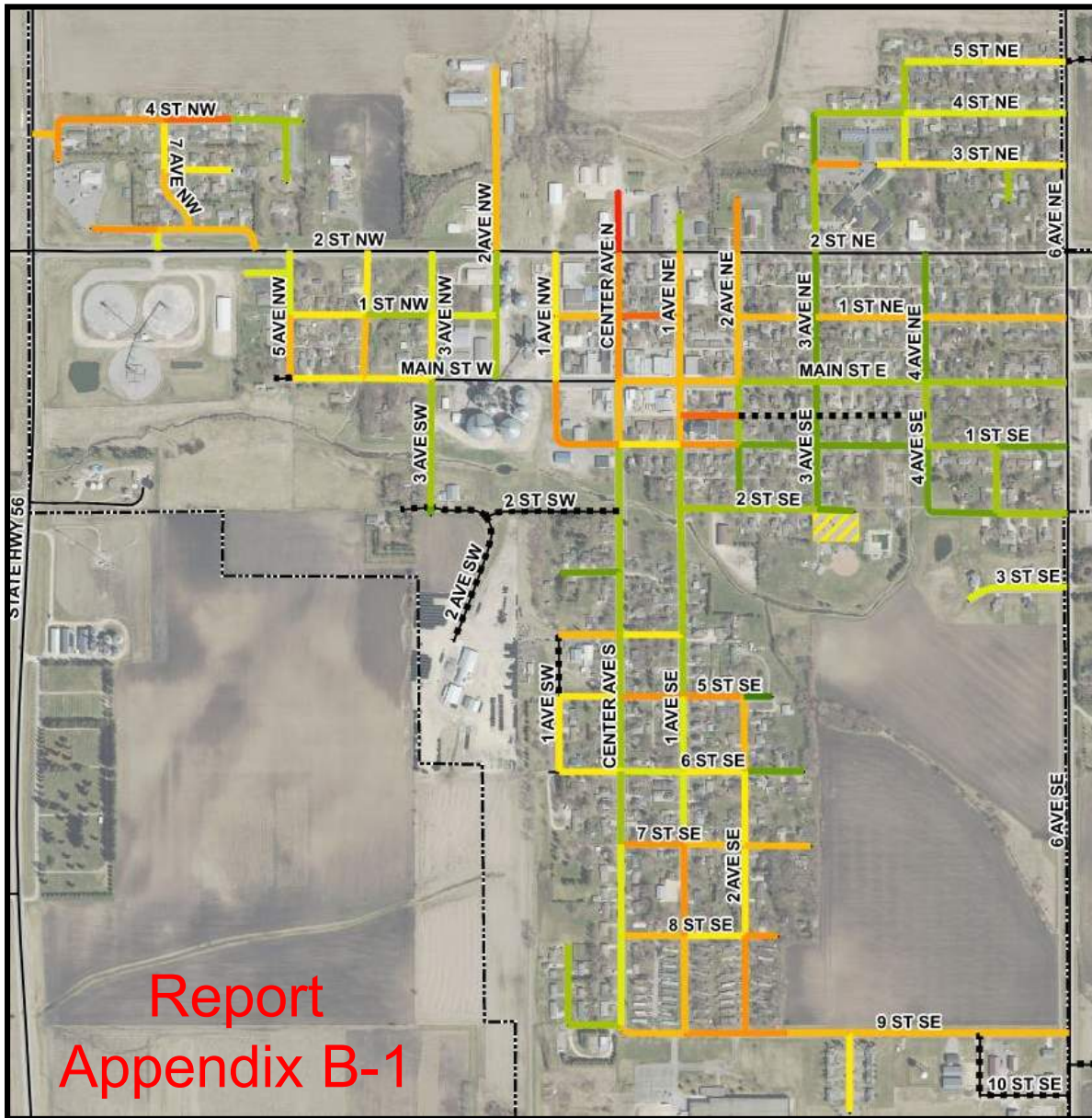


Table 3 – Pavement Conditional Ratings Summary

Conditional Rating	Total Street Length (Miles)	Percentage of Total Miles
7 – 10	3.3	35%
5 – 6	2.6	27%
1 – 4	3.6	38%
Total	9.6	100%
Gravel	1.6	-



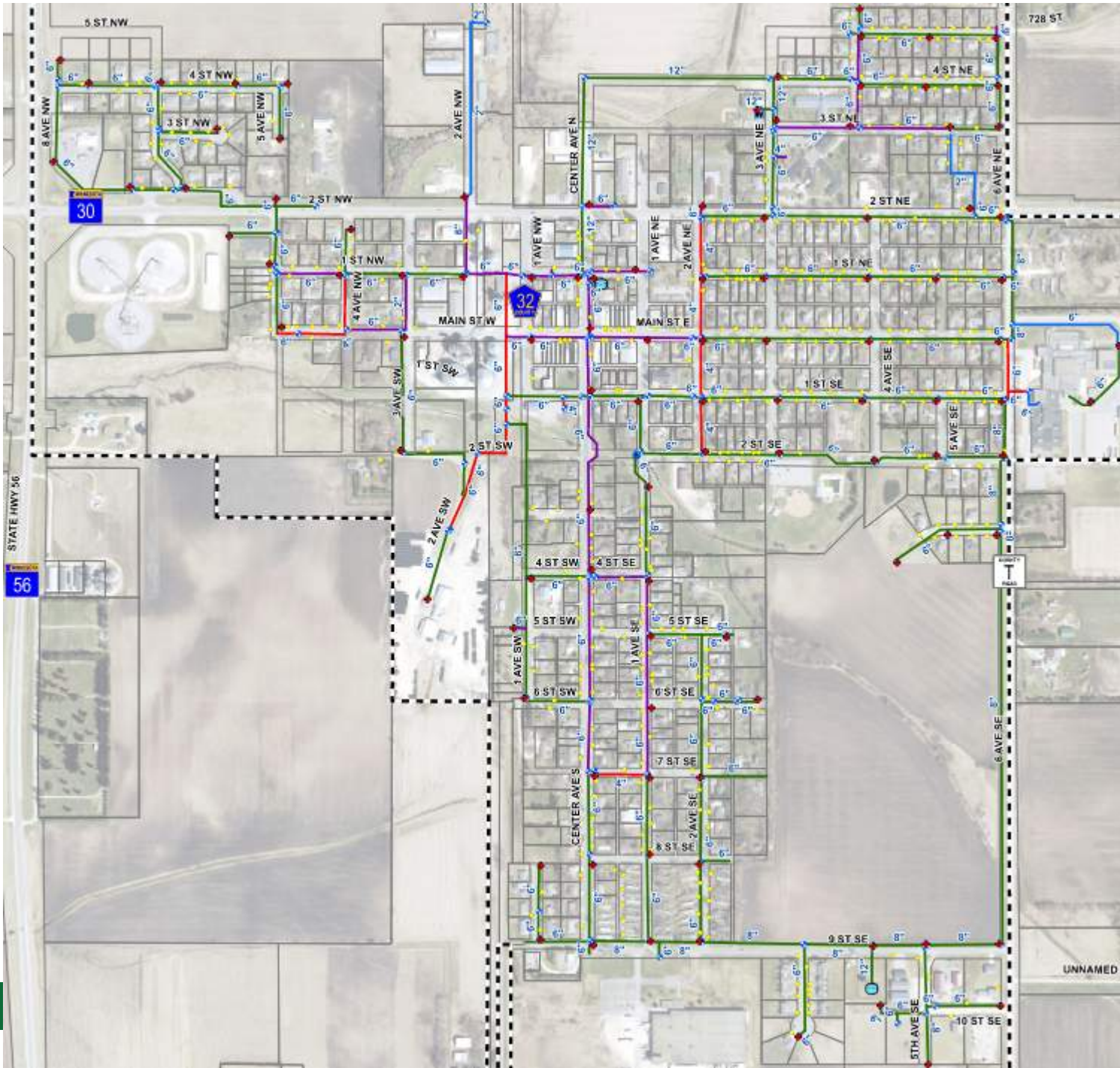
Water Distribution System

Cast Iron – Brittle, Corrosion Issues, Reduced Capacity

New Watermain – Ductile Iron or PVC, Upgrade Valves/Hydrants



Water System



Legend

Watermain (By Material)

- CIP
- DIP
- PVC
- Unknown



Sanitary Sewer System

Clay Sewers – Problematic, Open Joints, Susceptible to I&I

PVC Sewers – Gasketed Joints, Water Tight

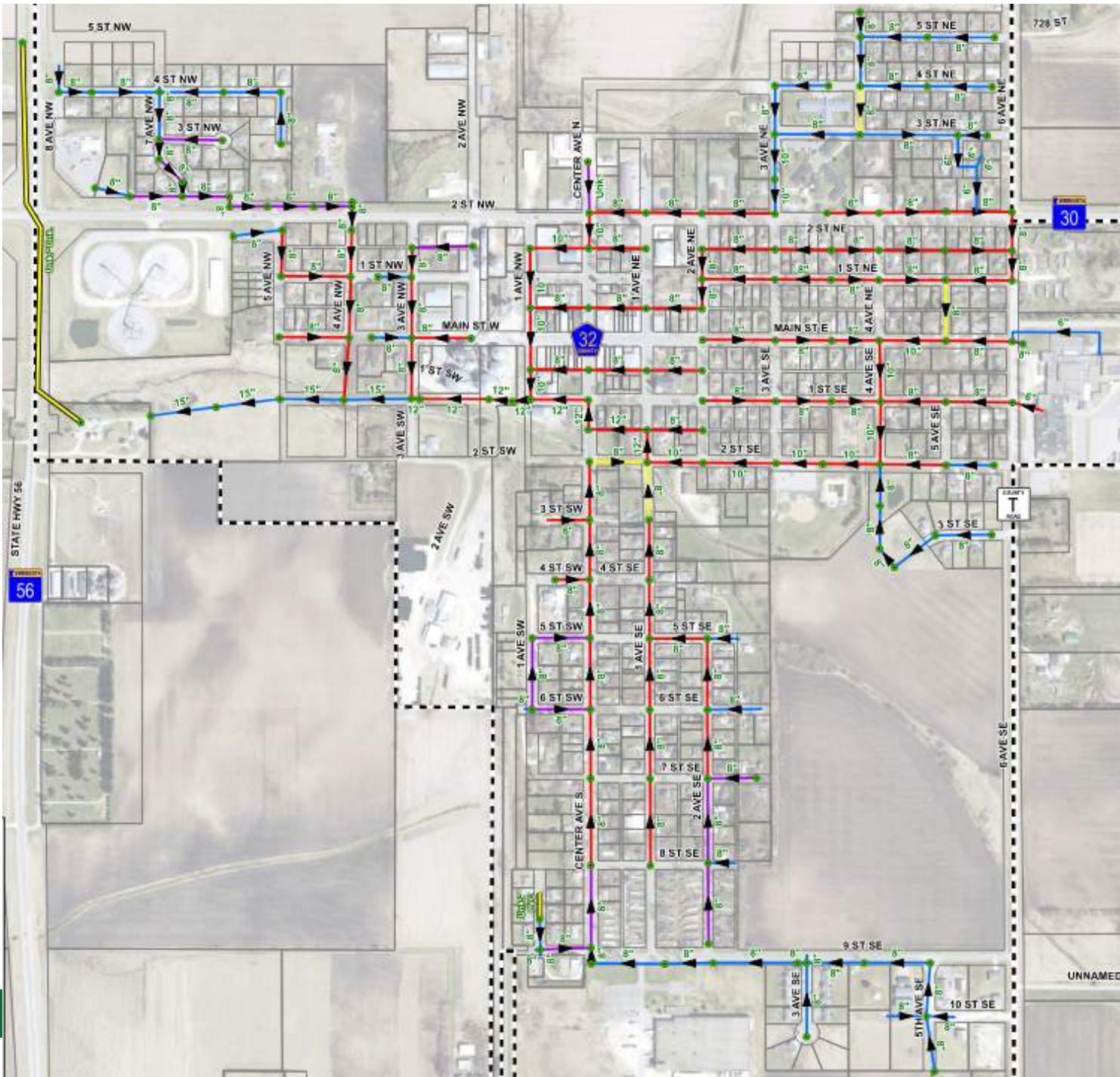


Sanitary Sewer System

CUSTOMER NAME: NEW LONDON, MN
JOB NUMBER: 101599
OPERATOR: RON S.
DATE: 12/1/2011
ADDRESS: ALLEY
CITY: NEWLONDON, MN
SHOT-SEG NUMBER: 3-3
START MH: DNR PONDS
END MH: 217 1ST AVE.
DIRECTION: DOWNSTREAM
DIAMETER: 10
LENGTH: 232
JOB TYPE: PRE-MAIN



Sanitary Sewer System



Legend

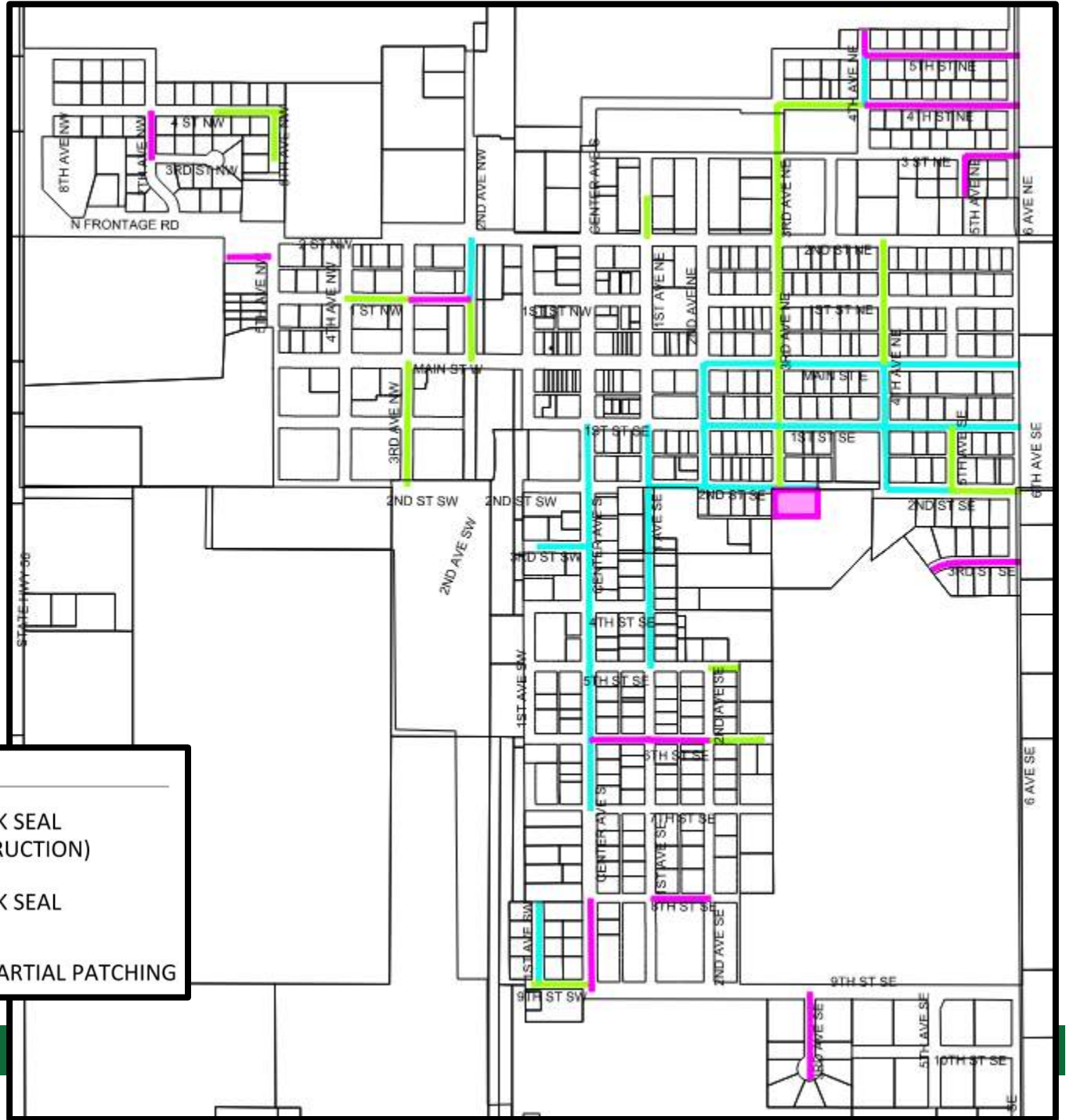
Sanitary Pipe (By Material)




- ▶ PVC
- ▶ VCP
- ▶ CIPP Lined
- ▶ Unknown



Street Maintenance Map

Report Appendix B-4



STREET IMPROVEMENT TYPE	
	SEAL COAT & CRACK SEAL (FUTURE RECONSTRUCTION)
	SEAL COAT & CRACK SEAL
	MILL & OVERLAY, PARTIAL PATCHING

Discussion

- What if you can only afford surface improvements?
 - Mill & Overlay life 20-25 years
 - Risks:
 - Utility Failure prior to pavement failure
 - Example: 80 yr old WMN will be 100+ yrs at end of pavement life
 - Added pavement replacement costs (\$\$\$)
 - Patch decreases pavement quality
- Sometimes necessary – Point is that the City understands these risks during the decision-making process.

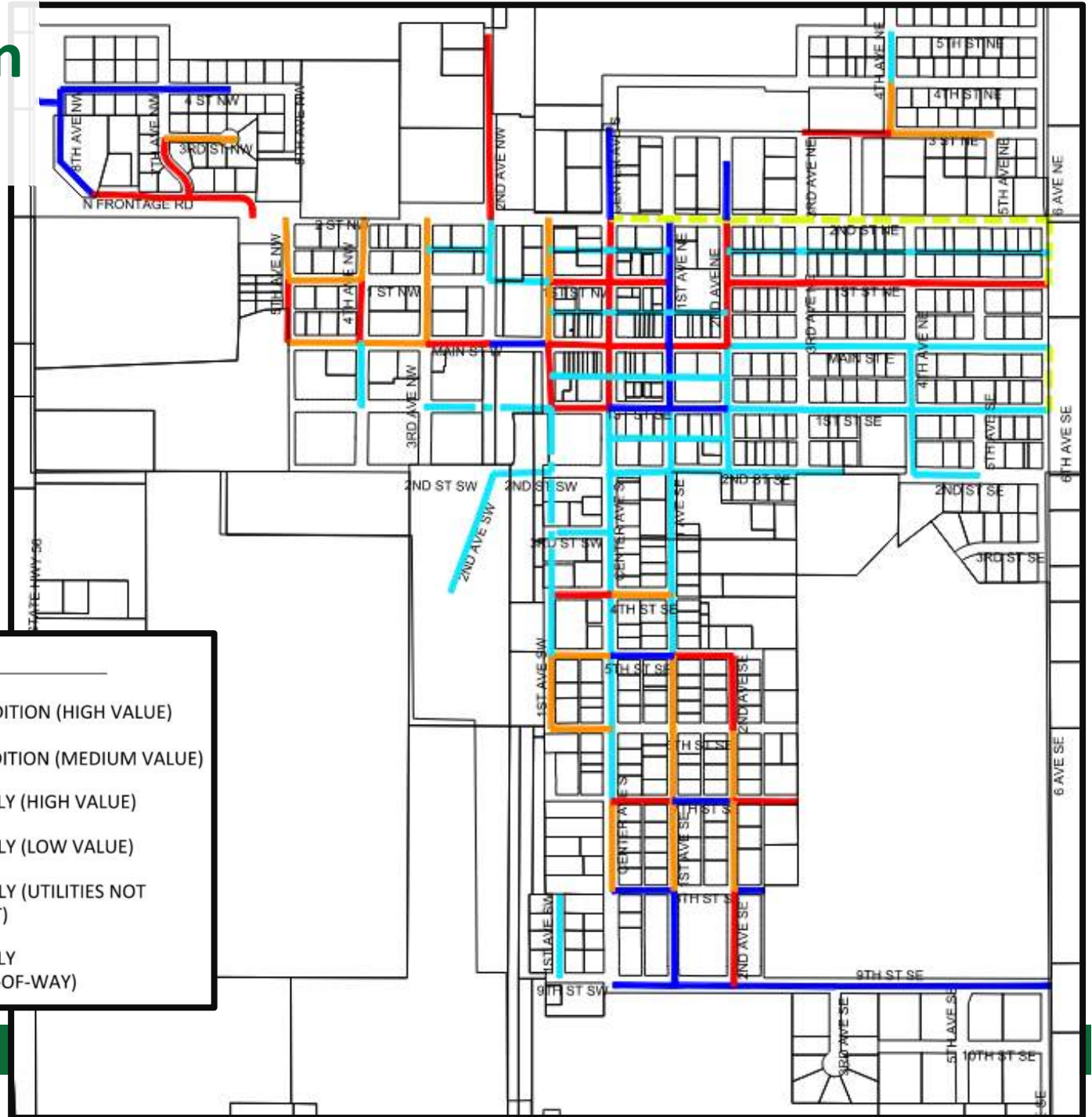


Reconstruction Map

Report
Appendix
B-5

RECONSTRUCTION BASED ON:

- STREET & UTILITY CONDITION (HIGH VALUE)
- STREET & UTILITY CONDITION (MEDIUM VALUE)
- STREET CONDITION ONLY (HIGH VALUE)
- UTILITY CONDITION ONLY (LOW VALUE)
- UTILITY CONDITION ONLY (UTILITIES NOT LOCATED IN PAVEMENT)
- UTILITY CONDITION ONLY (COUNTY/STATE RIGHT-OF-WAY)



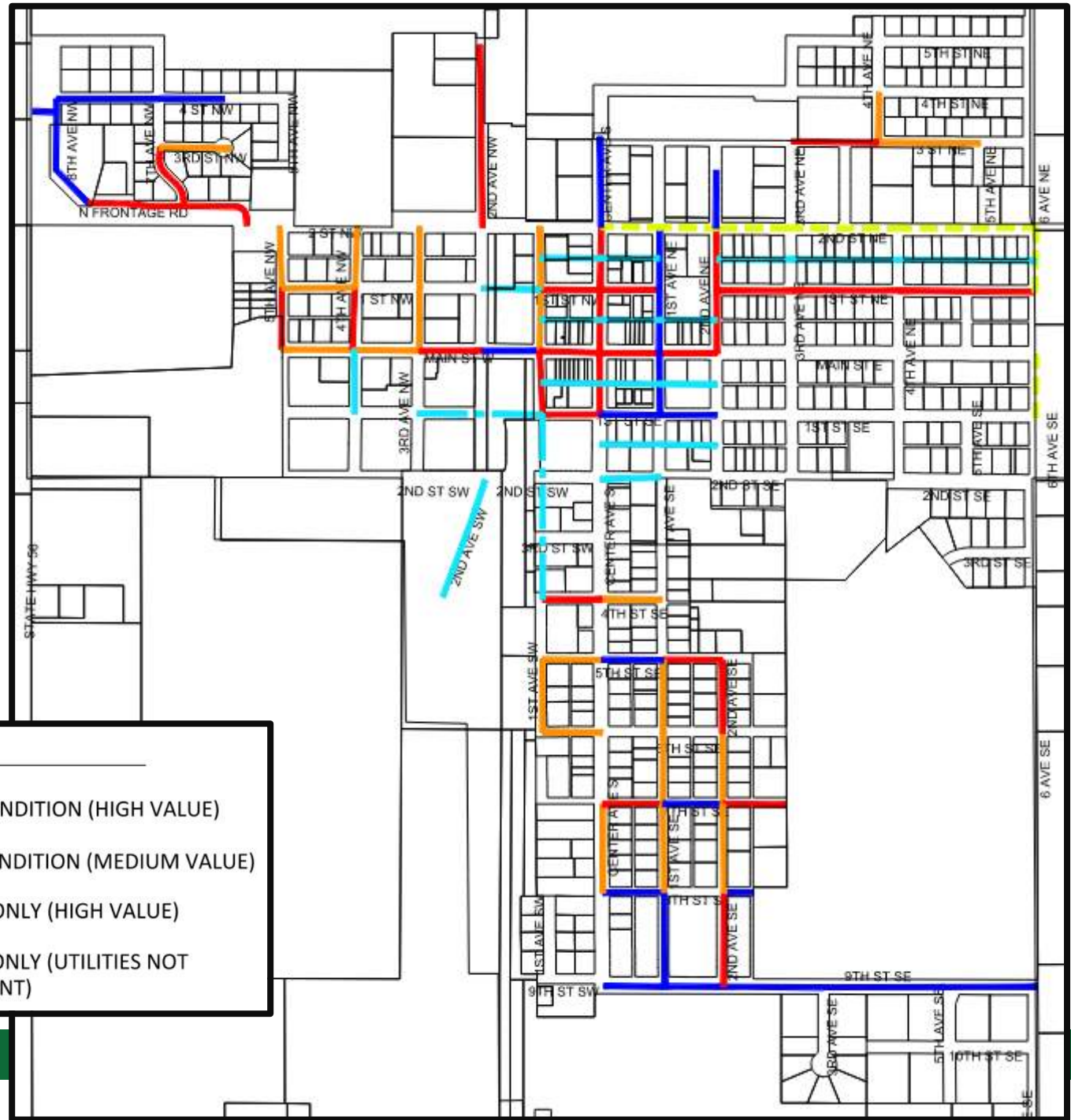
Prioritizing Projects

Reconstruction

Eliminate
Low Value
Needs

RECONSTRUCTION BASED ON:

- STREET & UTILITY CONDITION (HIGH VALUE)
- STREET & UTILITY CONDITION (MEDIUM VALUE)
- STREET CONDITION ONLY (HIGH VALUE)
- UTILITY CONDITION ONLY (UTILITIES NOT LOCATED IN PAVEMENT)






Prioritizing Projects

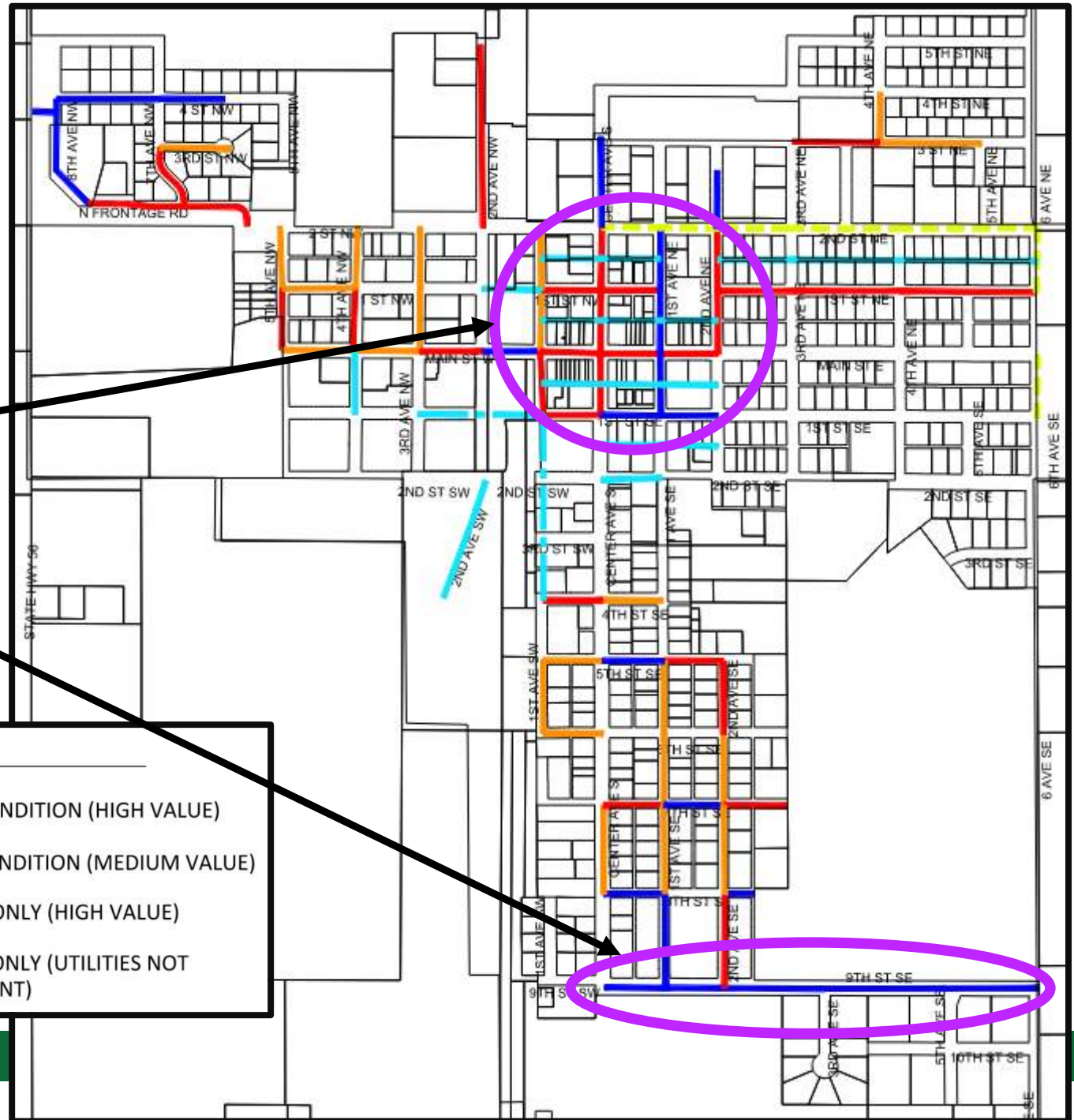
Reconstruction

Downtown Area

9th Street/
South End

RECONSTRUCTION BASED ON:

-  STREET & UTILITY CONDITION (HIGH VALUE)
-  STREET & UTILITY CONDITION (MEDIUM VALUE)
-  STREET CONDITION ONLY (HIGH VALUE)
-  UTILITY CONDITION ONLY (UTILITIES NOT LOCATED IN PAVEMENT)



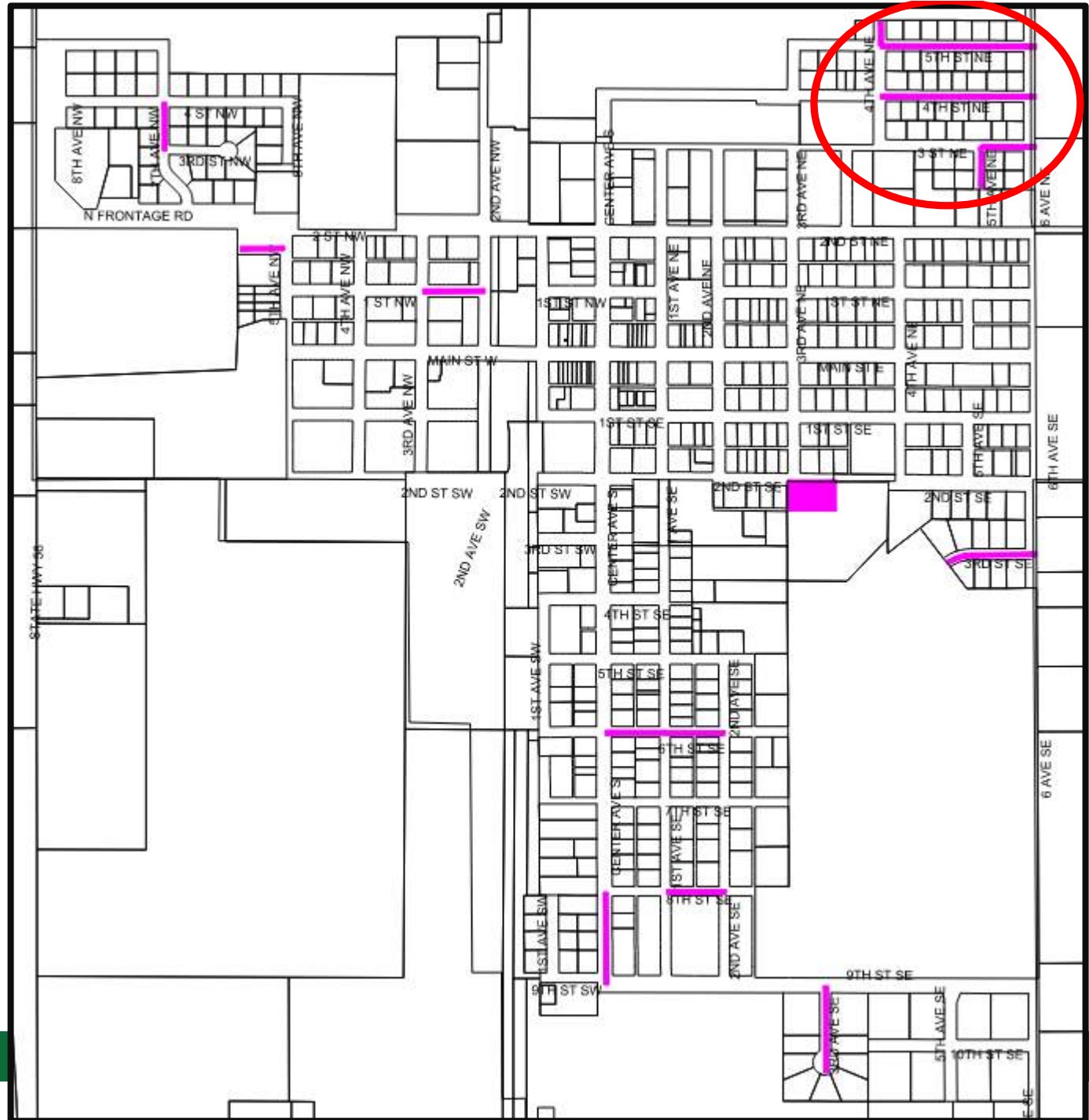
Prioritizing Projects:

Overlays

Northeast Identified for 2021

Exact prioritization less critical

Key Point: Complete within 5-10 years



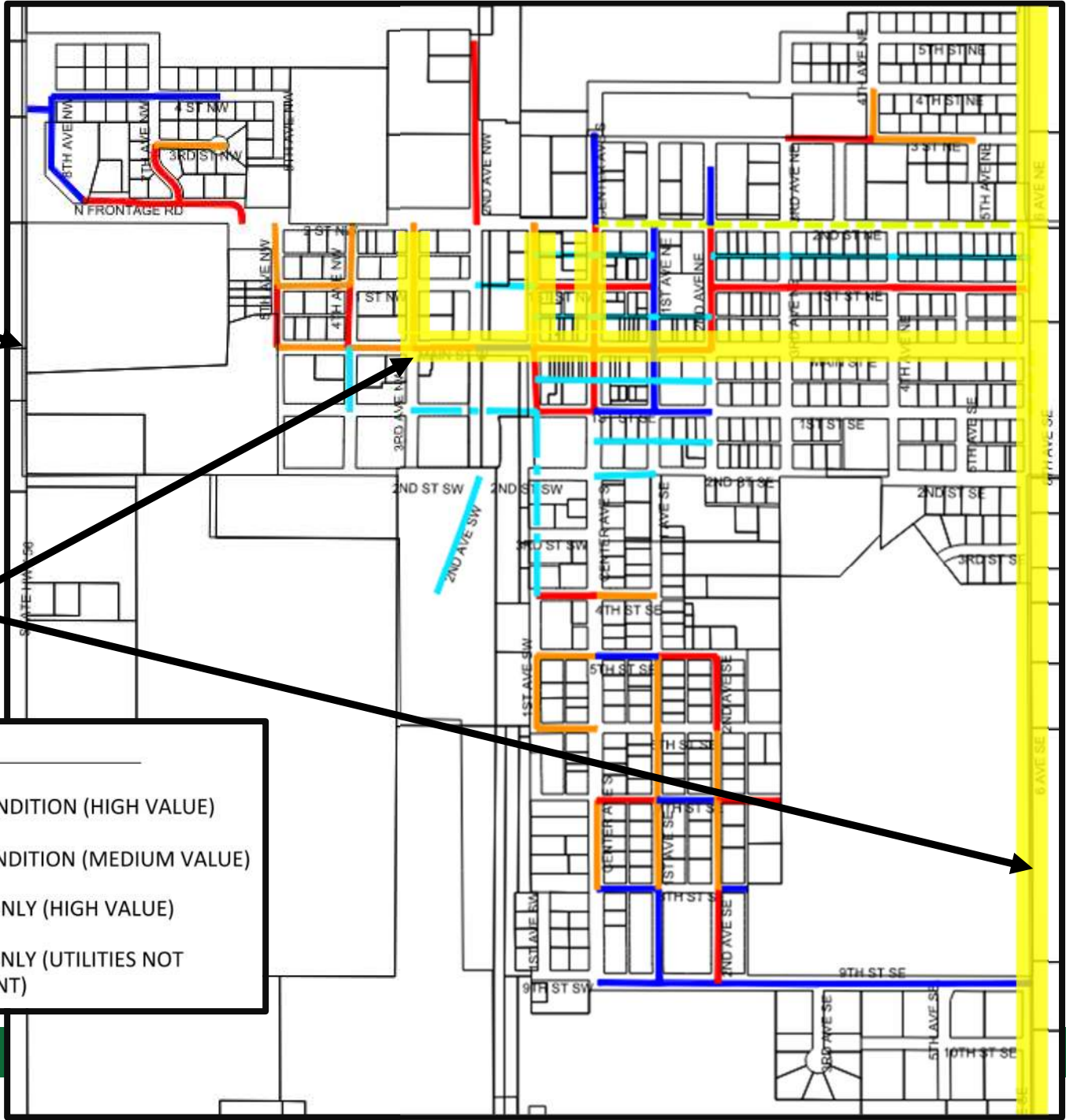
Other Considerations

MnDOT Trunk Hwy
Cooperative Agreement Process / Written Cost

County/County State Aid Route:

RECONSTRUCTION BASED ON:

- STREET & UTILITY CONDITION (HIGH VALUE)
- STREET & UTILITY CONDITION (MEDIUM VALUE)
- STREET CONDITION ONLY (HIGH VALUE)
- - - UTILITY CONDITION ONLY (UTILITIES NOT LOCATED IN PAVEMENT)



Budgeting

Seal Coating & Crack Filling

- Priority #1 (Preserve Good Pavement Conditions)
- Most cost-effective method
- 5 Year Cycle (6-8 year max.)
- Annual Budget \$44,000
 - See Appendix C-1
 - More cost-effective if completed every 2 years (88K project)
 - Expect to increase over time
 - Does not include misc. repairs to streets req'd to keep streets drivable (potholes, patching)



Budgeting

Mill & Overlay & Patching

- Short turnaround needed
- Consider underlying utilities
- 20-30 year cycle (typical)
- Current Need = ~\$840,000
 - Recommend completing within next 5-10 years

Next Steps:

Funding

- Cash or Finance
- Add M&O projects to CIP



Budgeting

Reconstruction

- Prioritize overall needs to Maximize Value
- Minimize improvements to streets outside Capital Improvement Plan
- 50+ year cycle
- Focus on Higher Value Needs
- What's next:
 - Select high priority projects
 - Stay within CIP budget



Infrastructure Management Recap

Smart Infrastructure Planning

- Prioritizing Needs
 1. Preventative Maintenance (**Always**)
 2. Overlays & Reconstructions
- Maximize Value with dollars spent on Reconstruction
 - Plan reconstructions for projects with Pavement & Utility needs, when possible
 - Address full needs of corridor in one project

Continue Updating & Gathering Information

- Update plan regularly (with each bigger project)
- Update utility information as it becomes available

Overall Goal

Provide city-wide understanding of infrastructure system for informed Capital Improvement Planning



Project Planning Process - Example

1. Define Project Budget from CIP
 - 2021 – \$1.5 Million
2. Select Project Area
 - Complete Feasibility Report & Design
 - Modify Scope as necessary to Stay within Budget
 - High Level Estimates for 2021 project below



1 st Ave NE & 1 st St NE	\$ 562 K	}	Reconstruction = \$1.265 M
2 nd Ave NE (Main – 2 nd St NE)	\$ 653 K		
Alley	\$ 50 K		
5 th St NE (4 th – 6 th)	\$ 105 K	}	Overlays = \$ 299 K
4 th St NE (4 th – 6 th)	\$ 105 K		
3 rd St NE, 4 th Ave NE, 5 th Ave NE	\$ 89 K		
			<u>Total = \$1,564,000</u>

Modify scope as needed by removing segments or using alternates



Project Planning Process - Example

1. Define Project Budget from CIP
 - 2024 – \$1.5 Million (City)
2. Update Infrastructure Plan
3. Select Project Area
 - Complete Feasibility Report & Design
 - Modify Scope as necessary to Stay within Budget



Main St (1 st NW to 2 nd NE)	\$ 1.147 M
Undefined Overlays (Selected Later)	\$ 350 K
BUT..... Potential LRIP Grant (\$750 K)	
Center Ave (Main to 2 nd Ave N)	\$ 767 K

Potential additional street if county can assist through municipal state aid funding

Total = \$1,497,000

Total = \$2,264,000

Recommend applying for LRIP Grant this winter



2021 Project

MN Statutes Ch. 429

Special Assessment Process

1. Prepare Feasibility Report
 - Identify Need & Cost
 - Verify/Modify Scope
 - *Prepare Assessment Policy*
2. Hold (Public) Improvement Hearing
 - Provide reasonable estimate of Assessment for owners
 - Authorize Final Design
 - *Consider add'l public meetings*
3. Hold Assessment Hearing
 - Before or After Construction
 - Certifies final assessment for each property



Tentative Schedule

Authorize Feas. Report, Survey, Geotech.....	11/19/20
Present Feasibility Report to Council, Call for Hearing.....	12/21/20
Special meeting to approve assessment policy.....	Early Jan
Improvement Hearing.....	01/18/21
Final Design.....	Jan – Mar '21
Approve Plans & Specifications, Advertise for Bids.....	03/15/21
Receive Bids, Call for Assessment Hearing.....	04/19/21
Assessment Hearing & Award Bid.....	05/17/21
Construction (Start).....	June '21
Substantial Completion(Underground & First Lift Blacktop).....	Fall '21
Final Completion (Final Lift Blacktop, Punchlist).....	Spring '22



Needed Tonight

Consideration of the following:

- Resolution directing Bolton & Menk to prepare Feasibility Report
- Task Order for Preliminary Engineering & Survey work

