

CUMMING CENTRAL REGION SANITARY SEWER – FACILITY PLAN

Cumming, Iowa

November 2025

McClure Project No. 2024001997-003

Report For:

City of Cumming
649 N 44th Street
Cumming, IA 50061
Rita Conner, City Administrator
rconner@cumming.iowa.gov

Prepared By:

McClure
1360 NW 121st St.
Clive, Iowa 50325
CJ Gross, PE
cgross@mcclurevision.com



TABLE OF CONTENTS

1.0	EXECUTIVE SUMMARY	1
2.0	INTRODUCTION	2
3.0	BACKGROUND	5
3.1	Planning Period	5
3.2	Land Use and Population	5
3.3	Sanitary Interceptor Sewers	5
3.4	Sanitary Sewer Drainage Areas	5
4.0	DESIGN FLOWS	7
4.1	Current Flows	7
4.2	Design Flow	7
5.0	IMPROVEMENT ALTERNATIVES	8
5.1	Gravity Sewers	8
5.2	Force Main and Lift Stations	17
6.0	RECOMMENDATIONS	22
6.1	Base Recommendation	22
6.2	Alternative 1	24
6.3	Alternative 2	26
6.4	Alternative 3	29
7.0	IMPLEMENTATION	31
7.1	Implementation Overview	31
7.2	CIP 1 – Base Recommendation	31
7.3	CIP 2 – Utilizing the Future North Trunk Sewer	33
7.4	CIP 3 – North Trunk Sewer Built in Intermediate Future	35
8.0	FINANCING	37
8.1	Financing	37

LIST OF EXHIBITS

Exhibit 2.1 Project Location 3
Exhibit 2.2 Boundary of Study..... 4
Exhibit 3.1 Sanitary Interceptor Sewers and Drainage Areas 6
Exhibit 5.1 Proposed Gravity Sewer Locations 9
Exhibit 5.2 Proposed Gravity Sewer Slopes..... 11
Exhibit 5.3 Proposed Force Main and Lift Station Locations 18
Exhibit 6.1 Base Recommendation 23
Exhibit 6.2 Alternative 1 25
Exhibit 6.3 Alternative 2.1 27
Exhibit 6.4 Alternative 2.2 28
Exhibit 6.5 Alternative 3..... 30
Exhibit 7.1 CIP 1 32
Exhibit 7.2 CIP 2 34
Exhibit 7.3 CIP 3 36

LIST OF TABLES

Table 1. Design Flows 8
Table 2. Gravity Main Sizes 10
Table 3. Force Main Sizes 17
Table 4. Lift Station Sizes 17
Table 5. CWSRF Construction Loan Financing Alternatives 38
Table 6. USDA-RD Loan Interest Rates 39

LIST OF APPENDICES

APPENDIX A – Local Tributaries A
APPENDIX B – Calculations, Equations and Assumptions B

1.0 EXECUTIVE SUMMARY

McClure Engineering Company (McClure) was retained by the City of Cumming (City) to complete a comprehensive sanitary sewer collection system study and report the findings as the *Cumming Central Region Sanitary Sewer Facility Plan*. The Facility Plan referenced covers Phase II and is preceded by the 2022 McClure *Sanitary Sewer Collection System Facility Plan*, known as Phase I. The Phase I Report outlined improvements for the Old Town Cumming's existing sanitary sewer system. This Phase II report serves as the City's Master Plan for identifying sanitary sewer infrastructure improvements needed as growth continues. The Phase II report identifies gravity mains, force mains, and lift stations as part of the base recommendation, assuming the City retains sole responsibility for collecting and conveying wastewater within its limits to the existing sanitary interceptor sewers for treatment by the Des Moines Metropolitan Wastewater Reclamation Authority. Recommendations also include cost-effective alternatives to the base recommendation, utilizing shared infrastructure with neighboring communities.

The proposed infrastructure will convey wastewater to one of two sanitary interceptor sewers: the Middle Creek Trunk Sewer or the South Trunk Sewer. These interceptors ultimately discharge to the Des Moines Metropolitan Wastewater Reclamation Authority (WRA) for treatment. It is assumed that the WRA has sufficient capacity for the expansion of Cumming.

The design flow for each gravity main, force main and lift station is based on the population within the drainage area it serves, with drainage areas defined by sewersheds within the study boundary. Infrastructure is sized to accommodate a density of four (4) persons per acre, assuming a wastewater generation rate of 100 gallons per capita per day and applying a peaking factor inversely proportional to the population of each service area.

The base recommendation for the Phase II report outlines 17 gravity mains, six (6) force mains and five (5) lift stations. Gravity main alignments were established by identifying the low points within each sewershed to maintain the required pipe cover while planning for existing site topography during construction. Per Iowa Statewide Urban Design Standards (SUDAS), gravity mains require a minimum diameter of 8 inches with a minimum slope of 0.4%. They are sized based on the design flow of each service area while maintaining the required minimum cleaning velocity of 2 ft/s. Force mains and lift stations are likewise sized to accommodate the design flow of their respective service area.

The Engineer's Opinion of Probable Cost for the base recommendation is \$29,700,000 in 2025-dollar value with the assumption that the City has sole responsibility for all proposed infrastructure. The cost estimate is considered AACE Class 5.

Three cost-efficient alternatives are additionally proposed to utilize shared infrastructure, as well as three capital improvement plans for potential sanitary sewer phasing.

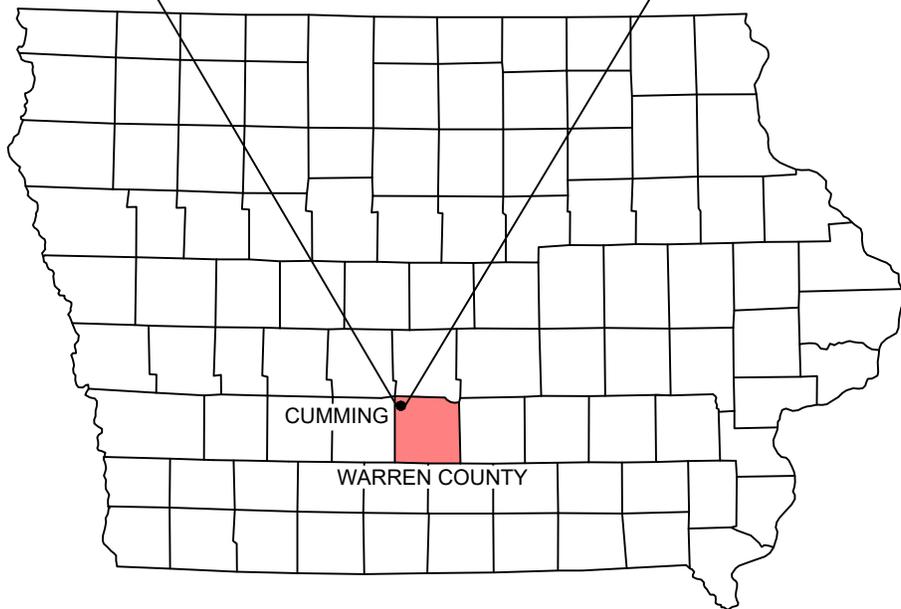
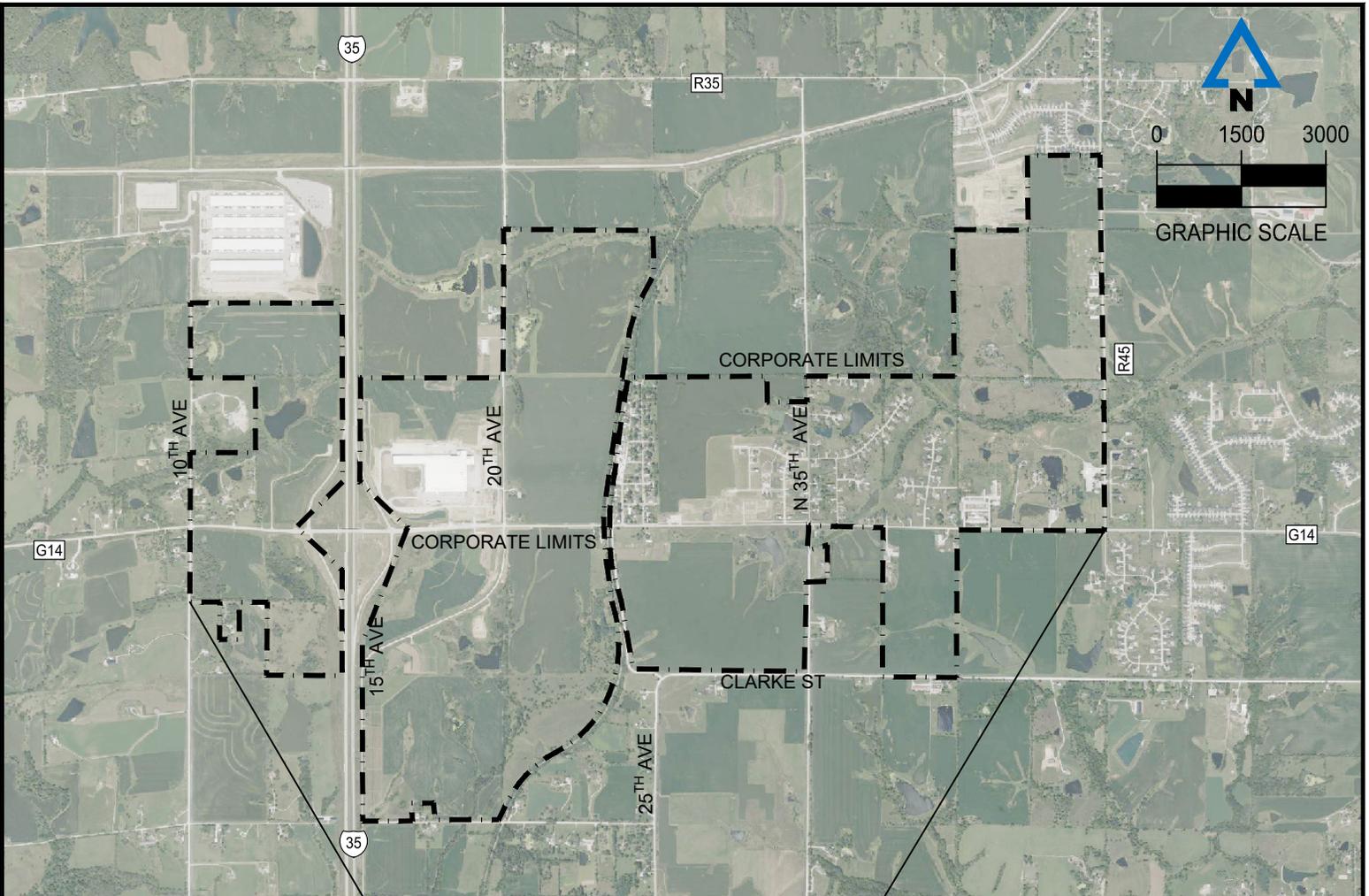
2.0 INTRODUCTION

The City of Cumming is located south of the City of West Des Moines (West Des Moines) and west of the City of Norwalk (Norwalk), within Warren County, Iowa. Cumming had a population of 436 per the 2020 Census and is apart of the Des Moines Metropolitan Area (Exhibit 2.1).

The City corporate limits are shown below in Exhibit 2.2. The boundaries of study for this facility plan are defined by West Des Moines to the north, Norwalk to the east, the current Moratorium Line to the south, and the Madison County Line to the west. The boundary of study excludes Old Town Cumming, as the sanitary sewer improvements for the historic downtown were outlined in the Phase I Report. The boundary of study is assumed to have no existing city sanitary infrastructure; therefore, no existing flows are considered.

The proposed infrastructure will convey wastewater to one of two sanitary interceptor sewers: the Middle Creek Trunk Sewer or the South Trunk Sewer. These interceptors ultimately discharge to the WRA for treatment. It is assumed that the WRA has sufficient capacity for the expansion of Cumming.

The design flow for each gravity main, force main and lift station is based on the population within the drainage area it serves, with drainage areas defined by sewersheds within the study boundary. Infrastructure is sized to accommodate a density of four (4) persons per acre, assuming a wastewater generation rate of 100 gallons per capita per day and applying a peaking factor inversely proportional to the population of each service area.



IOWA STATE MAP
NO SCALE

Exhibit 2.1 - Project Location
 Cumming Central Region Sanitary System Facility Plan
 Cumming, IA



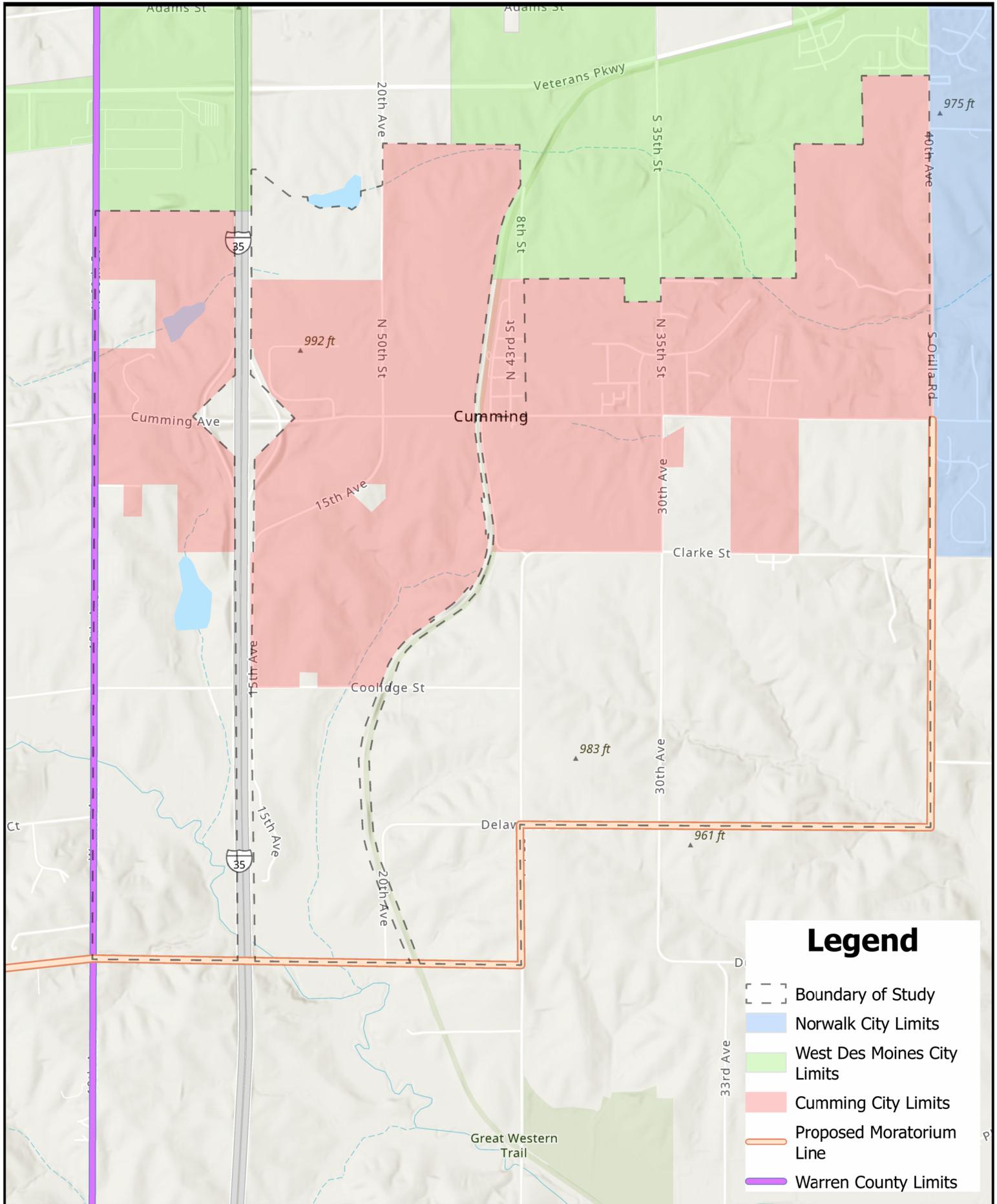
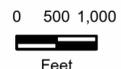


Exhibit 2.2 - Boundary of Study

Cumming Central Region Sanitary Sewer Facility Plan | Cumming, IA



3.0 BACKGROUND

3.1 Planning Period

The Phase I Facility Plan outlined a planning period of 20 years, extended to 2043 due to the lack of impact of Old Town future growth. This Phase II Facility Plan has a planning period of 40 years, extended from 2025 to 2065.

3.2 Land Use and Population

Land outside of the present City limits is not currently zoned. Generally, the land to the south of the City corporate limits is rural residential, mostly comprised of acreages with a few rural enterprises. Given the current land use, future land use for the boundary of study is assumed to be low-density residential with the population density modeled as 4 persons per acre.

3.3 Sanitary Interceptor Sewers

The City of Cumming has had its sanitary wastewater treated by the WRA since 2012. To extend service to the City, the Middle Creek Trunk Sewer was built. The Middle Creek Trunk Sewer passes through the north-east corner of the City and also services the surrounding communities. The South Trunk Sewer is the newest sanitary interceptor sewer. The South Trunk Sewer connects to the Middle Creek Trunk Sewer on the eastern side of the City and generally extends west along Highway G14. The proposed sanitary sewer improvements recommended in this Phase II Facility Plan will connect into the existing sanitary interceptor sewers, conveying sanitary waste to the WRA for treatment. It is assumed the WRA has sufficient treatment capacity; however, this must be confirmed prior to construction. The existing sanitary interceptor sewers are displayed in Exhibit 3.1.

3.4 Sanitary Sewer Drainage Areas

The sanitary sewer drainage areas are delineated by sewersheds within the boundary of study. The sewershed boundaries correspond to the high points of each drainage area, while the interior of the basin along tributaries represents where waste will naturally collect. From these drainage areas, sanitary wastewater is conveyed to larger sanitary interceptor sewers for collection at the WRA. The drainage areas, defined by their respective local sewersheds, are shown in Exhibit 3.1.

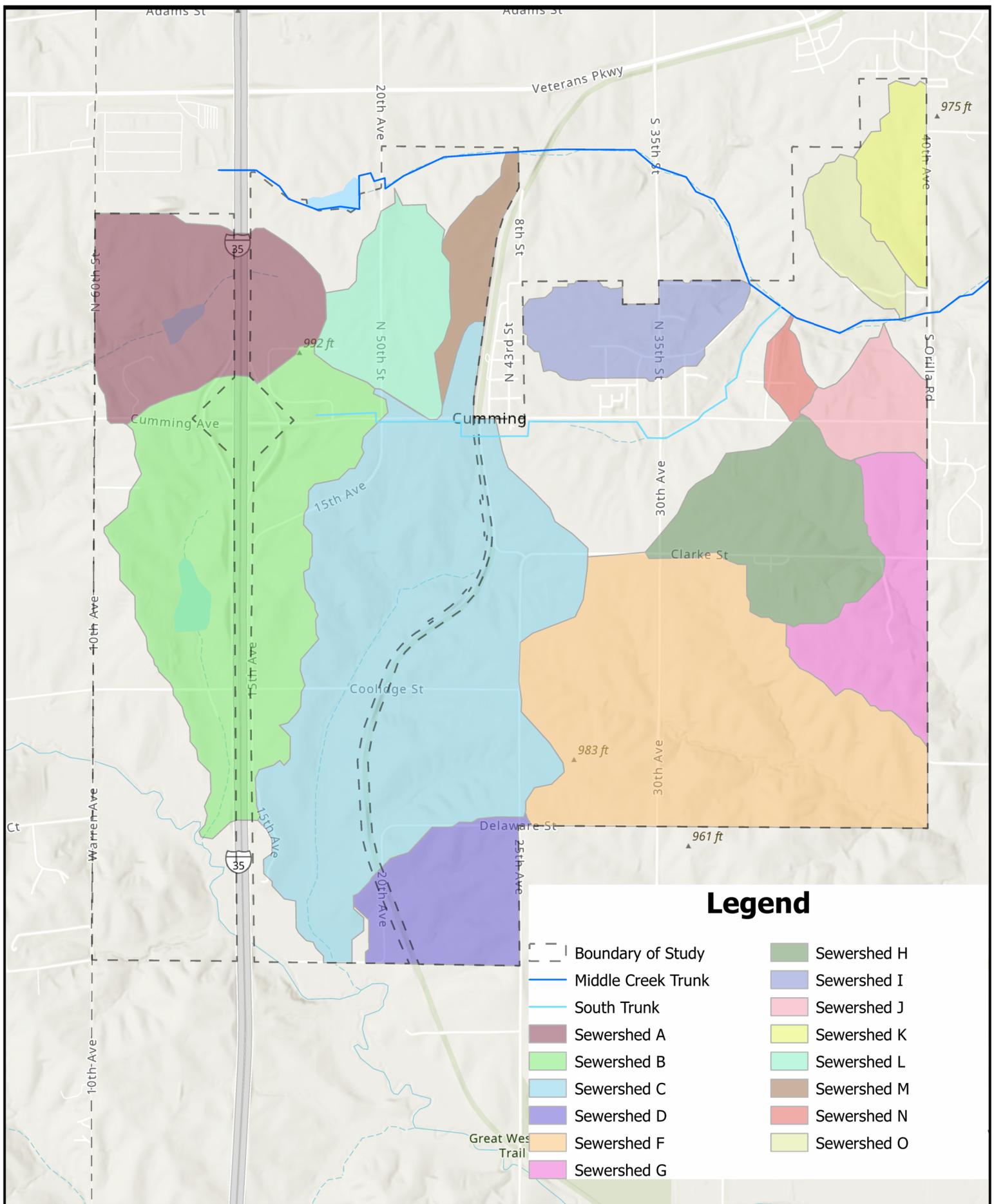


Exhibit 3.1 - Sanitary Interceptor Sewers & Drainage Areas

Cumming Central Region Sanitary Sewer Facility Plan | Cumming, IA

0 500 1,000
 Feet



4.0 DESIGN FLOWS

4.1 Current Flows

The Phase I Facility Plan outlines the existing flows and loading for the City's collection system. This Phase II Facility Plan focuses on the planned city expansion; therefore, no current flows are associated with the proposed infrastructure. Existing residences and facilities are assumed to be served by individual septic systems and do not contribute to the City's collection system.

4.2 Design Flow

Design flow, expressed in millions of gallons per day (MGD), is calculated by service area acreage to produce a population equivalent. From this population equivalent, wastewater production of 100 gallons per capita per day may be used to estimate the total future volume of wastewater generated in each service area to be collected.

The design demand (gpd/acre) fluctuates per main due to unique peaking factors. Peaking factors are inversely related to the number of people serviced by each main. This rationale follows a fundamental principle in probability and statistics. As the size of a population increases, the variation in individual waste generation tends to average out, reducing the magnitude of peak flows relative to the mean use. Larger populations exhibit smaller peaks in wastewater production due to the smoothing effect of a larger population sample. Design flows for gravity and force mains are presented in Table 1 and Table 3, respectively. All supporting calculations are provided in Appendix B. Given the current land use outlined in Section 3.2, future development is assumed to be low-density residential, with an average density of 4 persons per acre.

The sanitary sewer system loading is assumed to be 0.17 pounds of BOD per capita, based on the assumption that no major industrial users are located within the boundary of study. Design loadings should be reviewed and coordinated with the WRA to ensure compliance with any capacity limitations of the treatment facility.

5.0 IMPROVEMENT ALTERNATIVES

5.1 Gravity Sewers

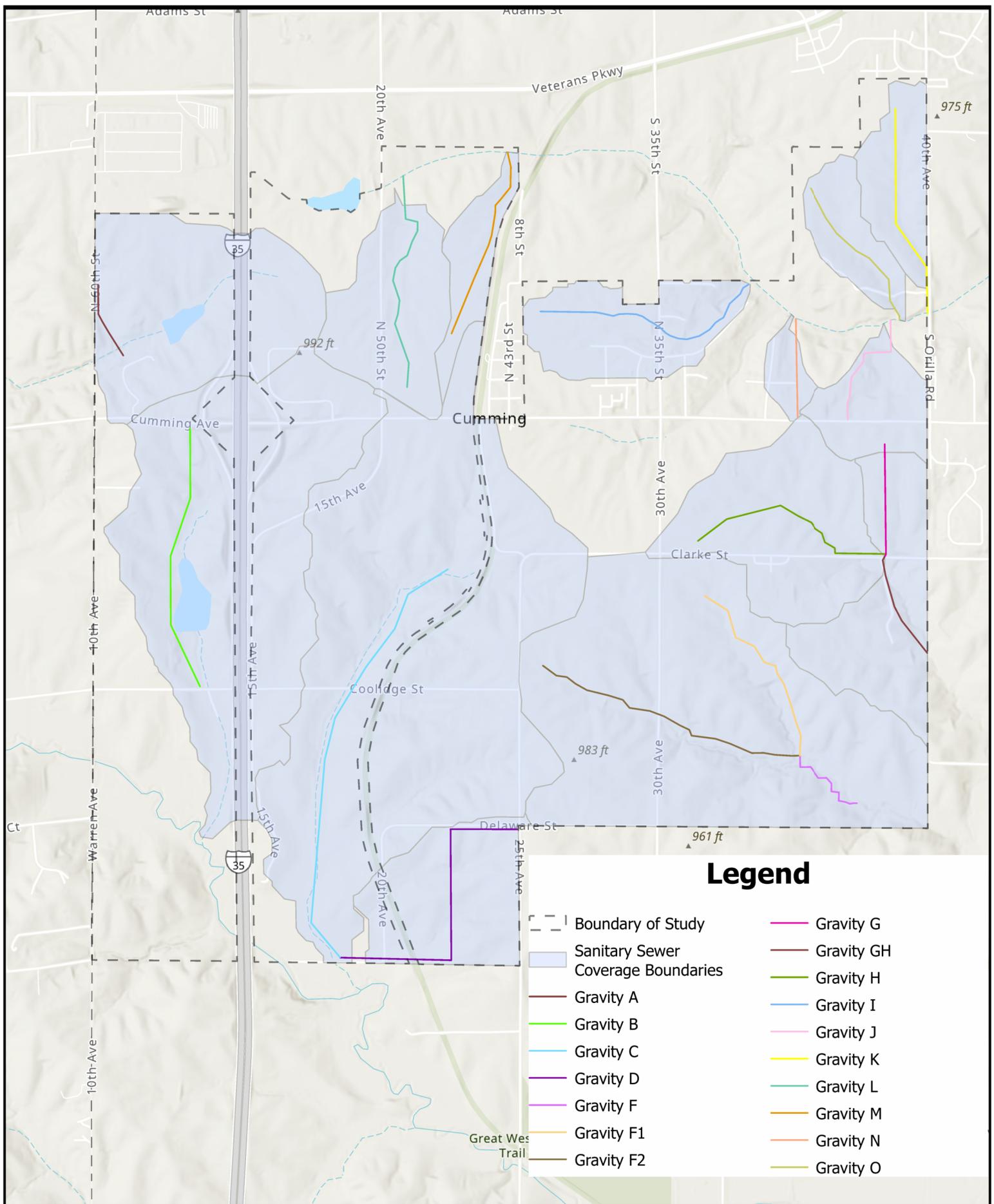
Proposed gravity main alignments were identified within the sanitary drainage areas as part of the Phase II Facility Plan. Main locations were selected based on natural topography, existing infrastructure and sewershed boundaries. Geographic Information System (GIS) data was utilized to delineate the sewershed boundaries and identify natural drainage tributaries. The tributaries serve as geographic lows within the sewersheds for gravity main alignments (Appendix A). Gravity mains convey wastewater to sanitary interceptor sewers directly or via a pump station and force main if required. Gravity main locations are identified below in Exhibit 5.1.

Based on the established gravity main alignments, pipe gradients were defined and evaluated. Slopes are optimized by aligning with the natural topography of the selected route, while maintaining installation depths within acceptable limits of 8 to 20 feet as defined by SUDAS Ch. 3C-11. H. Construction costs increase significantly for pipe depths exceeding 20 feet; therefore, such depths have been avoided where practical. Maximum pipe depth is 40 feet. Changes in pipe slope have been minimized to standardize the evaluation as much as possible; it is recommended variations in pipe gradients be further refined during project design. The lengths of the pipe segments are governed by the proposed gravity main alignments and the extent of tributary reaches within the sanitary drainage area.

The design flow rates for the proposed gravity mains are presented in Table 1 below.

Table 1. Design Flows

Gravity Main	Estimated Population Served	Design Demand (gpd/acre)	Acres	Design Flow (MGD)
A	1244	1495	311	0.46
B	3732	1344	933	1.25
C	3840	1340	960	1.29
D	688	1560	172	0.27
F1	1400	1480	350	0.52
F2	1416	1479	354	0.52
F	2816	1386	704	0.98
G	240	1647	60	0.10
H	976	1523	244	0.37
GH	1704	1456	426	0.62
I	588	1575	147	0.23
J	360	1617	90	0.15
K	356	1618	89	0.14
L	660	1564	165	0.26
M	260	1642	65	0.11
N	108	1694	27	0.05
O	288	1634	72	0.12

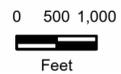


Legend

- Boundary of Study
- Sanitary Sewer Coverage Boundaries
- Gravity A
- Gravity B
- Gravity C
- Gravity D
- Gravity F1
- Gravity F2
- Gravity G
- Gravity GH
- Gravity H
- Gravity I
- Gravity J
- Gravity K
- Gravity L
- Gravity M
- Gravity N
- Gravity O

Exhibit 5.1 - Proposed Gravity Sewer Locations

Cumming Central Region Sanitary Sewer Facility Plan | Cumming, IA



Gravity mains with diameters of 15 inches or less shall be designed in accordance with SUDAS Ch. 3C-1.A to carry the peak flow at a depth of no more than 67% of the pipe diameter and maintain a scouring velocity greater than 2 ft/s and a maximum velocity less than 15 ft/s. Gravity main diameters, slopes, and resulting flow velocities are presented in Table 2 below.

Table 2. Gravity Main Sizes

Gravity Main	Diameter (inch)	Slope (%)	Velocity (ft/s)
A	12	0.5 - 4.0	3.5 - 10.0
B	12	1.0 - 4.0	5.0 - 10.0
C	15	0.4 - 1.0	3.7 - 5.8
D	8	0.4 - 2.5	2.4 - 6.0
F1	8	1.0 - 2.0	3.8 - 5.4
F2	8	1.0 - 2.0	3.8 - 5.4
F	12	1.0	5.0
G	8	3.2	6.8
H	8	1.5 - 2.2	3.8 - 5.7
GH	12	0.4 - 3.2	3.2 - 8.9
I	8	1.5	4.7
J	8	2.0 - 2.5	5.4 - 6.0
K	8	1.0 - 2.5	3.8 - 6.0
L	8	0.8	3.4
M	8	1.5	4.7
N	8	4.0	7.6
O	8	1.0 - 3.5	3.8 - 7.1

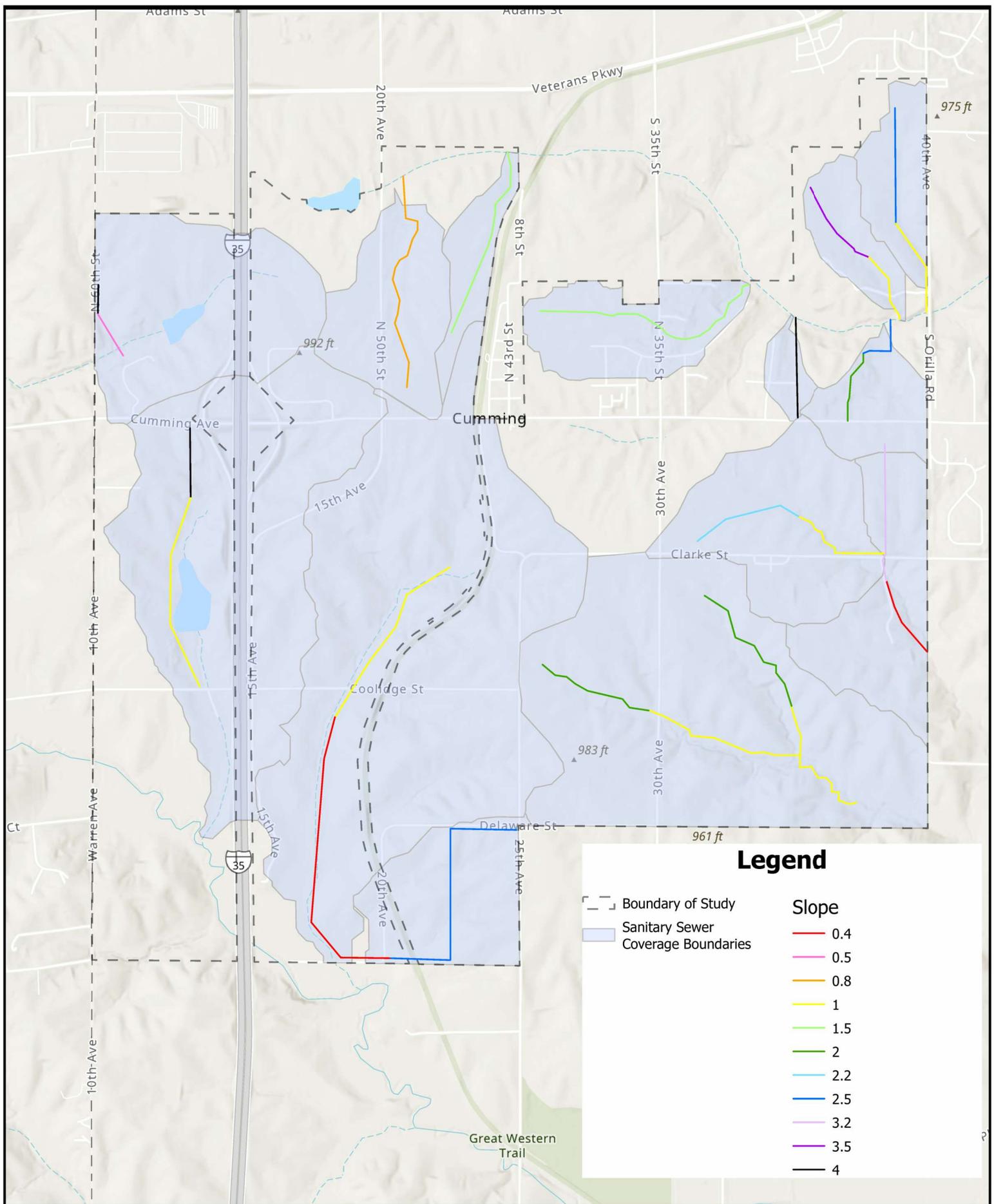
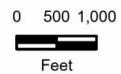


Exhibit 5.2 - Proposed Gravity Sewer Slopes

Cumming Central Region Sanitary Sewer Facility Plan | Cumming, IA



The sections below describe the sizes and locations of the recommended gravity mains within the study boundary. These improvements represent the base recommendation to provide full sanitary sewer coverage across the study area, based on the assumption that the City of Cumming maintains sole responsibility for wastewater collection and discharge to the regional interceptor system for treatment by the WRA.

For each proposed main segment, an Engineer's Opinion of Probable Cost is included, along with identification of any potential for cost-effective alternatives. Alternatives are further documented in Section 6.0.

Cost estimates have been prepared in accordance with planning-level Class 5 estimation standards defined by AACE International, consistent with the AACE Class 5 guidelines.

Gravity Main A

Gravity Main A conveys wastewater north to south within Sewershed A to Lift Station 1. Discharge from Lift Station 1 flows into Gravity Main B before continuing through Force Main 2 and Force Main 4 to the South Trunk Sewer.

Gravity Main A is proposed as 12-inch PVC SDR pipe and has a total length of 1,517 linear feet. The pipe grade transitions once, 944 linear feet upstream of Lift Station 1 from 4% to 0.5%. Gravity Main A has a peak design flow of 0.46 MGD and is planned to provide sanitary sewer service to approximately 311 acres, representing an estimated contributing population of 1,244 residents.

The Engineer's Opinion of Probable Cost for Gravity Main A is \$355,000 (2025 dollars).

Gravity Main B

Gravity Main B conveys wastewater north to south within Sewershed B to Lift Station 2. Discharge from Lift Station 2 flows through Force Main 2 and Force Main 4 to the South Trunk Sewer.

Gravity Main B is proposed as 12-inch PVC SDR pipe and has a total length of 5,227 linear feet. The pipe grade transitions once, 3,854 linear feet upstream of Lift Station 2 from 4% to 1%. Gravity Main B has a peak design flow of 1.25 MGD and is planned to provide sanitary sewer service to approximately 933 acres, representing an estimated contributing population of 3,732 residents.

The Engineer's Opinion of Probable Cost for Gravity Main B is \$1,504,000 (2025 dollars).

Gravity Main C

Gravity Main C conveys wastewater north to south within Sewershed C to Lift Station 3. Discharge from Lift Station 3 flows into Force Mains 3 and 4 to the South Trunk Sewer.

Gravity Main C is proposed as 15-inch PVC SDR pipe and has a total length of 8,659 linear feet. The pipe grade transitions once, 4,066 linear feet upstream of Lift Station 3 from 1% to 0.4%. Gravity Main C has a peak design flow of 1.29 MGD and is planned to provide sanitary sewer service to approximately 960 acres, representing an estimated contributing population of 3,840 residents.

The Engineer's Opinion of Probable Cost for Gravity Main C is \$2,897,000 (2025 dollars).

Gravity Main D

Gravity Main D conveys wastewater northeast to southwest within Sewershed D to Lift Station 3. Discharge from Lift Station 3 flows into Force Mains 3 and 4 to the South Trunk Sewer.

Gravity Main D is proposed as 8-inch PVC SDR pipe and has a total length of 6,020 linear feet. The pipe grade transitions once, 1,034 linear feet upstream of Lift Station 3 from 2.5% to 0.4%. Gravity Main D has a peak design flow of 0.27 MGD and is planned to provide sanitary sewer service to approximately 172 acres, representing an estimated contributing population of 688 residents.

The Engineer's Opinion of Probable Cost for Gravity Main D is \$1,594,000 (2025 dollars).

Gravity Main F1

Gravity Main F1 conveys wastewater north to south within Sewershed F to Gravity Main F. Wastewater flows from Gravity Main F to Force Mains 5 and 6 before discharging into the Middle Creek Trunk Sewer.

Gravity Main F1 is proposed as 8-inch PVC SDR pipe and has a total length of 3,910 linear feet. The pipe grade transitions once, 916 linear feet upstream of Gravity Main F from 2% to 1%. Gravity Main F1 has a peak design flow of 0.52 MGD and is planned to provide sanitary sewer service to approximately 350 acres, representing an estimated contributing population of 1,400 residents.

The Engineer's Opinion of Probable Cost for Gravity Main F1 is \$881,000 (2025 dollars).

Gravity Main F2

Gravity Main F2 conveys wastewater northwest to southeast within Sewershed F to Gravity Main F. Wastewater flows from Gravity Main F to Force Mains 5 and 6 before discharging into the Middle Creek Trunk Sewer.

Gravity Main F2 is proposed as 8-inch PVC SDR pipe and has a total length of 5,440 linear feet. The pipe grade transitions once, 3,115 linear feet upstream of Gravity Main F from 2% to 1%. Gravity Main 2 has a peak design flow of 0.52 MGD and is planned to provide sanitary sewer service to approximately 354 acres, representing an estimated contributing population of 1,416 residents.

The Engineer's Opinion of Probable Cost for Gravity Main F2 is \$911,000 (2025 dollars).

Gravity Main F

Gravity Main F conveys wastewater northwest to southeast within Sewershed F to Force Mains 5 and 6 via Lift Station 5 before discharging into the Middle Creek Trunk Sewer.

Gravity Main F is proposed as 12-inch PVC SDR pipe and has a total length of 1,830 linear feet with a pipe grade of 1%. Gravity Main F has a peak design flow of 0.98 MGD and is planned to provide sanitary sewer service to approximately 704 acres, representing an estimated contributing population of 2,816 residents.

The Engineer's Opinion of Probable Cost for Gravity Main F is \$472,000 (2025 dollars).

Gravity Main G

Gravity Main G conveys wastewater north to south within Sewershed G to Gravity Main GH. Wastewater flows from Gravity Main GH to Force Main 6 before discharging into the Middle Creek Trunk Sewer.

Gravity Main G is proposed as 8-inch PVC SDR pipe and has a total length of 2,184 linear feet with a pipe grade of 3.2%. Gravity Main G has a peak design flow of 0.10 MGD and is planned to provide sanitary sewer service to approximately 60 acres, representing an estimated contributing population of 240 residents.

The Engineer's Opinion of Probable Cost for Gravity Main G is \$380,000 (2025 dollars).

Gravity Main H

Gravity Main G conveys wastewater west to east within Sewershed H to Gravity Main GH. Wastewater flows from Gravity Main GH to Force Main 6 before discharging into the Middle Creek Trunk Sewer.

Gravity Main H is proposed 8-inch PVC SDR pipe and has a total length of 4,224 linear feet. The pipe grade transitions once, 1,890 linear feet upstream of Gravity Main GH from 2.2% to 1%. Gravity Main H has a peak design flow of 0.37 MGD and is planned to provide sanitary sewer service to approximately 244 acres, representing an estimated contributing population of 976 residents.

The Engineer's Opinion of Probable Cost for Gravity Main H is \$472,000 (2025 dollars).

Gravity Main GH

Gravity Main GH conveys wastewater north to south within Sewershed G to Force Main 6 via Lift Station 6 before discharging wastewater to the Middle Creek Trunk Sewer.

Gravity Main GH is proposed 12-inch PVC SDR pipe and has a total length of 2,146 linear feet. The pipe grade transitions once, 1,778 linear feet upstream of Lift Station 6 from 3.2% to 0.4%. Gravity Main GH has a peak design flow of 0.62 MGD and is planned to provide sanitary sewer service to approximately 426 acres, representing an estimated contributing population of 1,704 residents.

The Engineer's Opinion of Probable Cost for Gravity Main GH is \$93,000 (2025 dollars).

Gravity Main I

Gravity Main I conveys wastewater west to east within Sewershed I to the Middle Creek Trunk Sewer.

Gravity Main I is proposed as 8-inch PVC SDR pipe and has a total length of 4,646 linear feet with a pipe grade of 1.5%. Gravity Main I has a peak design flow of 0.23 MGD and is planning to provide sanitary sewer service to approximately 147 acres, representing an estimated contributing population of 588 residents.

The Engineer's Opinion of Probable Cost for Gravity Main I is \$725,000 (2025 dollars).

There is potential for a cost-efficient alternative, proposed in Section 6.2. For the alternative, Gravity Main I connects to a future development in West Des Moines just north of the City limits instead feeding directly into the Middle Creek Trunk Sewer. See Section 6.2 for more details.

Gravity Main J

Gravity Main J conveys wastewater south to north within Sewershed J to the Middle Creek Trunk Sewer.

Gravity Main J is proposed as 8-inch PVC SDR pipe and has a total length of 2,524 linear feet. The pipe grade transitions once, 1,158 linear feet upstream of the Middle Creek Trunk Sewer from 2% to 2.5%. Gravity Main J has a peak design flow of 0.15 MGD and is planned to provide sanitary sewer service to approximately 90 acres, representing an estimated contributing population of 360 residents.

The Engineer's Opinion of Probable Cost for Gravity Main J is \$464,000 (2025 dollars).

Gravity Main K

Gravity Main K conveys wastewater north to south within Sewershed K to the Middle Creek Trunk Sewer.

Gravity Main K is proposed as 8-inch PVC SDR pipe and has a total length of 4,171 linear feet. The pipe grade transitions once, 1,933 linear feet upstream of the Middle Creek Trunk Sewer from 2.5% to 1%. Gravity Main K has a peak design flow of 0.14 MGD and is planned to provide sanitary sewer service to approximately 89 acres, representing an estimated contributing population of 356 residents.

The Engineer's Opinion of Probable Cost for Gravity Main K is \$651,000 (2025 dollars).

Gravity Main L

Gravity Main L conveys wastewater south to north within Sewershed L to the Middle Creek Trunk Sewer.

Gravity Main L is proposed 8-inch PVC SDR pipe and has a total length of 4,382 linear feet with a pipe grade of 0.8%. Gravity Main L has a peak design flow of 0.26 MGD and is planned to provide sanitary sewer service to approximately 165 acres, representing an estimated contributing population of 660 residents.

The Engineer's Opinion of Probable Cost for Gravity Main L is \$684,000 (2025 dollars).

Gravity Main M

Gravity Main M conveys wastewater south to north within Sewershed M to the Middle Creek Trunk Sewer.

Gravity Main M is proposed as 8-inch PVC SDR pipe and has a total length of 3,749 linear feet with a pipe grade of 1.5%. Gravity Main M has a peak design flow of 0.11 MGD and is planned to provide sanitary sewer service to approximately 65 acres, representing an estimated contributing population of 260 residents.

The Engineer's Opinion of Probable Cost for Gravity Main M is \$585,000 (2025 dollars).

Gravity Main N

Gravity Main N conveys wastewater south to north within Sewershed N to the Middle Creek Trunk Sewer.

Gravity Main N is proposed as 8-inch PVC SDR pipe and has a total length of 1,925 linear feet with a pipe grade of 4%. Gravity Main N has a peak design flow of 0.05 MGD and is planned to provide sanitary sewer service to approximately 27 acres, representing an estimated contributing population of 108 residents.

The Engineer's Opinion of Probable Cost for Gravity Main N is \$300,300 (2025 dollars).

Gravity Main O

Gravity Main O conveys wastewater northwest to southeast within Sewershed O to the Middle Creek Trunk Sewer.

Gravity Main O is proposed as 8-inch PVC SDR pipe and has a total length of 3,168 linear feet. The pipe grade transitions once, 1,403 linear feet upstream of the Middle Creek Trunk Sewer from 3.5% to 1%. Gravity Main O has a peak design of 0.12 MGD and is planned to provide sanitary sewer service to approximately 72 acres, representing an estimated contributing population of 288 residents.

The Engineer's Opinion of Probable Cost for Gravity Main O is \$494,000 (2025 dollars).

5.2 Force Main and Lift Stations

Force mains (pressure pipes) are placed, where required, between gravity mains and existing trunk sewers. Force mains are required where the natural topography prevents direct gravity discharge to downstream interceptor sewers.

Because pressurized sanitary pipelines are not governed by surface contours, routing generally follows existing transportation corridors to reduce acquisition and restoration impacts. Accordingly, pressure mains are primarily aligned within existing road rights-of-way. Pipe sizing is based on projected sanitary flow demands, and segment head loss is calculated to confirm hydraulic losses are minimized for the selected diameter and material. The pressure main system summary is presented in Table 3 below.

Table 3. Force Main Sizes

Force Main	Acres of Land Serviced	Design Flow (MGD)	Diameter (inch)	Velocity (ft/s)
1	311	0.46	6	3.7
2	933	1.25	10	3.6
3	1132	1.49	12	2.9
4	2065	2.51	16	2.8
5	704	0.98	10	2.8
6	1130	1.48	12	2.9

Lift stations are placed at the start of force main segments to pump wastewater when gravity conveyance is not feasible. Each station is sized based on the peak flow it is required to convey. The recommended lift-station capacities and sizes are presented in Table 4 below.

Table 4. Lift Station Sizes

Lift Station	Size (MGD)
1	0.5
2	1.5
3	1.5
5	1
6	1.5

The proposed force main routes and lift station locations are shown in Exhibit 5.3.

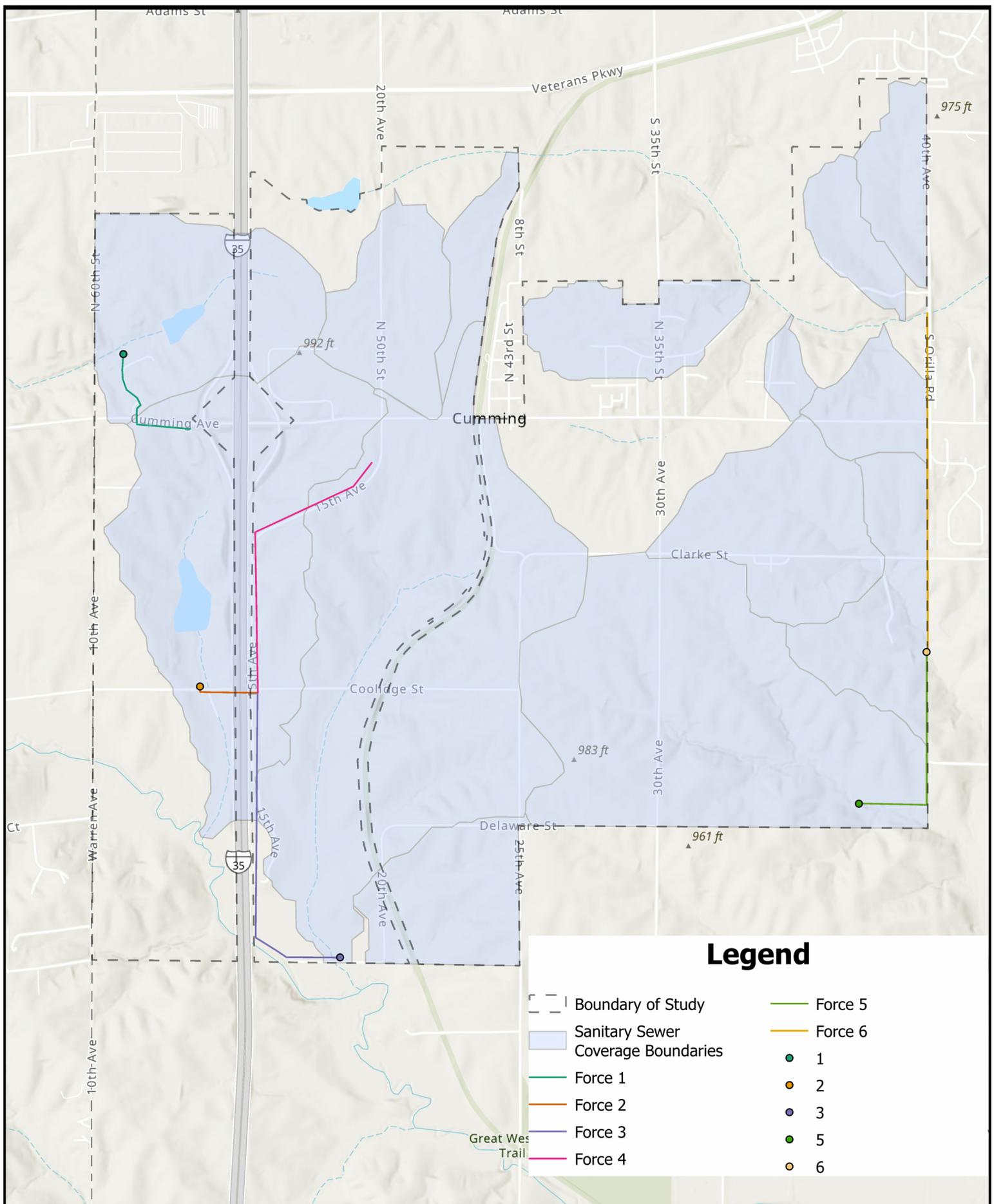
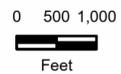


Exhibit 5.3 - Proposed Force Main & Lift Station Locations
 Cumming Central Region Sanitary Sewer Facility Plan | Cumming, IA



The sections below describe the sizes and locations of the recommended force mains and lift stations within the study boundary. These improvements represent the base recommendation to provide full sanitary sewer coverage across the boundary of study, based on the assumption that the City of Cumming maintains sole responsibility for wastewater collection and discharge to the regional interceptor system for treatment by the WRA.

For each proposed main segment, an Engineer's Opinion of Probable Cost is included, along with identification of any potential for cost-effective alternatives. Alternatives are further documented in Section 6.0.

Cost estimates have been prepared in accordance with planning-level Class 5 estimation standards defined by AACE International, consistent with the AACE Class 5 guidelines.

Force Main 1

Force Main 1 conveys wastewater from Gravity Main A to Gravity Main B via Lift Station 1, spanning across Sewershed A and Sewershed B.

Force Main 1 is proposed as 6-inch PVC pressure pipe and has a total length of 2,540 linear feet. At the anticipated peak design flow of 0.46 MGD, the force main has an operating velocity of 3.7 ft/s and corresponding head loss of 18 feet. Force Main 1 is planned to provide sanitary sewer service to approximately 311 acres, representing an estimated contributing population of 1,244 residents.

The Engineer's Opinion of Probable Cost for Force Main 1 is \$396,000 (2025 dollars).

Force Main 2

Force Main 2 conveys wastewater from Gravity Main B to Force Main 4 via Lift Station 2, within Sewershed B, crossing Interstate 35.

Force Main 2 is proposed as a 10-inch PVC pressure pipe and has a total length of 1,220 linear feet. At the anticipated peak flow of 1.25 MGD, the force main has an operating velocity of 3.6 ft/s and a corresponding head loss of 5 feet. Force Main 2 is planned to provide sanitary sewer service to approximately 933 acres, representing an estimated contributing population of 3,732 residents.

The Engineer's Opinion of Probable Cost for Force Main 2 is \$647,000 (2025 dollars).

Alternative 2 outlined in Section 6.3 explores the potential of eliminating Force Mains 2, 3, and 4 by expediting the North Trunk Sewer timeline to extend the sanitary interceptor sewer to the Warren County limits. Gravity Mains B, C and D would be extended, connecting directly to the new interceptor. See Section 6.3 for more details.

Force Main 3

Force Main 3 conveys wastewater from Gravity Mains C and D to Force Main 4 via Lift Station 3, spanning Sewersheds B, and C.

Force Main 3 is a proposed 12-inch PVC pressure pipe and has a total length of 6,547 linear feet. At the anticipated peak design flow of 1.49 MGD, the force main has an operating velocity of 2.9 ft/s and corresponding head loss of 14 feet. Force Main 3 is planned to provide sanitary sewer service to approximately 1,132 acres, representing an estimated contributing population of 4,528 residents.

The Engineer's Opinion of Probable Cost for Force Main 3 is \$1,532,000 (2025 dollars).

Potential cost-effective alternative outlined above in the Force Main 2 description.

Force Main 4

Force Main 4 conveys wastewater from Force Mains 2 and 3 to an existing manhole along 15th Ave, between Sewersheds B and C.

Force Main 4 is proposed as a 16-inch PVC pressure pipe and has a total length of 5,808 linear feet. At the anticipated peak design flow of 2.51 MGD, the force main has an operating velocity of 2.8 ft/s and corresponding head loss of 8 feet. Force Main 4 is planned to provide sanitary sewer service to approximately 2,065 acres, representing an estimated contributing population of 8,260 residents.

The Engineer's Opinion of Probable Cost for Force Main 4 is \$1,812,000 (2025 dollars).

Potential cost-effective alternative outlined above in the Force Main 2 description.

Force Main 5

Force Main 5 conveys wastewater from Gravity Main F to Force Main 6 via Lift Station 5, spanning Sewersheds F and G.

Force Main 5 is proposed as 10-inch PVC pressure pipe and has a total length of 4,330 linear feet. At the anticipated peak design flow of 0.98 MGD, the force main has an operating velocity of 2.8 ft/s and corresponding head loss of 10 feet. Force Main 5 is planned to provide sanitary sewer service to approximately 704 acres, representing an estimated contributing population of 2,816 residents.

The Engineer's Opinion of Probable Cost for Force Main 5 is \$844,000 (2025 dollars).

Alternative 3 outlined in Section 6.4 explores the potential of eliminating Force Mains 5 and 6 by expediting the North Trunk Sewer timeline to extend the sanitary interceptor sewer to the Cumming-Norwalk city limits. Gravity Mains F and GH would be extended, connecting directly to the new interceptor. See Section 6.4 for more details.

Force Main 6

Force Main 6 conveys wastewater from Gravity Main GH and Force Main 5 to the Middle Creek Trunk Sewer via Lift Station 6.

Force Main 6 is proposed as 12-inch PVC pressure pipe and has a total length of 6,600 linear feet. At the anticipated peak design flow of 1.48 MGD, the force main has an operating velocity of 2.9 ft/s and corresponding head loss of 14 feet. Force Main 6 is planned to provide sanitary sewer service to approximately 1,130 acres, representing an estimated contributing population of 4,520 residents.

The Engineer's Opinion of Probable Cost for Force Main 6 is \$1,544,000 (2025 dollars).

Potential cost-effective alternative outlined above in the Force Main 5 description.

Lift Station 1

Lift Station 1 is located between Gravity Main A and Force Main 1. Lift Station 1 is sized for 0.5 MGD.

The Engineer's Opinion of Probable Cost for Lift Station 1 is \$702,000 (2025 dollars).

Lift Station 2

Lift Station 2 is located between Gravity Main B and Force Main 2. Lift Station 2 is sized for 1.5 MGD.

The Engineer's Opinion of Probable Cost for Lift Station 2 is \$2,106,000 (2025 dollars).

Lift Station 3

Lift Station 3 is located between Gravity Main C, Gravity Main D and Force Main 3. Lift Station 3 is sized for 1.5 MGD.

The Engineer's Opinion of Probable Cost for Lift Station 3 is \$2,106,000 (2025 dollars).

Lift Station 5

Lift Station 5 is located between Gravity Main F and Force Main 5. Lift Station 5 is sized for 1 MGD.

The Engineer's Opinion of Probable Cost for Lift Station 5 is \$1,404,000 (2025 dollars).

Alternative 3 outlined in Section 6.4 explores the potential of eliminating Lift Stations 5 and 6 by expediting the North Trunk Sewer timeline to extend the sanitary interceptor sewer to the Cumming-Norwalk city limits. Gravity Mains F and GH would be extended, connecting directly to the new interceptor, eliminating the need for Lift Stations 5 and 6. See Section 6.4 for more details.

Lift Station 6

Lift Station 6 is located between Gravity Main GH, Force Main 5 and Force Main 6. Lift Station 6 is sized for 1.5 MGD.

The Engineer's Opinion of Probable Cost for Lift Station 6 is \$2,106,000 (2025 dollars).

Potential cost-effective alternative outlined above in the Lift Station 5 description.

6.0 RECOMMENDATIONS

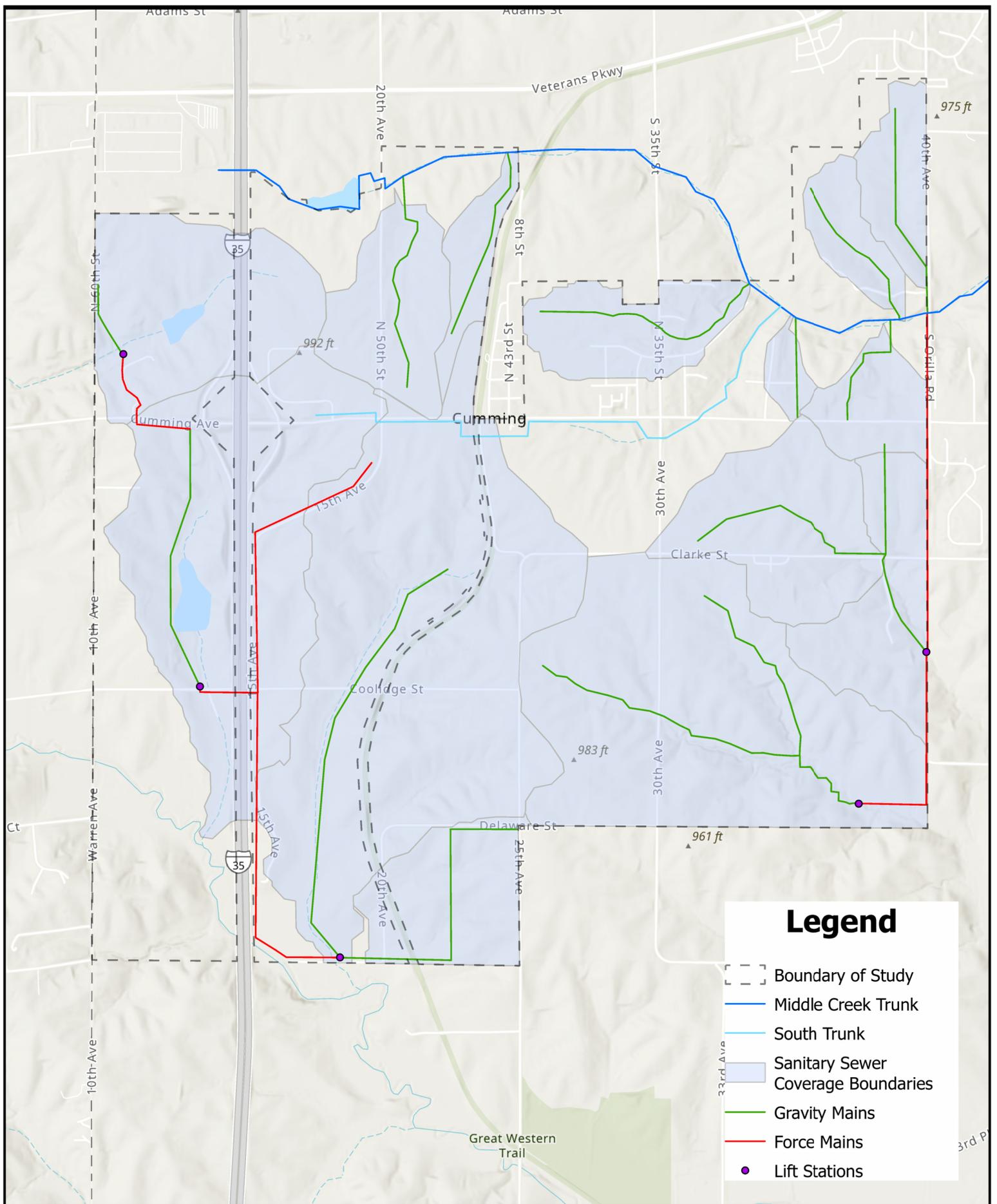
6.1 Base Recommendation

McClure recommends that the City utilizes the Phase II Facility Plan as long-range master planning framework, guiding phased infrastructure delivery in coordination with future City growth and development. The plan is intended to inform the City on system location, sizing, inter-sewershed coordination, and subsequent engineering work.

As development occurs and land is acquired for new communities, design should reference the Phase II master planning framework to ensure sanitary sewer mains and pump facilities are appropriately coordinated at a regional scale. Considering drainage-area interconnections during design will minimize future system modifications and rework.

The base sanitary sewer system recommendation includes 17 gravity sewer mains, six (6) force main pressure pipes, and five (5) lift stations, as shown in Exhibit 6.1. The infrastructure identified in this report reflects McClure's current understanding of the study boundary and existing downstream interceptors and is intended for planning and budgeting purposes. Engineer's Opinion of Probable Cost of the base recommendation is \$29,700,000 in 2025-dollar value and is intended to be used for budgetary purposes. The cost estimate is AACE Class 5. The cost estimate assumes no major reconstruction of existing infrastructure.

Sections 6.2, 6.3 and 6.4, explore cost-effective alternatives. Each of the three alternatives utilizes shared infrastructure to convey wastewater to existing and future sanitary interceptor sewers, in contrast to the base recommendation where the City is solely responsible for sanitary wastewater collection. Sections 7.2, 7.3 and 7.4 outline three Capital Improvement Plans, to assist the City in coordinating project sequencing depending on construction of base recommendations or alternatives. Section 7.2 phases sanitary sewer development for the base recommendation, Section 7.3 utilizes the future North Trunk Sewer, and Section 7.4 outlines a sanitary sewer phasing strategy for if land development demand is faster than the expansion of the North Trunk Sewer.

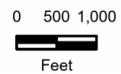


Legend

- Boundary of Study
- Middle Creek Trunk
- South Trunk
- Sanitary Sewer Coverage Boundaries
- Gravity Mains
- Force Mains
- Lift Stations

Exhibit 6.1 - Base Recommendation

Cumming Central Region Sanitary Sewer Facility Plan | Cumming, IA

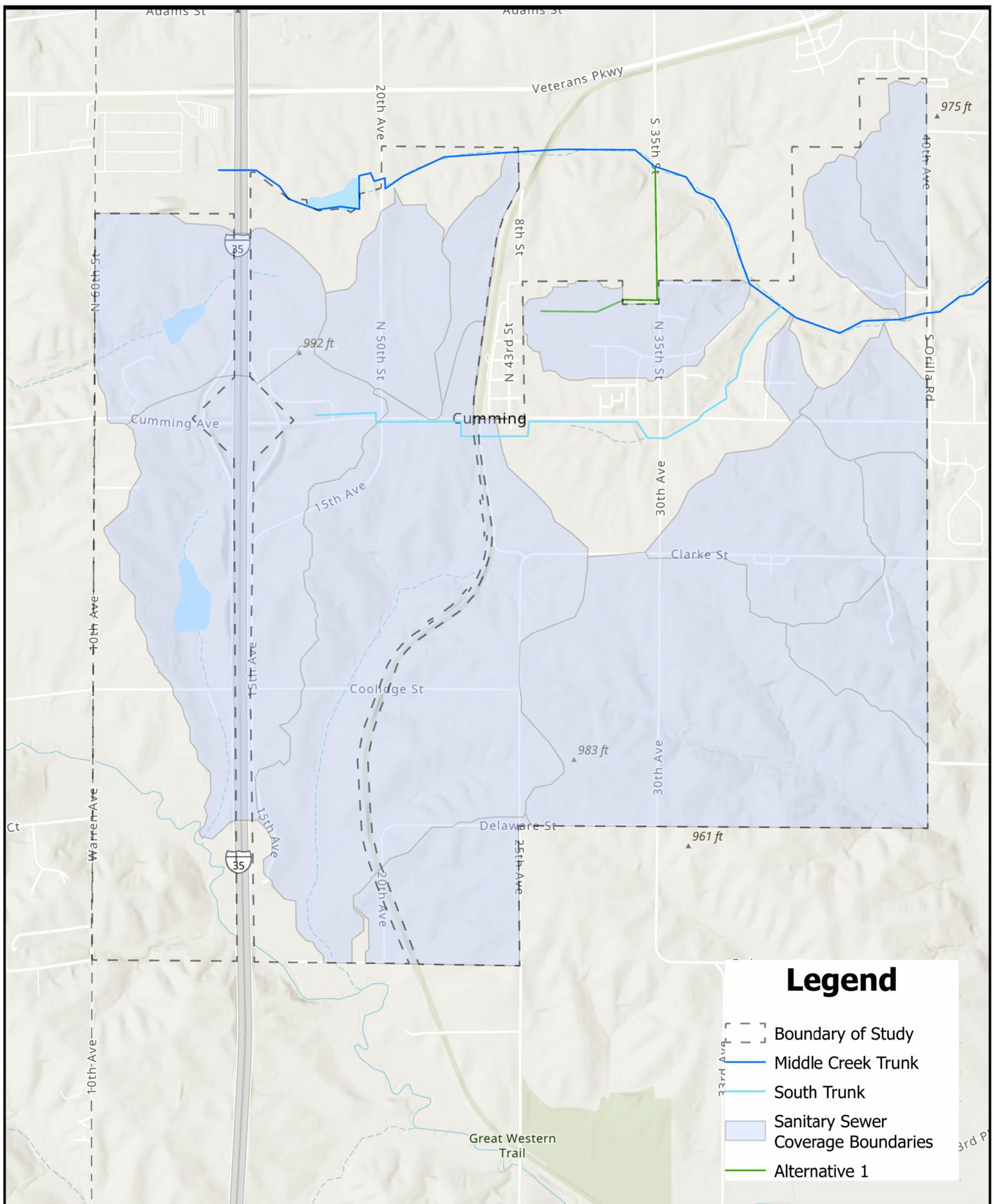


6.2 Alternative 1

Gravity Sewer I follows the tributary parallel to N Cattail Creek, North of Highway G14 and perpendicular to N 35th Street. Given the topography and drainage area, the gravity sewer alignment was designed to follow the natural slope of the drainage area, feeding directly into the Middle Creek Trunk Sewer.

The City requested that McClure provide supplemental information on the sanitary infrastructure serving Sewershed I, due to the City's knowledge of a proposed new development north of the City limits in West Des Moines. In response, McClure prepared a technical memorandum dated November 11, 2025, titled *Cumming Central Region Sanitary Sewer Infrastructure Alternatives*.

The tech memo explored two alternate routes to collect wastewater from Sewershed I than proposed in this report. Both alternatives would collect wastewater from the west side of Sewershed I and gravity feed north across the Cumming-West Des Moines limits to the Middle Creek Trunk Sewer, utilizing shared infrastructure. Alternative 1.B from the tech memo is shown in Exhibit 6.2 and is noted as Alternative 1 for this report. The alternative is subject to change as the supplemental tech memo was produced in parallel with the Phase II Facility Plan.

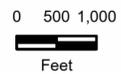


Legend

- Boundary of Study
- Middle Creek Trunk
- South Trunk
- Sanitary Sewer Coverage Boundaries
- Alternative 1

Exhibit 6.2 - Alternative 1

Cumming Central Region Sanitary Sewer Facility Plan | Cumming, IA



6.3 Alternative 2

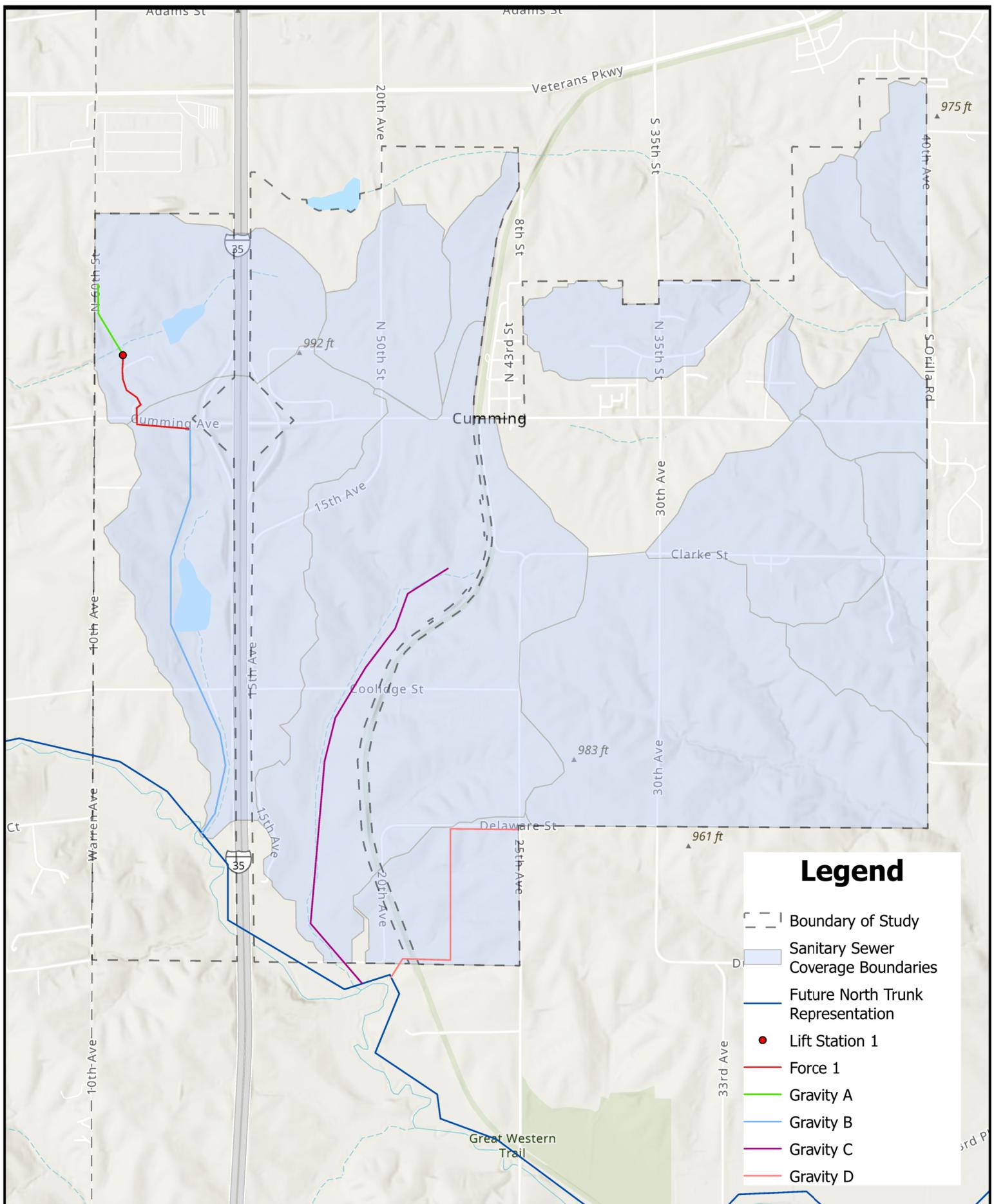
Alternative 2 was developed based on McClure’s understanding that WRA plans to construct a future North Trunk Sewer to serve Norwalk, Cumming, and West Des Moines. The proposed trunk alignment is planned in an east–west orientation, south of the City limits.

The base recommendation conveys wastewater generated in drainage areas A–D, as defined in the facility plan, to the South Trunk Sewer via pumping. Collection from sewersheds A–D is routed north using Force Mains 2-4, supported by Lift Station 2, Lift Station 3.

Under full build-out of the A–D drainage areas, the projected peak design flow exceeds the hydraulic capacity of the South Trunk Sewer, indicating a mismatch between ultimate demand and available conveyance capacity. Force Main 4 collects wastewater from sewersheds A-D to discharge into the South Trunk Sewer and has a design flow of 2.51 MGD. Given the slope and size of the sanitary interceptor sewer at the tie-in location, the trunk sewer’s capacity is 1.94 MGD. It is unknown what percent of the South Trunk Sewer capacity is already utilized. Assuming 1.5 MGD of capacity is available for flow from sewersheds A-D, approximately 1,235 of the 2,065 acres can be serviced by the South Trunk Sewer.

McClure proposes two options:

1. Option 1 accelerates construction of the future North Trunk Sewer. Under this scenario, when sewersheds A–D reach full development, Gravity Main B, Gravity Main C, and Gravity Main D would convey wastewater by gravity directly into the North Trunk Sewer, eliminating the need for Force Main 2, Force Main 3, Force Main 4, Lift Station 2, and Lift Station 3. This configuration is illustrated in Exhibit 6.3.
2. Option 2 outlines a sequenced approach if developers intend to develop Sewershed A, Sewershed B north of Coolidge St., and Sewershed C north of Coolidge St before the North Trunk Sewer is extended to the Warren County limits. In this scenario, part of the proposed infrastructure could be built to minimize rework. This would entail Gravity Main C only extending to Coolidge St. where Lift Station 2, 3 and Force Main 2 would be relocated, and a shortened Force Main 4 would transport waste to the South Trunk Sewer (Exhibit 6.4). The sizes of the gravity mains, force mains and lift stations may decrease due to smaller service areas. The area of Option 2 is approximately 1,483 acres. Available capacity of the South Trunk Sewer should be calculated before design to ensure ultimate demand matches available conveyance capacity. Once the North Trunk Sewer is extended to the Warren County limits, Gravity Mains B, C, and D would be extended south to the North Trunk Sewer.

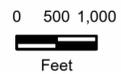


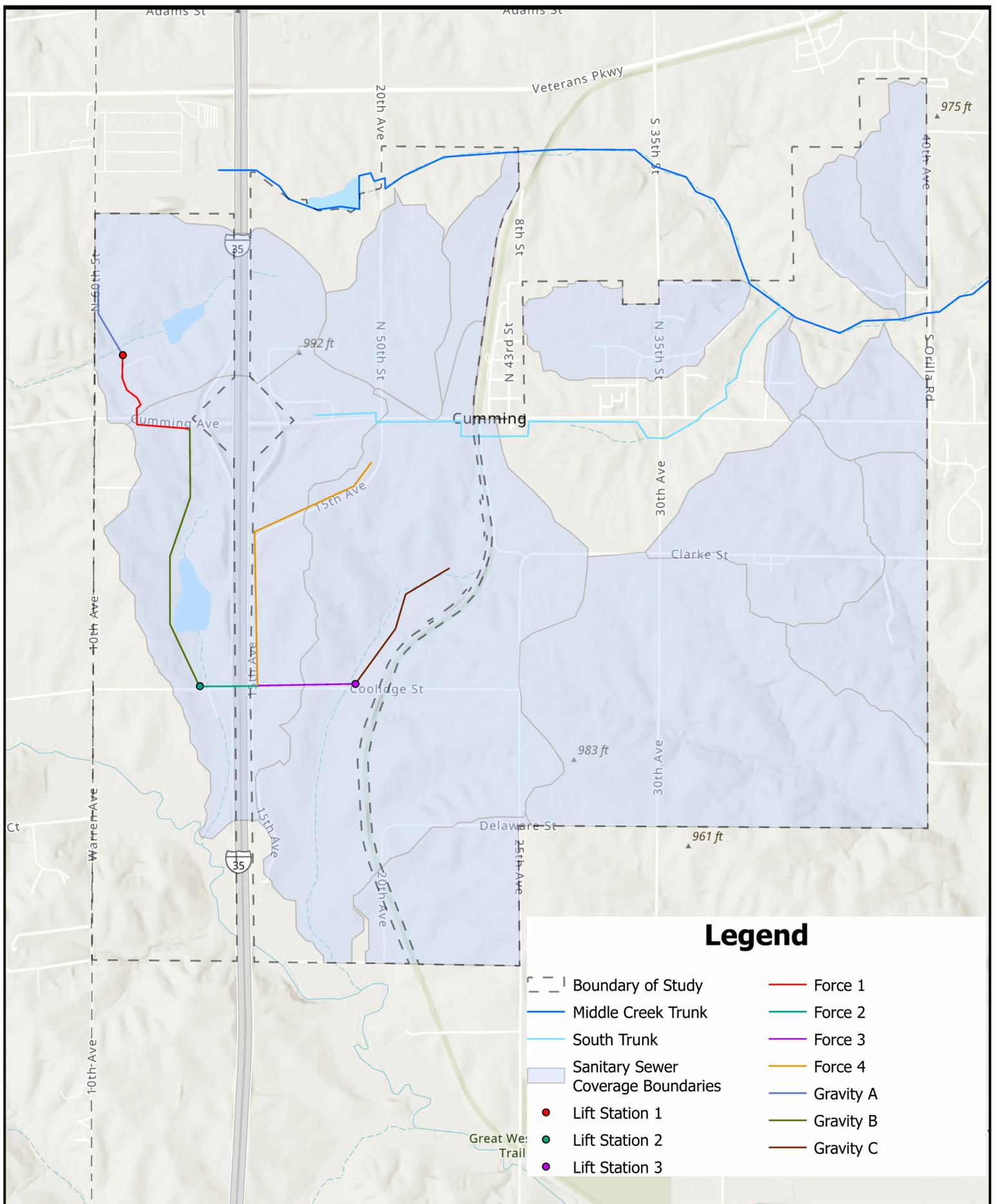
Legend

- Boundary of Study
- Sanitary Sewer Coverage Boundaries
- Future North Trunk Representation
- Lift Station 1
- Force 1
- Gravity A
- Gravity B
- Gravity C
- Gravity D

Exhibit 6.3 - Alternative 2.1

Cumming Central Region Sanitary Sewer Facility Plan | Cumming, IA



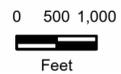


Legend

- Boundary of Study
- Middle Creek Trunk
- South Trunk
- Sanitary Sewer Coverage Boundaries
- Lift Station 1
- Lift Station 2
- Lift Station 3
- Force 1
- Force 2
- Force 3
- Force 4
- Gravity A
- Gravity B
- Gravity C

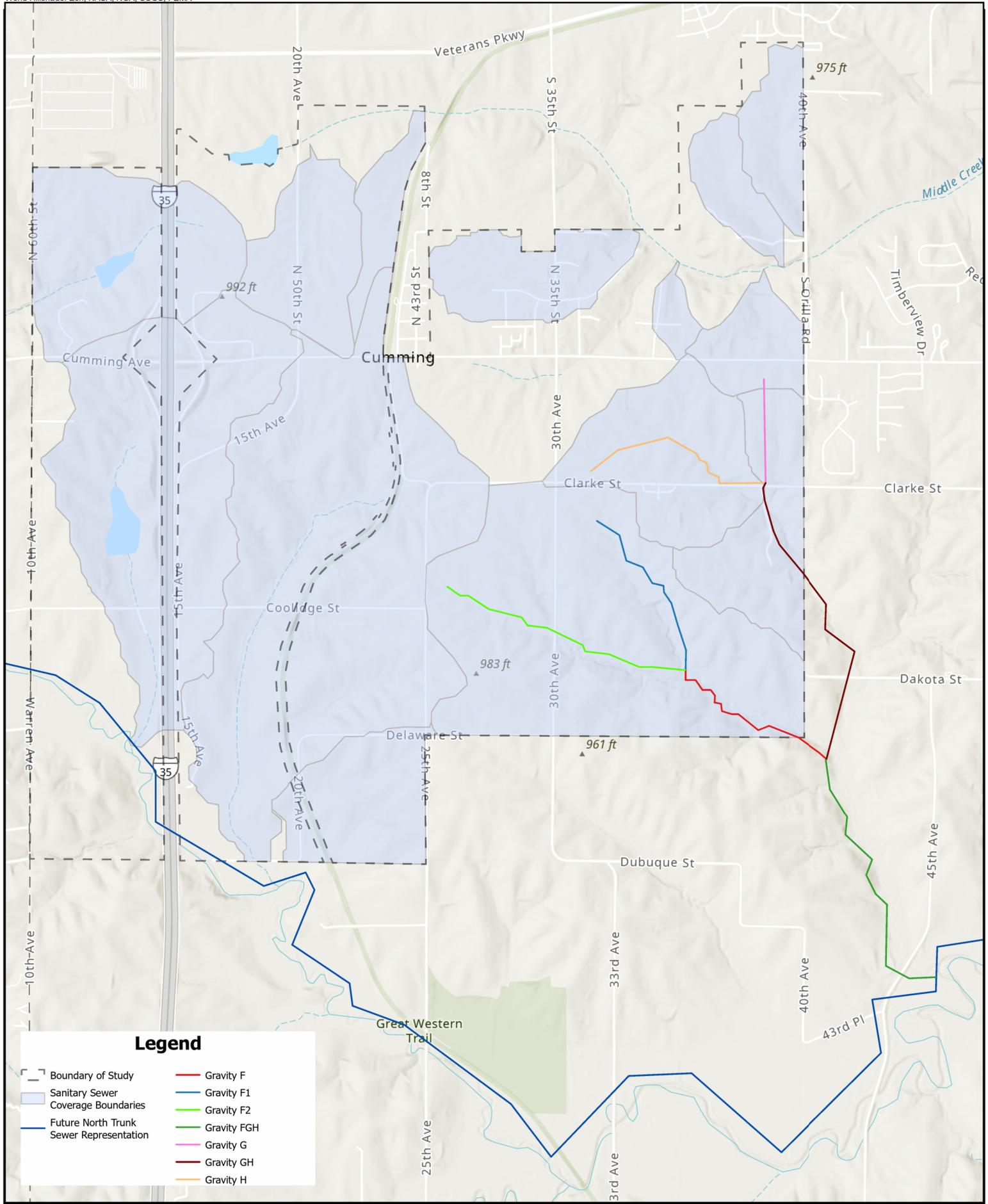
Exhibit 6.4 - Alternative 2.2

Cumming Central Region Sanitary Sewer Facility Plan | Cumming, IA



6.4 Alternative 3

Alternative 3 would also utilize the future North Trunk Sewer. Instead of building Lift Stations 5, 6 and their associated force mains, Gravity Mains F and GH could combine into Gravity Main FGH and gravity feed south to the future North Trunk Sewer (Exhibit 6.5). For this alternative, the North Trunk Sewer would need to be extended to the latitude of the Cumming-Norwalk city limits. Norwalk and the City would share the sanitary sewer infrastructure as Cumming and Norwalk develop to the south. Gravity Main FGH would need to be sized to handle the design flow for the service areas of both Cumming and Norwalk.

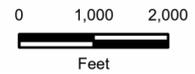


Legend

- Boundary of Study
- Sanitary Sewer Coverage Boundaries
- Future North Trunk Sewer Representation
- Gravity F
- Gravity F1
- Gravity F2
- Gravity FGH
- Gravity G
- Gravity GH
- Gravity H

Exhibit 6.5 - Alternative 3

Cumming Central Region Sanitary Sewer Facility Plan | Cumming, IA



7.0 IMPLEMENTATION

7.1 Implementation Overview

The Phase II Facility Plan base recommendation outlines over 90,000 linear feet of new sanitary sewer and nearly 4,000 acres of drainage areas requiring service. Land development is expected to be driven primarily by residential demand within the future City of Cumming limits. To maximize cost-efficiency, the City should utilize developers and neighboring communities' that share a need for expanded sanitary sewer capacity. By aligning these shared demands, the City can support mutually beneficial investment in sanitary sewer infrastructure while minimizing public expenditure.

McClure has outlined three (3) implementation phasing plan alternatives for the City. The phasing plans differ based on the level of shared responsibility and the timing of the future North Trunk Sewer. Each phasing alternative is described as a Capital Improvement Plan (CIP).

In all scenarios, gravity mains servicing drainage areas north of Highway G14 are expected to be developed first. These drainage areas can be served without the need for force mains or lift stations, allowing each development to proceed independently without reliance on downstream infrastructure.

7.2 CIP 1 – Base Recommendation

Infrastructure phasing for CIP 1 was developed on the base recommendation that the City does not utilize shared sanitary sewer infrastructure and assumes that City expansion is developer driven. Developers are responsible for providing sanitary sewer infrastructure as they develop land and ensure that the size of gravity mains is adequate for the service area in totality. The South Trunk Sewer does not currently have capacity to collect wastewater from Sewersheds A, B, C and D when service areas are fully developed. See Section 6.3 for more details.

The developers will generally be responsible for gravity mains, and the City will be responsible for the lift stations and associated force mains to convey wastewater to existing sanitary interceptor sewers when required. CIP 1 also assumes that the City would be responsible for Gravity Mains A and B, west of Interstate 35. Generally, land west of Interstate 35 within the City's current limits is zoned for professional commercial. CIP 1 assumes that Gravity Mains A and B would be built by the City to further promote industrial growth, if developers do not initiate development first.

Gravity Mains I, J, K, L, M, N, and O are to be built first as their corresponding service areas are independent of each other and do not require force mains or lift stations to be built. Approximately 655 acres can be serviced by Gravity Mains I, J, K, L, M, N and O.

Gravity Mains G, H, GH, and Force Mains and Lift Station 6 are assumed to be built in the future and service an addition 426 acres. Gravity Mains A and B, as well as Force Mains 1, 2, 4 and Lift Stations 1 and 2 are planned to be the next phase built, providing sanitary service to an additional 933 acres. Sewersheds A, B, G and H would be developed on an intermediate timeline, allowing for City expansion south without utilizing the future North Trunk Sewer.

Gravity Mains F1, F2 and F, Lift Station 5 and Force Main 5 would be developed next, serving an additional 704 acres. Gravity Mains C and D, Force Main 3 and Lift Station 3 are assumed to be built last, and would provide sanitary service to another 1,132 acres.

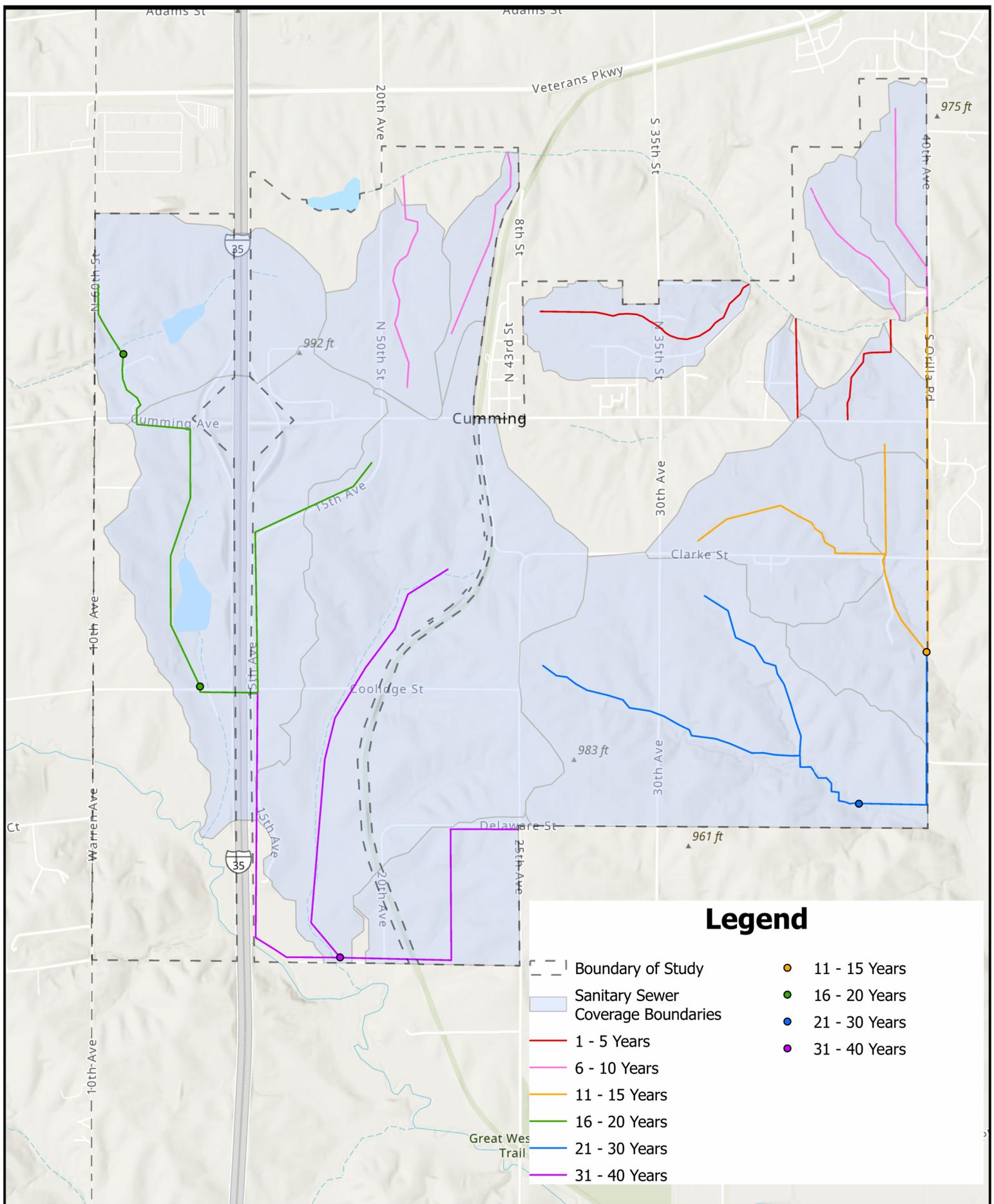
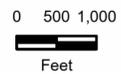


Exhibit 7.1 - CIP 1

Cumming Central Region Sanitary Sewer Facility Plan | Cumming, IA



7.3 CIP 2 – Utilizing the Future North Trunk Sewer

CIP 2 utilizes the future North Trunk Sewer to share sanitary sewer infrastructure costs with neighboring communities. Utilizing the North Trunk Sewer negates the need for five of the six force mains, and four of the five lift stations by increasing the length of gravity mains to convey wastewater directly into the future sanitary interceptor sewer instead of pumping wastewater to existing interceptors.

Generally, developers will be responsible for building gravity mains and the City will be responsible for building force mains and lift stations. Since the CIP 2 phasing scenario reduces the number of force mains and lift stations needed to one each, the City's direct financial cost is reduced. The City will still have financial responsibility for shared mains and future sanitary interceptor sewers outside of City limits. Discussions regarding financial and construction responsibility will be left up to the City, developers, and neighboring communities at the time of design.

Direct savings gained from reduced City financed sanitary sewer infrastructure can be redirected to the development of the North Trunk Sewer up to the Warren County Limits. The North Trunk Sewer will need to be built up to the Cumming-Norwalk city limits before Sewersheds F, G and H can be serviced, and the sanitary interceptor sewer built to the Warrant County Limits before Sewershed A, B, C and D can be serviced.

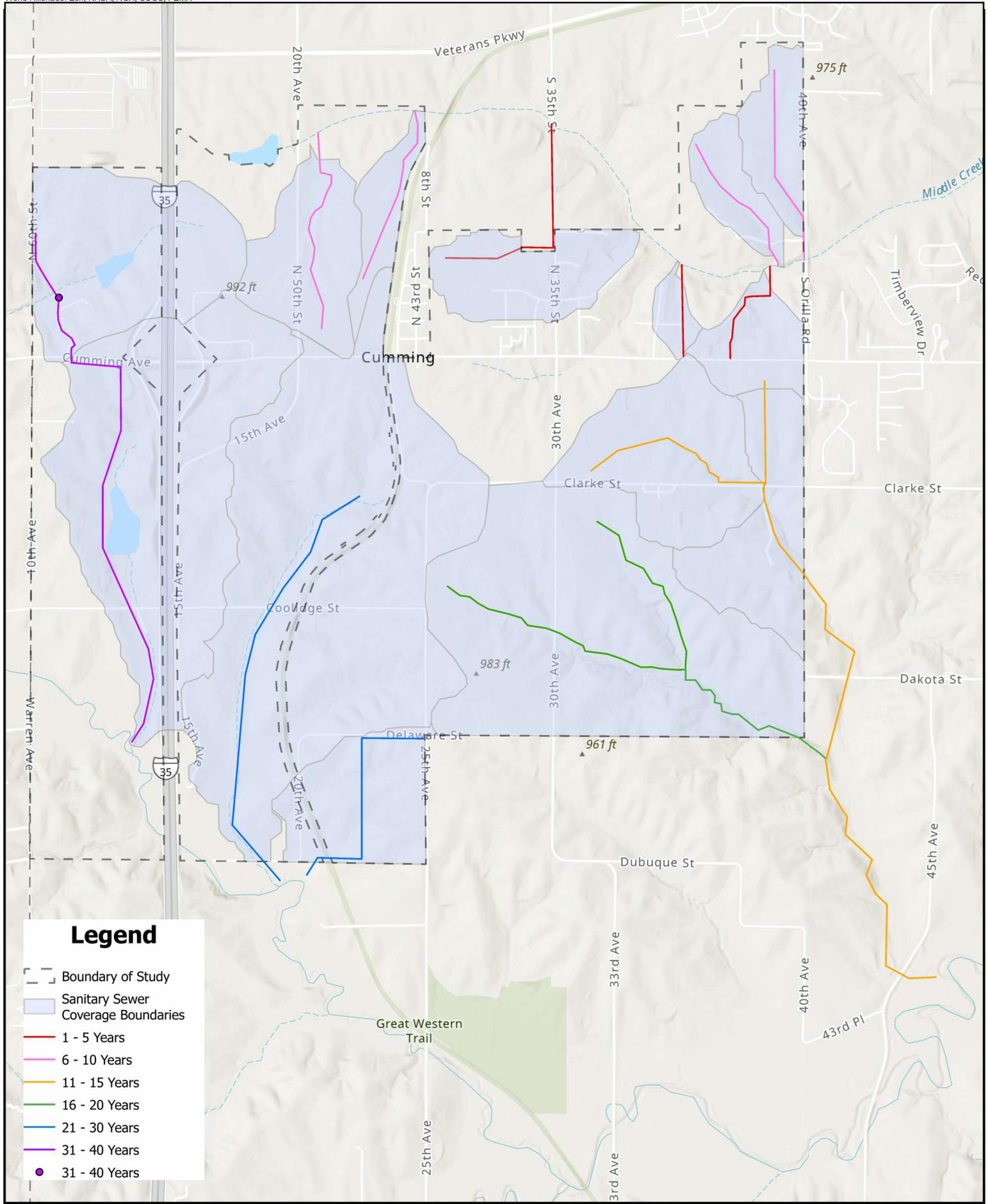
Gravity Mains I, J, K, L, M, N and O can be built as land development occurs, discharging wastewater directly into the existing sanitary interceptor sewers, servicing an estimated 655 acres.

Gravity Mains G, H, GH and FGH would be built next to service Sewersheds G and H, discharging wastewater into the future North Trunk Sewer south of the Cumming-Norwalk city limits. Gravity Mains GH and FGH would need to be sized to service both Cumming's Sewersheds G and H, as well as any Norwalk future developments off of the same major tributary. Development would need to be coordinated between the City, developers, and Norwalk. At the time of connection, another 426 acres could be serviced within the City limits.

Gravity Mains F1, F2, and F can be developed any time after Gravity Main GH connects to the North Trunk Sewer, servicing another 704 acres.

Gravity Mains B, C and D can be built once the North Trunk Sewer is extended to approximately the Warren County Limits. Gravity Main A, Force Main 1 and Lift Station 1 can be built after Gravity Main B. Another 2065 acres can be developed with sanitary collection provided by Gravity Mains A, B, C and D.

CIP 2 is the most cost-efficient alternative for the City, allowing for the City to redirect funds to develop the North Trunk Sewer with the WRA and neighboring communities.

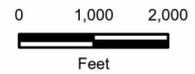


Legend

- Boundary of Study
- Sanitary Sewer Coverage Boundaries
- 1 - 5 Years
- 6 - 10 Years
- 11 - 15 Years
- 16 - 20 Years
- 21 - 30 Years
- 31 - 40 Years
- 31 - 40 Years

Exhibit 7.2 - CIP 2

Cumming Central Region Sanitary Sewer Facility Plan | Cumming, IA



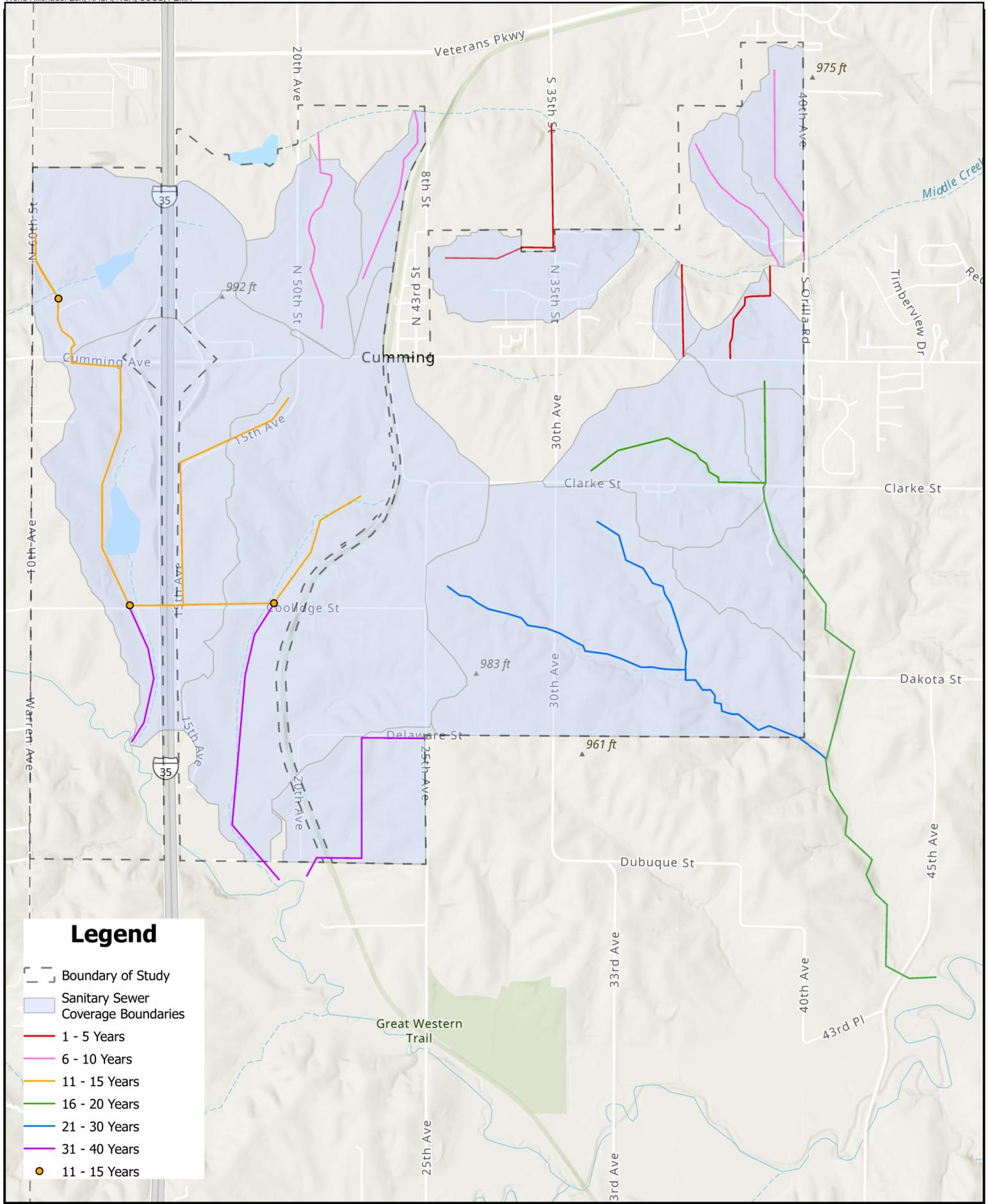
7.4 CIP 3 – North Trunk Sewer Built in Intermediate Future

CIP 3 utilizes shared infrastructure with neighboring communities and is developer driven and assumes that the pace of land development moves faster than the speed at which the future North Trunk Sewer is expanded.

Gravity Mains I, J, K, L, M, N and O are to be built when land development occurs and will service approximately 655 acres. Gravity mains will discharge wastewater directly into existing sanitary interceptor sewers.

If land development drives the need for sanitary sewer infrastructure before the North Trunk Sewer is extended, Sewershed A, B and half of C can be developed, north of Coolidge Street. Gravity Main A, B, and C, as well as Force Main 1, 2, 3, 4 and Lift Station 1, 2 and 3 could be built to create a network to provide supplemental service to 1,483 acres. Eventually, Gravity Mains B, C and D would be extended to connect to the future North Trunk Sewer and service an additional 582 acres in the intermediate future. The purpose of partially developing the service area is to allow for growth while waiting for the North Trunk Sewer to get built, supplementing with additional force mains and lift stations.

Gravity Mains G, H, GH, FGH and eventually F1, F2, and F would be built to connect to the future North Trunk sewer once it is extended to the Cumming-Norwalk city limits. An additional 1,130 acres can be serviced from Sewersheds F, G and H.

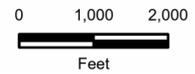


Legend

- Boundary of Study
- Sanitary Sewer Coverage Boundaries
- 1 - 5 Years
- 6 - 10 Years
- 11 - 15 Years
- 16 - 20 Years
- 21 - 30 Years
- 31 - 40 Years
- 11 - 15 Years

Exhibit 7.3 - CIP 3

Cumming Central Region Sanitary Sewer Facility Plan | Cumming, IA



8.0 FINANCING

8.1 Financing

Listed below are seven main sources of funding the City may utilize to pay for the proposed improvements. The following is a brief discussion of each funding source.

- Clean Water State Revolving Fund Loan (CWSRF)
- Conventional General Obligation Bonds (GO)
- Conventional General Obligation Bonds Abated by Utility Revenue
- Conventional Utility Revenue Bonds
- Community Development Block Grant (CDBG)
- USDA Rural Development Loan and Grant
- Wastewater and Drinking Water Treatment Financial Assistance Program (WTFAP)

CLEAN WATER STATE REVOLVING FUND

The Clean Water State Revolving Fund (CWSRF) Program is jointly administered by IDNR and the Iowa Finance Authority (IFA). The program offers two primary types of loans.

SRF Eligibility Rules

Iowa's Clean Water State Revolving Fund (SRF) program provides loans to wastewater systems for design and construction. IDNR has established priorities for SRF and publishes the projects each year in its Intended Use Plan (IUP). The IUP includes the proposed uses of the moneys and describes how each project will be managed. IDNR has prepared scoring criteria that is used to address loan eligibility. To be placed on the Priority List for SRF funding, the City must have a facility plan for potential system needs, approved by IDNR, and submit a written application for placement on the Priority List. The application requires a description of the type of project for which financial assistance is being requested, the amount of financial assistance being requested, and a proposed preliminary project construction schedule. SRF applicants must demonstrate financial viability through their work with a municipal advisor as required by the SRF program. An Environmental Review of the project by the IDNR will then be completed.

Planning & Design Loan

The Planning and Design Loan, which is available at 0.00% interest for up to 3 years, covers expenses such as engineering fees, environmental studies, and other costs related to the planning and submission of an applicable project. Following the 3-year period, the Planning and Design Loan must be paid or rolled over into a permanent form of financing, such as a CWSRF Construction Loan. It is typically recommended the City apply for this funding for all planning and design work given the favorable terms.

Construction Loan

The Construction Loan, which is available at multiple interest rates and terms, is designed to cover the costs of the actual construction of a wastewater infrastructure project. Construction loans offered by the CWSRF program can take the form of either a revenue bond or a general obligation bond. While each type of bond has the same loan terms and interest rates available, revenue bonds in the CWSRF program require a coverage ratio of 10% (which is lower than the typical 25% coverage ratio required

by conventional water revenue bonds). General obligation bonds in the CWSRF program do not typically have a coverage ratio. Due to the current rate environment and availability of funds, the SRF program has recently lowered the interest rates and fees to the values shown in the following table. When utilizing the CWSRF program, there are additional requirements added to the project, such as Davis-Bacon Wages, Build America Buy America (BABA) requirements, and additional construction contract documents. An Environmental Review and Cost & Effectiveness Analysis must also be completed to receive a CWSRF Loan.

Table 5. CWSRF Construction Loan Financing Alternatives

Option	Origination Fee	Interest Rate ¹	Loan Term	Comment
Option 1	0.50%	3.26%	20	All Communities Eligible
Option 2	0.50%	4.26%	30	Only Disadvantaged Communities

¹The loan administration/servicing fee of 0.25% has been included in all interests shown in the above table.

Disadvantaged Communities

The CWSRF program has a special interest rate available for communities which qualify as “disadvantaged” under the newly implemented Disadvantaged Community Rule. This rule, which became effective in 2013, came about following the passage of state legislation regarding affordability criteria for proposed wastewater improvement projects.

A community whose sanitary user fees will be in excess of 2.0% of MHI because of the proposed improvement automatically qualifies as disadvantaged. If the proposed sanitary user fee will be between 1.0 and 2.0%, the City may still qualify as disadvantaged, but additional criteria such as unemployment rates, City bond ratings, and other factors must be evaluated prior to determining disadvantaged status.

GENERAL OBLIGATION BONDS

General obligation bonds may also be used to finance wastewater improvements. General obligation bonds may be repaid by revenue generated from the sewer utility or by a general tax levy. The amount of general obligation debt is limited to a State Constitutional debt limit equal to 5% of the value of taxable property within the City’s limits. The City’s sum total of outstanding loans, bonds, notes, or other instruments payable from property taxes cannot exceed this amount. The Iowa Supreme Court has also ruled tax increment revenue debt must also be counted in this limit. Further information may be obtained from the City’s bond counsel and financial advisor.

GENERAL OBLIGATION BONDS ABATED BY UTILITY REVENUE

In addition to regular general obligation bonds, a special repayment structure can also be used to finance general obligation bonds using utility revenues similar to a revenue bond. This type of general obligation bond (abated with utility revenue) is still secured by pledging a portion of the City’s tax base similar to a regular general obligation bond. However, rather than repaying the bond from tax revenue, increased utility rates are utilized to repay the bond instead of increased tax rates on real property. Additionally, because the bond is secured by the tax base of the City, it also does not have a coverage ratio requirement typical of most bonds paid by utility revenues. Thus, the utility abated

general obligation bond combines the attributes of a general obligation bond and revenue bond. Further information on general obligation bonds may be obtained from the City’s bond counsel.

REVENUE BONDS

Revenue bonds are only repaid by the *net* operating revenue from the utility issuing the bonds. The bonds are not subject to lien against the general taxes of the community and therefore, typically sell at a slightly higher interest rate than general obligation bonds. The extent that revenue bonds can be issued to finance a project is determined by the net revenue of the utility. Conventional revenue bonds require sewer rates to be set at a level able to retire the debt while accumulating a 15% to 35% reserve fund. Further information may be obtained from the City’s bond counsel and financial advisor.

COMMUNITY DEVELOPMENT BLOCK GRANT

In conjunction with pursuing a construction loan, the City may also apply for grant funding. One source of grant funding is the Community Development Block Grant (CDBG) Water & Sewer Program. The CDBG Water & Sewer Program is administered by the Iowa Economic Development Authority (IEDA) and consists of federal grant money awarded to Iowa communities on an annual competitive basis for the improvements of wastewater facilities (along with other community infrastructure projects). The eligibility of the City for the grant program and the size of grant awarded are based on the City’s population, percentage of residents meeting low to moderate-income criteria, size of the proposed project, and the qualifications of other projects who have applied for CDBG funding in the same fiscal year.

UNITED STATES DEPARTMENT OF AGRICULTURE – RURAL DEVELOPMENT (USDA-RD)

The United States Department of Agriculture’s (USDA) Rural Development department administers loans and grants to communities through the Water and Waste Disposal Loan and Grant Fund. This program provides funding for clean and reliable drinking water systems, sanitary sewage disposal, sanitary solid waste disposal, and stormwater drainage to households and businesses in eligible rural areas. This program provides loan funding with up to a 40-year payback period (based on the useful life of the facilities financed) with a fixed interest rate. Current interest rates are shown in the table below. Cumming would likely fall into the market rate category. Grant funding is available on a need-based basis, and eligibility is determined based on the area’s average utility rates. It is encouraged the City apply for all grant funding for which it may qualify.

Table 6. USDA-RD Loan Interest Rates

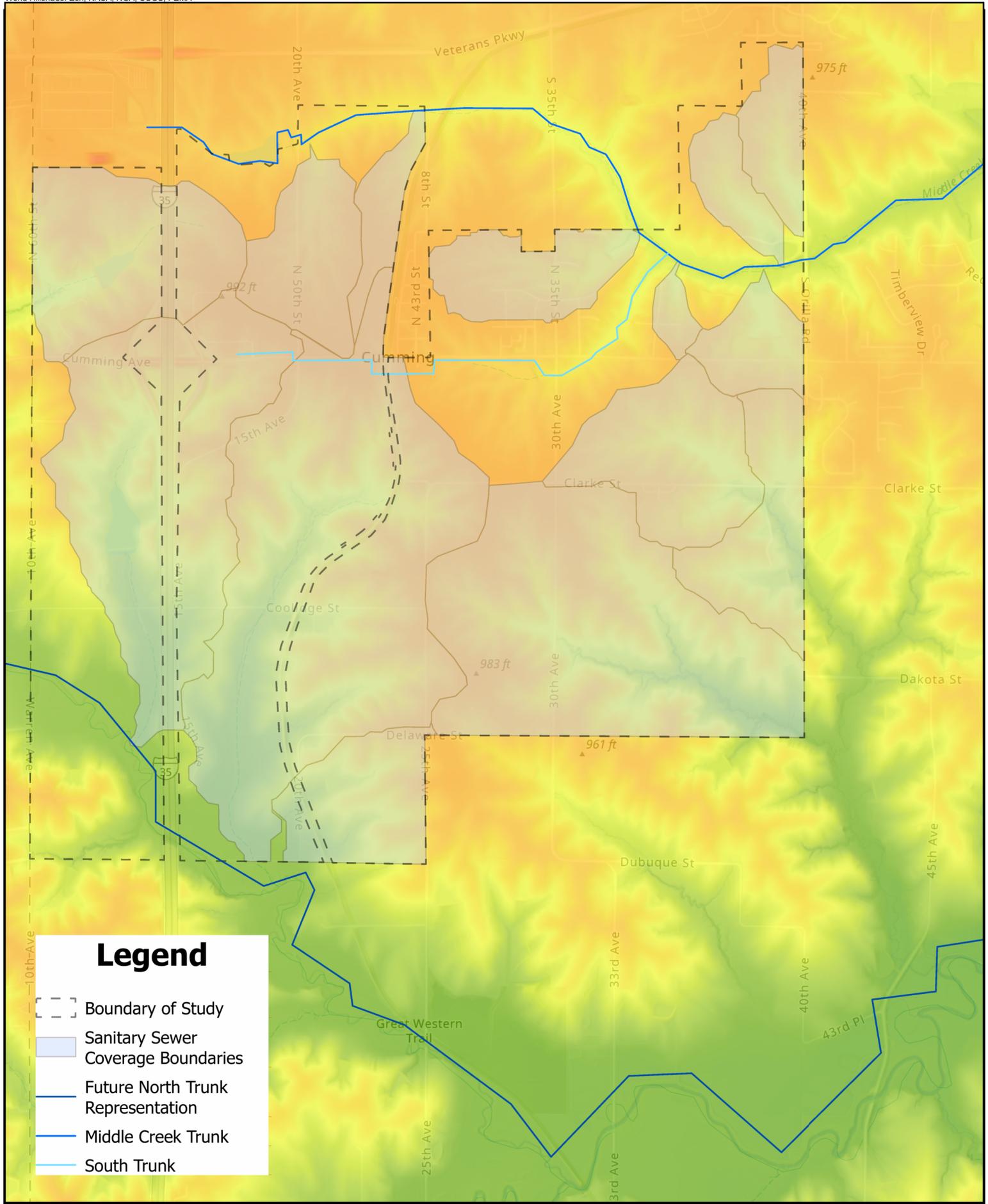
Category	Interest Rates for 1 st Quarter Fiscal Year of 2026
Poverty	3.125%
Intermediate	4.250%
Market	5.250%

WASTEWATER AND DRINKING WATER TREATMENT FINANCIAL ASSISTANCE PROGRAM (WTFAP)

WTFAP is a grant program that gives priority to disadvantaged communities who are improving wastewater treatment facilities. As noted above, disadvantaged communities are determined by having a LMI greater than 51%. Award of grant funding is determined by a committee. Applications are awarded annually and are due in October, and funding can be awarded during the construction phase of improvements.

APPENDIX A

Local Tributaries

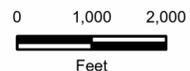


Legend

- Boundary of Study
- Sanitary Sewer Coverage Boundaries
- Future North Trunk Representation
- Middle Creek Trunk
- South Trunk

Appendix A - Local Tributaries

Cumming Central Region Sanitary Sewer Facility Plan | Cumming, IA



APPENDIX B

Calculations, Equations and Assumptions

Computed By:	<u>Mary Olesberg</u>	Date:	<u>11/30/2025</u>
Checked By:	<u>Cole Prevost</u>	Date:	<u>12/1/2025</u>
Approved By:	<u>CJ Gross</u>	Date:	<u>12/1/2025</u>

Purpose:

Appendix B - Calculations, Equations and Assumptions - *Cumming Central Region Sanitary Sewer - Facility Plan, Cumming, Iowa, November 2025.*

References:

1. SUDAS Section 3B-1 - Flow Determinations - Figure 3B-1.01: "Ratio of Peak to Average Daily Sewage Flow"
2. SUDAS Section 3C-1 - Facility Design - Figure 3C-1.01: "Flow for Circular Pipe Flowing Full (Based on Manning's Equation n=0.013)"
3. *Gravity Sanitary Sewer Design and Construction* - Figure 5-7 "Hydraulic elements plot for circular conduits"

Design Criteria:

Knowns:

Manning Roughness Coefficient (n) = 0.013
Hazen-Williams Coefficient (C) = 150
Minimum Velocity (Gravity) = 2 ft/s
Maximum Velocity (Gravity) = 15 ft/s
Minimum Velocity (Force) = 2 ft/s
Maximum Velocity (Force) = 8 ft/s
Conversion Factor $k_n = 1.49$

Assumptions:

Area Density = 4 people/acre
Production Rate = 100 gpd/capita
Gravity main maximum pipe fullness = 2/3rds of depth (Y/D = 0.67), for pipe diameter less than or equal to 15 inches
Velocity Hydraulic Ratio at (Y/D = 0.67) = 1.1

Equations:

$$\text{Design Demand} \left(\frac{\text{gpd}}{\text{acre}} \right) = \text{Area Density} \left(\frac{\text{people}}{\text{acre}} \right) * \text{Production Rate} \left(\frac{\text{gpd}}{\text{capita}} \right) * \text{Peaking Factor}$$

$$\text{Peaking Factor} = \frac{18+P^{0.5}}{4+P^{0.5}}, P = \text{population in thousands}$$

$$\text{Population} = P = \text{Area Density} \left(\frac{\text{people}}{\text{acre}} \right) * \text{Acres}$$

$$\text{Design Flow (MGD)} = \text{Design Demand} \left(\frac{\text{gpd}}{\text{acre}} \right) * \text{Acres} \div 10^6$$

Computed By: Mary Olesberg **Date:** 11/30/2025

Checked By: Cole Prevost **Date:** 12/1/2025

Approved By: CJ Gross **Date:** 12/1/2025

$$\text{Manning's Equation} = V \left(\frac{ft}{s} \right) = \frac{k_n}{n} \left(\frac{D (ft)}{4} \right)^{\frac{2}{3}} * \text{slope}^{\frac{1}{2}} * \text{Velocity Hydraulic Ratio}$$

$$\text{Continuity Equation} = Q \left(\frac{ft^3}{s} \right) = V \left(\frac{ft}{s} \right) * A (ft^2)$$

$$\text{Hazen - Williams Equation} = \text{headloss} (ft) = \frac{0.002083 * L (ft) * \left(\frac{100}{C} \right)^{1.852} * \left(\frac{Q (gpd)}{1440} \right)^{1.852}}{(D (in))^{4.8655}}$$

Analysis:

Design Demand is determined by Area Density, Production Rate, Peaking Factor, and the size of land serviced. Once the Design Demand is calculated for each service area, the Design Flow is calculated by multiplying Design Demand by the acres of land to be serviced. Design Flow is calculated for each gravity main and force main identified in the Phase II Facility plan, determined by the acres of land each main services.

Gravity main sizes are determined by slope, flow, pipe fullness, minimum and maximum velocity. The slope and flow of each gravity main is determined by the main alignment and area of land serviced. The SUDAS Figure 3C-1.01 nomograph is used to determine the minimum diameter of pipe given slope and Design Flow. Target velocity is calculated using Manning's Equation given the gravity main slope, diameter, and Velocity Hydraulic Ratio determined by pipe fullness.

Force mains are sized using the continuity equation. Given the Design Flow and target velocity of 4 ft/s, the target cross sectional area is calculated. The target cross sectional area is rounded up to the nearest force main diameter size, and velocity is recalculated given the new pipe diameter. Headloss is calculated using Hazen-Williams Equation for each force main to ensure the diameter is optimal for the length of the force main.

Lift Stations are sized to the nearest 0.5 MGD given the force main they service for budgetary purposes.

Attachments:

1. SUDAS Section 3B-1 - Flow Determinations - Figure 3B-1.01: "Ratio of Peak to Average Daily Sewage Flow"
2. SUDAS Section 3C-1 - Facility Design - Figure 3C-1.01: "Flow for Circular Pipe Flowing Full (Based on Manning's Equation n=0.013)"
3. Gravity Sanitary Sewer Design and Construction - Figure 5-7 "Hydraulic elements plot for circular conduits"

Figure 3B-1.01: Ratio of Peak to Average Daily Sewage Flow

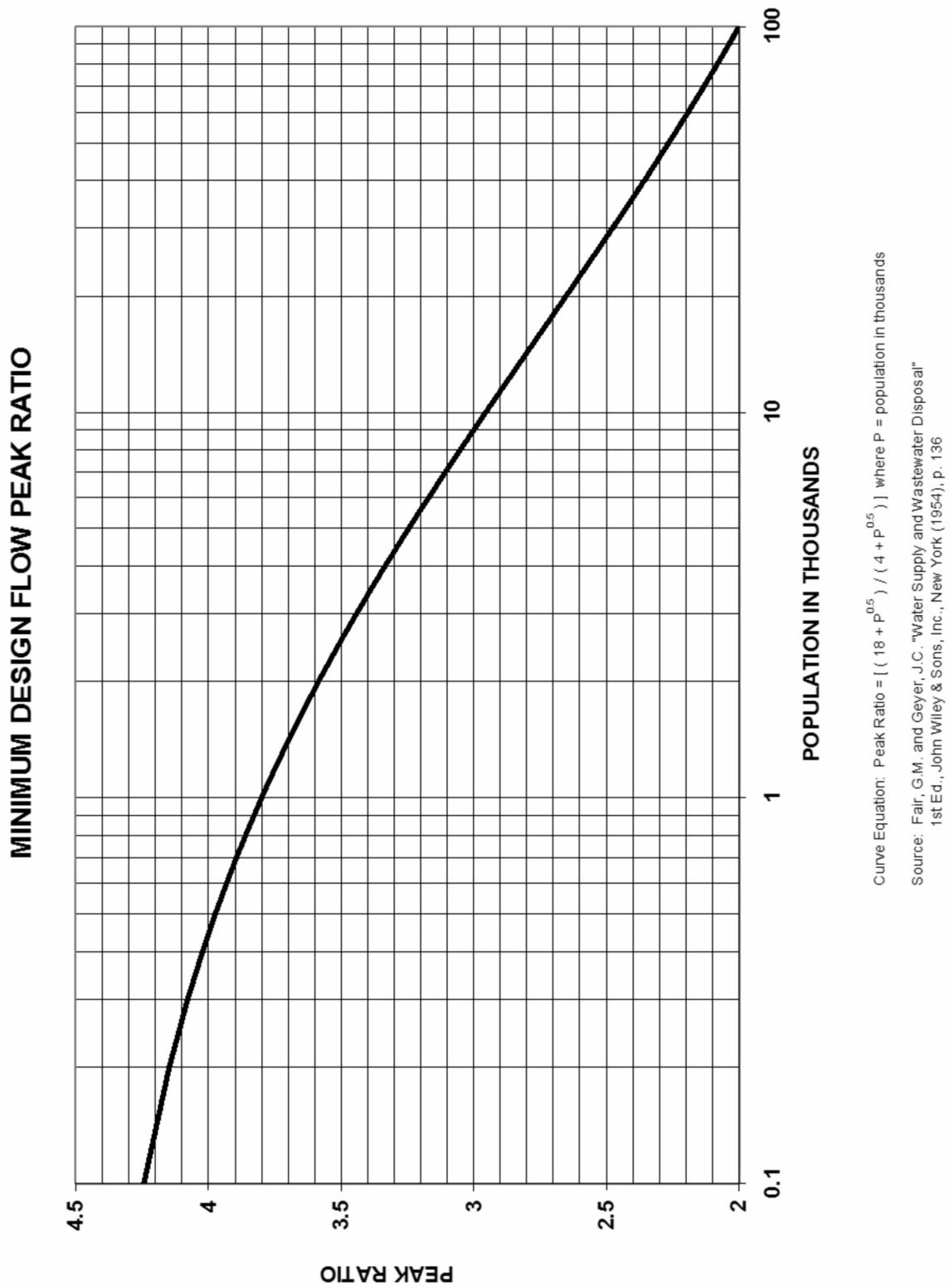
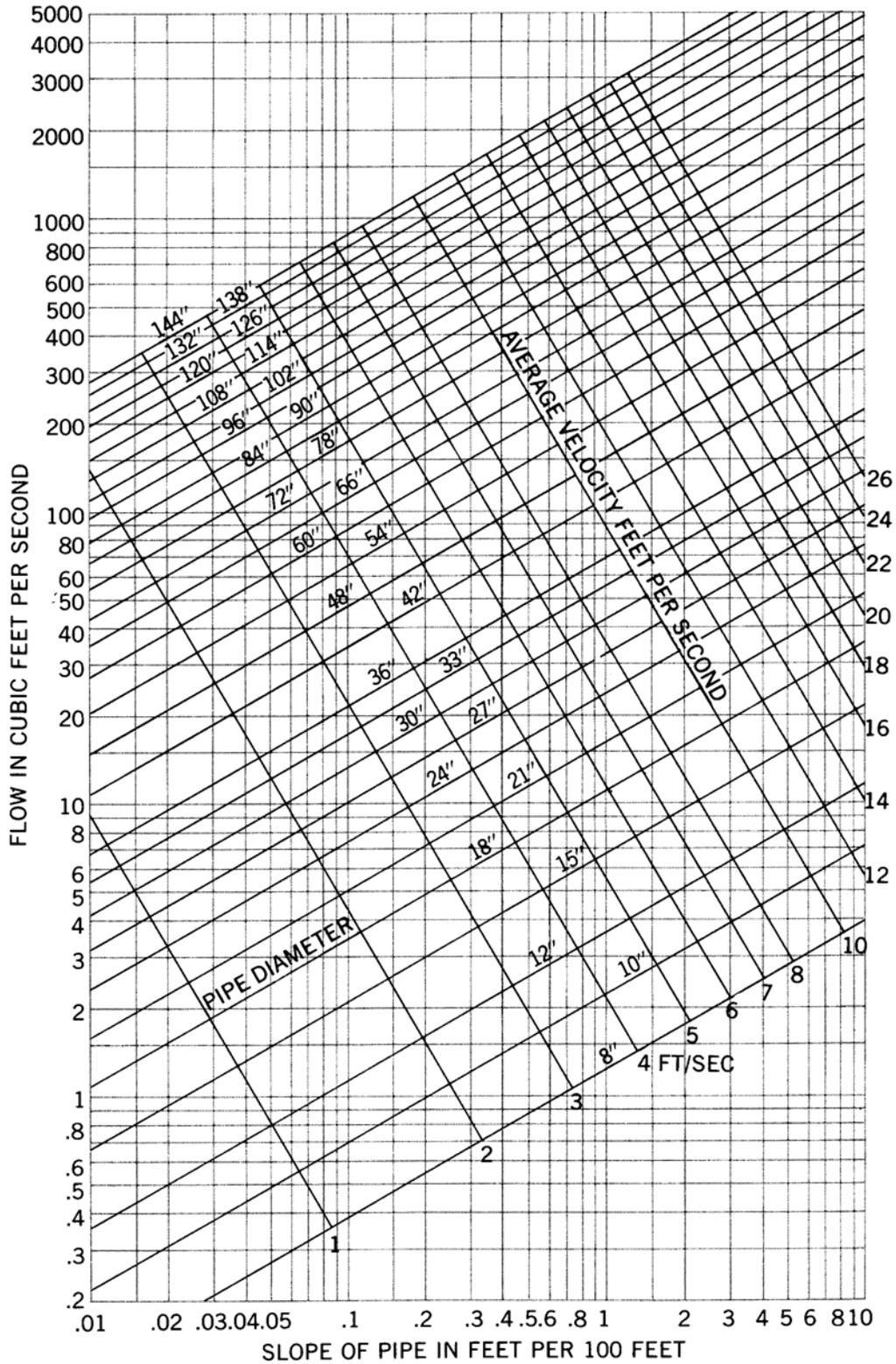


Figure 3C-1.01: Flow for Circular Pipe Flowing Full (Based on Manning's Equation $n=0.013$)



Darcy-Weisbach equation is now easily used on calculators and computers. Although the Hazen-Williams equation can be used for open-channel calculations, such use is rare. If it is used for partially full conduits, the hydraulic elements in Fig. 5-7 can be used as it is in the other equations. Values of C_{HW} can be found in Lansey and El-Shorbagy (2001) and many other sources.

5.4.2.4. Partial Depth Calculations

Fluid flow equations are used for conduits of all shapes flowing either full or partly full. For conduits with complex cross sections, equations, tables, or graphs must be available that give relationships between size and depth of flow and the area and hydraulic radius. For a circular shape (as shown in Fig. 5-3), the equations relating the pertinent variables are given as Eqs. (5-27), (5-28), (5-29), and (5-30). Since the depth, y , is more convenient than θ to measure or use directly, Eq. (5-28) can be used to determine θ for a given conduit diameter and flow depth. This θ , measured in radians, can then be used in Eqs. (5-29) and (5-30) to calculate the partially full area and hydraulic radius.

$$y = \frac{D}{2}(1 - \cos \theta) \quad (5-27)$$

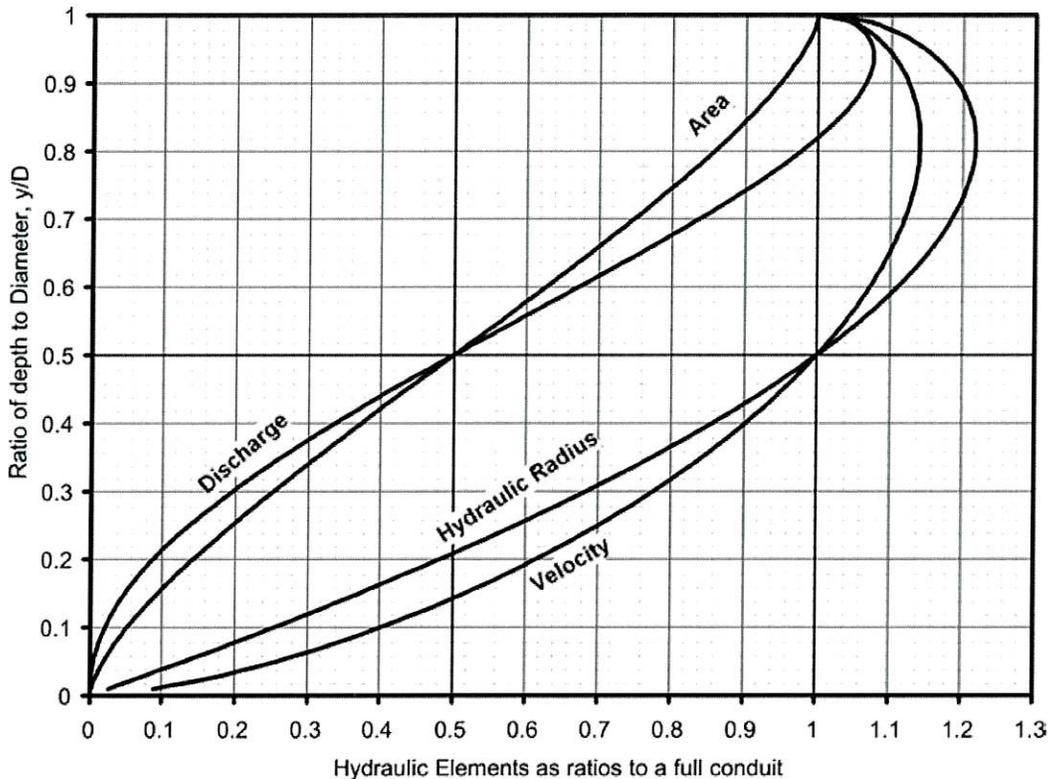


FIGURE 5-7. Hydraulic elements plot for circular conduits. Modified from: T. R. Camp. (1946). "Design of sewers to facilitate flow." Sew. Works Jour. 18(3).