

Memorandum

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Date: December 16, 2020

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To: Mr. Jim Cornell

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Company: City of Kalamazoo

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From: Prein&Newhof

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Project #: 2180207

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Re: City of Kalamazoo SAW Grant:  
 Summary of Wastewater Asset Management Plan

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This memorandum provides the summary of the City of Kalamazoo wastewater asset management plan SAW grant activities required under Section 603 of Public Act 84 of 2015. Headings and italicized quotes are from recent EGLE guidance.

**Grantee Information**

Grantee:  
 City of Kalamazoo  
 241 West South Street  
 Kalamazoo, MI 49007  
<https://www.kalamazoocity.org/>

Contact: Mr. James Ritsema, City Manager  
 Phone: (269) 337-8047

SAW Grant Project Number: 1462-01

**Executive Summary**

The City of Kalamazoo received a SAW Grant in December 2017 to prepare Wastewater and Stormwater Asset Management Plans. The Grant agreement indicated the following amounts:

Project Total	Grant Amount	Local Match
\$2,000,000	\$2,000,000	\$0
Project Total	Wastewater Costs	Stormwater Costs
\$2,000,000	\$1,358,936	\$641,064

The Key components in the Asset Management Plan include:

1. Asset Inventory and Condition Assessment
2. Criticality of Assets
3. Level of Service
4. Operation and Maintenance Strategies/Revenue Structure
5. Long-term Funding/Capital Improvement Plan

## **Asset Inventory**

*“Describe the system components included in the AMP. Discuss how they were located and identified, if applicable. Describe the platform used to develop and maintain the inventory of assets.”*

The City of Kalamazoo’s wastewater assets are located both within and outside of the city corporate limits. Sewer lines outside of the corporate limits are referred to as multi-jurisdictional sewers, or interceptors, which transport sewer from the surrounding communities to the City of Kalamazoo for treatment. The City of Kalamazoo is responsible to maintain both sewers within the City’s corporate limit, and the multi-jurisdictional sewers within the other municipalities.

All assets that are functionally or financially significant to the wastewater system have been inventoried. Manhole, gravity sewer main, force main, and lift station locations were plotted in a Geographic Information System (GIS) using record drawings. Manhole and lift station locations were field verified and adjusted with survey grade Global Positioning System (GPS) coordinates.

Asset inventory data including years of installation, materials, sizes, pipe inverts, and manhole rim elevations were cataloged from record drawing and visually verified where needed. Asset inventory data is managed using GIS databases.

Locations of non-pipe assets, such as, lift station components, building components, and other equipment are compiled in a package of inventory spreadsheets. These assets are not mapped in GIS.

## **Condition Assessment**

*Discuss the condition assessment process, including what methods were used. Summarize the results of the assessment for each asset category.*

**Gravity Sewer Mains:** Inspections were made using either a pole mounted zoom camera (looking up or down each pipe from the manholes) or with in-line closed circuit television (CCTV) cameras. Pipes inspected with zoom camera methods were rated considering any observable roots, deposits, joint conditions, pipe wall conditions, infiltration, or other defect observations. Pipes inspected with CCTV were rated using the Pipeline Assessment Certification

Program (PACP) system condition grading system. Composite Risk of Failure ratings of 1-5 were derived for each pipe.

Percentage of gravity sewer pipes in each rating category

City				
1	2	3	4	5
27%	49%	18%	4%	2%

Multi-Jurisdictional				
1	2	3	4	5
37%	44%	16%	1%	1%

**Force Mains:** Force main conditions were estimated using pipe age, material, and break history records. The City of Kalamazoo’s force main data was compared with that of several other municipalities to establish a comparative reference. Ratings of 1-5 were developed for each force main.

Percentage of force main pipes in each rating category

City				
1	2	3	4	5
3%	12%	0%	14%	71%

Multi-Jurisdictional				
1	2	3	4	5
6%	0%	0%	0%	94%

**Manholes:** Manholes were visually inspected and rated on a scale of 1-5 based on factors related to the condition of castings, steps, structures, and infiltration.

Percentage of manholes in each rating category

City				
1	2	3	4	5
22%	48%	14%	9%	8%

Multi-Jurisdictional

1	2	3	4	5
12%	39%	20%	19%	10%

**Lift Stations:** Visual inspection and performance testing were completed to evaluate asset condition. Lift station assets, including pumps, valves, piping, structures, electrical, controls, and other assets, were rated on a scale of 1-5. Composite ratings for the station as a whole were developed.

Number of lift stations in each rating category

City

1	2	3	4	5
0%	0%	29%	71%	0%

**Criticality of Assets**

*“A summary of the method used to assess the criticality of assets considering the likelihood and consequence of failure. Discussion may include the method used to assess the criticality of assets considering the likelihood and consequence of failure and based on the condition of the assets and the determined risk tolerance, how were the assets ranked.”*

Assets were given a Risk of Failure (RoF) rating of 1-5 (5 being the worst) based on factors related to both physical and functional conditions as determined through condition assessments. Assets were given a Consequence of Failure (CoF) rating of 1-5 (5 being the worst) based on potential damage to adjacent utilities, transportation networks, and the surrounding property/environment. The magnitude of the potential service disruption was also a factor.

Assets with the higher rankings for Consequence of Failure were those that:

- Provide service to a significant portion of the system
- Serve schools / hospitals / major industry
- Are under major roads or are adjacent to other major utilities
- Are adjacent to waterways or significant wetlands

Criticality ratings were calculated as the product of an asset’s RoF and CoF, producing criticality ratings ranging from 1-25 (25 being the most critical). The most critical assets were found to be gravity sewers primarily along Burdick Street, East Michigan Avenue, and Lake Street.

## **Level of Service Determination**

*“A summary of the level of service goals the municipality has determined that it wants to provide its customers based on the municipality’s ability to provide the service and customer expectations. Discussion may include the procedures used to involve stakeholders in the level of service discussion. The trade-offs for the service to be provided. This could include any technical, managerial, health standard, safety, or financial restraints, as long as all regulatory requirements are met. How the level of service goals were determined”*

The City recognizes that the people served by the system are more than customers, they are the system owners. City staff act as stewards of the system. The City has held numerous workshops with the City Staff. Discussions at these meetings included the results of the condition assessments, the costs for various operations, maintenance and replacement strategies affecting the levels of service, and potential rate impacts. Based on the input received during these meetings, the following Level of Service Goals have been established:

1. Meet Regulatory Requirements
2. Minimize Service Interruptions
3. Minimize Public Hazards
4. Manage Storm Water Inflow and Ground Water Infiltration
5. Provide Capacity for Community Growth
6. Minimize Life Cycle Costs

## **Revenue Structure**

*“A summary of the funding structure and rate methodology that provides sufficient resources to implement the asset management program. Discussion may include the rates, charges, or other means of revenue were reviewed to determine if there will be sufficient funds to cover system operation, maintenance, replacement, capital improvement projects, and debt costs, identified in the AMP. If the current rate structure was not sufficient, discuss what increases were needed to ensure the desired level of service is sustainable and if any changes were made.”*

The City maintains a highly developed rate methodology which includes City of Kalamazoo system assets and system assets shared with adjacent partner communities. This methodology incorporates all planned Capital Improvement Projects.

The annual investment cost was evaluated and scenarios developed for cash funding and debt financing. Based on this analysis, it is expected that a combination of future rate increases and debt financing will be needed to fund capital projects.

## **Capital Improvement Plan**

*“A summary of the long-term Capital Improvement Plan that was developed to address system needs identified in the AMP.”*

A Capital Improvement Plan, CIP, showing project descriptions, cost estimates, and project timelines was developed for the capital improvements needed within a ten-year planning period. The major wastewater system projects identified in the CIP are:

### City-Owned Pipe

- Twenty-two (22) point repairs at various locations across the system
- CIPP Lining of 70,000 feet of gravity pipe
- Gravity Sewer replacement on John St., South Park St., Acker Ln., Ingleside Terr., and Egleston Ave.
- Gravity Sewer replacement of 6” diameter mainline pipes with 8” diameter pipe
- Force main replacement for Burke Ct., Woods Lake, Whites Lake and Virginia Lift Stations
- Rehab 4 lift stations and reconstruct 1 lift station
- Develop the O&M for future CCTV and cleaning needs

### Multi-Jurisdictional Owned Pipe

- 3,900 CIPP Lining of feet of gravity pipe and 8 lining spot repairs
- Replace Sanitary Siphon at Kalamazoo River

## **List of Major Assets**

*“Provide a general list of the major assets identified in the AMP.”*

The City of Kalamazoo’s major assets include:

### Assets within the City

- 1,350,067 feet of 6” to 54” diameter gravity sewer
- 5,908 manholes
- 7 lift stations
- 4,424 feet of 4” to 12” diameter force main

### Multi-jurisdictional Assets

- 375,394 feet of 8" to 78" diameter gravity sewer
- 1,281 manholes
- 9,740 feet of 36" diameter force main