Prein&Newhof
Engineers ▪ Surveyors ▪ Environmental ▪ Laboratory

Memorandum

Date:	December 29, 2020
To:	Ms. Valorie White
Company:	Michigan Department of Environment, Great Lakes, and Energy
From:	Prein&Newhof
Project #:	2130357
Re:	Charter Township of Oshtemo SAW Grant: Summary of Wastewater Asset Management Plan

This memorandum provides the summary of the Charter Township of Oshtemo 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:
Charter Township of Oshtemo
7275 W. Main Street
Kalamazoo, MI 49009
http://oshtemo.org

Contact: Ms. Elizabeth Heiny-Cogswell, Township Supervisor
Phone: (269) 375-4260

SAW Grant Project Number: 1488-01

Executive Summary

The Charter Township of Oshtemo 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
$704,850	$634,365	$70,485
Project Total	Wastewater Costs	Stormwater Costs
$704,850	$704,850	$0

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."

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

1	2	3	4	5
87.0%	7.7%	4.0%	0.8%	0.5%

Force Mains: Force main conditions were estimated using pipe age, material, and break history records. Oshtemo Township'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

1	2	3	4	5
69.5%	30.5%	0.0%	0.0%	0.0%

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

1	2	3	4	5
65.0%	29.0%	4.8%	0.9%	0.3%

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

1	2	3	4	5
1	0	7	2	1

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 9th Street from Atlantic Avenue to "N" Avenue, 11th Street from "KL" Avenue to West Michigan Avenue, the sewer along the railroad from 9th Street to "KL" Avenue, and the concrete pipe near "N" Avenue between 11th Street and Fountain Square Drive.

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 Township recognizes that the people served by the system are more than customers, they are the system owners. Township staff act as stewards of the system. The Township has held numerous public meetings and workshops with the Township Staff and Board Members. 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."

Historical operating expenses were reviewed using current audit and budget information. Based on that information, a "Test Year" was developed that reflected a baseline cost. The baseline costs included currently budgeted expenses, debt service, and leveling for base operating cost.

The customer base was reviewed, including the number of residential equivalent units in the system. Other operating and non-operating revenues were also evaluated. Prediction of customer connections was made including trending in system utilization, projection of operating costs, and anticipated inflation by expense category.

A forecasting system was developed and used to identify the estimated replacement investment for the remaining lifecycle of all assets, based on the asset inventory and condition assessment data. Project costs were estimated for capital improvements within the first 10 years. 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 or 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:

- Remove and repair one (1) utility penetration – gas main at Stadium Drive
- Eleven (11) point repairs at various locations across the system (ROF 5 & 4)
- Replace one (1) lift station – Stadium Drive
- Rehabilitate / Upgrade nine (9) lift stations with consideration of eliminating 1 lift station
- Develop and continue O&M for CCTV and cleaning needs of the system
- Develop an O&M plan for easement maintenance

List of Major Assets

"Provide a general list of the major assets identified in the AMP."

Oshtemo Township's major assets include:

- 256,530 feet of 8" to 27" diameter gravity sewer
- 1,129 manholes
- 11 lift stations
- 27,073 feet of 2" to 14" diameter force main