ASSET MANAGEMENT PLAN SUMMARY

for:

The Charter Township of Commerce

Wastewater Collection System

(as req'd under Section 603 of Public Act 84 of 2015)

MDEQ SAW Grant # 1021-01

GW Project # 18548.00

October 2017

Prepared by:

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Asset Management Plan Summary

Commerce Township Wastewater System - MDEQ SAW Grant #1021-01
October 2017

The Charter Township of Commerce applied for and received a grant to further develop an Asset Management Plan for its sanitary system through the Michigan Department of Environmental Quality's (MDEQ) Stormwater, Wastewater and Asset Management (SAW) program. Because the SAW program was funded through monies appropriated for water quality, other related infrastructure systems, such as drinking water, were not eligible for funding through the grant.

The Commerce Township Sewage Disposal System is owned by Commerce Township and is operated and maintained by the Oakland County Water Resources Commissioner (WRC). The WRC has various tools used to manage the assets it maintains, including a GIS geodatabase, Computer Maintenance Management System (Cityworks), hydraulic models, condition assessment methods, risk/prioritization models, capacity studies, asset deterioration models, and an operating and capital improvement project prioritization model. These tools are used to guide the short and long-term strategies for WRC to operate the various systems in a sustainable manner that meets the required level of service, with a focus on prioritizing assets that are most critical and being cost-effective.

The WRC "Common to All" approach was generally followed in the development of the asset management plan for this system. The following is a summary of the AMP, as required by the grant, which includes a brief discussion of the five major AMP components, a list of the plan's major identified assets, and contact information for the grant.

The five major Asset Management Plan (AMP) components are as follows:

1) Asset Inventory and Condition Assessment
2) Level of Service
3) Criticality of Assets
4) O&M Strategies and Revenue Structure
5) Long Term Funding / Capital Improvement Plan

A. Asset Inventory and Condition Assessment

A Geographic Information System (GIS) geodatabase is maintained by the WRC and accessible to Commerce Township as the primary means to inventory and map the assets in the system. The geodatabase provides a means to record the attributes associated with each asset, such as installation date (age), size, material, along with other information need for a given asset type. The geodatabase is integral to WRC's Collaborative Asset Management System (CAMS,) which allows for maintenance history and cost tracking on an asset and/or fund level.

Condition assessment tools and protocols were developed by the WRC & Giffels Webster to allow for efficient and consistent recording of asset condition. For sanitary sewer assets, a NASSCO-compliant software program stores data collected during sewer televising. The data stored can be shared with the existing CAMS system. Inspection work orders in the CAMS system are used for evaluation of other types of assets, such as manholes and other collection system structures, and for most vertical asset types, such as pumps, valves, structures, and assets within the Commerce Township Wastewater Treatment Plan (CWWTP).

Asset Management Plan Summary

Commerce Township Wastewater System - MDEQ SAW Grant #1021-01
October 2017

As part of the grant for the Commerce Township Sewage Disposal System, the GIS geodatabase inventory was reviewed for completeness and to ensure critical attributes were populated. Commerce Township has approximately 72 miles (383,000 lineal feet) of gravity sewer, 56 miles (295,000 lineal feet) of force main, and 1826 manholes. Most of the sanitary pipe and manholes within the Commerce Township System are less than 20 years old and therefore not eligible for funding of field condition assessments. The portion of the sanitary sewer system older than 20 years, which is approximately 10.25 miles (54,161 lineal feet) of gravity sanitary sewer underwent a condition assessment via televising. In addition, approximately 231 manholes were evaluated using the NASSCO / CAMS inspection work orders. The project's scope included additional analysis of individual defects and review of the consequence of failure to identify recommendations for the first five-year projects.

Horizontal Assets:

Key sewer pipe and manhole projects to be completed within the first five years are as follows:

- Welch Road main sanitary sewer pipe relining – completed in 2017.
- Sleeth Road Manhole Rehabilitation – planned for 2018
- Sleeth Road MH Vortex Unit Study – planned for 2018
- Additional sewer videotaping & MH inspections - $150,000/year each of the first five years
- Township Sewer Extension Study – scheduled for 2018
- Newton Road Force Main – scheduled for 2018
- Huron River Sewer Rehabilitation – scheduled for 2019
- Sewer Extension at Lake Sherwood / gravel pit area – scheduled for 2019
- Welch Road Force Main between Pontiac Trail & Easy Street – scheduled for 2020
- Section 36 Sewer Relining – scheduled for 2021

Vertical assets:

Pump Stations - Twenty-eight (28) pump stations were inventoried using the WRC asset hierarchy template, condition assessment data was collected and input into the CAMS system.

Key projects to be completed in the first five years are as follows:

- Campbell Creek PS Abandonment (currently under construction).
- Pump Station Capacity Study – scheduled for 2018
- Haggerty Road PS Abandonment – scheduled for 2019
- Pump Replacement at the Oakley Park PS – scheduled for 2022

CWWTP - Major assets within the Commerce Township Wastewater Treatment Plant (CWWTP) were inventoried using a WRC hierarchy template, condition assessment data was collected and input into the CAMS system.

Key CWWTP projects to be completed in the first five years are as follows:

- WWTP Ventilation Improvements – scheduled for 2018
- WWTP Power Supply Improvements – scheduled for 2018
- WWTP Channel 5 Rehabilitation – scheduled for 2018
- WWTP Rehabilitation of remaining channels and wet well – scheduled for 2019
- WWTP Sewer Line Rehabilitation – scheduled for 2022

Note that the projects listed above are in addition to the ongoing operations, maintenance and asset evaluations performed by the WRC as a part of a yearly O&M budget.

B. Level of Service

An overall level of service goal was determined that will be used as a starting point for each fund. Considerations into the level of service included compliance to regulations, operation, impact to the public and environment, safety and security, and are included in the overall business risk evaluation.

KEY:
Level of Service Goals: (Level of Service Category, Base Level of Service Goals, *Measurables*)

- **Level of Service Categories are shown in bold Font**
- Base Level of Service Goals are shown in normal Font
- Measurables are shown in italics

1) **Financial Viability & Impact**, Emergency repairs can be repaired within Utility Reserve Budgets of the system, *Exceedances of reserve budgets*
2) **Public Confidence / System Service Impact**, Minimal to some loss of service or impact on other services for less than four hours. No sanitary sewer overflows (SSO's) into homes, businesses or waterways. Minor disruption (e.g., traffic, dust, noise), *Number of service interruptions, complaints, and SSO's*
3) **Regulatory Compliance**, No significant state permit violations. Comply with All MDEQ policies, *Number of violations*
4) **Safety of Public and Employees**, Non-reportable injuries. No lost-time injuries or medical attention required. No impact to public health, *Number of injuries and any public health advisories*
5) **Redundancy,** Comply with 10 State Standards, *Number of violations*
6) **Business Risk Evaluation (BRE) Score,** Assess condition of system assets, *System risk score*
7) **Staffing,** Staffing levels and training maintained to meet level of service, *Number of open positions, annual training hours.*

The Probability of Failure (POF) and Consequence of Failure (COF) scoring matrices used in the criticality and risk analysis were developed using the strategic LOS guidance. Progress toward the goals are measured through the CAMS analytic data, and is reviewed as part of the annual Long-Range Planning (LRP) process with WRC, Commerce Township and its customers.

C. Criticality of Assets

WRC uses asset optimization software Power Plan AMP (previously known as RIVA) to assist with prioritization of cost-effective maintenance strategies and capital improvement planning. The software syncs with both the GIS geodatabase and the Cityworks software packages.

Base line Probability of Failure (POF) and Consequence of Failure (COF) factors that WRC configured into the Power Plan software as part of the "Common to All" approach was used to estimate the overall risk of the wastewater collection system assets. For pump stations, individual assets were reviewed by staff as part of the grant work, and POF and COF factors determined and input into the software.

The assets that have the greatest probability of failure and the greatest consequences associated with the failure will be the assets that are the most critical. Assets with the highest risk scores are likely candidates for immediate rehabilitation or replacement. Assets with lower scores should to be analyzed to develop the best life cycle strategy. The Business Risk Evaluation (BRE or Risk) score is the product of the POF and COF, as shown below:

BRE (Risk) = POF x COF

Using the WRC Common to All approach, the POF scoring factors for sanitary sewers (from highest to lowest weight) are the NASSCO Quick Structural Rating (QSR), NASSCO Quick Maintenance Rating (QMR), and the percent of useful life remaining, based on age and material. Pipes not inspected use only age and material as a preliminary score. Therefore, sewers with defects found during inspection and the oldest sewers will have the highest POF scores. Because only a portion of the sewerage system has been inspected, the final POF scores are still being developed.

Using the WRC Common to All approach similarly for the COF, the scoring factors for sanitary sewers (from highest to lowest weight) are the depth, diameter, water table (based on NASSCO infiltration defects found during televising) and proximity to a flood zone and major roadway. Therefore, sewers with the highest COF scores would be the larger, deeper sewers, particularly those located in floodplains, high water, or under roads.

By multiplying the POF and COF, the product becomes the Business Risk Evaluation score, or BRE. Therefore, the most “critical” sewers, or those with highest risk, would be the larger diameter pipes that have been televised with defects found, and that are deep.

The vertical assets, pump stations & major assets within the CWWTP were scored for POF based on the asset’s physical condition (60%), O&M protocols (25%), and performance (15%). The COF scores were based on the safety of the public and employee (25%), financial impact (15%), public confidence (10%), regulatory compliance (30%), and firm capacity (20%). Therefore, the most “critical” pump stations are those that have a lower physical condition and have higher firm capacities or more regulatory issues.

D. O&M Strategies and Revenue Structure

O&M strategies for the system were reviewed against the "Common to All" approach developed by WRC. These include determining future sewer cleaning and televising frequency, inspection & maintenance procedures for pump stations and the wastewater treatment plant. Costs required to implement the selected strategies were estimated and incorporated into the rate review process for the system. Commerce Township, Utility Financial Solutions, the OCWRC, and Oakland County's Fiscal Services staff all worked together to determine if the current rate structures were sufficient to meet the current needs for the management of the wastewater system, and to plan for any adjustments that may be required to meet anticipated future expenses. The Power Plan software provides estimated annual maintenance and capital needs for each fund, which is then reviewed by WRC staff and Commerce Township.

The WRC prepares a budget for Commerce Township for operations of the overall sanitary sewer collection system. This includes system assets such as pipe, manholes, lift stations and numerous assets within the wastewater treatment plant. Commerce Township also has a budget for debt and other items. The two budgets noted above were pieced together as Commerce Township contracted with Utility Financial Systems, LLC (UFS) to prepare a SAW Grant Rate Methodology report. The UFS report balance sheet shows

there is no revenue gap for budget. The rate methodology calculated by UFS under MDEQ requirements compared to the current approved rates confirm that there should not be a revenue gap compared to budgeted revenues. Also, per MDEQ SAW Grant requirements, this rate methodology demonstration of rate sufficiency was submitted to the MDEQ in April 2017 and was approved in May 2017.

E. Long Term Funding / Capital Improvement Plan

The Capital Improvement Plan (CIP) identifies system upgrades, rehabilitation and replacement needs for the future, typically over a period of 20 years, with greater emphasis on the first five years of the plan. On behalf of Commerce Township, Giffels Webster prepared a CIP that covers capital improvements to a) improve the condition of the existing collection system, b) major maintenance to the existing collection system, and c) capital improvements to increase capacity or improve condition of the future collection system. The WRC as the system operator also utilizes Power Plan to model asset deterioration and assist with identifying capital improvement needs for the near and long term. Costs for anticipated capital projects in the near term are also incorporated into the rate process. A summary of the Capital Improvement Projects is listed below:

Capital Projects, 0 to 5 years

2018 – Approx. total $5,095,000

- Sleeth Road MH Rehabilitation
- Sleeth Road Vortex Unit Study
- Continue with update of AMP
- Township Sewer Extension Study
- Pump Station Capacity Study
- WWTP Ventilation Improvements
- WWTP Power Supply Improvements
- WWTP Channel #5 Improvements
- Newton Road Force Main
- General Engineering & System Assessment

2019 – Approx. total $2,995,000

- Sewer extension @ Lake Sherwood / gravel pit area
- Haggerty Road Pump Station Abandonment
- Huron River Sewer Rehabilitation
- WWTP – Rehabilitation of remaining channels and wet well
- General Engineering & System Assessment

2020 – Approx. total $700,000

- Odor control and H2S study at various locations
- Add redundant Welch Road Force Main between Pontiac Trail and Easy Street
- General Engineering & System Assessment

2021 – Approx. total $825,000

- Reline portions of the deteriorated pipes in Section 36
- General Engineering & System Assessment

2022 – Approx. total $525,000

- WWTP Sewer Line Rehabilitation
- Replace Pumps at Oakley Park Pump Station

- General Engineering & System Assessment

Capital Projects, 6 to 10 years

- Oakley Park Road Force Main
- Diversion Sewer at Wise Road & Huron River
- Install Carey / Commerce Booster Station
- Upgrade Huron River Pump Station

Capital Projects, 10 to 20 years

- Additional Capacity to Welch Road Sanitary Gravity Trunk Line

F. Certification of Project Completeness & Project Contact Information

A signed Certification of Project Completeness form is attached.
Contact information for the grantee including name, address, and phone number is included below:

Primary Contact Name:

Mr. David Scott, Township Supervisor

2009 Township Drive, Commerce Township, MI 48390

Phone: 248-970-7070

System Manager:

Mr. Tim Prince, PE, Chief Manager

WRC Office, One Public Works Drive, Building 95 West, Waterford, MI. 48328

Phone: 248-858-1069

WRC Project Manager:

Mr. Navid Mehram, PE, Manager

WRC Office, One Public Works Drive, Building 95 West, Waterford, MI. 48328

Phone: 248-452-9245

Consultant Name:

Mr. Jason Mayer, PE, Partner

Giffels Webster, 1025 E. Maple Road, Birmingham, MI. 48009

Phone: 248-852-3100

G. Grant Amounts

On November 12th, 2014, a SAW Grant was awarded to Commerce Township in the amount of $989,496. This amount was determined by using the total eligible amount of $1,099,440 and subtracting the amount of required 10% match of $109,944. The SAW Grant Agreement Period ran January 2013 through October 2017.

An overall breakdown of the total approved SAW amount is as follows:

Projects #1 & #2 - Wastewater System Asset Management Plan

(1) AMP for Sanitary Sewer System - $694,000

(2) AMP for CT Waste Water Treatment Plant - $265,000

Projects #3, #4 & #5 - Wastewater Planning & Design Activities

(3) CTC PS Abandonment - $45,440

(4) Welch PS Abandonment - $32,000

(5) Haggerty PS Abandonment - $63,000 (this project amount was transferred to Project #1).

H. Summary of Assets in the Commerce Township Sewage Disposal System

Horizontal Assets:

Gravity Sewer Main	383,510 Lineal Feet (LF)
Sewer Manhole	1,826 each
Non-gravity Sewer Main (Force Main)	294,765 LF
Sewer Access Point	513 each
Sewer Fitting	5,269 each

Vertical Assets:

Lift Stations	28 each
Sewage Treatment Facility (CWWTP)	1 each
Grinder Pumps	1211 each

Note the following:

'Sewer Manholes' are located on gravity mains.
'Access Manholes' are located on force mains.
'Sewer fittings' include: barrel tap, bulkheads & plugs, increaser/reducer, cross fittings, tapping sleeves, tees and wyes.

Department of Environmental Quality (DEQ)
Stormwater, Asset Management, and Wastewater (SAW) Grant
Wastewater Asset Management Plan
Certification of Project Completeness

Completion Date OCTOBER 29, 2017
(no later than 3 years from executed grant date)

The CHARTER TOWNSHIP OF COMMERCE *(legal name of grantee)* certifies that all wastewater asset management plan (AMP) activities specified in SAW Grant No. 1021-01 have been completed and the implementation requirements, per Part 52 of the Natural Resources and Environmental Protection Act, 1994, PA 451, as amended, are being met. Section 5204e(3) requires implementation of the AMP and that significant progress toward achieving the funding structure necessary to implement the AMP be made within 3 years of the executed grant.

Please answer the following questions. If the answer to Question 1 is No, fill in the date of the rate methodology approval letter and skip Questions 2-4:

1) Funding Gap Identified: Yes or (No)
   If No - Date of the rate methodology approval letter: MAY 15, 2017.
2) Significant Progress Made: Yes or No N/A
   (The DEQ defines significant progress to mean the adoption of an initial rate increase to meet a minimum of 10 percent of any gain in revenue needed to meet expenses, as identified in a 5-year plan to eliminate the gap. A copy of the 5-year plan to eliminate the gap must be submitted with this certification.)
3) Date of rate methodology review letter identifying the gap: N/A.
4) An initial rate increase to meet a minimum of 10 percent of the funding gap identified was adopted on N/A.

Attached to this certification is a brief summary of the AMP that includes a list of major assets. Copies of the AMP and/or other materials prepared through SAW Grant funding will be made available to the DEQ or the public upon request by contacting:

DAVID SCOTT at (248) 960-7070 dscott@commercetwp.com
Name Phone Number Email

Signature of Authorized Representative (Original Signature Required) 10-25-17 Date

DAVID SCOTT, TOWNSHIP SUPERVISOR
Print Name and Title of Authorized Representative