



COURTLAND TOWNSHIP, MI

WASTEWATER SYSTEM

ASSET MANAGEMENT PLAN

Prepared by:

williams&works
engineers | surveyors | planners

Project No. 216175

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I. Executive Summary

Courtland Township received a SAW grant in 2013 and was able to collect information about its wastewater system. The information collected was used to make an inventory of the existing wastewater system in the Township. The wastewater system is comprised of manholes, gravity sewer pipe, laterals, submersible pump stations, grinder pump stations, house grinder pumps, force mains, cleanouts, and valves. These components are operated and maintained by Main-Tech Services, the system's contract operator. The replacement value of the assets in the system is \$11.4 million. As part of this study, an analysis was performed to assess what level of service this system provides. Using visual and televised inspection methods, many of the wastewater system assets in the Township were given a condition rating. Assuming all structures not inspected are in good condition, the results show that 3.5% of the sewer system is in poor condition, 7.5% is in fair condition, and 89.0% is in good condition. Using this condition rating, a capital improvement plan (CIP) was created. This considers both the likelihood and consequence of failure of each asset. The CIP proposed approximately \$76,000 of work in the next 1-3 years, \$78,000 in 3-5 years, \$112,000 in 5-10 years, \$54,000 in 10-15 years, and \$64,000 in 15-20 years. Based on the revenue structure used by the Township, these improvements should be accomplished within the time frames specified.

II. Introduction

Courtland Township owns a wastewater system surrounding Myers Lake, Little Myers Lake, Brower Lake, and Little Brower Lake and extending into adjacent subdivisions. The system receives about 82,000 gpd of water in the summer and about 72,000 gpd in the winter and serves about 300 homes. The wastewater works its way south through a series of gravity pipes, pump stations, and force mains until it is ultimately discharged to the North Kent Sewer Authority. The Township was awarded a Stormwater, Asset Management Plan, and Wastewater (SAW) Grant in 2013 which it used to locate, inspect, and inventory its wastewater system. The project total cost was \$67,258. The Township received a grant of \$60,532 and matched 10% at \$6,726.

The work began with making a GIS map of the system based on construction record drawings and aerial images. Next, much of the sewer and many of the manholes constructed before 1993 were inspected to give a representation of the system's condition. All the inspection data was compiled into the GIS map. The map shows all sanitary manholes, gravity pipes, pump stations, grinder pump stations, house grinder pumps, force mains, clean outs, and air release valves. Each asset has attributes stored in the map such as pipe length, material, condition, year installed, etc. The map was used to organize all information collected throughout the study. The map was provided to the Township for reference and to aid in future projects.

III. Asset Inventory

Courtland Township has a wastewater system consisting of force main, gravity sewer, laterals, manholes, submersible pump stations, grinder pump stations, house grinder pumps, and force main valves and clean outs. The system is maintained by Main-Tech Services, the contract operator. The system assets are shown Table 1. Table 1 also shows the estimated replacement value of all the assets. The components were located and recorded based on

construction records and aerial images. The information was imported into and maintained by ArcGIS. Each component was assigned an ID Tag coded to provide specific information about it. Maps were created to illustrate different properties of the system such as pipe age, pipe material, and pipe size.

Table 1: Courtland Township Wastewater System Assets

Type	Amount	Unit	Price	Value
1.25-inch Force Main	3869	ft	\$30	\$116,000
2-inch Force Main	3174	ft	\$30	\$95,000
2.5-inch Force Main	689	ft	\$30	\$21,000
3-inch Force Main	1333	ft	\$35	\$47,000
4-inch Force Main	6738	ft	\$40	\$270,000
6-inch Force Main	3927	ft	\$50	\$196,000
8-inch Force Main	6241	ft	\$60	\$374,000
8-inch Gravity Sewer	41316	ft	\$50	\$2,066,000
Sanitary Laterals	19536	ft	\$40	\$781,000
Manholes	206	ea	\$3,000	\$618,000
Force Main Valve/Clean Out	13	ea	\$4,000	\$52,000
Pump Stations	10	ea	\$400,000	\$4,000,000
Grinder Pump Stations	3	ea	\$200,000	\$600,000
House Grinder Pumps	44	ea	\$50,000	\$2,200,000
			Total	\$11,436,000

*All values in 2018 dollars

Sanitary Sewer and Manholes

The gravity sewer is made up of three different materials. Most of the sewer is polyvinyl chloride (PVC), but one stretch of pipe along the edge of Brower Lake is vitrified clay (VCP). Every section of pipe that discharges into a manhole is cement-lined ductile iron (DI). The pipe materials are laid out in the Table 2.

Table 2: Gravity Pipe Materials

Material	Length of Pipe [ft]	Percent of System
DI	747	1.8%
PVC	40885	97%
VCP	516	1.2%

The sewer was installed over a range of years. The first part of the system was installed in 1978. This comprised most of the sewer that encircles the lakes. More projects were completed in 1985, 1990, 1995, 2003, 2012, 2013, and 2017. The amount of pipe installed with each project is shown in Table 3.

Table 3: Age of Sewer Pipe

Year Installed	Length of Pipe [ft]	Percent of System
1978	27593	65%
1985	141	0.3%
1990	1640	3.9%
1995	1158	2.7%
2003	7011	17%
2012	1716	4.0%
2013	2255	5.4%
2017	635	1.5%

Pump Stations

Courtland Township owns and maintains 10 duplex submersible pump stations. This style of pump station has a buried, cylindrical concrete wet well that receives wastewater through a gravity pipe. Submerged pumps in the bottom operate based on the water level in the wet well. The pumps pull wastewater from the wet well and discharge it through a force main that exits the wet well. The force mains from these pump stations are PVC with ductile iron pipe where valves or cleanouts are located. There is a valve vault adjacent to the wet well that the force main runs through. This provides an area to have isolation valves and a bypass connection. A local control panel is mounted above ground to control the pump operation and provide a generator hookup. These pump stations are inspected on a weekly basis by Main-Tech Services. During inspections, notes are taken on the condition of the concrete, control panel, wet well, and valve vault. Furthermore, run times are recorded, the force mains are flushed, and any general comments about performance are noted.

Grinder Pump Stations

The Township also owns 3 duplex grinder-pump stations. These are very similar in operation to the submersible pump stations but have smaller grinder pumps in the wet well. The wet wells are small fiberglass cylinders rather than concrete chambers. The force mains from these pump stations are PVC with ductile iron pipe where valves or cleanouts are located. These stations are also inspected weekly.

House Grinder Pumps

When a house is located at a lower elevation than the sewer main, or if a house discharges directly into a force main, it requires its own grinder pump. There are 44 houses in Courtland Township that have a grinder pump. These stations have a small, underground, fiberglass chamber with a grinder pump inside. The chamber collects wastewater from the house through a gravity pipe, and the grinder pump discharges it to the main sewer when it fills through a small diameter pressure line. There is a local control panel that regulates the operation of the pump. These pump stations are inspected and cleaned annually.

The house grinder pumps are located at the following addresses: #9812, #9768, #9756, #9610, #9770, #9776, #9796, #9802, #9808 Myers Lake Ave; #7520 Hessler Dr; #8450, #8480, #8484, #8488, #8530, #8650, #8672, #8686, #8810 Brower Lake Ave; and #8369, #8405, #8415,

#8423, #8431, #8619, #8635, #8645, #8651, #8659, #8669, #8679, #8685, #8689, #8693, #8697, #8705, #8843, #8851, #8861, #8869, #8887, #8893, #8909, #8925 Je-Ne-Be Ave.

All wastewater pump station data is summarized in Table 4.

Table 4: Wastewater System Pump Station Data

Pump Station Name	Type	Year Built	Pumps Replaced	Rim Elev. [ft]	Depth [ft]	Wet Well Dia. [ft]	Operating Range [ft]	Influent Inv. Elev. [ft]	Discharge Pipe Elev. [ft]	Force Main Size [in]	Force Main Length [ft]
PS1	Submersible Pump	1978	2005	910.00	21.9	6.5	2.00	894.13	903.00	8	14,868
PS2	Submersible Pump	1978		903.50	15.9	6.5	0.55	893.63	897.00	4	708
PS3	Submersible Pump	1978		904.50	18.6	6.5	0.50	891.90	896.50	4	760
PS4	Submersible Pump	1978		904.50	18.1	6.5	0.50	892.36	896.00	4	1,630
PS5	Submersible Pump	1978		901.50	19.1	6.5	0.50	888.43	894.00	5	656
PS6	Submersible Pump	1978	2005	900.00	14.7	6.5	1.09	891.32	896.20	6	2,023
PS7	Submersible Pump	1978	2005	901.50	21.2	6.5	1.00	886.31	891.00	6	1,249
PS8	Submersible Pump	1978	2005	896.50	25.8	6.5	0.80	876.70	890.50	4	867
PS9	Submersible Pump	1978	2005	886.00	16.4	6.5	0.71	875.62	879.50	4	216
PS10	Submersible Pump	1978	2005	879.00	16.5	6.5	0.53	868.49	872.00	4	2,556
GPS1	Grinder Pump	1978		900.75	10.4	3.0	6.00	893.87	895.00	2	380
GPS2	Grinder Pump	1978		907.75	13.9	3.0	6.00	897.35	897.40	2	35
GPS4	Grinder Pump	1978		879.50	11.8	4.0	6.00	871.20	874.00	2	2,633

IV. Condition Assessment

Much of the wastewater collection system was inspected as part of this project. Gravity pipes were televised in order to assign them a condition rating. Almost all of the sewer constructed in 1978 was inspected with this project. The pipes were televised using closed circuit television (CCTV). A robotic camera was sent down each pipe and took pictures of the interior. Many manholes were visually inspected to show their conditions. The manhole upstream of each pump station wet well and 2 manholes downstream of each force main discharge were visually inspected. A certified inspector looked in each of these manholes and rated the condition of the flow channels, steps, cover, and concrete. This process gave a good indication of the condition of the worst parts of the system. Each component was given a condition rating on a 1 to 5 scale. A rating of 1 meant the structure is in "like new" condition. A rating of 5 indicated that the structure had failed and needs immediate repair. These ratings for pipes and manholes are based on Pipeline Assessment Certification Program (PACP) and Manhole Assessment Certification Program (MACP) standards, respectively.

The pump stations were also individually inspected as part of this project. During inspection, notes were taken on the condition of the site including concrete, control panel enclosures, hatches, and access. The wet well was opened and visually inspected for grease buildup, cracks, slide rail condition, and float operation. The general condition of the valve vault was assessed. Any performance problems of the pumps and general station comments were noted. Pump station reports are attached to this report in Appendix B.

The condition ratings were coded in GIS and are shown in the Condition Map in Appendix A. Table 5 shows a summary of the results of the inspections. It is assumed that any pipe or manhole not included in this study is in good condition.

Table 5: Condition Assessment of Wastewater Collection System

Condition	Number of Pipes	Length of Pipe [ft]	Number of Manholes
Not Inspected	115	23554	173
1	16	3374	12
2	54	10597	20
3	13	3164	1
4	7	1276	0
5	1	184	0
Total	206	42149	206

Figures 1 through 25 show examples of structural defects, the pipe condition with which they correlate, and the recommended improvement.



Figure 1: PS5_P077A; Condition: 5; Hole: Spot Repair

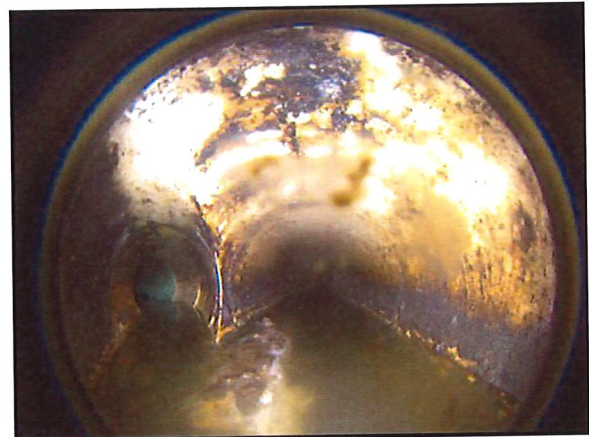


Figure 3: PS7_P044; Condition: 4; Deposits: Water Jet

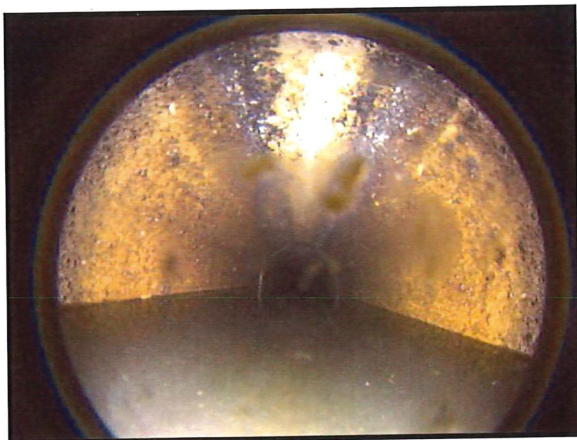


Figure 2: PS7_P044; Condition: 4; Water Level: Water Jet



Figure 4: PS8_P048; Condition: 4; Water Level

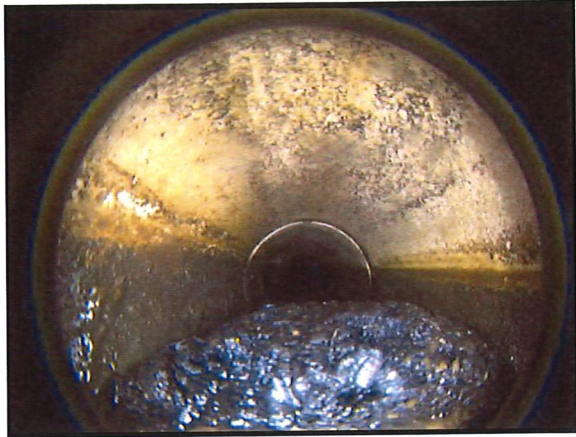


Figure 5: PS2_P099; Condition: 4; Obstacle: Water Jet

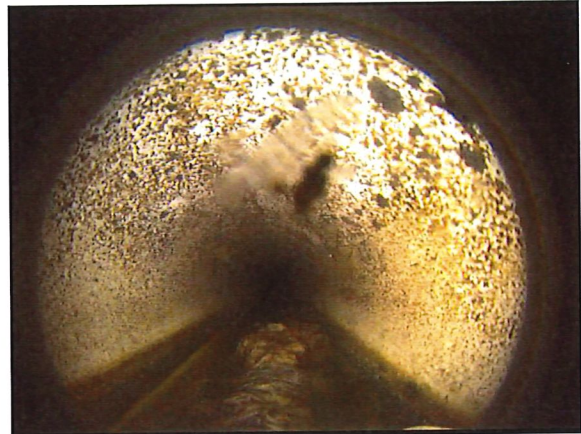


Figure 8: GP4_P084; Condition: 4; Deposits: Water Jet

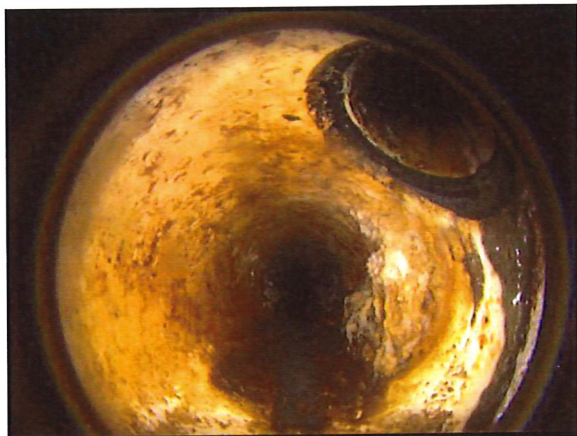


Figure 6: PS4_P121; Condition: 4; Deposits: Water Jet

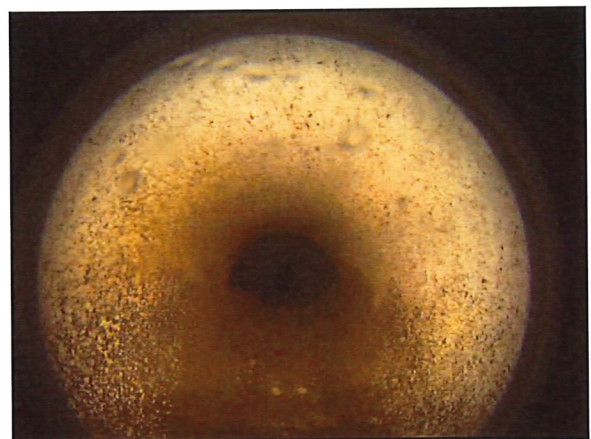


Figure 9: PS2_P098; Condition: 4; Deposits: Water Jet



Figure 7: GP2_P019; Condition: 4; Deposits: Water Jet

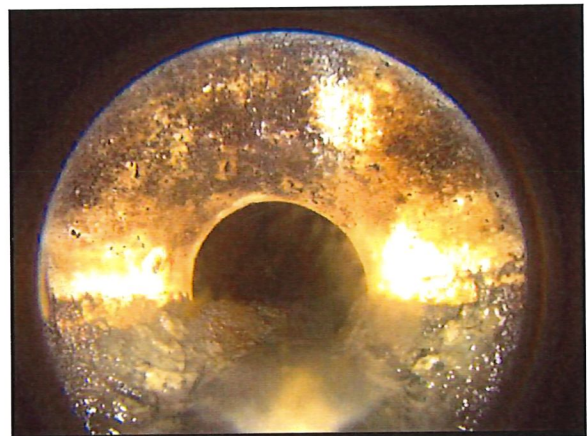


Figure 10: PS6_P023; Condition: 3; Deposits: Water Jet

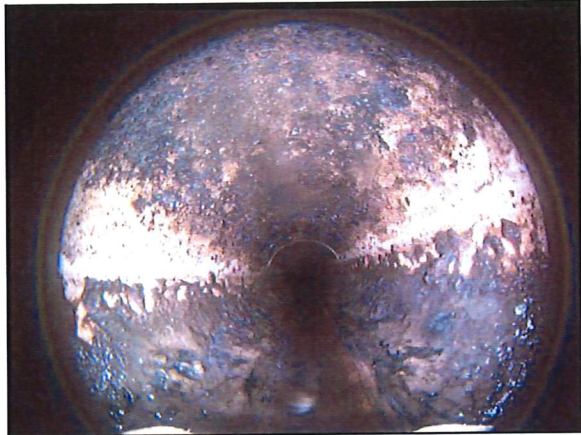


Figure 11: PS7_P036B; Condition: 3; Deposits: Water Jet

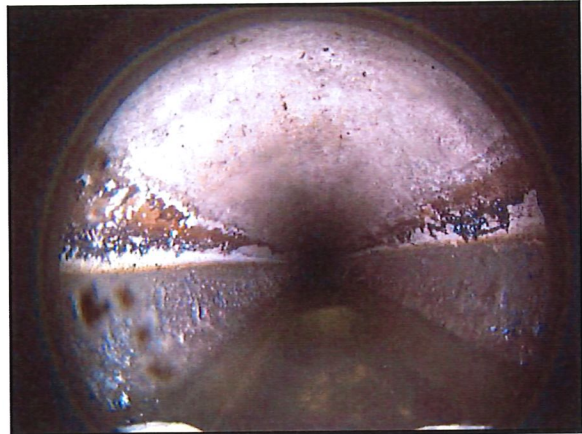


Figure 14: PS2_P100; Condition: 3; Deposits: Water Jet

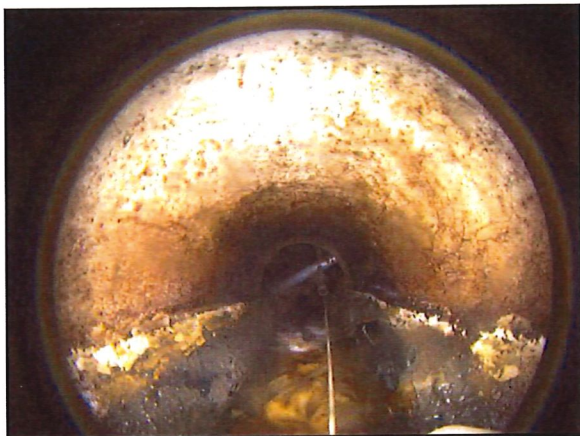


Figure 12: PS9_P055; Condition: 3; Deposits: Water Jet

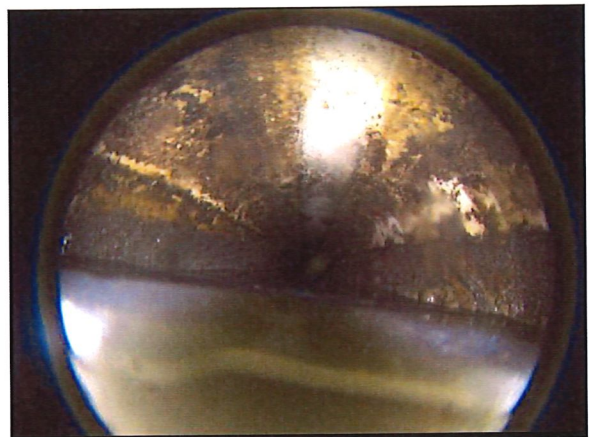


Figure 15: PS7_P043; Condition: 3; Deposits: Water Jet

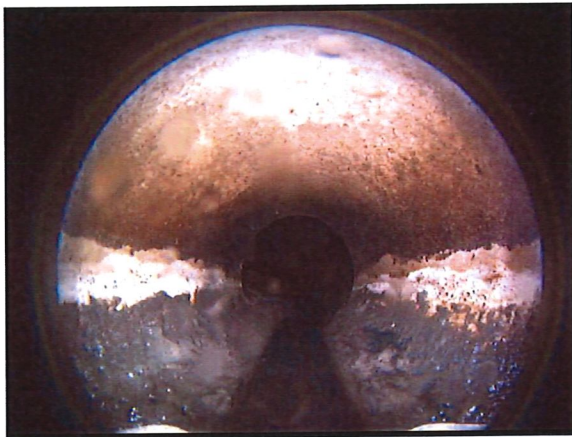


Figure 13: PS8_P050; Condition: 3; Deposits: Water Jet

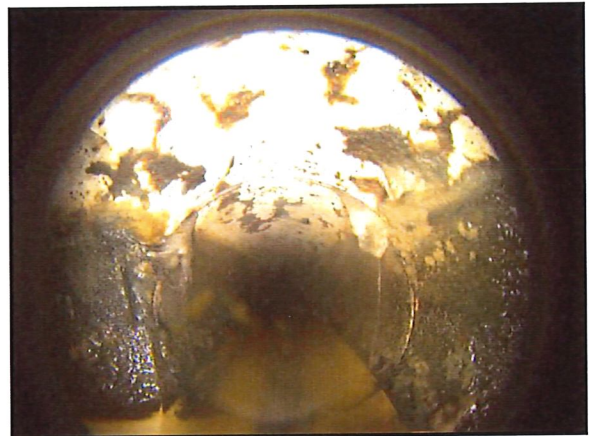


Figure 16: PS6_P024; Condition: 3; Deposits: Water Jet

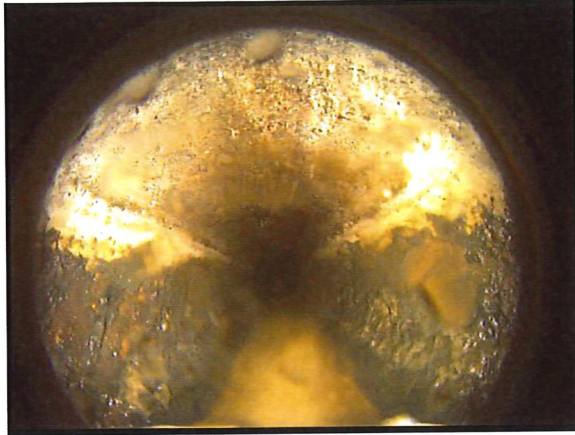


Figure 17: PS1_P002; Condition: 3; Deposits: Water Jet



Figure 20: PS10_082A; Condition: 3; Encrustation

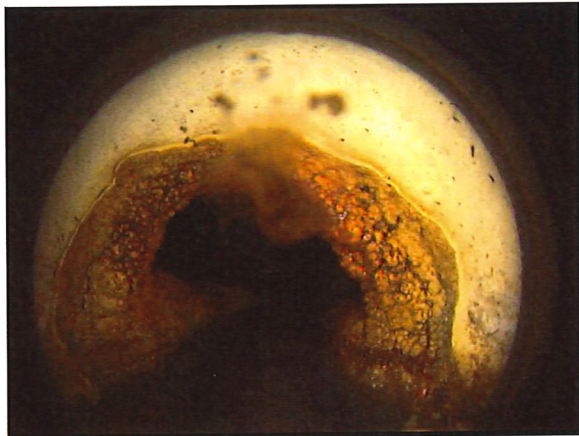


Figure 18: PS5_P031; Condition: 3; Encrustation

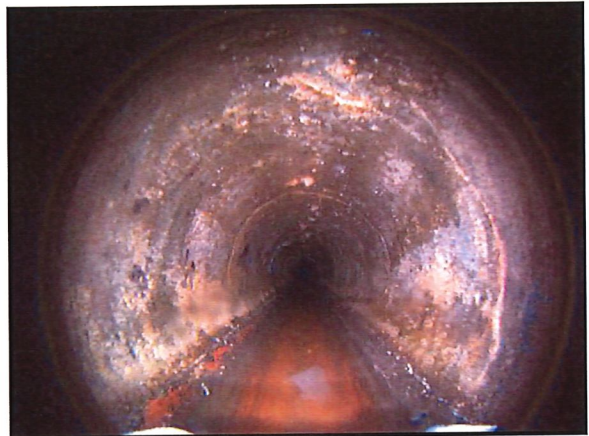


Figure 21: PS4_P114; Condition: 3; Crack Multiple: CIPP



Figure 19: PS10_P065; Condition: 3; Spiral Crack

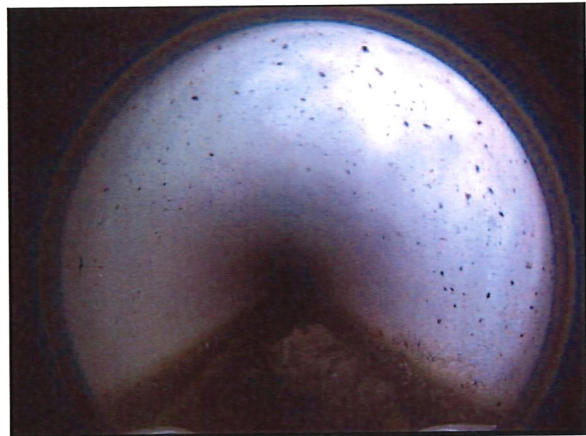


Figure 22: PS5_P033A; Condition: 3; Obstacle: Water Jet

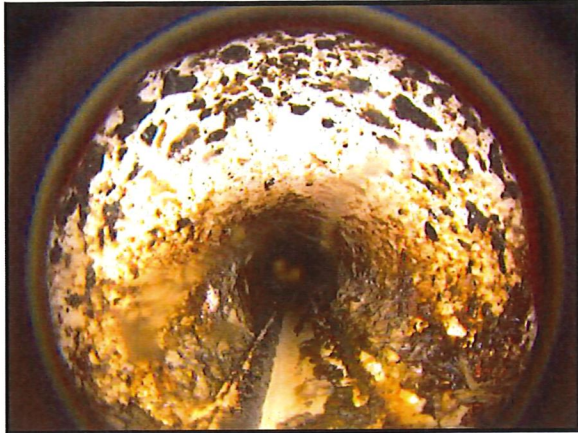


Figure 23: PS6_P021; Condition: 3, Deposits: Water Jet

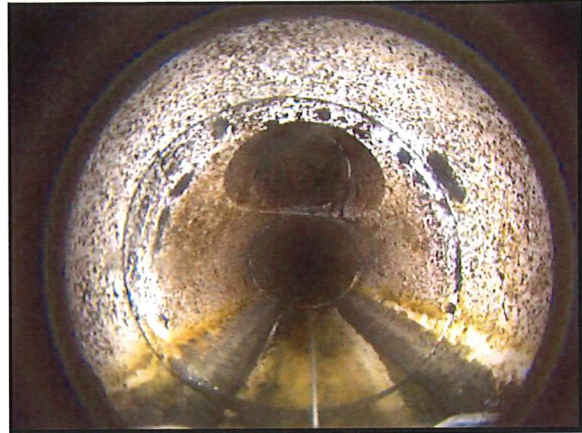


Figure 25: GP2_P016; Condition: 0; Tap Factory

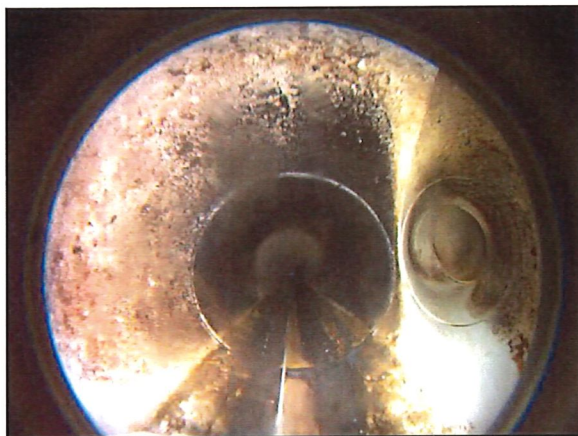


Figure 24: PS4_P120; Condition: 2; Deposits Fine: Water Jet

V. Critical Assets

An assessment was performed to determine which parts of the system are critical. This assessment started with assigning each sewer pipe an “importance” factor based on the consequence associated with its failure. Sewer pipes that serve less than 10 properties were assigned a 1 rating. Pipes that serve more than about 25% of the system were assigned a 5 rating. This information is shown in the Importance Map in Appendix A. The map shows that the pipes that carry wastewater from a force main discharge to a subsequent pump station tend to be important. The most important of these are the ones that feed the largest pump stations. This rating system was extended to the manholes, pump stations, and force mains using the same criteria. Each manhole assumes the importance of the pipe downstream, and each lift station or force main has the same importance factor of the pipe upstream.

The most important pump stations to keep maintained are PS1, PS6, PS7, PS8, and PS9. These handle most of the flow in the system. PS2, PS3, PS4, PS5, and PS10 handle less wastewater but are still important. The three grinder pump stations handle very little water, and house grinder pumps each only handle one house. These two types of stations are the least important to keep maintained.

To assign assets a criticality rating, both the asset’s condition and importance were taken into account. The two factors were multiplied together to yield a result between 1 and 25. These

results for the gravity pipes are shown in the Criticality Map in Appendix A. The criticality ratings were used to decide which pipes should be included in the capital improvement plan. Pipes with a high criticality rating were generally chosen to be fixed first. In this way, both the likelihood and consequence of failure were considered.

VI. Level of Service Required

The sewer system operates 24 hours per day, 7 days per week, 365 days per year. Each part of the system is functional at all times except when it is down for maintenance. The goal of the Township is to maintain the system well enough and monitor it so that backups never occur. In order to make sure this is possible, specific measures have been put into place. Each pump station has a generator connection, so a generator can be hooked up to run the pump station when power is out. Main-Tech Services has a generator owned by the township to use in the case of an emergency. Each pump station has a known amount of storage capacity, so if the downstream system is shut down, the pump station can be shut off for a known amount of time before backups begin. Spare pumps are kept by Main-Tech to use in case of pump failures. Each pump station also has a valve vault with a bypass connection. If a pump station is inoperable due to a component failure, bypass pumps or tanker trucks can be used to keep the system functional. Each pump station is equipped with high level alarms and is inspected weekly. Main-Tech is on call at all times if there is a problem.

The wastewater system has a few weaknesses that are important to note. The system generally collects wastewater and conveys it south and east until it reaches Pump Station 1. Pump Station 1 discharges the whole community’s wastewater through a 14,900-foot force main to the North Kent Sewer Authority. If there was a failure of this force main, pump station, or upstream pipe, the whole community would lose its sewer utility. For this reason, these aspects of the system should be very well maintained.

VII. Revenue Structure

The revenue for the wastewater system fund comes from sewer rates charged to Township residents who are sewer users. The Township sewer board reviews these rates on yearly basis. When reviewing the rates, the board keeps in mind the annual costs of running the system and paying Main-Tech services to operate and maintain it. They also look at future growth and expansion to save money for future projects and ongoing maintenance costs. Table 6 shows the current rates and fees for Courtland Township Sewer.

Table 6: Courtland Township Sewer Fees—2018

Trunkage (Hook-up)	\$2,600 per unit plus \$3,420 North Kent Sewer Authority Fee
Availability	\$3,700 per unit
DPW Inspection Fee	\$74 per hour
Quarterly Usage	\$165 per quarter (in advance)

All money collected from these rates and fees goes into the wastewater system fund. The fund is used to pay for sewer system operation and maintenance, debt service, and capital improvements. In the 2016-2017 budget, \$152,098 was paid to operation and maintenance, \$33,577 was paid to debt service, and \$152,000 was paid to capital improvements.

VIII. Capital Improvement Plan with Funding Gap Analysis.

Based on this study, a recommended capital improvement plan was created. It breaks down the work that needs to be done based on the likelihood and consequence of failure. These are based on the criticality ratings of the components. When creating the improvement schedule, structural defects in structures were more crucial than operation and maintenance improvements. Furthermore, the assets with a higher importance factor were given priority to get fixed first. The plan shown in Table 7 breaks down the recommended work for the next 20 years. It includes repairing all structural and operation and maintenance deficiencies as well as inspecting the rest of the sewer system not included in this project.

Table 7: Recommended Improvement Plan Costs

Time Frame	Action	Amount	Unit	Price	Cost	Time Frame Sum
1-3 Years	Spot Repair	2	ea	\$5,000	\$10,000	\$76,000
1-3 Years	Pipe Lining (CIPP)	516	ft	\$100	\$52,000	
1-3 Years	Manhole Repairs	3	ea	\$4,500	\$914,000 / 3500	
3-5 Years	Pipe Water Jetting	4624	ft	\$3	\$12,000	\$78,000
3-5 Years	Wet Well Coating	1	ea	\$15,000	\$15,000	
3-5 Years	Level Control Panels	2	ea	\$6,000	\$12,000	
3-5 Years	Paint Control Panels	13	ea	\$3,000	\$39,000	
5-10 Years	Pipe Water Jetting	10597	ft	\$3	\$26,000	\$112,000
5-10 Years	Manhole Repairs	19	ea	\$4,500	\$86,000	
10-15 Years	Pipe Evaluation	10780	ea	\$5	\$54,000	\$54,000
15-20 Years	Pipe Evaluation	12774	ft	\$5	\$64,000	\$64,000
					Total	\$384,000

*All values in 2018 dollars

The overall cost of the 1-3 year plan is \$76,000. This includes fixing all the structural problems with the gravity pipe in the Township and repairing manholes in poor condition. The pipe improvements are shown explicitly on the improvement maps in Appendix A. The manholes that need to be repaired are PS9_SMH054, GPS4_SMH083, and PS1_SMH006.

The 3-5 year plan will cost about \$78,000 and will fix all sewers in fair condition or worse and repair known problems with pump stations. The sewers in to be repaired are have a condition rating of 3, 4, or 5 and are shown in the improvement maps in yellow. orange or red. The pump station reports in Appendix B detail what is needed to repair each one.

The 5-10 year plan will cost about \$112,000 and will resolve any operation and maintenance deficiencies of the gravity sewer and repair any manholes not in good condition. This includes water jetting all the sewer with a condition rating of 2. This will help prevent future problems in these lines.

The 10-15 year plan includes televising the rest of the sewer that was built before 1992. This plan will cost about \$54,000. The 15-20 year plan will cost about \$64,000 and will cover inspecting the rest of the wastewater system in the Township. The current funding source should be adequate to pay for these improvements within the time frames specified.






Appendix A

Courtland Township Wastewater System Maps








- Pipe Sizes and IDs
- Pipe Importance Factors
- Pipe Conditions/Improvements
- Pipe Criticality/Improvements

Courtland Township Wastewater Collection System


Legend

-  Valves
-  Manholes
-  Grinder Pump House
-  Duplex Grinder Pump Station
-  Submersible Pump Station

Force Main Sizes

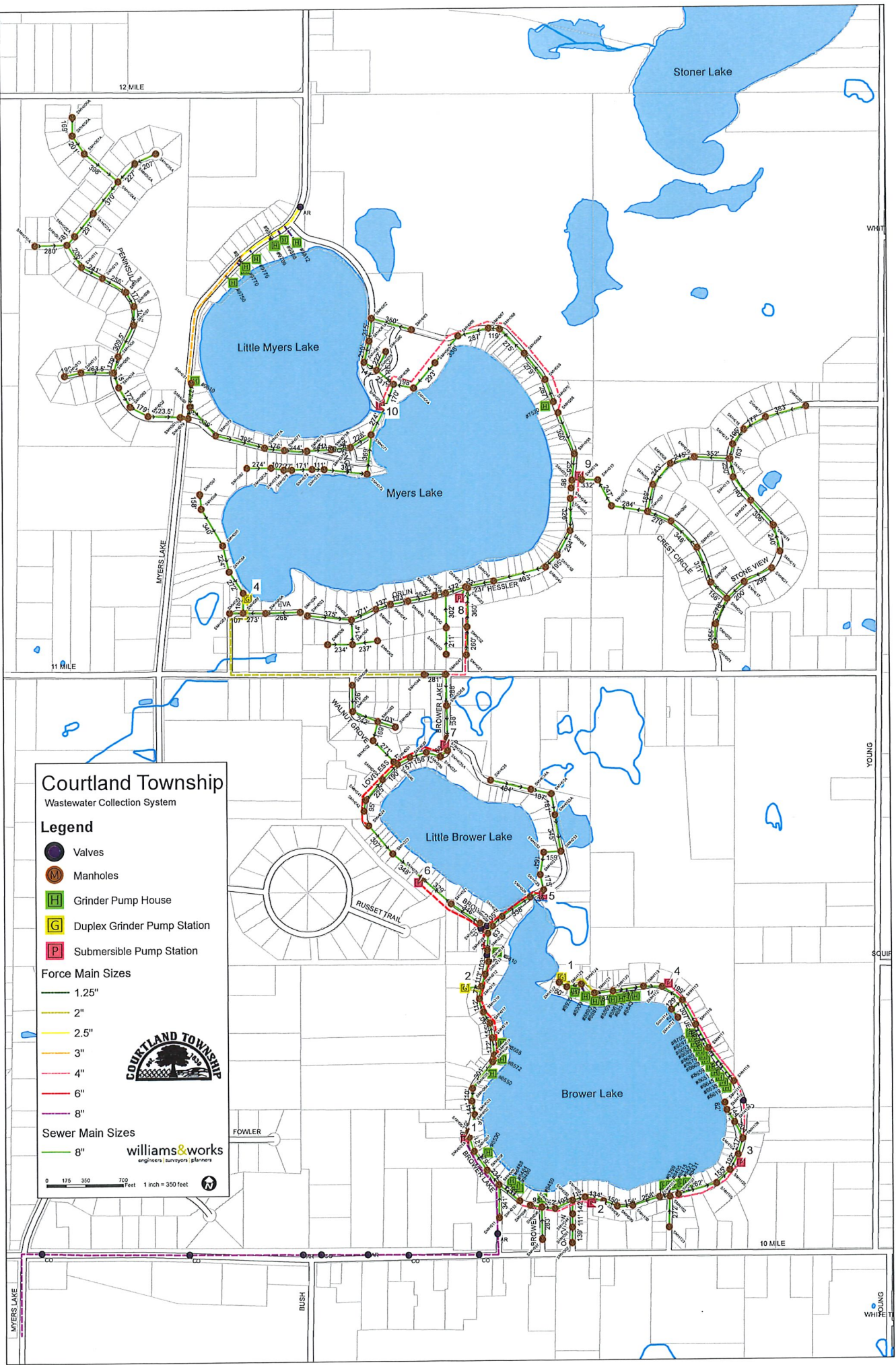
-  1.25"
-  2"
-  2.5"
-  3"
-  4"
-  6"
-  8"

Sewer Main Sizes

-  8"








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Courtland Township
Wastewater Collection System
Importance Factor Rating






Legend

-  Valves
-  Manholes
-  Grinder Pump House
-  Duplex Grinder Pump Station
-  Submersible Pump Station

Force Main

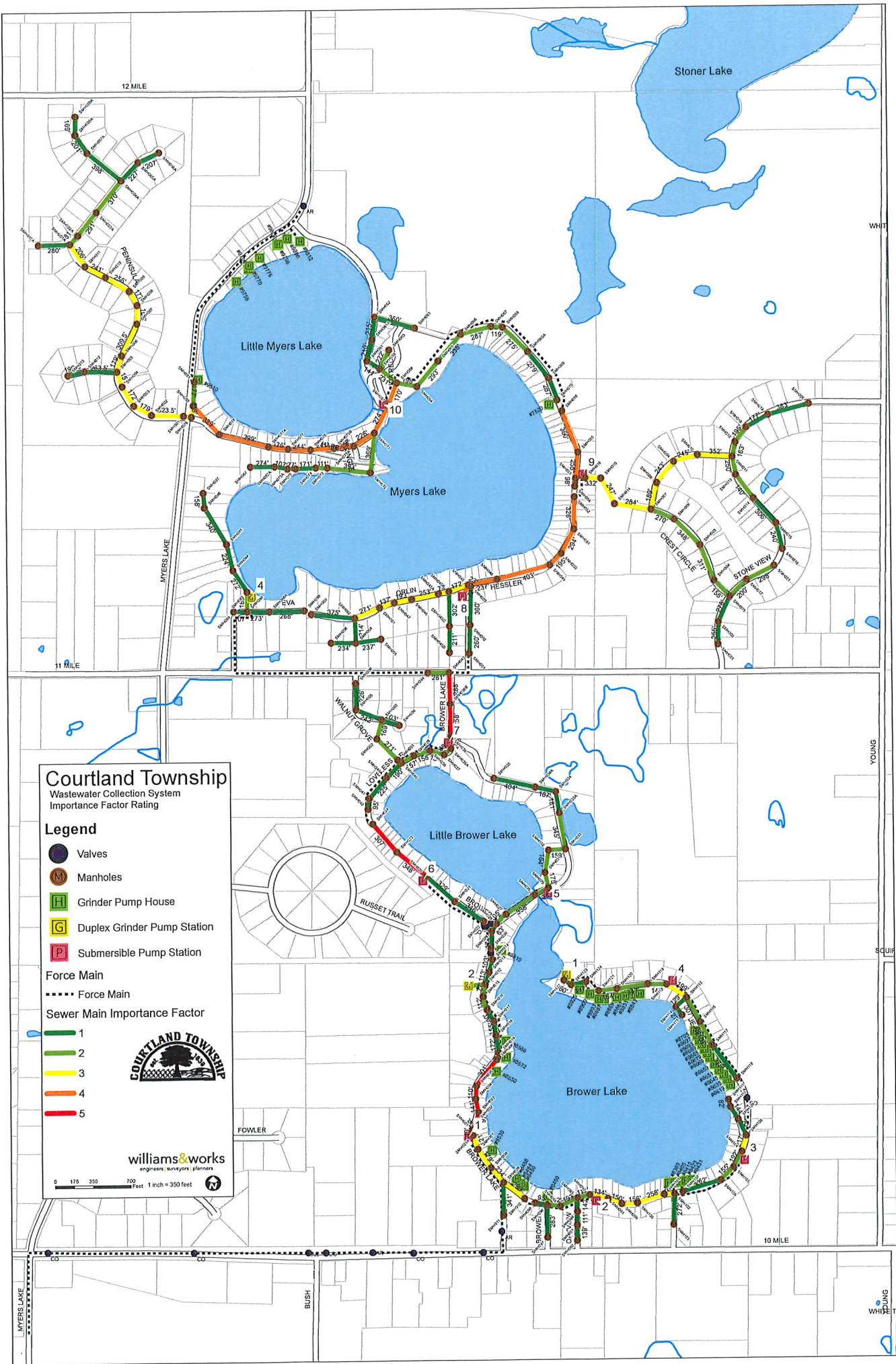
-  Force Main

Sewer Main Importance Factor

-  1
-  2
-  3
-  4
-  5



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12 MILE

11 MILE

10 MILE

Stoner Lake

Little Myers Lake

Myers Lake

Little Brower Lake

Brower Lake

WHT

YOUNG

SCUI

WHISE

MYERS LAKE

BUSH

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Courtland Township
Wastewater Collection System
Condition Rating and Improvement Plan








Legend

-  Valves
-  Manholes
-  Grinder Pump House
-  Duplex Grinder Pump Station
-  Submersible Pump Station

Force Main

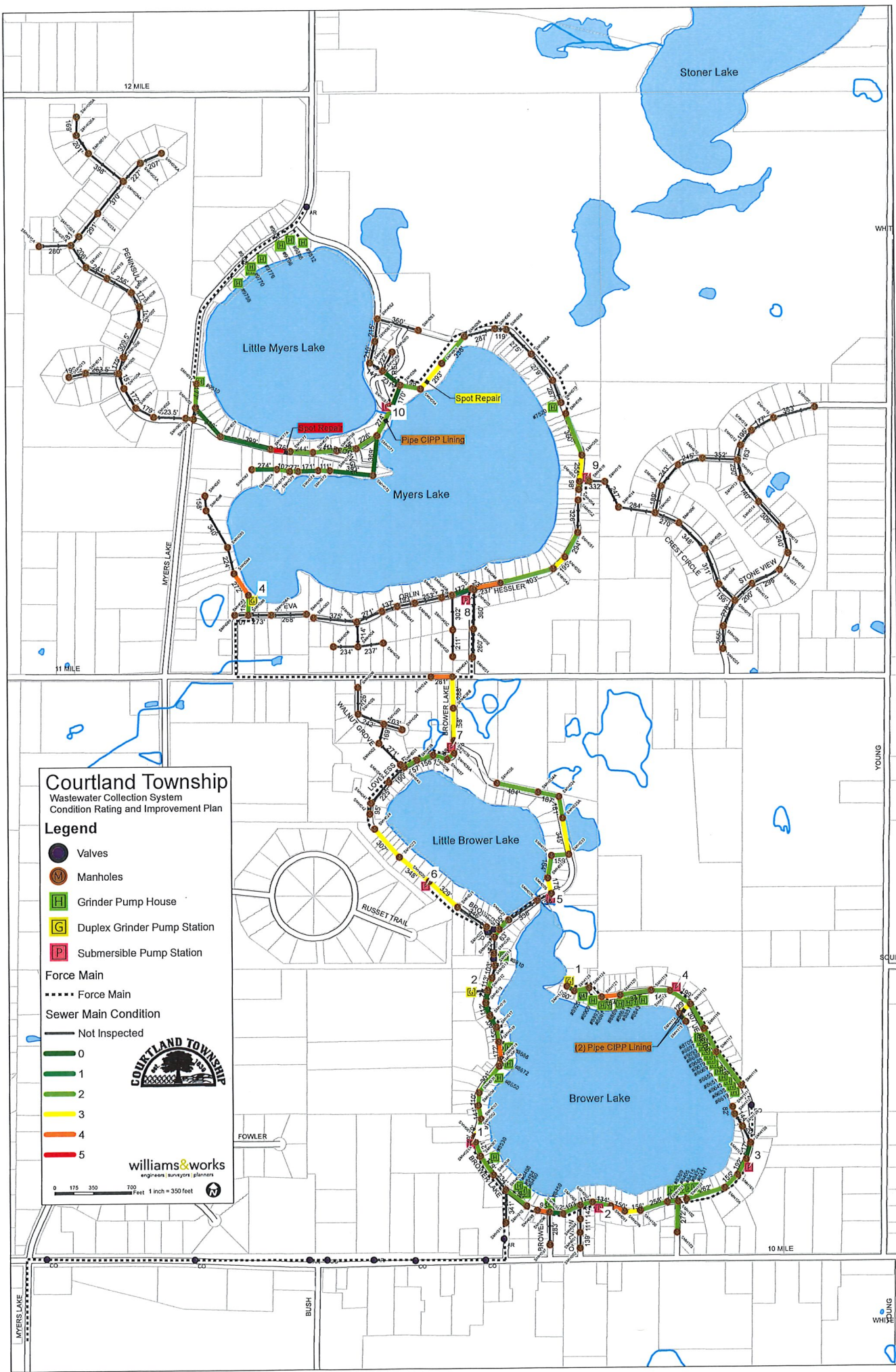
-  Force Main

Sewer Main Condition

-  Not Inspected
-  0
-  1
-  2
-  3
-  4
-  5








williams & works
engineers, surveyors, planners



Courtland Township
Wastewater Collection System
Criticality Rating and Improvement Plan


Legend

-  Valves
-  Manholes
-  Grinder Pump House
-  Duplex Grinder Pump Station
-  Submersible Pump Station

Force Main

----- Force Main

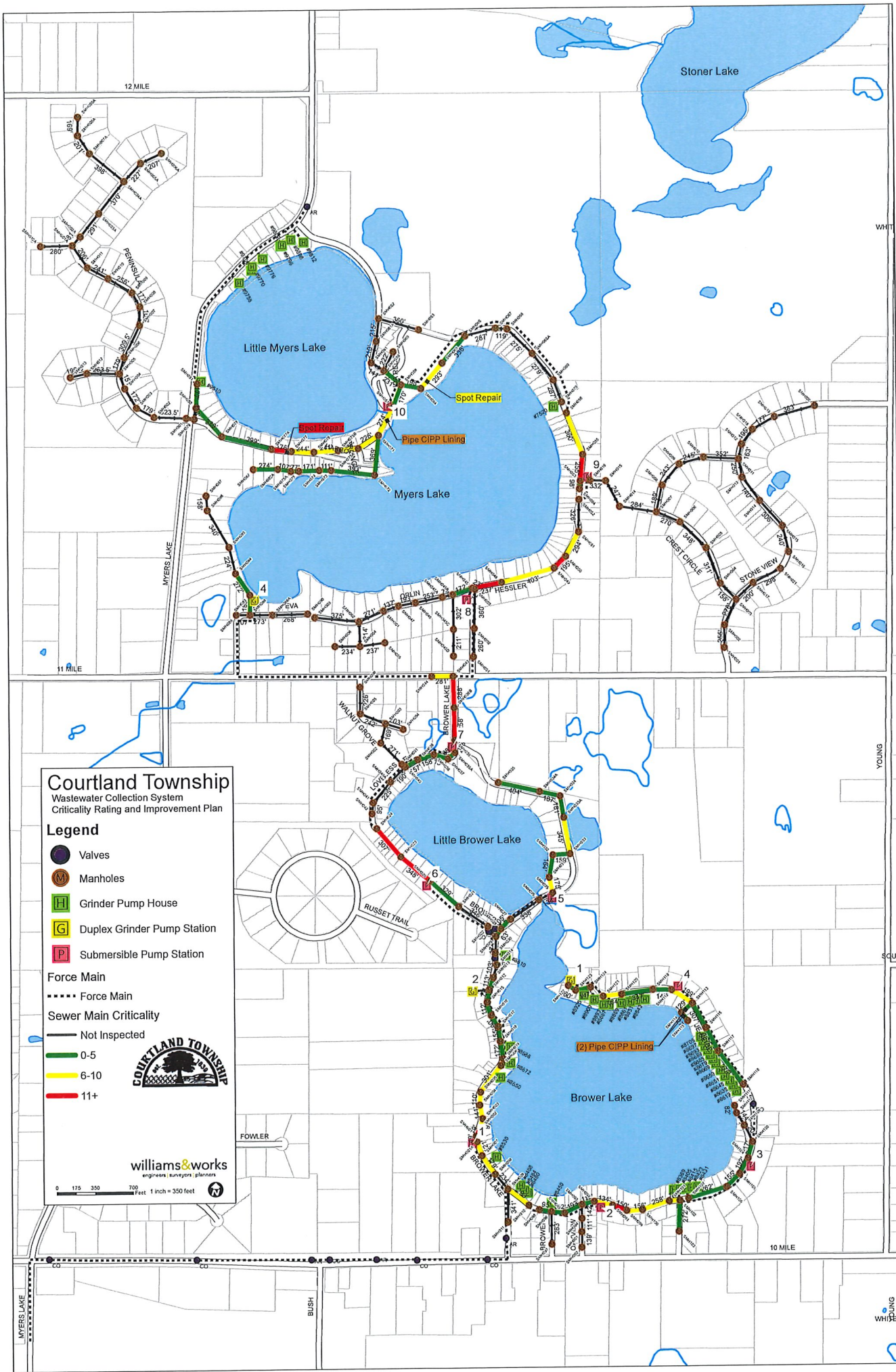
Sewer Main Criticality

-  Not Inspected
-  0-5
-  6-10
-  11+



williams & works
engineers | surveyors | planners

0 175 350 700 Feet 1 inch = 350 feet



Appendix B

Pump Station Reports

Courtland Township
Sanitary Lift Station Review Sheet

Inspection Date: Monday, April 9, 2018

Name: Grinder Pump Station 1
 Year Built: 1978
 Location: North End of Je-Ne-Be Dr Ne
 Type: Grinder Pump Station

Physical Characteristics

Wet Well

Type: Grinder Pump
 Material: Fiberglass
 Dia.: 3.0'
 Depth: 10.4'
 Inlet Pipe: 8" Ductile Iron
 Access Hatch: 30" x 18" Steel Door
 Vent: None
 Interior Coating: None
 Pipe Condition: Good
 Overall Condition: Fair (Cover Corrosion)

Pumps

Brand: Myers
 Location: Wet Well
 Number: 2
 Power: 240V, 1 Ph

	Pump 1	Pump 2	Pump 3
Rated Flow:	40 gpm	40 gpm	
TDH:	30'	30'	
Hp:	2	2	
Replaced/Rebuilt:			
Actual Flow:	25 gpm	25 gpm	
Run Hours:	516	532	

Site and Forcemain

Access Road: Pull-off
 Site Layout: Road Edge
 Forcemain Size: 2"
 Forcemain Type: PVC
 Forcemain Length: 380'
 Discharge Point: PS4_SMH121

Electrical and Controls

Incoming Power: 240V, 1 Ph
 Backup Power: MTS and Generator Connection
 Over/Underground: Underground
 Phase Converter: None
 Pump Controller: Warrick Controls ISR
 Level Control: Floats
 Backup Level Control: Floats
 Pump Alternator: Manual
 Flow Meter: None
 Panel Condition: Fair

Valve Vault

Type: None
 Material: N/A
 Diameter: N/A
 Discharge Angle: 180°
 Access Hatch: N/A
 Interior Coating: N/A
 Sump Pump: None
 Isolation Valves: PVC Ball Valves
 Check Valves: Duckbill Style on Pump Discharge
 Bypass: None
 Pipe Condition: Good

Other Equipment

Bioxide: No
 Desulfinator: No
 Mission System: No

Known Problems:

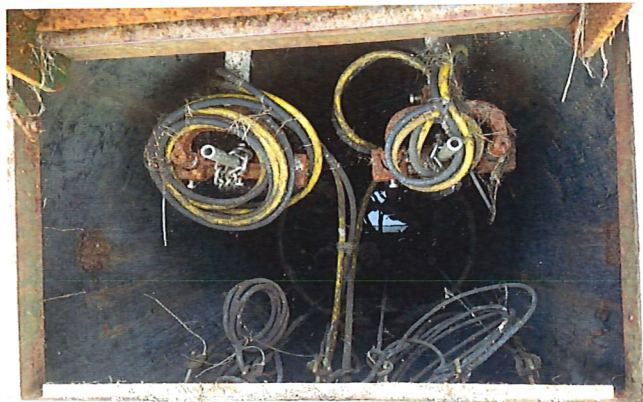
Corrosion on lid

Can too small

Planned Upgrades:

Wet Well Steel Replacement

General Comments:



**Courtland Township
Sanitary Lift Station Review Sheet**

Inspection Date: Monday, April 9, 2018

Name: Grinder Pump Station 2
 Year Built: 1978
 Location: Across from 8760 Brower Lake Dr NE
 Type: Grinder Pump Station

Physical Characteristics

Wet Well

Type: Grinder Pump
 Material: Fiberglass
 Dia.: 3.0'
 Depth: 13.9'
 Inlet Pipe: 8" Ductile Iron
 Access Hatch: 30" x 18" Steel Door
 Vent: None
 Interior Coating: None
 Pipe Condition: Good
 Overall Condition: Fair (Cover Corrosion)

Electrical and Controls

Incoming Power: 240V, 1 Ph
 Backup Power: MTS and Generator Connection
 Over/Underground: Underground
 Phase Converter: None
 Pump Controller: Warrick Controls ISR
 Level Control: Floats
 Backup Level Control: Floats
 Pump Alternator: Manual
 Flow Meter: None
 Panel Condition: Fair

Pumps

Brand: Myers
 Location: Wet Well
 Number: 2
 Power: 240V, 1 Ph

	Pump 1	Pump 2	Pump 3
Rated Flow:	<u>40 gpm</u>	<u>40 gpm</u>	
TDH:	<u>47'</u>	<u>47'</u>	
Hp:	<u>2</u>	<u>2</u>	
Replaced/Rebuilt:			
Actual Flow:			
Run Hours:	<u>2000</u>	<u>5907</u>	

Valve Vault

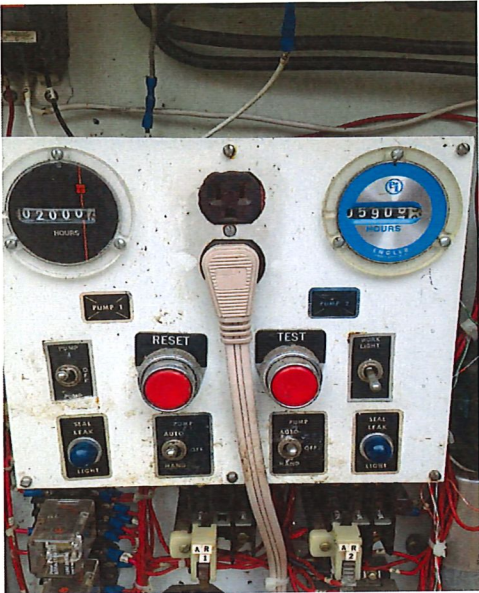
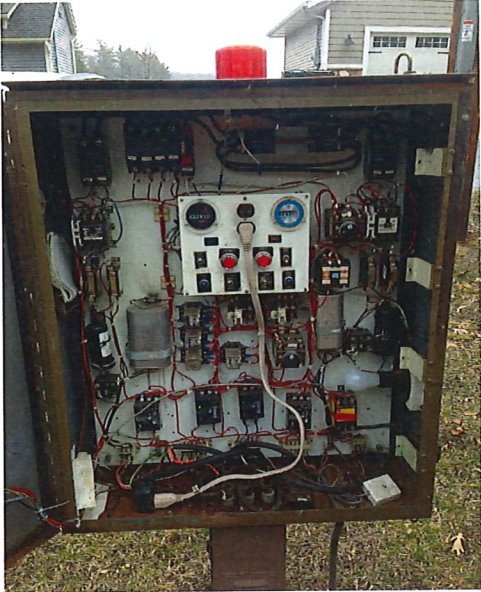
Type: None
 Material: N/A
 Diameter: N/A
 Discharge Angle: 180°
 Access Hatch: N/A
 Interior Coating: N/A
 Sump Pump: None
 Isolation Valves: PVC Ball Valves
 Check Valves: Duckbill Style on Pump Discharge
 Bypass: None
 Pipe Condition: Good

Site and Forcemain

Access Road: Pull-off
 Site Layout: Road Edge
 Forcemain Size: 2"
 Forcemain Type: PVC
 Forcemain Length: 35'
 Discharge Point: Forcemain from PS5 and PS6

Other Equipment

Bioxide: No
 Desulfinator: No
 Mission System: No



Courtland Township
Sanitary Lift Station Review Sheet

Inspection Date: Monday, April 9, 2018

Name: Grinder Pump Station 4
 Year Built: 1978
 Location: Edge of Lake behind 7121 Eva Dr NE
 Type: Grinder Pump Station

Physical Characteristics

Wet Well

Type: Grinder Pump
 Material: Fiberglass
 Dia.: 4.0'
 Depth: 13.9'
 Inlet Pipe: 8" Ductile Iron
 Access Hatch: 30" x 18" Steel Door
 Vent: None
 Interior Coating: None
 Pipe Condition: Good
 Overall Condition: Fair (Cover Corrosion)

Pumps

Brand: Myers
 Location: Wet Well
 Number: 2
 Power: 240V, 1 Ph

	Pump 1	Pump 2	Pump 3
Rated Flow:	<u>40 gpm</u>	<u>40 gpm</u>	
TDH:	<u>25'</u>	<u>25'</u>	
Hp:	<u>2</u>	<u>2</u>	
Replaced/Rebuilt:			
Actual Flow:			
Run Hours:	<u>2474</u>	<u>2725</u>	

Site and Forcemain

Access Road: Grass
 Site Layout: Edge of Myers Lake
 Forcemain Size: 2"
 Forcemain Type: PVC
 Forcemain Length: 2633'
 Discharge Point: PS7_SMH044

Electrical and Controls

Incoming Power: 240V, 1 Ph
 Backup Power: MTS and Generator Connection
 Over/Underground: Underground
 Phase Converter: None
 Pump Controller: Warrick Controls ISR
 Level Control: Floats
 Backup Level Control: Floats
 Pump Alternator: Manual
 Flow Meter: None
 Panel Condition: Fair

Valve Vault

Type: None
 Material: N/A
 Diameter: N/A
 Discharge Angle: 180°
 Access Hatch: N/A
 Interior Coating: N/A
 Sump Pump: None
 Isolation Valves: PVC Ball Valves
 Check Valves: Duckbill Style on Pump Discharge
 Bypass: None
 Pipe Condition: Good

Other Equipment

Bioxide: No
 Desulfinator: No
 Mission System: No

Known Problems:

Corrosion on lid

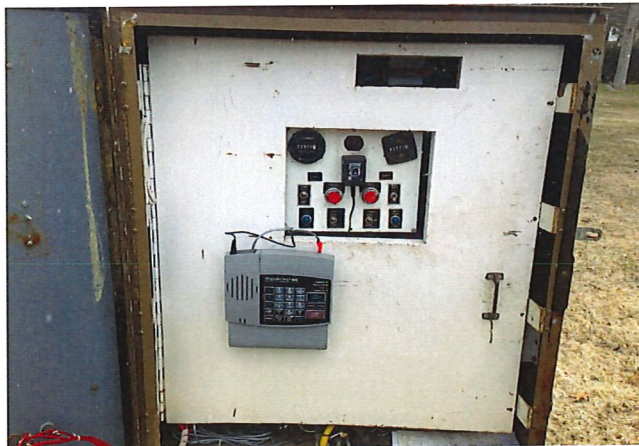
Rusted Steel Baffle Plate

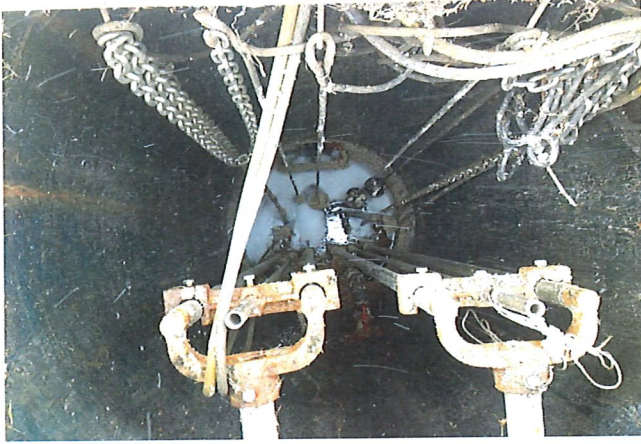
Planned Upgrades:

General Comments:

Far From Road

Piping has been replaced with PVC





Courtland Township
Sanitary Pump Station Review Sheet

Inspection Date: Monday, April 9, 2018

Name: Pump Station 1
 Year Built: 1978
 Location: Near 9000 Brower Lake Dr NE
 Type: Submersible Pump Station

Physical Characteristics

Wet Well

Type: Submersible Pump
 Material: Concrete
 Dia.: 6.5'
 Depth: 21.9'
 Inlet Pipe: 8" Ductile Iron
 Access Hatch: Bilco 54"x36" and 24"x30"
 Vent: Blower with Distant discharge
 Interior Coating: Yes
 Pipe Condition: Good
 Overall Condition: Good

Pumps

Brand: ABS / Sulzer
 Location: Wet Well
 Number: 2
 Power: 480V, 3 Ph

	Pump 1	Pump 2	Pump 3
Rated Flow:	617 gpm	429 gpm	
TDH:	97'	71'	
Hp:	28	20	
Replaced/Rebuilt:	2005	2005	
Actual Flow:			
Run Hours:	6960	8974	

Site and Forcemain

Access Road: Pull-Off
 Site Layout: Road Edge
 Forcemain Size: 8"
 Forcemain Type: PVC
 Forcemain Length: 14868'
 Discharge Point: MH @ Myers Lake Ave and Weller Ave

Electrical and Controls

Incoming Power: 480V, 3 Ph
 Backup Power: MTS and Generator Connection
 Over/Underground: Underground
 Phase Converter: None
 Pump Controller: Warrick Controls ISR
 Level Control: Floats
 Backup Level Control: Floats
 Pump Alternator: Yes
 Flow Meter: None
 Panel Condition: Fair: Gaskets Torn, Rusty Bottom

Valve Vault

Type: Oval Chamber
 Material: Concrete
 Diameter: 5.7' x 9'
 Discharge Angle: 180°
 Access Hatch: Bilco 42"x42"
 Interior Coating: None
 Sump Pump: Yes
 Isolation Valves: Plug
 Check Valves: Swing Check
 Bypass: 4" Butterfly Valve for Firehose Conn.
 Pipe Condition: Good

Other Equipment

Bioxide: Yes
 Desulfinator: No
 Mission System: Yes

Known Problems:

Planned Upgrades:

General Comments:

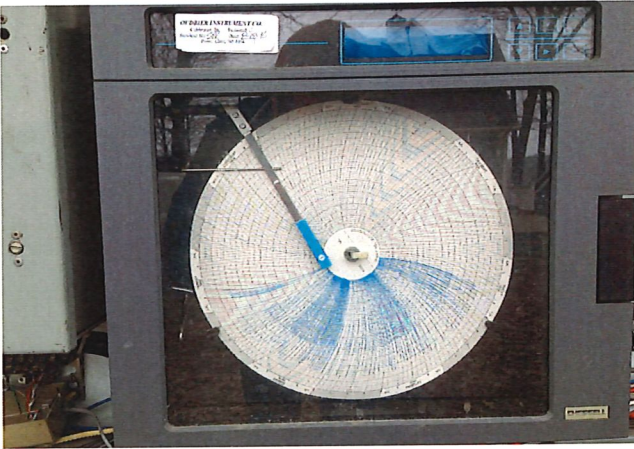
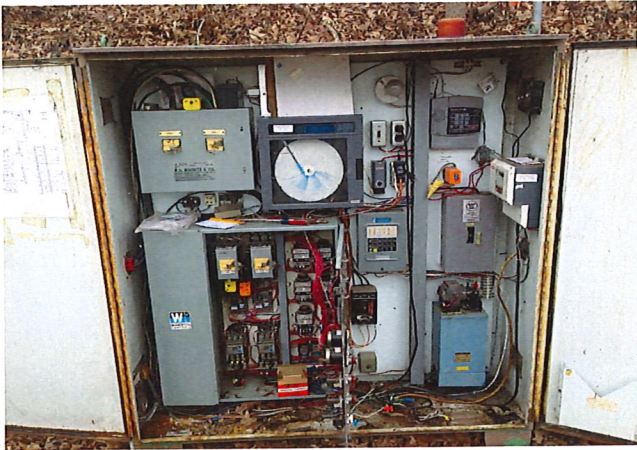
PVC Inlet Baffle

Conduits Replaced

Air Flush Forcemain Monthly

One Pump sized to flush force main on a weekly basis





**Courtland Township
Sanitary Lift Station Review Sheet**

Inspection Date: Monday, April 9, 2018

Name: Pump Station 2
 Year Built: 1978
 Location: Near 8314 Je-Ne-Be Dr NE
 Type: Submersible Pump Station

Physical Characteristics

Wet Well

Type: Submersible Pump
 Material: Concrete
 Dia.: 6.5'
 Depth: 15.9'
 Inlet Pipe: 8" Ductile Iron
 Access Hatch: Bilco 54"x36" and 24"x30"
 Vent: None
 Interior Coating: Yes
 Pipe Condition: Good
 Overall Condition: Good

Electrical and Controls

Incoming Power: 480V, 3 Ph
 Backup Power: MTS and Generator Connection
 Over/Underground: Underground
 Phase Converter: None
 Pump Controller: Warrick Controls ISR
 Level Control: Floats
 Backup Level Control: Floats
 Pump Alternator: Manual
 Flow Meter: None
 Panel Condition: Fair

Pumps

Brand: ABS / Sulzer
 Location: Wet Well
 Number: 2
 Power: 480V, 3 Ph

	Pump 1	Pump 2	Pump 3
Rated Flow:	110 gpm	110 gpm	
TDH:	48'	48'	
Hp:	20	20	
Replaced/Rebuilt:	2017	2017	
Actual Flow:			
Run Hours:	2339	2566	

Valve Vault

Type: Cylindrical Chamber
 Material: Concrete
 Diameter: 6.5'
 Discharge Angle: 180°
 Access Hatch: Bilco 42"x42"
 Interior Coating: None
 Sump Pump: Yes
 Isolation Valves: Plug
 Check Valves: Swing Check
 Bypass: Camlock (missing cover)
 Pipe Condition: Good

Site and Forcemain

Access Road: Pull-off
 Site Layout: Road Edge
 Forcemain Size: 4"
 Forcemain Type: PVC
 Forcemain Length: 708'
 Discharge Point: PS1_SMH010

Other Equipment

Bioxide: No
 Desulfinator: No
 Mission System: No



**Courtland Township
Sanitary Lift Station Review Sheet**

Inspection Date: Monday, April 9, 2018

Name: Pump Station 3
 Year Built: 1978
 Location: Near 8488 Je-Ne-Be Dr NE
 Type: Submersible Pump Station

Physical Characteristics

Wet Well

Type: Submersible Pump
 Material: Concrete
 Dia.: 6.5'
 Depth: 18.6'
 Inlet Pipe: 8" Ductile Iron
 Access Hatch: Bilco 54"x36" and 24"x30"
 Vent: None
 Interior Coating: Yes
 Pipe Condition: Good
 Overall Condition: Good

Pumps

Brand: ABS / Sulzer
 Location: Wet Well
 Number: 2
 Power: 480V, 3 Ph

	Pump 1	Pump 2	Pump 3
Rated Flow:	80 gpm	80 gpm	
TDH:	22'	22'	
Hp:	20	20	
Replaced/Rebuilt:			
Actual Flow:			
Run Hours:	1937	1738	

Site and Forcemain

Access Road: Pull-off
 Site Layout: Road Edge
 Forcemain Size: 4"
 Forcemain Type: PVC
 Forcemain Length: 760'
 Discharge Point: PS2_SMH102

Electrical and Controls

Incoming Power: 240V, 1 Ph
 Backup Power: MTS and Generator Connection
 Over/Underground: Underground
 Phase Convertor: Rotophase "Add-a-phase"
 Pump Controller: Warrick Controls ISR
 Level Control: Floats
 Backup Level Control: Floats
 Pump Alternator: Manual
 Flow Meter: None
 Panel Condition: Fair

Valve Vault

Type: Cylindrical Chamber
 Material: Concrete
 Diameter: 6.5'
 Discharge Angle: 180°
 Access Hatch: Bilco 42"x42"
 Interior Coating: None
 Sump Pump: Yes
 Isolation Valves: Plug
 Check Valves: Swing Check
 Bypass: Camlock
 Pipe Condition: Good

Other Equipment

Bioxide: No
 Desulfinator: Yes (in Summer)
 Mission System: No

Known Problems:

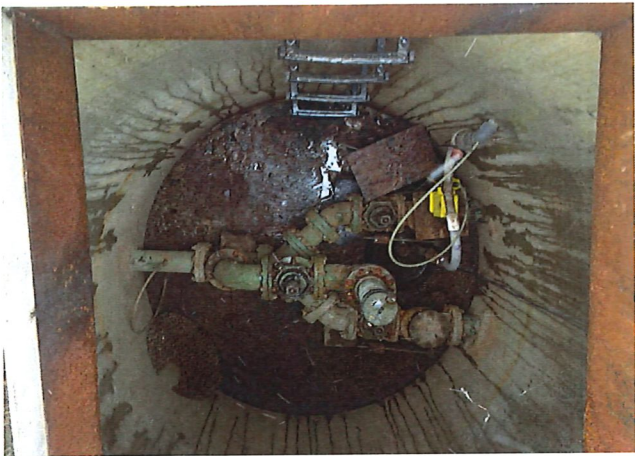
Age/Corrosion

Planned Upgrades:

General Comments:

Feed desufinator in the summer (eliminates hydrogen sulfide in all of East Brower Lake system)





Courtland Township
Sanitary Lift Station Review Sheet

Inspection Date: Monday, April 9, 2018

Name: Pump Station 4
 Year Built: 1978
 Location: Near 8768 Je-Ne-Be Dr NE
 Type: Submersible Pump Station

Physical Characteristics

Wet Well

Type: Submersible Pump
 Material: Concrete
 Dia.: 6.5'
 Depth: 18.1'
 Inlet Pipe: 8" Ductile Iron
 Access Hatch: Bilco 54"x36" and 24"x30"
 Vent: Yes
 Interior Coating: None
 Pipe Condition: Good
 Overall Condition: Good

Pumps

Brand: ABS / Sulzer
 Location: Wet Well
 Number: 2
 Power: 480V, 3 Ph

	Pump 1	Pump 2	Pump 3
Rated Flow:	<u>80 gpm</u>	<u>80 gpm</u>	
TDH:	<u>51'</u>	<u>51'</u>	
Hp:	<u>20</u>	<u>20</u>	
Replaced/Rebuilt:			
Actual Flow:			
Run Hours:	<u>16791</u>	<u>16743</u>	

Site and Forcemain

Access Road: Grass
 Site Layout: Road Edge
 Forcemain Size: 4"
 Forcemain Type: PVC
 Forcemain Length: 1630'
 Discharge Point: PS3_SMH108

Electrical and Controls

Incoming Power: 480V, 3 Ph
 Backup Power: MTS and Generator Connection
 Over/Underground: Underground
 Phase Converter: None
 Pump Controller: Warrick Controls ISR
 Level Control: Floats
 Backup Level Control: Floats
 Pump Alternator: Manual
 Flow Meter: None
 Panel Condition: Fair

Valve Vault

Type: Cylindrical Chamber
 Material: Concrete
 Diameter: 6.5'
 Discharge Angle: 180°
 Access Hatch: Bilco 42"x42"
 Interior Coating: None
 Sump Pump: Yes
 Isolation Valves: Plug (Leaking)
 Check Valves: Swing Check
 Bypass: Camlock
 Pipe Condition: Good

Other Equipment

Bioxide: No
 Desulfinator: No
 Mission System: No



Courtland Township
Sanitary Lift Station Review Sheet

Inspection Date: Monday, April 9, 2018

Name: Pump Station 5
 Year Built: 1978
 Location: Near 8900 Brower Lake Dr NE
 Type: Submersible Pump Station

Physical Characteristics

Wet Well

Type: Submersible Pump
 Material: Concrete
 Dia.: 6.5'
 Depth: 19.1'
 Inlet Pipe: 8" Ductile Iron
 Access Hatch: Bilco 54"x36" and 24"x30"
 Vent: None
 Interior Coating: None
 Pipe Condition: Good
 Overall Condition: Good

Pumps

Brand: ABS / Sulzer
 Location: Wet Well
 Number: 2
 Power: 480V, 3 Ph

	Pump 1	Pump 2	Pump 3
Rated Flow:	<u>80 gpm</u>	<u>80 gpm</u>	
TDH:	<u>57'</u>	<u>57'</u>	
Hp:	<u>20</u>	<u>20</u>	
Replaced/Rebuilt:			
Actual Flow:			
Run Hours:	<u>3750</u>	<u>3883</u>	

Site and Forcemain

Access Road: Pull-off
 Site Layout: Road Edge
 Forcemain Size: 4"
 Forcemain Type: PVC
 Forcemain Length: 656'
 Discharge Point: PS1_SMH006

Electrical and Controls

Incoming Power: 480V, 3 Ph
 Backup Power: MTS and Generator Connection
 Over/Underground: Underground
 Phase Converter: None
 Pump Controller: Warrick Controls ISR
 Level Control: Floats
 Backup Level Control: Floats
 Pump Alternator: Manual
 Flow Meter: None
 Panel Condition: Fair

Valve Vault

Type: Cylindrical Chamber
 Material: Concrete
 Diameter: 6.5'
 Discharge Angle: 180°
 Access Hatch: Bilco 42"x42"
 Interior Coating: None
 Sump Pump: Yes
 Isolation Valves: Plug
 Check Valves: Swing Check
 Bypass: Camlock
 Pipe Condition: Good

Other Equipment

Bioxide: No
 Desulfinator: No
 Mission System: No

Known Problems:

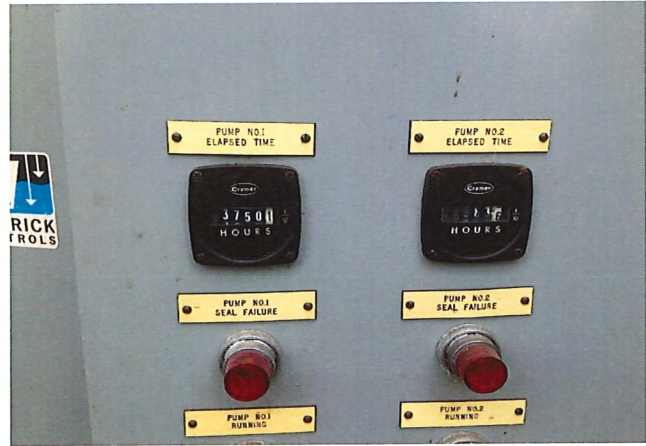
Age/Corrosion

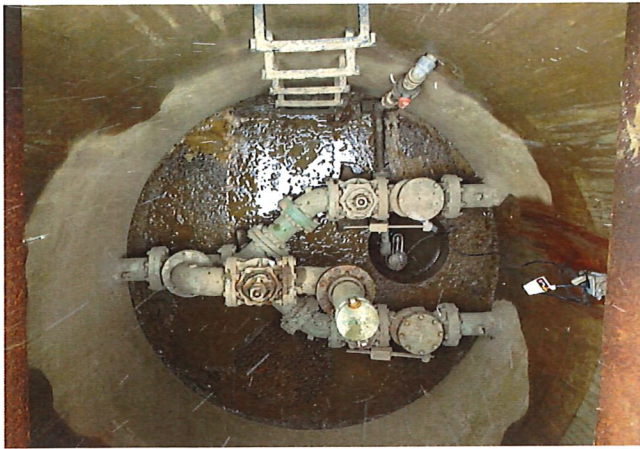
Planned Upgrades:

General Comments:

New Guide Rails

Pumps rebuilt





Courtland Township
Sanitary Lift Station Review Sheet

Inspection Date: Monday, April 9, 2018

Name: Pump Station 6
 Year Built: 1978
 Location: Across from 8928 Loveless Dr NE
 Type: Submersible Pump Station

Physical Characteristics

Wet Well

Type: Submersible Pump
 Material: Concrete
 Dia.: 6.5'
 Depth: 14.7'
 Inlet Pipe: 8" Ductile Iron
 Access Hatch: Bilco 54"x36" and 24"x30"
 Vent: None
 Interior Coating: Yes
 Pipe Condition: Good
 Overall Condition: Fair (Concrete damage)

Pumps

Brand: ABS / Sulzer
 Location: Wet Well
 Number: 2
 Power: 480V, 3 Ph

	Pump 1	Pump 2	Pump 3
Rated Flow:	286 gpm	286 gpm	
TDH:	50.4'	50.4'	
Hp:	6.62	6.62	
Replaced/Rebuilt:	2005	2005	
Actual Flow:			
Run Hours:	9688	9967	

Site and Forcemain

Access Road: Gravel
 Site Layout: Road Edge
 Forcemain Size: 6"
 Forcemain Type: PVC
 Forcemain Length: 2023'
 Discharge Point: PS1_SMH006

Electrical and Controls

Incoming Power: 480V, 3 Ph
 Backup Power: MTS and Generator Connection
 Over/Underground: Underground
 Phase Converter: None
 Pump Controller: Warrick Controls ISR
 Level Control: Floats
 Backup Level Control: Floats
 Pump Alternator: Manual
 Flow Meter: None
 Panel Condition: Fair

Valve Vault

Type: Cylindrical Chamber
 Material: Concrete
 Diameter: 6.5'
 Discharge Angle: 90°
 Access Hatch: Bilco 42"x42"
 Interior Coating: None
 Sump Pump: Yes
 Isolation Valves: Plug
 Check Valves: Swing Check
 Bypass: Camlock
 Pipe Condition: Good

Other Equipment

Bioxide: No
 Desulfinator: No
 Mission System: No



Courtland Township
Sanitary Lift Station Review Sheet

Inspection Date: Monday, April 9, 2018

Name: Pump Station 7
 Year Built: 1978
 Location: Near 8551 Brower Lake Rd NE
 Type: Submersible Pump Station

Physical Characteristics

Wet Well

Type: Submersible Pump
 Material: Concrete
 Dia.: 6.5'
 Depth: 21.2'
 Inlet Pipe: 8" Ductile Iron
 Access Hatch: Bilco 54"x36" and 24"x30"
 Vent: None
 Interior Coating: Yes
 Pipe Condition: Good
 Overall Condition: Good

Pumps

Brand: ABS / Sulzer
 Location: Wet Well
 Number: 2
 Power: 480V, 3 Ph

	Pump 1	Pump 2	Pump 3
Rated Flow:	253 gpm	253 gpm	
TDH:	22.6'	22.6'	
Hp:	2.82	2.82	
Replaced/Rebuilt:	2005	2005	
Actual Flow:			
Run Hours:	10816	11389	

Site and Forcemain

Access Road: Pull-off
 Site Layout: Road Edge
 Forcemain Size: 6"
 Forcemain Type: PVC
 Forcemain Length: 1249'
 Discharge Point: PS6_SMH024

Electrical and Controls

Incoming Power: 480V, 3 Ph
 Backup Power: MTS and Generator Connection
 Over/Underground: Underground
 Phase Convertor: None
 Pump Controller: Warrick Controls ISR
 Level Control: Floats
 Backup Level Control: Floats
 Pump Alternator: Manual
 Flow Meter: None
 Panel Condition: Fair

Valve Vault

Type: Cylindrical Chamber
 Material: Concrete
 Diameter: 6.5'
 Discharge Angle: 180°
 Access Hatch: Bilco 42"x42"
 Interior Coating: None
 Sump Pump: Yes
 Isolation Valves: Plug
 Check Valves: Swing Check
 Bypass: Camlock
 Pipe Condition: Good

Other Equipment

Bioxide: No
 Desulfinator: Yes
 Mission System: No

Known Problems:

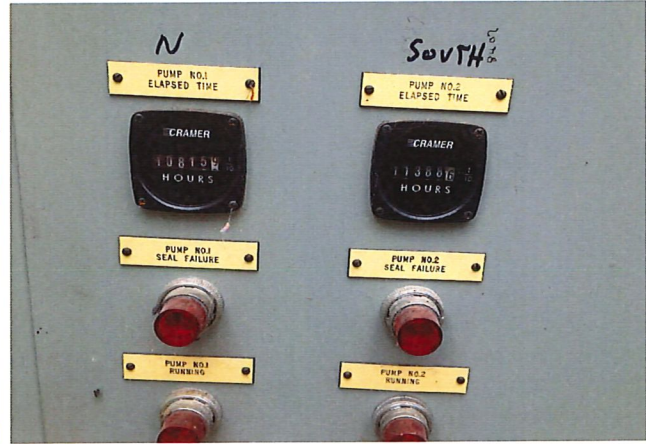
Age/Corrosion

Cross bar on bottom of slide rails catches rags and causes pump clogs

Planned Upgrades:

General Comments:

Feed desulfinator in summer (takes care of West side of system)





Courtland Township
Sanitary Lift Station Review Sheet

Inspection Date: Monday, April 9, 2018

Name: Pump Station 8
 Year Built: 1978
 Location: Near 7621 Hessler Dr NE
 Type: Submersible Pump Station

Physical Characteristics

Wet Well

Type: Submersible Pump
 Material: Concrete
 Dia.: 6.5'
 Depth: 25.8'
 Inlet Pipe: 8" Ductile Iron
 Access Hatch: Bilco 54"x36" and 24"x30"
 Vent: None
 Interior Coating: Yes
 Pipe Condition: Good
 Overall Condition: Good

Pumps

Brand: ABS / Sulzer
 Location: Wet Well
 Number: 2
 Power: 480V, 3 Ph

	Pump 1	Pump 2	Pump 3
Rated Flow:	<u>236 gpm</u>	<u>236 gpm</u>	
TDH:	<u>61'</u>	<u>61'</u>	
Hp:	<u>6.91</u>	<u>6.91</u>	
Replaced/Rebuilt:	<u>2005</u>	<u>2005</u>	
Actual Flow:			
Run Hours:	<u>6529</u>	<u>6967</u>	

Site and Forcemain

Access Road: Gravel
 Site Layout: Road Edge
 Forcemain Size: 4"
 Forcemain Type: PVC
 Forcemain Length: 867'
 Discharge Point: PS7_SMH043

Electrical and Controls

Incoming Power: 480V, 3 Ph
 Backup Power: MTS and Generator Connection
 Over/Underground: Underground
 Phase Converter: None
 Pump Controller: Warrick Controls ISR
 Level Control: Floats
 Backup Level Control: Floats
 Pump Alternator: Manual
 Flow Meter: None
 Panel Condition: Poor (Sinking)

Valve Vault

Type: Cylindrical Chamber
 Material: Concrete
 Diameter: 6.5'
 Discharge Angle: 180°
 Access Hatch: Bilco 42"x42"
 Interior Coating: None
 Sump Pump: Yes
 Isolation Valves: Plug
 Check Valves: Swing Check
 Bypass: Camlock
 Pipe Condition: Good

Other Equipment

Bioxide: No
 Desulfinator: No
 Mission System: No

Known Problems:

Age/Corrosion

Control Panel is settling, severely tilted

Pump slide rail is not straight

Dry pit cover crumbling

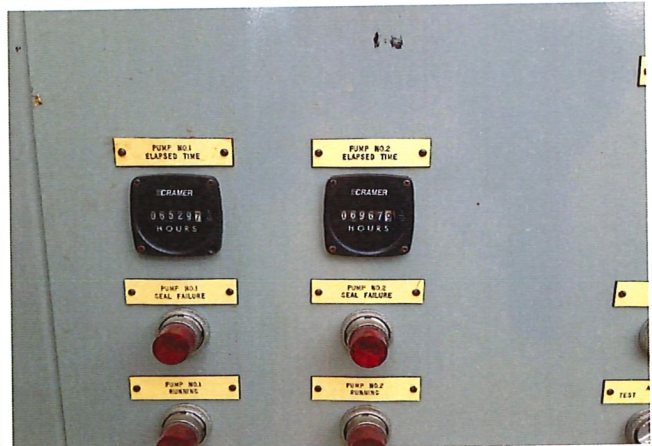
Planned Upgrades:

General Comments:

New pump discharge elbow

Only 2' of operating range

Extra alarm light and loud bell for extra protection





Courtland Township
Sanitary Lift Station Review Sheet

Inspection Date: Monday, April 9, 2018

Name: Pump Station 9
 Year Built: 1978
 Location: Near 7562 Hessler Dr NE
 Type: Submersible Pump Station

Physical Characteristics

Wet Well

Type: Submersible Pump
 Material: Concrete
 Dia.: 6.5'
 Depth: 16.4'
 Inlet Pipe: 8" Ductile Iron
 Access Hatch: Bilco 54"x36" and 24"x30"
 Vent: None
 Interior Coating: None
 Pipe Condition: Good
 Overall Condition: Good

Pumps

Brand: ABS / Sulzer
 Location: Wet Well
 Number: 2
 Power: 480V, 3 Ph

	Pump 1	Pump 2	Pump 3
Rated Flow:	<u>212 gpm</u>	<u>212 gpm</u>	
TDH:	<u>34.9'</u>	<u>34.9'</u>	
Hp:	<u>3.32</u>	<u>3.32</u>	
Replaced/Rebuilt:	<u>2005</u>	<u>2005</u>	
Actual Flow:			
Run Hours:	<u>6242</u>	<u>5972</u>	

Site and Forcemain

Access Road: Grass
 Site Layout: Road Edge
 Forcemain Size: 4"
 Forcemain Type: PVC
 Forcemain Length: 216'
 Discharge Point: PS8_SMH052

Electrical and Controls

Incoming Power: 480V, 3 Ph
 Backup Power: MTS and Generator Connection
 Over/Underground: Underground
 Phase Converter: None
 Pump Controller: Warrick Controls ISR
 Level Control: Floats
 Backup Level Control: Floats
 Pump Alternator: Manual
 Flow Meter: None
 Panel Condition: Good

Valve Vault

Type: Cylindrical Chamber
 Material: Concrete
 Diameter: 6.5'
 Discharge Angle: 90°
 Access Hatch: Bilco 42"x42"
 Interior Coating: None
 Sump Pump: Yes
 Isolation Valves: Plug
 Check Valves: Swing Check
 Bypass: Camlock
 Pipe Condition: Good

Other Equipment

Bioxide: No
 Desulfinator: No
 Mission System: No

Known Problems:

Age/Corrosion

Planned Upgrades:

Wet Well Coating

General Comments:

All downstream pump stations have been coated





**Courtland Township
Sanitary Lift Station Review Sheet**

Inspection Date: Monday, April 9, 2018

Name: Pump Station 10
 Year Built: 1978
 Location: Southeast Corner of Myers Lake Park
 Type: Submersible Pump Station

Physical Characteristics

Wet Well

Type: Submersible Pump
 Material: Concrete
 Dia.: 6.5'
 Depth: 16.5'
 Inlet Pipe: 8" Ductile Iron
 Access Hatch: Bilco 54"x36" and 24"x30"
 Vent: None
 Interior Coating: None
 Pipe Condition: Good
 Overall Condition: Good

Pumps

Brand: ABS / Sulzer
 Location: Wet Well
 Number: 2
 Power: 480V, 3 Ph

	Pump 1	Pump 2	Pump 3
Rated Flow:	<u>102 gpm</u>	<u>102 gpm</u>	
TDH:	<u>40.9'</u>	<u>40.9'</u>	
Hp:	<u>2.77</u>	<u>2.77</u>	
Replaced/Rebuilt:	<u>2005</u>	<u>2005</u>	
Actual Flow:			
Run Hours:	<u>7617</u>	<u>7997</u>	

Site and Forcemain

Access Road: Gravel Parking Lot
 Site Layout: Edge of Parking lot
 Forcemain Size: 4"
 Forcemain Type: PVC
 Forcemain Length: 2556'
 Discharge Point: PS9_SMH056

Electrical and Controls

Incoming Power: 480V, 3 Ph
 Backup Power: MTS and Generator Connection
 Over/Underground: Underground
 Phase Converter: None
 Pump Controller: Warrick Controls ISR
 Level Control: Floats
 Backup Level Control: Floats
 Pump Alternator: Manual
 Flow Meter: None
 Panel Condition: Fair (Settling)

Valve Vault

Type: Cylindrical Chamber
 Material: Concrete
 Diameter: 6.5'
 Discharge Angle: 90°
 Access Hatch: Bilco 42"x42"
 Interior Coating: None
 Sump Pump: Yes
 Isolation Valves: Plug
 Check Valves: Swing Check
 Bypass: Camlock
 Pipe Condition: Good

Other Equipment

Bioxide: No
 Desulfinator: No
 Mission System: No

Known Problems:

Age/Corrosion

Panel Settling

Planned Upgrades:

Wet Well Coating

General Comments:

Storage Shed on Site for possible chemical addition

Must clean out every 3 months because of wipes, grease, scum

Same impeller as PS1 but clogs a lot more



