



# City of NAPOLEON, Ohio

## Waste Water Treatment Plant

735 E. Washington St., P.O. Box 151, Napoleon, OH 43545

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## 2018 Annual Report Combined Sewer Overflow & Sanitary Sewer Overflows

### Back Ground

The City of Napoleon is served by a partial combined sewer system (CSS) constructed in the downtown area in the early 1900's. The Wastewater Treatment Plant (WWTP) was built in 1958 along the Maumee River. As the City has grown the collection system evolved by expanding outward with separated sewers and pump stations. Multiple surface load separations were completed in the City from the 1970's through the 1990's. The WWTP was expanded in 1982, 1997 and 2010 with several new processes to improve effluent quality and increase capacity. At present, the WWTP is rated at 2.5 million gallons per day (MGD) capacity with the ability to continuously treat 4.5 MGD and has an instantaneous peak hydraulic capacity of 7.5 MGD. The 2.5 MG Equalization Basin (EQ basin) at the head of the WWTP was constructed in 2010 as part of Long Term Control Plan (LTCP) Project No. 14 and can store wet weather flows at a peak rate of 33 MGD. In total, the WWTP and EQ basin can handle flow rates reaching 40 MGD for a short time period during wet weather periods.

The Napoleon CSS consists of the following sewer sheds: East Riverview, East Washington, Front, Haley, Oberhaus, South Side, Shelby, VanHying, and West Riverview. The City has made a continuous effort throughout the LTCP to improve the collection system including interceptor improvements, pump station upgrades, CSO control improvements and SSO closures. Prior to the LTCP the City had identified six (6) CSO and ten (10) SSO outfall locations throughout the City. At the end of 2016, one (1) CSO and eight (8) SSO locations have been closed because of the improvements made to the collection system. The remaining five (5) CSOs and two (2) SSOs that are active in the system are summarized below.

NPDES ID	Name	Location Description
CSO #003	Central CSO	Parking lot NW of Scott Street and West Riverview Avenue, Discharges to the Maumee River.
CSO #004	Monroe CSO	Monroe Street and East Riverview Avenue, Discharges to the Maumee River.
CSO #006	Oakwood CSO	Oakwood Avenue and Yeager Street, Discharges to Oberhaus Creek
CSO #010	Dodd CSO	Dodd Street and Yeager Street, Discharges to Oberhaus Creek
CSO #011	WWTP 011 Outfall	WWTP Facility, Discharges to the Maumee River.
SSO #302	Haley SSO	Haley Avenue and West Riverview Avenue, Discharges to the Maumee River.
SSO #303	Glenwood SSO	Ritter Park near Glenwood Avenue, Discharges to the Maumee River.

## **Current Conditions**

The criterion limits CSO events to a maximum of four (4) overflows in a typical year to provide an adequate level of control to meet the water quality-based requirements of the Clean Water Act (CWA).

The CSO Control Policy defines “criterion” as the elimination or capture for treatment of no less than 85 percent by volume of the combined sewage collected in the CSS during precipitation events on a system-wide, annual average basis.

*“On a nationwide basis, the number of overflows not receiving primary treatment and corresponding to 85 percent capture for treatment, ranged from four to six depending on location. In practice, a CSO control facility that captures for treatment 85 percent of the combined sewage collected in the system may experience more than six overflows on an annual average basis, although a significant deviation from this range of overflows would not be expected. In cases where a significant deviation due to local conditions is encountered, the permit writer’s judgment should be used to determine whether use of the 85 percent capture criterion is appropriate.”*

The Napoleon CSS is operating well above 85 percent capture even though the model predictions show the City’s collection system captures more than 99 percent of wet weather flows during the typical year, with nine (9) overflow events predicted at the Central and Monroe CSO’s.

## **Rainfall Data**

The City has installed a permanent tipping bucket rain gauge at the WWTP so that rainfall data can be continuously recorded in five (5) minute increments and matched to overflow events as recorded by the level sensors.

Various rainfall statistics (e.g., volume, duration, intensity, and return period) will be calculated for each event coinciding with an overflow event at any of the CSOs or SSOs to assist in the comparison of overflow volumes and monitored recorded data. This data will be collected by City staff and recorded.

## **Level Sensors**

The Solinst Levellogger Edge level sensors were installed in July 2015 at CSOs 002, 004, 006, and 010, and SSOs 302 and 303. The sensors are suspended in the structure of each of the CSOs and SSOs to provide an accurate level measurement. The sensors record both temperature and level.

The sensors are downloaded monthly, at a minimum, and after a wet weather event. The City previously had used the block method to record CSO/SSO events. The blocks have been left in place in the structures as a visual reference to determine if a CSO event has occurred and if the level sensor data needs to be downloaded for the required reporting.

The data obtained from the level sensors must be processed to ultimately provide an estimated overflow volume. Initially, the level sensor data is automatically corrected by the Solinst software in conjunction with a barometric sensor, located at the WWTP, to provide a level reading. The corrected output from the level sensor software is copied into an Excel spreadsheet that was developed to convert the level readings into an overflow volume using standard equations, such as Manning’s Equation, weir equations and orifice equations, to provide an estimated overflow volume (in gallons).

## **Visual Inspection of CSOs and SSOs**

Visual inspections of any storm water outfalls required by the current NPDES Permit will be visually inspected. The visual inspections will follow the procedures of any flow that is observed during the dry weather inspections will be tested for wastewater indicators including, but not limited to E. coli and ammonia.

## Summary of Events

### CSO 003 Central School Discharge Maumee River:

<u>Date</u>	<u># of Events</u>	<u>Total Discharged</u>	<u>Cause of Event</u>	<u>Time of Event</u>
5/3/2018	1	0.147 MG	Excessive Rain (2.28")	12am-6am
6/10/2018	1	0.052 MG	Excessive Rain (1.14")	5am-6am
6/22/2018	1	0.056 MG	Excessive Rain (1.55")	3pm-4pm
8/7/2018	1	0.029MG	Excessive Rain (0.63")	Lost Data
8/12/2018	1	0.047MG	Excessive Rain (0.76")	Lost Data
8/20/2018	1	0.025MG	Excessive Rain (1.12")	9pm-12am
8/25/2018	1	0.002MG	Excessive Rain (1.04")	9am-12pm

### CSO 004 Monroe Street Discharge Maumee River:

<u>Date</u>	<u># of Events</u>	<u>Total Discharged</u>	<u>Cause of Event</u>	<u>Time of Event</u>
5/3/2018	1	0.001MG	Excessive Rain (2.28")	12am-6am
6/10/2018	1	0.023MG	Excessive Rain (1.14")	5am-6am
6/22/2018	1	0.012MG	Excessive Rain (1.55")	3pm-4pm
8/7/2018	1	0.033MG	Excessive Rain (0.63")	Lost Data
8/12/2018	1	0.015MG	Excessive Rain (0.76")	Lost Data
8/17/2018	1	0.001MG	Excessive Rain (0.88")	6pm-6:30pm
8/20/2018	1	0.028MG	Excessive Rain (1.12")	9pm-12am
8/25/2018	1	0.0001MG	Excessive Rain (1.04")	9am-12pm

### CSO 006 Oakwood Discharge Oberhaus Creek:

<u>Date</u>	<u># of Events</u>	<u>Total Discharged</u>	<u>Cause of Event</u>	<u>Time of Event</u>
8/7/2018	1	0.002MG	Excessive Rain (0.63")	Lost Data

### CSO 010 Dodd & Yeager Discharge Oberhaus Creek:

<u>Date</u>	<u># of Events</u>	<u>Total Discharged</u>	<u>Cause of Event</u>	<u>Time of Event</u>
No Events				

### CSO 011 WWTP Plant Bypass Discharge Maumee River:

<u>Date</u>	<u># of Events</u>	<u>Total Discharged</u>	<u>Cause of Event</u>	<u>Time of Event</u>
5/3/2018	1	0.725MG	Computer Malfunction	12am-7:30am

### SSO 300 All City Wide Manholes Depending on Location:

<u>Date</u>	<u># of Events</u>	<u>Total Discharged</u>	<u>Cause of Event</u>	<u>Time of Event</u>
5/3/2018	1	Estimated at 0.0010MG	Excessive Rain (2.28")	12am-6am

### SSO 302 Haley Street Discharge Maumee River:

<u>Date</u>	<u># of Events</u>	<u>Total Discharged</u>	<u>Cause of Event</u>	<u>Time of Event</u>
5/3/2018	1	0.1151MG	Excessive Rain (2.28")	12am-6am

## SSO 303 Glenwood Discharge Maumee River:

<u>Date</u> <u>No Events</u>	<u># of Events</u>	<u>Total Discharged</u>	<u>Cause of Event</u>	<u>Time of Event</u>
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### **Nine Minimum Control Inspection Summaries**

1. Proper operation & regular maintenance program for sewer system and CSO's.

City staff operates and maintains the wastewater treatment plant (WWTP) and the collection system. The city employs private contractors to televise and clean sewers, with the goal of inspecting the full collection system at least once every ten years, though known problem and high importance areas are inspected more frequently. Pump stations are inspected twice a week, overflow regulators are inspected monthly and overflow outfalls are inspected during precipitation events that activate the EQ basin screw pumps.

2. Maximum use of the collection system for storage.

By Cleaning and televising the collection system on a regular basis the city achieves the maximum storage in the collection system.

3. Review and modification of pretreatment requirements to assure CSO impacts are minimized.

The City does not have an Ohio EPA approved pretreatment program.

4. Maximize flow at the WWTP for treatment.

The WWTP is a trickling filter facility designed to treat an average daily flow of 2.5 million gallons per day (MGD). The WWTP is capable of handling sustained peak flows up to 6 MGD.

5. Prohibition of CSOs during dry weather.

The City visually inspects its outfall regulators monthly during dry weather and no y weather overflows have been observed.

6. Control of solids and floatable materials in CSO's.

Catch basins are cleaned at known problem areas frequently.

7. Pollution Prevention.

The City preforms street sweeping weekly and operates a curbside leaf pick-up program in the fall.

8. Public Notification to ensure the public receives adequate notification of CSO occurrences and impacts.

The City implements the Great Lakes Basin CSO Public Notification Plan, approved by Ohio EPA. Along with signs posted at all outfalls.

9. Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

Each overflow regulator is equipped with tipping blocks to indicate an overflow event. City staff inspects the regulators for overflows during precipitation events that activate the EQ basin screw pumps. Additionally, the City has installed level sensors at each regulator that record overflow volumes. The data is downloaded each month to support discharge volume.

## Proposed NPDES Compliance Projects

We are proposing the following efforts to be included in the revised NPDES Schedule of Compliance to facilitate closure of the two (2) remaining SSOs by 2025:

1. **Proposed LTCP Project No. 36** – Haley SSO Elimination Project (2022) – Connect the Haley SSO (#302) to the West Riverview Interceptor, just upstream of the West Lift Station. This change will result in the immediate closure of the Haley SSO outfall, but will likely cause a nominal increase in predicted overflow volume at the Glenwood SSO (#303) from about 91,000 gallons to 115,000 gallons during a 10-year, 2-hour storm. Based upon a typical year such as 2007, activity at the Glenwood SSO (#303) should not occur.
2. **Proposed LTCP Project No. 38** – Glenwood SSO Relief Project (2023) – The West Lift Station will be modified from its current peak capacity of 1.8 MGD to a new peak capacity of 2.1 MGD to maximize the available capacity within the Front Street Interceptor. The elevation of the Glenwood SSO (#303) will be raised by approximately 1.0 to 1.5 feet, depending on available space within the overflow manhole. Finally, a connection will be made between the West Riverview Interceptor and the nearby FBWB utilized by the WTP. Under this interim condition, the SWMM model predicts that approximately 11,000 gallons would discharge from the Glenwood SSO (#303) and 77,000 gallons would be stored in the FBWB during the 10-year, 2-hour event. Based upon the typical year (2007), activity at the Glenwood SSO (#303) should not occur during a typical year.
3. **Proposed LTCP Project No. 39** – Glenwood SSO Elimination Project (2025) – The City will monitor the activity of the Glenwood SSO (#303) for a period not to exceed two (2) years from the completion of Proposed LTCP Project No. 38 above. Assuming the proposed modifications perform as predicted by the hydraulic model, the City will close the Glenwood SSO (#303) by December 2025.

It is anticipated that the implementation of LTCP Projects 36, 38 and 39 will enable the closure of the remaining SSOs within the Napoleon CSS and will not create additional water-in-basement (WIB) occurrences for peak rainfall events.

Based upon meetings with the Ohio EPA on March 26, 2018 and November 1, 2018 and other correspondence, the City of Napoleon has agreed to amend its control strategy for CSOs and SSOs through a variety of improvement initiatives to reduce and control flows from release into Waters of the State.

Six (6) total projects have been identified in the proposed NPDES Compliance Schedule. The projects include Phase 1 Improvements at the WWTP, replacement of the Williams and Van Hying Pumping Stations, improvements to the East Washington Interceptor, and the closure of the two (2) remaining SSOs at Haley Avenue and Glenwood Avenue.

The proposed efforts will reduce overflow volumes by approximately 62 percent but may not lower the number of events to four (4) or fewer, as required.

The new completion date for the City of Napoleon LTCP would be no later than December 31, 2029. This proposed schedule will ensure the City continues to work towards the goals of the LTCP, while gaining flexibility, along with other capital improvements, at a pace that is financially sustainable for the residents and businesses within the City.

For further information contact the Napoleon Wastewater Plant at 419-592-3936

*David Pike*

*City of Napoleon*

*Wastewater Superintendent*



# City of Napoleon, Ohio

## Department of Public Works

255 West Riverview Avenue, P.O. Box 151

Napoleon, OH 43545

Chad E. Luffs, P.E., P.S., Director of Public Works

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March 19, 2019

Ohio Environmental Protection Agency  
Division of Surface Water  
347 N. Dunbridge Road  
Bowling Green, OH 43402

Attn: Peggy Christy

Re: City of Napoleon's Long Term Control Plan  
Annual Project Status Summary

Dear Ms. Christy,

As required by the City of Napoleon's N.P.D.E.S. Permit, below is a list of current and completed projects from the City of Napoleon's Long Term Control Plan, Table 1.

- N.P.D.E.S. Permit, Part 1.C.A.1 – Sensor Installation – Completed<sup>2</sup> – Completed
- N.P.D.E.S. Permit, Part 1.C.A.2 – Palmer Ditch Study – (Report submitted December 21, 2016) Completed
- N.P.D.E.S. Permit, Part 1.C.A.3 – Wet Weather Improvement Plan Update – Currently under contract
- N.P.D.E.S. Permit, Part 1.D – Post-Construction Compliance Monitoring Plan – Outfalls located (incorporated into GIS) and annual inspection per requirements of permit implemented – On-going
- L.T.C.P. Project No. 1: Hilltop Lane Sanitary Sewer Improvements – Completed
- L.T.C.P. Project No. 2: Dodd & Yeager Sewer Separation Phase I – Completed
- L.T.C.P. Project No. 3: W. Clinton Street Storm Sewer Improvements – Completed
- L.T.C.P. Project No. 4: West Lift Station Replacement – Completed
- L.T.C.P. Project No. 5: E. Maumee Interceptor – Completed
- L.T.C.P. Project No. 6: S. Perry Street Pumping Station – Completed
- L.T.C.P. Project No. 7: Palmer Ditch Pumping Station Control Modifications – Completed
- L.T.C.P. Project No. 8: Reiser Street CSO Replacement – Completed
- L.T.C.P. Project No. 9: W. Riverview Interceptor I/I Reduction Study – Completed
- L.T.C.P. Project No. 10: Haley Avenue Interceptor I/I Reduction Study – Completed
- L.T.C.P. Project No. 11A: W. Riverview I/I Reduction Project – Completed
- L.T.C.P. Project No. 11B: W. Riverview I/I Reduction Project – Completed

- L.T.C.P. Project No. 11C – W. Riverview I/I Reduction Project – Deleted per findings of I/I Study
- L.T.C.P. Project No. 11D – W. Riverview I/I Reduction Project – Deleted per findings of I/I Study
- L.T.C.P. Project No. 11E: W. Riverview I/I Reduction Project – Phase I (replacement of sanitary sewer on Park Lane from Ritter Park to Park Street) – Completed
- L.T.C.P. Project No. 12: Woodlawn Avenue Sewer Separation – Completed
- L.T.C.P. Project No. 13: South Side Interceptor I/I Reduction Study – Completed
- L.T.C.P. Project No. 14: WWTP Separated System Equalization Basin (2.5 MG) – Completed
- L.T.C.P. Project No. 15: W. Washington Sanitary Sewer Replacement – Completed
- L.T.C.P. Project No. 16A: Kenilworth Area I/I Removal Project – Completed
- L.T.C.P. Project No. 16B: Kenilworth Area I/I Removal Project – Completed
- L.T.C.P. Project No. 17A: Haley Avenue I/I Reduction Project – Completed
- L.T.C.P. Project No. 17B: Haley Avenue I/I Reduction Project – Completed
- L.T.C.P. Project No. 17C: Haley Avenue I/I Reduction Project – Currently under contract for design. Construction scheduled for 2019, & 2020.
- L.T.C.P. Project No. 17D: Haley Avenue I/I Reduction Project – Phase I (Sanitary Sewer on Avon Place) – Completed
- L.T.C.P. Project No. 17E: Haley Avenue I/I Reduction Project – Deleted per findings of I/I Study
- L.T.C.P. Project No. 18: West Riverview Interceptor Replacement Project – Completed
- L.T.C.P. Project No. 19: Oberhaus Interceptor I/I Reduction Study – Completed
- L.T.C.P. Project No. 20A: South Side Interceptor I/I Reduction Project – Completed
- L.T.C.P. Project No. 20B: South Side Interceptor I/I Reduction Project – Phase I (Appian Avenue) – Completed
- L.T.C.P. Project No. 20C: South Side Interceptor I/I Reduction Project – Phase I (S. Perry Street Sanitary Sewer) – Completed
- L.T.C.P. Project No. 20C: South Side Interceptor I/I Reduction Project – Phase II (Meekison Street) – Finalizing Design
- L.T.C.P. Project No. 21A: Oberhaus Interceptor I/I Reduction Project – Completed
- L.T.C.P. Project No. 21B: Oberhaus Interceptor I/I Reduction Project – Currently being designed by City personnel (Phase 2 of 3 of the Oberhaus Interceptor)
- L.T.C.P. Project No. 22: VanHyning Interceptor I/I Reduction Study – Completed
- L.T.C.P. Project No. 23: East Riverview Interceptor I/I Reduction Study – Completed
- L.T.C.P. Project No. 25: Front Street Interceptor I/I Reduction Study – Completed
- L.T.C.P. Project No. 26: E. Riverview Interceptor I/I Reduction Projects – Phase I (Industrial Drive) – Completed
- L.T.C.P. Project No. 27A: Dodd & Yeager Sewer Separation Phase II – Phase I (Storm Sewer on Rye Street from Outlet to Yeager Street) – Completed
- N.P.D.E.S. Permit, Part 1.C.A.5 – Williams Pumping Station Replacement Project – Advertising for Bids.
- N.P.D.E.S. Permit, Part 1.C.C. – Illicit Discharge Detection and Elimination – Completed

If you have any questions or require additional information, please contact me at your convenience.

Yours truly,

A handwritten signature in black ink, appearing to read 'Chad E. Lulfs', written in a cursive style.

Chad E. Lulfs, P.E., P.S.  
Director of Public Works  
City of Napoleon, Ohio

cc: Joel Mazur, City Manager  
Dave Pike, Wastewater Superintendent  
Jeff Rathge, Operations Superintendent  
Derek Dalton, Stantec