Annual Report
of
"CSO Discharges"
from the
Wet-Weather Treatment Facility Outfall 002

General Information	
Date of Report:	April 25, 2019
Report Prepared By:	Michael Kuss, General Manager
NPDES Permit No.	IN0023752
Outfall:	002 – Wet-Weather Treatment Facility Discharge
Receiving Stream:	Trail Creek
Location of Outfall 002:	The discharge location is along Trail Creek at latitude 41° 43' 10" N and longitude 86° 52'56" W. This location is approximately 1.9 miles upstream of Lake Michigan.
Contact Info: The name, phone number, and email address of the Michigan City Sanitary District's contact person:	Name: Michael Kuss, Title: General Manager, Michigan City Sanitary District Address: 1100 E. 8th Street, Michigan City, IN 46360 Phone Number: 219-874-7799 Email address: mkuss@mcsan.org

I. Summary

The Michigan City Sanitary District is required to prepare an Annual Report and submit it to the IDEM and the USEPA no later than May 1 each year, describing the discharges from its Wet-Weather Treatment Facility during the previous year.

During 2018, the Michigan City Sanitary District had one "CSO Discharge" Event from its Wet-Weather Treatment Facility – Outfall 002. All Discharges were monitored and there were zero violations of the limits contained in the NPDES Permit.

II. Annual Report Required Information

(A) Description of the location and receiving water for each CSO discharge point, and the treatment provided.

There is only one "CSO Discharge" outfall. The "CSO" Outfall is a treated discharge from the Michigan City Sanitary District's Wet-Weather Treatment Facility – Outfall 002. Outfall 002 is located at the treatment plant and wastewater discharged from this point receives screening and grit removal by the main Treatment Plant, and aeration, settling, and disinfection and de-chlorination (during the recreational season of April 1 through October 31) by the Wet-Weather Treatment Facility, before discharge. The discharges from Outfall 002, are monitored for: flow, CBOD5, TSS, Ammonia-Nitrogen, pH, Dissolved Oxygen, and Total Residual Chlorine and *E. coli* (during the recreational season of April 1 through October 31). The NPDES Permit specifies limits for Total Residual Chlorine and *E. coli* in accordance with the State Water Quality Standards for these parameters. The Discharge enters Trail Creek approximately 1.9 river miles upstream of Lake Michigan.

(B) The date, location, approximate duration, volume, and cause of each discharge from the District's Wet-Weather Treatment Facility Outfall 002.

There was one "CSO Discharge" Event during 2018. This event was the result of widespread flooding in northern Indiana. The discharge started on February 20, 2018 at 1:10 pm and lasted until 7:25 am on February 26, 2018. This discharge received screening and grit removal by the main Treatment Plant, and aeration, settling form the Wet-Weather treatment facility prior to discharge. The discharge was not disinfected, because disinfection is only required between April 1 and October 31, each year. Please refer to the attached narrative description of the discharge event for more information. Please note the required "7-Day Notifications" were not submitted because this discharge occurred prior to the requirement for such submissions (August 7, 2018).

Summary Table of Discharge Events

Event No.	Date of Discharge	Location of Discharge	Duration of Discharge	Volume of Discharge	Cause
1	2-20-18 thru 2-26-19	Outfall 002	7 days	14.246 MG	Extreme wet-weather and area wide flooding

(C) The date, location, duration, volume, and cause of each dry weather discharge from the District's Wet-Weather Treatment Facility Outfall 002.

There were zero Dry Weather "CSO Discharge" Events during 2018.

(D) A summary of available monitoring data for CSO discharges from the past calendar year.

The discharges from Outfall 002 are monitored for: flow, CBOD5, TSS, Ammonia-Nitrogen, pH, Dissolved Oxygen. Total Residual Chlorine and E. coli are monitored is discharges occur during the recreational season of April 1 through October 31. The NPDES Permit specifies limits for Total Residual Chlorine and E. coli in accordance with the State Water Quality Standards for these parameters.

The Table Below summarizes the monitoring data for the CSO Discharges that occurred during 2018.

Summary of Monitoring Data of 2018 Outfall 002 Data

Date of Discharge	Flow Total Volume	CBOD5	TSS	pH	Total Residual Chlorine*	*E. coli**	Ammonia NH3-N	Dissolved Oxygen
	MGD	mg/l	mg/l	s.u.	mg/l	cfu/100 ml	mg/l	mg/l
2/20/18	2.458	**	**	7.3			***	***
2/21/18	5.625	18	45	7.6			3.0	***
2/22/18	3.017	16	16	7.6			3.1	6.3
2/23/18	1.783	13	10	7.5			3.3	7.7
2/24/18	0.963	12	7	7.8			3.8	7.8
2/25/18	0.346	9.6	8	7.3			5.6	7.9
2/26/18	0.054	9.6	18	**			***	***

*Note: Disinfection is only required form April 1 through October 31 each year. These parameters are not sampled if the discharged occurs outside of this time period. ** 24 hour Composite Samples were obtained from 1:10 pm to 1:10 pm each day and the data was reported on the date the composite sampling ended. *** No sample was obtained; NH3-N and DO testing are not required by the NPDES Permit.

(E) A description of any public access areas potentially impacted by each CSO discharge.

All discharges for Outfall 002 were monitored in accordance with the terms and conditions contained in the NPDES Permit, except for the failure to obtain a pH sample on February 26, 2018, due to a misinterpretation of the NPDES Permit sampling requirements. There were zero violations of the limits for Outfall 002 contained in the NPDES Permit and, therefore, there were no potentially impacted public access areas affected by the discharges from the Wet-Weather Treatment Facility Outfall 002.

(F) Representative precipitation data in total inches to the nearest 0.1 inch that resulted in a CSO discharge, if precipitation was the cause of the discharge.

The Rainfall Summary Table below, presents the rainfall data pursuant to each discharge from the District's Wet-Weather Treatment Facility Outfall 002.

Precipitation Summary for Outfall 002 Discharges Events

Date	Rainfall Total Inches	Volume of Discharge MGD	Was Snow Melt a Contributing Factor
2/19/18	1.20 Inches	0.000	
2/20/18	2.12 Inches	2.458	Yes
2/21/18	0.38 Inches	2.458	Yes
2/22/18		5.625	Yes
2/23/18	0.04 Inches	3.017	Yes
2/24/18	0.01 Inches	1.783	Yes
2/25/18	0.03 Inches	0.963	Yes
2/26/18		0.346	Yes
2/27/18		0.054	Yes
2/28/18	0.01 Inches	0.000	
3/1/18	0.71 Inches	0.000	

*Note: The Michigan City Sanitary District records rainfall from six remote weather stations sites throughout the City. The information presented in this table is the average data of these six sites. Additionally, all snow is converted to rainfall.

**On February 19, 2018, a slow-moving precipitation event began to move across Indiana and rain fell for 41 hours from February 19, 2018 through February 21, 2018, with a three-day total of 3.62 inches of rain. Additional rain was received on February 23, 24, and 25, 2018, bringing the seven-day total to 3.70 inches. This rain event, the snow melt, and the frozen ground led to widespread flooding throughout northwest Indiana, and even caused the closure of many State Roads (some of which remained closed through March 31, 2019). See the attached narrative description of the discharge event for more information.

(F) Permittee contact information.

See General Information Section at the top of this Report.

(G) Summary of implementation of the nine minimum controls and the status of implementation of the District's Long-Term CSO Control Plan (or other plans to reduce or prevent CSO discharges).

The Michigan City Sanitary District has completed the implementation of the nine minimum controls. This work was completed over ten (10) years ago. The following Table lists the Nine Minimum Controls and summarizes means by which the control was implemented.

Long-Term CSO Control Plan - NINE MINIMUM CONTROLS

Nine Minimum Technology-Based Controls	Pollution Control Categories		
	Source Control	Collection System Control	Treatment Plant Control
Proper operation and maintenance of collection system		X	
Maximum use of collection system for storage		X	
Review and modification of pretreatment programs	X		
Maximization of flow to and through POTW for treatment		X	X
Prohibition of CSO discharges during dry weather		X	X
Control of solid and floatable materials in CSO discharges		X	X
Pollution prevention programs	X		
Public notification to ensure that public receives adequate notification of CSO occurrences and CSO impacts	X*		
Monitoring to effectively characterize CSO impacts, and efficacy of CSO controls	X	X	X

*Note: Achieved through implementation of the State and Federal CSO Notification rules.

The Michigan City Sanitary District submitted its Long-Term CSO Control Plan to the IDEM in April 2002 and the IDEM subsequently approved the District's LTCP in April of 2004. The Long-Term CSO Control Plan was fully implemented by 2006.

(i) A description of key milestones remaining to complete implementation of the CSO Control Plan.

The Long-Term CSO Control Plan is fully implemented and all Key Milestones have been achieved.

(ii) A description of the average annual number of CSO discharges anticipated after implementation of the Long-Term CSO Control Plan (or other plan relevant to reduction of CSO overflows) is completed.

The Long-Term CSO Control Plan is fully implemented. The Michigan City Sanitary District does not have combined sewer overflow points as defined by 40 CFR 403.3(r). This code defines a Combined Sewer Overflow (CSO) as a discharge from a combined

sewer system (CSS) at a point **prior** to the Publicly Owned Treatment Works (POTW) Treatment Plant. While technically not a CSO outfall, the discharge from the Sanitary District's Wet-Weather Treatment Facility - Outfall 002 - is labeled as such, in the Michigan City Sanitary District's NPDES Permit. Discharges from Outfall 002 rarely occur. There have only been two (2) discharge events since July 2011, and only one discharge event in the last six (6) years. Prior to the February 2018 discharge event, the last discharges occurred on June 28, 2013 and July 3, 2011. Discharges from Outfall 002 receive screening and grit removal by the main Treatment Plant, and aeration, settling, and during the recreational season of April 1 through October 31 disinfection and de-chlorination, by the Wet-Weather Treatment Facility, before discharge.

Wet-Weather "CSO" Treatment Facility Discharge events in last 10 years
Outfall 002 Discharges Events

Date	Number of Events	Dates	Was Snow Melt a Contributing Factor
2010	0		
2011	1	7/2/11 to 7/3/11	NO
2012	0		
2013	1	6/26/13 to 6/28/13	NO
2014	0		
2015	0		
2016	0		
2017	0		
2018	1	2/20/18 to 2/26/18	Yes
2019 (to date)	0		
Total	3	N/A	N/A

2018 - Narrative Description "CSO Discharges"
Discharges from the WET-Weather Treatment Facility
Outfall 002
Michigan City Sanitary District
NPDES Permit No. IN0023752

Discharges from the Wet-Weather Treatment Facility Outfall 002:

Outfall 002 is the discharge location for our Wet-Weather Treatment Facility but it is classified as a Combined Sewer Overflow (CSO) in our NPDES Permit. However, the discharge is not an overflow from the sewer system, as the discharge occurs after the incoming wastewater receives screening, aeration, and settling (and disinfection and de-chlorination from April 1 through October 31).

The Wet-Weather Treatment Facility, a/k/a the Combined Sewage Storage Basin (CSSB), can store up to 6 MG of wastewater (combined storm and sanitary). This stored wastewater is typically pumped through the Primary/Secondary/Tertiary Wastewater Treatment Facility for treatment. However, on February 20, 2018, at 1:10 pm, the storage capacity of the Wet-Weather Treatment Facility was exceeded due to wet weather and a discharge began from Outfall 002. The last time there was a discharge from the Wet-Weather Treatment Facility was on June 28, 2013 (1,698 days prior).

The Michigan City area received snow for eight (8) of nine (9) days from February 3 to February 11, 2018, with major snow events occurring on February 9 and February 11, 2018. The total snow amounts from the February 9 and 11, 2018 events reached approximately 15 inches and contractors were hired to help the City relocate massive piles of snow during this snow emergency.

While warmer weather ensued on February 14 and 15, 2018 (43° F and 45° F, respectively), and light rain was received on February 15 and 17, 2018, large piles of plowed snow still existed throughout the Michigan City area, and the ground still contained a considerable depth of frost.

On February 19, 2018, a slow-moving precipitation event began to move across Indiana and rain fell for 41 hours from February 19 through February 21, 2018, with a three day total of 3.62

inches of rain. Additional rain was received on February 23, 24, and 25, 2018, bringing the seven day total to 3.70 inches. This rain event, the resultant snow melt, and the frozen ground led to widespread flooding throughout northwest Indiana, and even caused the closure of many State Roads (some of which remained closed through March 31, 2018).

We attempted to treat as much wastewater flow as possible through our Primary/Secondary/Tertiary Wastewater Treatment Facility, but the impact of the incoming flow from this rain event, combined with the significant snow melt and frozen ground, was more than our treatment plant could handle and a discharge from the Wet-Weather Treatment Facility began on February 20, 2018 at 1:10 pm. Because of the saturated ground and widespread flooding, the incoming flows to the Primary/Secondary/Tertiary Wastewater Treatment Facility remained high and the discharge from the Wet-Weather Treatment Facility continued until 7:25 am on February 26, 2018. The average design capacity of our Primary/Secondary/Tertiary Wastewater Treatment Facility is 12 MGD and peak design capacity is 15 MGD. The daily flow totals brought into the treatment facility for Primary/Secondary/Tertiary Wastewater Treatment and the discharge totals from the Wet-Weather Treatment Facility are presented in Table 1, below.

Table 1
Rainfall and Treatment Facility Total Flows

Date	Rain	Primary/Secondary/Tertiary Wastewater Treatment Facility Flow	Wet-Weather Treatment Facility Flow
February 19, 2018	1.20 Inches	10.54 MG	-0-
February 20, 2018	2.12 Inches	23.41 MG	2.458 MG
February 21, 2018	0.38 Inches	24.58 MG	5.625 MG
February 22, 2018		21.44 MG	3.017 MG
February 23, 2018	0.04 Inches	17.84 MG	1.783 MG
February 24, 2018	0.01 Inches	17.78 MG	0.963 MG
February 25, 2018	0.03 Inches	17.29 MG	0.346 MG
February 26, 2018		17.08 MG	0.054 MG
February 27, 2018		16.44 MG	-0-
February 28, 2018	0.01 Inches	16.76 MG	-0-
March 1, 2018	0.71 Inches	16.87 MG	-0-

Influent flows were maintained above the 15 MGD Peak capacity rating through March 1, 2018, to drain the Wet-Weather Treatment Facility because more rain was predicted. These efforts were successful and there has not been another discharge from the Wet-Weather Treatment Facility, to date. The total volume discharged from the Wet-Weather Treatment Facility from February 20 through February 26, 2018, was 14.246 MG, with 11.100 MG or 80% of the total volume discharging in the first three days. The discharge was sampled for CBOD5, Total Suspended Solids (TSS), pH, Ammonia-Nitrogen (NH3-N), and Dissolved Oxygen (DO). The results of this sampling are presented in Table 2, below.

Table 2

Sampling Results from Wet-Weather Treatment Facility Discharges – Outfall 002

Date	Wet-Weather Treatment Facility Flow	pH (s.u.)	CBOD5 (mg/l)	TSS (mg/l)	NH3-N (mg/l)	DO (mg/l)
February 20, 2018	2.458 MG	7.3	*	*	**	**
February 21, 2018	5.625 MG	7.6	18	45	3.0	**
February 22, 2018	3.017 MG	7.6	16	16	3.1	6.3
February 23, 2018	1.783 MG	7.5	13	10	3.3	7.7
February 24, 2018	0.963 MG	7.8	12	7	3.8	7.8
February 25, 2018	0.346 MG	7.3	9.6	8	5.6	7.9
February 26, 2018	0.054 MG	**	9.6	18	**	**
Average	2.035 MG	N/A	13.0	17.3	N/A	N/A

Notes: Outfall 002 Data is reported in accordance with clarification from the IDEM (see email attached to Wet-Weather Treatment Facility MMR). * 24 hour Composite Samples were obtained from 1:10 pm to 1:10 pm each day and the data was reported on the date the composite sampling ended. ** No sample was obtained; NH3-N and DO testing are not required by the NPDES Permit.

The NPDES Permit does not contain numeric effluent limits for the discharge from the Wet-Weather Treatment Facility, Outfall 002, with the exception of *E. coli* and total residual chlorine, but these limits and sampling requirements are only applicable from April 1 through October 31. However, the results can be compared to the Permit limits for the Primary/Secondary/Tertiary Wastewater Treatment Facility's discharge from Outfall 001. Tables 3 through 7, below, contain such comparisons.

Table 3
Wet-Weather Treatment Facility Discharge pH Comparison

Date	Outfall 001 pH (s.u.) Daily Range Limits	Wet-Weather Treatment Facility pH (s.u.)	Would the Limit at Outfall 001 have been met?
February 20, 2018	6.0 to 9.0	7.3	Yes
February 21, 2018	6.0 to 9.0	7.6	Yes
February 22, 2018	6.0 to 9.0	7.6	Yes
February 23, 2018	6.0 to 9.0	7.5	Yes
February 24, 2018	6.0 to 9.0	7.8	Yes
February 25, 2018	6.0 to 9.0	7.3	Yes

Table 4
Wet-Weather Treatment Facility Discharge CBOD5 Comparison

Date	Outfall 001 CBOD5 (mg/l) Weekly Average Limit	Wet-Weather Treatment Facility CBOD5 (mg/l) Average	Would the CBOD5 Limit at Outfall 001 have been met?
February 20-26, 2018	7.5	13	No

Table 5
Wet-Weather Treatment Facility Discharge TSS Comparison

Date	Outfall 001 TSS (mg/l) Weekly Average Limit	Wet-Weather Treatment Facility TSS (mg/l) Average	Would the CBOD5 Limit at Outfall 001 have been met?
February 20-26, 2018	9	17.3	No

Table 6
Wet-Weather Treatment Facility Discharge NH3-N Comparison

Date	Outfall 001 NH3-N (mg/l) Daily Maximum Limit	Wet-Weather Treatment Facility NH3-N (mg/l)	Would the Limit at Outfall 001 have been met?
February 21, 2018	3.3	3.0	Yes
February 22, 2018	3.3	3.1	Yes
February 23, 2018	3.3	3.3	Yes
February 24, 2018	3.3	3.8	No
February 25, 2018	3.3	5.6	No

Table 7
Wet-Weather Treatment Facility Discharge DO Comparison

Date	Outfall 001 DO (mg/l) Daily Minimum Limit	Wet-Weather Treatment Facility DO (mg/l)	Would the Limit at Outfall 001 have been met?
February 22, 2018	7	6.3	No
February 23, 2018	7	7.7	Yes
February 24, 2018	7	7.8	Yes
February 25, 2018	7	7.9	Yes

The data presented above in Tables 3 through 7, shows that twelve (12) measurements would have achieved compliance with the Outfall 001 limits and five (5) measurements would not have achieved compliance with the Outfall 001. However, if the discharges from Outfall 001 and 002 were combined into one outfall the combined waste stream would easily have achieved compliance with all the limits for Outfall 001. Tables 8 through 11, provide the theoretical discharge quality values of a combined Outfall 001 + 002 and compare this information to the limits provided for Outfall 001. See the attached Flow Weighted Values of a Theoretical Combined Outfall 001 + 002 Wastestream Chart for more information.

Table 8
Combined Discharge CBOD5 Comparison

Date	Outfall 001 CBOD5 (mg/l) Weekly Average Limit	Combined Discharge CBOD5 (mg/l) Weekly Average	Would the CBOD5 Limit at Outfall 001 have been met?
February 20-26, 2018	7.5	3.07	Yes

Table 9
Combined Discharge TSS Comparison

Date	Outfall 001 TSS (mg/l) Weekly Average Limit	Combined Discharge TSS (mg/l) Weekly Average	Would the TSS Limit at Outfall 001 have been met?
February 20-26, 2018	9	3.10	Yes

Table 10
Combined Discharge NH3-N Comparison

Date	Outfall 001 NH3-N (mg/l) Daily Maximum Limit	Combined Discharge NH3-N (mg/l)	Would the NH3-N Limit at Outfall 001 have been met?
February 21, 2018	3.3	0.6	Yes
February 22, 2018	3.3	0.4	Yes
February 23, 2018	3.3	0.3	Yes
February 24, 2018	3.3	0.2	Yes
February 25, 2018	3.3	0.1	Yes

Table 11
Combined Discharge DO Comparison

Date	Outfall 001 DO (mg/l) Daily Minimum Limit	Combined Discharge DO (mg/l)	Would the DO Limit at Outfall 001 have been met?
February 22, 2018	7	10.77	Yes
February 23, 2018	7	10.76	Yes
February 24, 2018	7	10.77	Yes
February 25, 2018	7	10.81	Yes

In conclusion, this discharge event was the first discharge from Outfall 002 since June 28, 2013, and only the second such event since July 3, 2011. There were zero violations of the limits for Outfall 002 contained in the NPDES Permit, and the results of the additional monitoring of the discharges from Outfall 002 demonstrate no adverse effect on the receiving stream (Trail Creek) or Lake Michigan. Therefore, there were no potentially impacted public access areas affected by the discharges from the Wet-Weather Treatment Facility Outfall 002 in 2018.