Origination Date: 4/2019
Revision Dates:

CITY OF SUPERIOR

SUPERIOR
WISCONSIN
Living up to our name.

Combined Sewer Overflow Public Notification Plan
2018 Annual Notice

Prepared by:
ESD Staff

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SECTION 1 – INTRODUCTION

The City of Superior Environmental Services Division of Public Works (ESDPW) serves a population of 27,244 within the city of Superior (2010 census), and satellite sewer system of the Parkland Sanitary District. ESDPW operates four treatment facilities: the main treatment plant, and three auxiliary treatment facilities (CSTP). The three auxiliary treatment facilities have storage basins at each location. Updates to the collection system and main treatment plant, and changes made to the way the treatment facilities are run, have made overflows rare. Figure 1.1 shows the number of combined sewer overflow events per year since 1999. Figure 1.2 shows the total annual volume of combined sewer overflows since 1999. Table 1.1 lists each combined sewer overflow location and its receiving water. All CSOs at these facilities receive a minimum of treatment, including primary clarification and floatables removal prior to discharge, and are classified as "Treated Combined Sewer Overflows."

ESDPW is preparing this annual notice in response to the new federal regulations, 40 CFR 122.38, which were published in the *Federal Register* on January 8, 2018, and became effective on February 7, 2018. For overflows to the Great Lakes Basin, these new regulations establish minimum overflow notification procedures and the preparation of a notification plan no later than August 7, 2018. These regulations also establish minimum requirements, starting on February 7, 2019, for providing an annual notice describing the CSO discharges from its discharge point(s) that occurred in the previous calendar year by May 1 of each calendar year.

Figure 1.1

Number of Combined Sewer Overflow Wet Weather Events Per Year

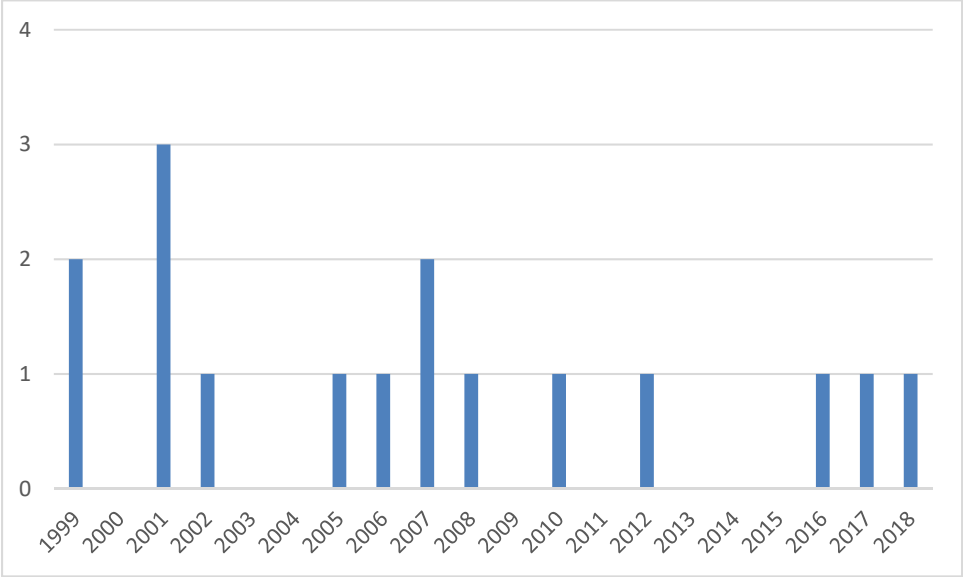

Figure 1.2
Annual Total Combined Sewer Overflow Volume
(millions of gallons)

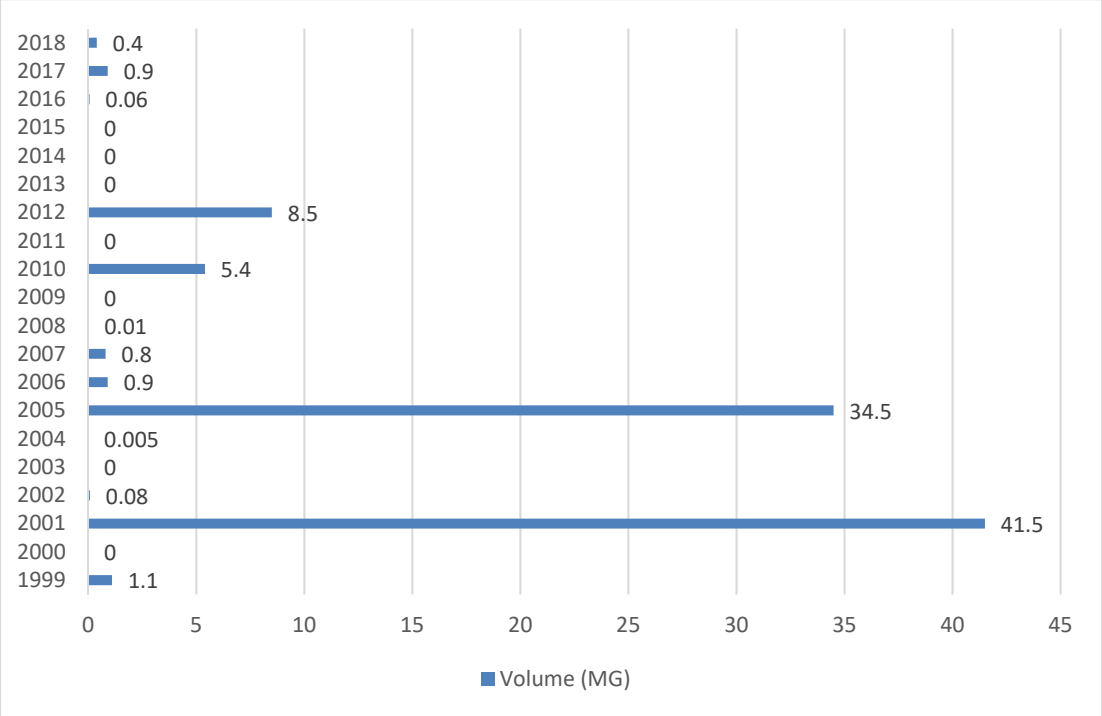

Table 1.1
Combined Sewer Overflow Locations

Name	Location	Surface Water
CSTP 2	51 E. 1st Street	Superior Bay
CSTP 5	61st Street & Birch Avenue	Nemadji River
CSTP 6	Texas Avenue & 17th Street	St. Louis River

SECTION 2 – 2018 COMBINED SEWER OVERFLOW EVENTS

2.1. Combined Sewer Overflow Event Details

CSO Event 1

Location:	CSTP 6
Date:	6/17/2018
Starting time:	5:50 PM
Duration:	5 hours 55 minutes
Estimated Volume:	369,233 gallons
Cause:	An intense period of rainfall combined with saturated clay soil

Potentially impacted public access areas:

Arrowhead Public Boat Launch

Overflow monitoring data:

Samples collected 6/17/2018 5:50 PM

Tests performed and results:

TSS	73 mg/L
pH	7.42
BOD	(4 samples) 9.28, 7.45, 7.15, 7.44 mg/L
Phosphorus	0.458 mg/L
F. coli	15,000 CFU/100 ml

Precipitation data:

Presidential Disaster Declaration FEMA-4383-DR

Rain event start date:	6/15/2018
Rain event start time:	5:00 AM
Rain event end date:	6/17/2018
Rain event end time:	5:00 PM
Amount of rainfall:	4.0 inches

Supporting documentation:

City of Superior Combined Sewage Overflow or Bypass Notification, Form 3400-184C, forwarded to the WI DNR 6/22/2018 (Appendix A)

ESDPW Overflow Data Sheet and lab results (Appendix B)

National Weather Service-Duluth Office, Record of River and Climatological Observations June 2018 (Appendix C)

SECTION 3 – OVERFLOW REDUCTION EFFORTS

Per the EPA's CSO Control Policy, the Nine Minimum Controls for Combined Sewer Overflows, and the City of Superior's actions on these controls, are:

1. *Proper operation and regular maintenance programs for the sewer system and CSO outfalls;*
   The City of Superior has a Capacity Management Operation and Maintenance (CMOM) program, which includes goals for routine cleaning of sanitary and combined sewers, repair and rehabilitation of collection system manholes and inlets/catch basins, and inspection of sanitary and combined sewers and manholes. These goals are routinely met and exceeded by the City of Superior.
2. *Maximum use of the collection system for storage;*
   In addition to storage inherently available within the sewers themselves, the auxiliary treatment facilities within the combined sewage districts in the City of Superior have basins for storage of wet weather flows.
3. *Review and modification of pretreatment requirements to ensure that CSO impacts are minimized;*
   The City of Superior has a Pretreatment Program that ensures flows to public sewers meet specific requirements per City, State and Federal regulations.
4. *Maximization of flow to the POTW for treatment;*
   In 2018, over 99.9% of flow was discharged through a POTW. Additionally, at least 99.9% of flow was discharged through a POTW from 2014 to 2017.
5. *Elimination of CSOs during dry weather;*
   The City of Superior has not had a dry weather CSO in the last ten years.
6. *Control of solid and floatable materials in CSOs;*
   Control of solid and floatable materials in CSOs is obtained by the installation of baffles at the overflow locations settling within the basins at the auxiliary treatment facilities. Solids within the basins are routinely removed and disposed of at the local landfill.
7. *Pollution prevention programs to reduce contaminants in CSOs;*
   The City of Superior has a robust Pollution Prevention Program that includes control measures (Mutt Mitt dispensers, weekly street sweeping, etc.), public education (brochures, fliers, websites, tabling or speaking at events, tours, etc.), an illicit dumping program (ordinances, inspections, enforcement), construction oversight (plan review, permitting, inspections, enforcement), and an industrial pretreatment program for local industries.
8. *Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts; and*
   The City of Superior has implemented a Combined Sewer Overflow Public Notification Plan, which includes, but is not limited to, notification through a publicly accessible website, notification to the Douglas County Health Department and the local private water utility, and press release to the Superior Telegram.

9. *Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.*
   The City of Superior has completed its LTCP Post Construction Monitoring Plan and submitted the final report to the Wisconsin DNR on March 23, 2015.

Additionally, the City of Superior has a Combined Sewer Overflow Long Term Control Plan in effect.

SECTION 4 – CHANGES TO OVERFLOW LOCATIONS OR PUBLIC NOTIFICATION PLAN

4.1 Overflow Location Changes

No changes have been made to any overflow locations in 2018.

4.2. Public Notification Plan Changes

The City of Superior Combined Sewer Overflow Public Notification Plan was originated in August 2018, with updates made in February 2019. A current copy of this document is available online at http://www.ci.superior.wi.us/902/Combined-Sewer-Overflows.

SECTION 5 – CONTACT INFORMATION

Any question or comments regarding this notice shall be forwarded to:
Jon Shamla
Wastewater Engineering and Operations Manager
City of Superior
Environmental Services Division of Public Works
(715) 394-0392 x 1008
shamlaj@ci.superior.wi.us

APPENDICES

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APPENDIX A – CITY OF SUPERIOR COMBINED SEWAGE OVERFLOW OR BYPASS NOTIFICATION, FORM 3400-184C, EVENT DATE 6/17/2018

City of Superior
Combined Sewage Overflow or Bypass Notification

[City Form 3400-184C (7/09)]

To the State of Wisconsin, Department of Natural Resources

This amended form is submitted to the State of Wisconsin, Department of Natural Resources as the equivalent to Form 3400-184 (4/02) Sanitary Sewer Overflow or Bypass Notification Summary Report as referenced below, modified to be consistent with the City of Superior Long Term Control Plan.

Notice: Under s.283.55 (1)(dm), Wis. Stats., and in accordance with WPDES permit reporting requirements, all permittees shall provide the following notices if an **unscheduled** combined sewage overflow or bypass occurs:

- Within **24 hours** of the occurrence, notify the DNR regional wastewater staff by telephone (FAX, email or voice mail, if staff is unavailable).
- Within **5 days** of the occurrence, provide a written report describing the overflow or bypass overflow or bypass, including all information requested on this form. The permittee is required to submit this form or other equivalent written notification to the DNR Regional Office.

Failure to notify the Department as specified may result in fines up to $10,000 for each day of violation [s. 283.91(2), Wis. Stats.].

Personally identifiable information will be used for program administration and will also be made available to requesters as required under Wisconsin Open Records law [ss. 19.31 - 19.39, Wis. Stats.].

Instructions: Use this form to report all **unscheduled combined sewage overflow or bypass occurrences.** Attach additional information as necessary to explain or document the overflow or bypass. For the purposes of this report, combined sewer overflow means a discharge of a combination of storm and sanitary wastewater or storm and industrial wastewater directly or indirectly to the waters of the state when the volume of wastewater flow exceeds the transport, storage or combined sewage treatment plant capacity of a combined sewer system (ss281 Water and Sewage (b)). For the purposes of this report, bypass means the diversion of waste streams around any portion of the treatment works.

Use one form per occurrence. A single occurrence may be more than one day if the circumstance causing the overflow or bypass results in a discharge duration more than 24-hours. If there is a stop and restart of the overflow or bypass within 24-hours, but it is caused by the same circumstances, report it as one occurrence. If the discharges are separated by more than 24 hours, they should be reported as separate occurrences.

Notification Information		**Combined Sewage Overflow or Bypass Reported To DNR**	
Permittee (Municipality or Facility Name) City of Superior		Date 6-18-2018	Time 11:20 ☒ am ☐ pm
Person Representing Permittee Who Contacted DNR Max Lucci, City of Superior		DNR Office and Person Contacted Superior Office, Eric De Venecia	
Combined Sewage Overflow or Bypass Details			
Date(s) and Duration of Overflow or Bypass Occurrence (complete a separate form for **each occurrence**)			
Start Date 6/17/2018	Time (to nearest 15 minutes) 5:50 ☐ am ☒ pm	End Date 6/17/2018	Time (to nearest 15 minutes) 11:45 ☐ am ☒ pm
Duration of the overflow or bypass (hours and minutes) 5 hours and 55 minutes		Estimated Volume of Wastewater Discharged (gallons) 369,233 gallons	

Location of the Overflow or Bypass (complete a separate form for **each discharge location**)

☐ CSTP 2 ☐ CSTP 5 ☒ CSTP 6 ☐ Other (specify) _____

Circumstances Causing the Overflow or Bypass (check all that apply)

☒ Rain	☐ Power Outage	☐ Equipment Failure
☐ Rain and Snow Melt	☐ Plugged Sewer	☐ Widespread Flooding
☐ Snow Melt	☐ Broken Sewer	☐ Other (explain below)

Narrative Description. Explain why the overflow or bypass occurred. For example, describe what equipment failed, what caused the power outage, or what plugged the sewer. Flooding should only be indicated as a cause if there is significant flooding caused by high river, stream, or lake water levels, not just localized high water in the street.

An intense period of rainfall combined with clay soil contributed to high flow conditions. The resulting flow into the CSTP 6 facility exceeded that facility's capacity to treat wastewater.

Please note that this is a treated combined sewer overflow, with treatment consisting of primary settling and control of floatables.

City of Superior
Combined Sewage Overflow or Bypass Notification

Form 3400-184C (07/09)

Wet Weather Data (if applicable)

Document weather conditions if they contributed to the cause of the overflow or bypass. An overflow or bypass may be caused by a series of short rain storms or in combination with a snow melt. Wet weather data should include the cumulative amount of precipitation that caused the overflow or bypass.

Date(s) and Duration of Rainfall

Start Date	Time (to nearest 15 minutes)	End Date	Time (to nearest 15 minutes)
6/15/2018	5:00 ☒ am ☐ pm	6/17/2018	5:00 ☐ am ☒ pm

Amount of Rainfall (nearest rain gauge to 0.1 inch accuracy)	Amount of Snow Melt (estimated inches melted)
4.0 inches	N/A

Contributing Soil Conditions (saturated, frozen, soil type) Clay soil

Receiving Water Information (check all that apply)

Provide the name of the local receiving water that the wastewater entered, which could be a nearby stream, river, lake, or wetland. If discharge did not enter directly into a surface water, but indirectly by way of a ditch or storm sewer, trace the path of the ditch or storm sewer to find the receiving water

- ☐ Runs on ground and absorbs into the soil.
- ☒ Ditch. Name of surface water it drains to: The St. Louis River
- ☐ Storm sewer. Name of surface water it drains to: _____
- ☐ Surface water direct discharge: _____
- ☐ Other, describe: _____

Actions to Correct This Occurrence and To Prevent Overflows or Bypasses

Describe what actions were taken to minimize the volume of the overflow or bypass reported on this form. Also describe what actions are planned to prevent or minimize overflows or bypasses. The EPA Combined Sewer Overflow Policy governs combined sewage overflows and bypasses from the POTW. If the permittee fails to operate and maintain the POTW to prevent prohibited overflows and bypasses as required, they will be subject to enforcement action.

The CSTP 6 facility was run at full capacity before, during, and after this period of overflow in an attempt to prevent and then minimize the volume of water overflowed. We will continue to operate and maintain this CSTP facility to mitigate the potential of future overflows at this facility.

Report Completed By

Authorized Representative Name (Print)	Title
Jon Shamla	Wastewater Treatment Engineering and Operations Manager

Authorized Representative Signature	Date
Jon Shamla	6/22/2018

APPENDIX B – ESDPW DATA SHEET AND LAB RESULTS

ESDPW Overflow Data Sheet (020115)

Section A (General Instructions)

When called for heavy rain or other events contributing to possible overflows, the following actions must be taken:

1. Check, at minimum, the following five areas frequently until overflow begins
   a. Lift Station #5
   b. Lift Station #6
   c. Lift Station #7
   d. Manhole at 36th Ave E. and 5th St. E.
   e. Manhole at ICO

2. Once an overflow has started the following must be performed:
   a. Collect a 1L grab sample and a sample for f. coli analysis
   b. Estimate the flow rate of the overflow
   c. Record the time and environmental conditions each time the overflow is checked in the data fields below (Section B).
   d. Check the overflow every 4-6 hours and estimate the flow by estimating the volume of flow, height of water column, etc.
   e. Contact the WDNR for verbal notification within 24 hours of the first overflow

3. Once the event has passed the following must be performed:
   a. Estimate the total amount of water that has overflowed

4. The following tests must be performed on overflow/CSO samples:
   a. Manholes, LS #5, LS #6, LS #7, and other overflows:
      i. TSS, BOD, *F. coli*
   b. CSO bypasses:
      i. TSS, pH, BOD, phosphorus, *F. coli*
   c. CSO Influent Samples:
      i. TSS, pH, BOD
   d. CSO Effluent Samples:
      i. TSS, pH, BOD, phosphorus, *F. coli*

Section B (Observation Data)

Date: 6-17-18 Location: CSO#6

DNR Office and person contacted: SUPERIOR, ENIC DE VENECIA Date/Time of Contact: 6-18-18, 11:20 AM

Contacted by: MAX LUCCI, ESDPW

Circumstances causing the overflow/bypass event:

- [x] Rain
- [ ] Rain and Snow Melt
- [ ] Snow Melt
- [ ] Power Outage
- [ ] Plugged Sewer
- [ ] Broken Sewer
- [ ] Equipment Failure
- [ ] Widespread Flooding
- [ ] Other

ESDPW Overflow Data Sheet (020115)

Date / Time: Weather Conditions/Observations:

6-17-18, 5:50 Pm ; 68°F ; 3" ABOVE
RAIN WEIR
SAMPLES COLLECTED. MMJ

6-17-18, 11:45 Pm ; 65°F ; OVERFLOW
MISTY, ENDED.
CLOUD COVER
MMJ

Start Time and Date of Event: 6-17-18, 5:50 Pm Total Amount of Precipitation: 4.04 INCHES

End Time and Date of Event: 6-17-18, 11:45 Pm Estimated Amount of Water Discharged: 369,233 GALLONS

Duration of Event: 5 HRS 55 MIN Start Time and Date of Precipitation: 6-15-18, 5:00 Am

End Time and Date of Precipitation: 6-17-18, 5:00 Pm

Does this overflow or bypass constitute a SSO or a CSO? Why? CSO #6
OVERFLOW WEIRS

TSS Benchsheet [07-18-2017]

Analysis Date	06/18/18
Sample Date	06/17/18

Facility:	City of Superior, ESDPW Lab	
Method:	SM 2540D (1997)	

Read In Weights		Read Out Weights		Re-dry back in TSS Oven		Re-dry out of TSS Oven	
Analyst	TMS	Analyst	TMS	Analyst	TMS	Analyst	TMS
Date Samples In	06/18/18	Date Samples Out	06/18/18	Date Samples In	06/18/18	Date Samples Out	06/18/18
Time Samples In	9:28 am	Time Samples Out	10:42 am	Time Samples In	10:48 am	Time Samples Out	11:50 am

Control Limits			
Minimum Sample Weight	0.0010 g	Minimum oven drying time	1 hr
Maximum Sample Weight	0.2000 g	Minimum oven drying time for re-dry	1 hr
Weight Difference must be ≤	0.0005 g		

Sample ID	Pan ID	Sample Volume Used (mL)	Sample plus filter weight after 1st dry (g)	Filter weight (g)	Sample Weight (g)	TSS (mg/L)	Sample plus filter weight after re-dry (g)	Weight difference btw dry cycles (g)
MPINF061718	GRIT	100	0.1191	0.1136	0.0055	55	0.1191	0.0000
MPEFF061718	EFF	150	0.1188	0.1143	0.0045	30	0.1187	0.0001
PRIINF061718	PH	50	0.1210	0.1138	0.0072	144		
PRIEFF061718	PRI EFF	100	0.1198	0.1149	0.0049	49		
AER061818	AER	15	0.1574	0.1150	0.0424	2827		
TP2EFF061618	CSTP2 EFF	250	0.1195	0.1151	0.0044	18	0.1195	0.0000
TP2INF061718	CSTP2 INF	100	0.1148	0.1070	0.0078	78	0.1148	0.0000
LS50VF061718	LS5 OVF	200	0.1177	0.1076	0.0101	50		
CS060VF061718 ~~LS6~~ TMS	CS06 OVF	150	0.1169	0.1059	0.0110	73		

City of Superior, ESDPW Lab (Supplemental Data Sheet: Page 1 of 2) [06-01-2011]

Analysis Date	06/18/18
Sample Date	06/17/18
Precipitation (Inches)	2.44
Duration (Hours)	9
Main Plant Effluent Grab DO (mg/L)	7.75
DO Analyst	TMS

pH Analyst	TMS
pH Meter Calibration Slope (%)	99.2
Grab Sample ID	**pH (s.u.)**
MPINF061818	7.~~46~~ 51 TMS
MPEFF061818	7.47
TP2INF061818	7.40
TP2EFF061818	7.33
CS060VF061718	7.42
TP5INF061818	7.~~4~~ 57 TMS
TP5EFF061818	7.59
TP6INF061818	7.46
TP6 EFF061818	7.54

City of Superior, ESDPW Lab (Supplemental Data Sheet: Page 2 of 2) [06-01-2011]

Composite Sample ID	Settable Matter (mL/L)
MPINF061718	2
MPEFF061718	0.2
PRIINF061718	4

Grab Sample ID	F. Coli Raw Data / Initials	F. Coli (CFU/100mL)	E. Coli Raw Data / Initials	E. Coli (CFU/100mL)
	IN 06/18/18 11:06 am TMS OUT 06/19/18 11:06 am KRP		IN 06/18/18 11:06 am TMS OUT 06/19/18 11:06 am KRP	
MPEFF061818	0/B 3/0.2 3/1.0 52/10	520	0/B 1/0.2 8/1.0 58/10	580
	IN 06/18/18 11:21 am TMS OUT: 06/19/18 11:21 am KRP		IN 06/18/18 11:21 am TMS OUT 06/19/18 11:21 am KRP	
TP2EFF061818	0/B 0/0.2 0/1.0 2/10	18	0/B 0/0.2 0/1.0 0/10	<9
	IN 06/18/18 11:35 am TMS OUT 06/19/18 11:35 am KRP		IN 06/18/18 11:35 am TMS OUT 06/19/18 11:35 am KRP	
TP5EFF061818	0/B 22 KRP 21/0.1 42/0.2 162/1.0	21,333 ~~21,000~~ MMJ	0/B 21/0.1 65/0.2 163/1.0	21,000
	IN 06/18/18 11:48 am TMS OUT 06/19/18 11:48 am KRP		IN 06/18/18 11:48 am TMS OUT 06/19/18 11:48 am KRP	
TP6EFF061818	0/B 16/0.1 17/0.2 107/1.0	10,769	0/B 13/0.1 16/0.2 77/1.0	8,154

C/BOD5 Benchsheet [07-18-2017]

Facility:	City of Superior, ESDPW Lab

Method:	SM 5210B (2001)	

Traceability Information	
Analysis Date	06/18/18
Sample Date	06/17/18
Dilution Water Bottle ID	JUG #6
Nutrient Pillow ID	13APR18C, 10OCT17F, 01FEB18A
GGA ID	02MAY18A
Seed ID	AER061818
Nitrification Inhibitor ID	28MAR18A
Seed Decant Settling Time (min)	12

Read In Calibration	
Analyst	TMS
WSA Temp (°C)	21.3
WSA Pressure (mm Hg)	748
WSA DO (mg/L)	8.71
Theoretical DO (mg/L)	8.69
(TDO - WSA DO) mg/L	-0.02
Date Bottles In	06/18/18
Time Bottles In	3:07 pm

Read Out Calibration	
Analyst	KRP
WSA Temp (°C)	21.2
WSA Pressure (mm Hg)	741
WSA DO (mg/L)	8.67
Theoretical DO (mg/L)	8.63
(TDO - WSA DO) mg/L	-0.04
Date Bottles Out	06/23/18
Time Bottles Out	10:30am

Control Limits
Blank ≤ 0.24 mg/L
GGA = (167.5 to 228.5) mg/L
pH = (6.0 to 8.5) s.u.
Residual DO ≥ 1.0 mg/L
DO Depletion ≥ 2.0 mg/L
WSA/Sample Temp = 20 ± 3°C
(TDO - WSA DO) within ± 0.2 mg/L
DOi ≤ (TDO + 0.4) mg/L
Code Defintions
NI = Nitrification inhibitor added
PD = Sample pre-diluted
AN = Additional nutrients added

Composite Sample Check Data			
Sample ID	pH (s.u.)	Temp prior to dilution (°C)	Code
MPINF061718	7.76	18.6	NI
MPEFF061718	7.71	21.4	NI AN
PRIINF061718	7.58	18.7	NI

SC = 0.1188 for 3mL Seed

Sample ID	Bottle ID	Sample Volume Used (mL)	Seed Volume added (mL)	Initial DO (mg/L)	Final DO (mg/L)	DO Depletion (mg/L)	Seed Control Factor (mg/L) per mL	DO Depletion minus Seed Contribution (mg/L)	Dilution Factor	C/BOD5 (mg/L)	Average C/BOD5 (mg/L) for passing dilutions
Blank	201		~~30~~ TMS	8.72	8.64	0.08				0.08	
Seed Blank 1	202	~~30~~ TMS	~~40~~ 30	8.73	7.35	1.38	0.0446				
Seed Blank 2	203	~~4~~	~~50~~ 40	8.72	6.86	1.86	0.0465				
Seed Blank 3	204		~~60~~ 50	8.70	6.63	2.07	0.0414				
Seed Blank 4	205		60	8.69	6.42	2.27	0.0378				
GGA	206	6	3	8.75	4.32	4.43	0.0396	4.3112	50	216	
MPINF061718	207	15	3	8.81	8.31	0.50	0.0396	0.3812	20	7.62	
MPINF061718	208	30	3	8.77	7.69	1.08	0.0396	0.9612	10	9.61	
MPINF061718	209	60	3	8.72	6.66	2.06	0.0396	1.9412	5	9.71	10
MPEFF061718	210	50	3	8.78	7.91	0.87	0.0396	0.7512	6	4.51	
MPEFF061718	211	100	3	8.69	6.83	1.86	0.0396	1.7412	3	5.22	
MPEFF061718	212	250	3	8.43	3.35	5.08	0.0396	4.9612	1.2	5.95	6
PRIINF061718	213	10	3	8.73	8.08	0.65	0.0396	0.5312	30	15.94	
PRIINF061718	214	20	3	8.67	7.64	1.03	0.0396	0.9112	15	13.67	
PRIINF061718	215	40	3	8.51	6.56	1.95	0.0396	1.8312	7.5	13.73	<14

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C/BOD5 Benchsheet [07-18-2017]

Facility:	City of Superior, ESDPW Lab

Method:	SM 5210B (2001)	

Traceability Information	
Analysis Date	06/18/18
Sample Date	06/17/18
Dilution Water Bottle ID	JUG #6
Nutrient Pillow ID	13APR18C, 10OCT17F, 01FEB18A
GGA ID	02MAY18A
Seed ID	AER061818
Nitrification Inhibitor ID	28MAR18A
Seed Decant Settling Time (min)	12

Read In Calibration	
Analyst	TMS
WSA Temp (°C)	21.3
WSA Pressure (mm Hg)	748
WSA DO (mg/L)	8.71
Theoretical DO (mg/L)	8.69
(TDO - WSA DO) mg/L	-0.02
Date Bottles In	06/18/18
Time Bottles In	3:07pm

Read Out Calibration	
Analyst	KRP
WSA Temp (°C)	21.2
WSA Pressure (mm Hg)	741
WSA DO (mg/L)	8.67
Theoretical DO (mg/L)	8.63
(TDO - WSA DO) mg/L	-0.04
Date Bottles Out	06/23/18
Time Bottles Out	10:30am

Control Limits
Blank ≤ 0.24 mg/L
GGA = (167.5 to 228.5) mg/L
pH = (6.0 to 8.5) s.u.
Residual DO ≥ 1.0 mg/L
DO Depletion ≥ 2.0 mg/L
WSA/Sample Temp = 20 ± 3°C
(TDO - WSA DO) within ± 0.2 mg/L
DOi ≤ (TDO + 0.4) mg/L
Code Defintions
NI = Nitrification inhibitor added
PD = Sample pre-diluted
AN = Additional nutrients added

Composite Sample Check Data			
Sample ID	pH (s.u.)	Temp prior to dilution (°C)	Code
PRIEFF061718	7.63	18.1	NI
TP2INF061718	7.63	17.9	
LS50VF061718	7.46	18.5	
CS060VF061718	7.42	18.8	

SC = 0.1188 for 3mL Seed

Sample ID	Bottle ID	Sample Volume Used (mL)	Seed Volume added (mL)	Initial DO (mg/L)	Final DO (mg/L)	DO Depletion (mg/L)	Seed Control Factor (mg/L) per mL	DO Depletion minus Seed Contribution (mg/L)	Dilution Factor	C/BOD5 (mg/L)	Average C/BOD5 (mg/L) for passing dilutions
PRIEFF061718	216	15	3	8.75	8.26	0.49	0.0396	0.3712	20	7.42	
PRIEFF061718	217	30	3	8.64	7.63	1.01	0.0396	0.8912	10	8.91	
PRIEFF061718	218	60	3	8.45	6.41	2.04	0.0396	1.9212	5	9.61	10
TP2INF061718	219	12	3	8.72	7.91	0.81	0.0396	0.6912	25	17.28	
TP2INF061718	220	25	3	8.71	7.12	1.59	0.0396	1.4712	12	17.65	
TP2INF061718	221	50	3	8.67	5.79	2.88	0.0396	2.7612	6	16.57	17
TP2INF061718	222	100	3	8.60	2.53	6.07	0.0396	5.9512	3	17.85	
LS50VF061718	223	12	3	8.75	8.03	KRP 0.72	0.0396	0.6012	25	15.03	
LS50VF061718	224	25	3	8.74	7.55	1.19	0.0396	1.0712	12	12.85	
LS50VF061718	225	50	3	8.74	6.27	2.47	0.0396	2.3512	6	14.11	14
LS50VF061718	226	100	3	8.75	3.75	5.00	0.0396	4.8812	3	14.64	
CS060VF061718	227	12	3	8.75	8.26	0.49	0.0396	0.3712	25	9.28	
CS060VF061718	228	25	3	8.75	8.01	0.74	0.0396	0.6212	12	7.45	
CS060VF061718	229	50	3	8.76	7.45	1.31	0.0396	1.1912	6	7.15	
CS060VF061718	230	100	3	8.79	6.19	2.60	0.0396	2.4812	3	7.44	7

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Total Phosphorus Sample Benchsheet [07-17-2017]

Method	EPA 365.1 rev. 2 (1993)		
Facility	City of Superior, ESDPW Lab		

Traceability Information		**Control Limits**	
CCV / LCS Standard ID	TMS5	Method Blank < LOD	
Spectrophotometer	GENESYS 20	CCV / LCS = 90% to 110%	
Wavelength (nm)	890	Samples preserved with sulfuric acid (pH < 2) ✓	
Hach (Green) DosiCap "Zip" ID	05APR18A	Samples neutralized prior to digestion (pH 6 to pH 8) ✓	
Hach Reagent "B" ID	05APR18A		
Hach (Grey) DosiCap "C" ID	05APR18A		
Spectrophotometer Blank	Undigested Distilled Water		
LOD (mg/L)	0.0092	Analysis Date	06/20/18
Block Temperature (°C)	150	Analyst	KRP
Final Digested Volume of Samples (mL)	2	Digestion Date	06/20/18
Date of calibration curve benchsheet	03/27/18	Digestion Analyst	KRP

Sample ID	Sample Vial (No.)	Absorbance	TP Conc. (mg/L) from Calibration Curve	Dilution Factor	Final TP Conc. (mg/L)
Reagent Blank	1	0.054		1	
CCV	2	0.375	0.528	1	0.528
Method Blank	3	0.0050	-0.011	1	-0.011
MPINF061618	4	0.100	0.1272	10	1.272
MPEFF061618	5	0.483	0.685	1	0.685
PRIEFF061618	6	0.087	0.1083	10	1.083
TP2EFF061618	7	0.398	0.561	1	0.561
MPINF061718	8	0.069	0.0820	10	0.820
MPEFF061718	9	0.461	0.653	1	0.653
PRIEFF061718	10	0.089	0.1112	10	1.112
KRP ~~CSOVF~~ CSO6OVF 061718	11	0.327	0.458	1	0.458
TP2EFF061718	12	0.313	0.438	1	0.438
TP5EFF061718	13	0.301	0.420	1	0.420
TP6EFF061718	14	0.305	0.426	1	0.426
MPINF061818	15	0.084	0.1039	10	1.039
MPEFF061818	16	0.354	0.497	1	0.497
PRIEFF061818	17	0.090	0.1126	10	1.126
KRP ~~CCV~~ TP2BASIN062018	KRP 218	0.225	0.309	1	0.309
CCV	2	0.377	0.531	1	0.531

COMMENTS: Absorbances are reagent blank corrected. CCV: 105.6%. CCV: 106.2%, MB: -0.011 < 0.0092 (LOD)

MPINF061718 result invalid d/t absorbance reading being < lowest concentration on standard curve. Sample will be rerun w/smaller dilution factor. 06/20/18 KRP

QC valid 06/20/18 KRP

City of Superior, ESDPW Lab (Supplemental Data Sheet: Page 1 of 2) [06-01-2011]

Analysis Date	06/17/18
Sample Date	06/16/18
Precipitation (Inches)	0.16 (MMJ)
Duration (Hours)	3.5 (MMJ)
Main Plant Effluent Grab DO (mg/L)	7.62
DO Analyst	TMS

pH Analyst	TMS
pH Meter Calibration Slope (%)	99.2
Grab Sample ID	**pH (s.u.)**
MPINF061718	7.41
MPEFF061718	7.36
TP2INF061~~6~~718 7 TMS	7.79

City of Superior, ESDPW Lab (Supplemental Data Sheet: Page 2 of 2) [06-01-2011]

Composite Sample ID	Settable Matter (mL/L)
MPINF061618	3
MPEFF061618	0.3
PRIINF061618	6

Grab Sample ID	F. Coli Raw Data / Initials	F. Coli (CFU/100mL)	E. Coli Raw Data / Initials	E. Coli (CFU/100mL)
	IN 6/17/18 11:02am TMS OUT 06/18/18 11:06am TMS		IN 6/17/18 11:02am TMS OUT 06/18/18 11:06am TMS	
TP2EFF06~~16~~17/18	17 TMS 0/B 0/0.2 0/1.0 1/10	9	0/B 0/0.2 0/1.0 0/10	<9
(Mnz) LS50VF06/7/18	0/B 62/0.1 139/0.2 TNTC/1	52,533		
(Mnz) CS060VF06/7/18	0/B 14/0.1 30/0.2 TNTC/1	15,000		

APPENDIX C – NATIONAL WEATHER SERVICE-DULUTH OFFICE RECORD OF RIVER AND CLIMATOLOGICAL OBSERVATIONS JUNE 2018

STATION (Climatological)	(River Station, if different)	MONTH	
SUPERIOR		Jun	2018

STATE	COUNTY	RIVER
WI	DOUGLAS	

TIME (local) OF OBSERVATION RIVER	TEMPERATURE	PRECIPITATION	STANDARD TIME IN USE
	MID	MID	

TYPE OF RIVER GAGE	ELEVATION OF RIVER GAGE ZERO	FLOOD STAGE	NORMAL POOL STAGE

WS FORM B-91
(03-09)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

RECORD OF RIVER AND CLIMATOLOGICAL OBSERVATIONS

DATE	TEMPERATURE 24 HRS ENDING AT OBSERVATION MAX	MIN	AT OBSN	PRECIPITATION 24 HR AMOUNTS Rain, melted snow, etc. (in and hundredths)	Snow, ice pellets, hail (ins. and tenths)	AT OB Snow, ice pellets, hail ice on ground (in)	Draw a straight line (——) through hours precipitation was observed, and a wavy line (~~~~) through hours precipitation probably occurred unobserved (A.M. / NOON / P.M.)	WEATHER (Observation Day) Mark 'X' for all types occurring each day: Fog	Ice pellets	Glaze	Thunder	Hail	Damaging winds	Time of occurrence if different from above	RIVER STAGE Condition	Gage reading at ___ AM	Tendency	REMARKS (SPECIAL OBSERVATIONS, ETC.)
1	52.3	44.8	43.9	0.00	0.0	0.0												
2	45.2	39.8	42.5	3.88	0.0	0					✓							Rain
3	65	41	54	0.03	0.0	0												Lite Rain
4	77	49	51	0.00	0.0	0												
5	53	45	46	0.00	0.0	0												
6	79	44	62	.25	0.0	0												RAIN
7	63	48	48	0.00	0.0	0												
8	55	48	49	0.00	0.0	0												
9	51	46	47	0.02	0.0	0												SPRINKLES
10	54	46	48	0.00	0.0	0												
11	53	46	50	0.00	0.0	0												
12	77	50	66	0.00	0.0	0												SPRINKLES
13	82	54	64	0.00	0.0	0												
14	64	50	51	T	0.0	0												SPRINKLES
15	77	49	50	1.44	0	0					✓							RAIN Thunder storm
16	59	46	54	.16	0	0					✓							RAIN, SPRINKLES, Lightning
17	72	54	68	2.44	0.0	0					✓							RAIN, HEAVY RAIN, LIGHTNING
18	72	59	59	0.00	0.0	0												
19	61	56	57	0.00	0.0	0												
20	74	54	55	0.00	0.0	0												
21	57	52	55	0.00	0.0	0												
22																		
23																		
24																		
25																		
26																		
27																		
28																		
29																		
30																		
31																		
			SUM					Fog	Ice pel	Glaze	Thund	Hail	Dam winds					

CHECK BAR (for wire weight) NORMAL CHECK BAR

READING	DATE

CONDITION OF RIVER AT GAGE

A. Obstructed by rough ice
B. Frozen, but open at gage
Upper surface smooth ice
e gorge above gage
E. Ice gorge below gage
F. Shore ice
G. Floating ice
H. Pool stage

OBSERVER

SUPERVISING OFFICE
DLH Duluth

STATION INDEX NO.
47-8349-01

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