

WPDES PERMIT

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
**PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE
ELIMINATION SYSTEM**

MILWAUKEE METROPOLITAN SEWERAGE DISTRICT COMBINED

is permitted, under the authority of Chapter 283, Wisconsin Statutes, to discharge from two facilities,
located at

700 EAST JONES ST, Milwaukee, WI (Jones Island Water Reclamation Facility)

and

8500 SOUTH FIFTH STREET, Oak Creek, WI (South Shore Water Reclamation Facility)

to

**the Milwaukee Outer Harbor on Lake Michigan, the Milwaukee Inner Harbor/Kinnickinnic River, and Lake
Michigan in Milwaukee County**

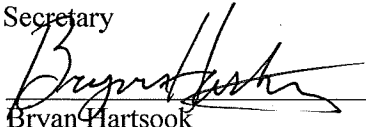
in accordance with the effluent limitations, monitoring requirements and other conditions set
forth in this permit.

The permittee shall not discharge after the date of expiration. If the permittee wishes to continue to discharge after
this expiration date an application shall be filed for reissuance of this permit, according to Chapter NR 200, Wis.
Adm. Code, at least 180 days prior to the expiration date given below.

State of Wisconsin Department of Natural Resources

For the Secretary

By


Bryan Hartsook

Wastewater Field Supervisor

3/27/19
Date Permit Signed/Issued

PERMIT TERM: EFFECTIVE DATE - April 01, 2019

EXPIRATION DATE - March 31, 2024

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1 Influent Requirements

1.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
701	Jones Island INFLUENT: 24-hr flow proportional composite samples shall be collected prior to coarse screening from the high and low siphons and Inline Storage System (ISS).
702	South Shore INFLUENT: 24-hr flow proportional composite samples shall be collected after preliminary treatment (screening and grit removal) and prior to primary treatment.

1.2 Influent Monitoring Requirements

The permittee shall comply with the following monitoring requirements.

1.2.1 Sampling Point 701 - JONES ISLAND; and 702- SOUTH SHORE

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD ₅ , Total		mg/L	Daily	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	Daily	24-Hr Flow Prop Comp	
Cadmium, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	
Chromium, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	
Copper, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	
Lead, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	
Nickel, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	
Zinc, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	
Mercury, Total Recoverable		ng/L	Monthly	24-Hr Comp	See section 1.2.1.3 below.

1.2.1.1 Total Metals Analyses

Measurements of total metals and total recoverable metals shall be considered as equivalent.

1.2.1.2 Sample Analysis

Samples shall be analyzed using a method which provides adequate sensitivity so that results can be quantified at a level of quantitation below the calculated/potential effluent limit, unless not possible using the most sensitive approved method.

1.2.1.3 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

2 Cooling Water Intake Structure (CWIS)

2.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
703	Jones Island COOLING WATER INTAKE: Intake flow shall be monitored on days of operation of the Milwaukee Inner Harbor/Kinnickinnic River cooling water intake structure.

2.2 Cooling Water Monitoring Requirements and BTA Determination

The intake(s) has been reviewed for compliance with BTA (Best Technology Available) standards and the BTA determination(s) is listed below.

2.2.1 703 – Jones Island Cooling Water Intake

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	Report maximum flow
Intake Water Used Exclusively For Cooling		Percent	Daily	Continuous	

2.2.1.1 CWIS - Authority to Operate and Description

The permittee shall at all times properly operate and maintain all water intake facilities. The permittee shall give advance notice to the Department of any planned changes in the location, design, operation, or capacity of the intake structure. The permittee is authorized to use the Jones Island cooling water intake system which consists of the following:

- Location: Milwaukee Inner Harbor, on the east bank of the Kinnickinnic River, 120 feet from the confluence with the Milwaukee River.
- General Description: Installed channel with a 4 ft. x 4 ft. opening in sheet pile wall.
- Major Components: Sixteen bars covering a total surface area of 4.67 square feet, leaving 11.33 square feet open at the channel. Two parallel 10 ft wide traveling screens.
- Maximum Design Intake Flow (DIF): 8.6 MGD (2 pumps at 4.3 MGD each)
- Maximum Design Intake Velocity: 1.2 ft/sec at the point where the water is withdrawn from the harbor (bar rack at a submerged intake).
- Average Actual Intake Velocity: 0.17 ft/sec at the point where the water is withdrawn from the harbor (bar rack at a submerged intake).
- Maximum Through-Screen Design Intake Velocity: 0.19 ft/sec (with 2 pumps operating at 4.3 MGD each through traveling screens)

2.2.1.2 Cooling Water Intake BTA (Best Technology Available) Determination

The Department believes that the Jones Island cooling water intake, as described above in subsection 2.2.1.1, represents BTA for impingement mortality and interim BTA for entrainment reduction and hence for minimizing adverse environmental impact in accordance with the requirements in section s. 283.31(6), Wis. Stats. and section 316(b) of the Clean Water Act.

Note: This BTA determination was based on the Department's November 11, 2016 Draft Guidance for Implementation of Section 316(b) of the Clean Water Act: Regulating Cooling Water Intake Structures. In the case that major changes are made to the Guidance, and/or a new code is promulgated that significantly effects the requirements in this section, the Department shall modify this section accordingly.

2.3 Cooling Water Intake Structure Standard Requirements

The following requirements and provisions apply to all water intake structures identified as sampling points in section 2.1.

2.3.1 Future BTA for Cooling Water Intake Structure

BTA determinations for entrainment and impingement mortality at cooling water intake structures will be made in each permit reissuance, in accordance with 40 CFR §125.90-98. **In subsequent permit reissuance applications, the permittee shall provide all the information required in 40 CFR §122.21(r).**

Exemptions from some permit application requirements are possible in accordance with 40 CFR §125.95(c) and §125.98(g), where information already submitted is sufficient. If an exemption is desired, a request for reduced application material requirements must be submitted at least 2 years and 6 months prior to permit expiration. Past submittals and previously conducted studies may satisfy some or all of the application material requirements.

Note: The Department is in the process of promulgating ch. NR 111, Wis. Adm. Code, on cooling water intake structures. The objective of ch. NR 111 is to incorporate federal requirements for cooling water intake structures into the state's administrative code. If ch. NR 111 is promulgated prior to the expiration of this permit, the permittee may be subject to ch. NR 111 application requirements for the next permit reissuance.

2.3.2 Documentation to be Submitted

Because the Department granted the permittee an alternate schedule for submittal of the remaining application materials pursuant to 40 CFR 125.95(a)(2), the following documentation shall be submitted with the next permit application for reissuance, **no later than September 30, 2023**, as required in 40 CFR §122.21(r):

- Applicable provisions described in §122.21(r)(5).
- Facility's water balance, according to §122.21(r)(3).
- A report on the actual intake velocity and evaluation that it will not exceed 0.5 fps under all conditions, including during minimum ambient source water surface elevations and during periods of maximum head loss across the intake bars, according to §122.21(r)(6).
- Hydrological and geomorphological data of the water body, temperature regimes and zone of influence, according to §122.21(r)(2).
- Source water baseline biological characterization data. A summary of the studies previously submitted is acceptable, as long as it clearly shows their applicability to MMSD's intake hydraulic zone of influence and it focus on the applicable requirements in §122.21(r)(4).
- Operational Status, according to §122.21(r)(8).
- Entrainment Performance Studies, according to §122.21(r)(7).

This study shall demonstrate the difference between aquatic life concentrations in the body of water, outside of the zone of influence, and the aquatic life concentrations in the forebay, upstream of the traveling screens.

- Entrainment Characterization Study, if after delineation of hydraulic zone of influence, it is determined that the previously submitted Study performed by Wisconsin Electric Valley Power Plant is not applicable to the permittee, according to §122.21(r)(9).
- Alternatives analysis report for compliance with the entrainment BTA. This alternatives analysis for entrainment BTA shall examine the options for compliance with the entrainment BTA requirement and propose a candidate entrainment BTA to the Department for consideration during its next BTA determination. The analysis must, at least narratively, address and consider the factors listed in §125.98 (f) (2) and may consider the factors listed in § 125.98 (f) (3). The analysis must evaluate, at a minimum, closed-cycle recirculating systems, fine mesh screens with a mesh size of 2mm or smaller, variable speed pumps, water reuse or alternate sources of cooling water, and any additional technology identified by the department at a later date.
- All other applicable documentation described on 40 CFR §122.21(r) previously submitted with the application for the current permit and not requested for exemption according to 40 CFR §125.95(c) and §125.98(g).

Notes: *The Entrainment Performance Study and the Entrainment Characterization Study may be combined and submitted as one. Pursuant to §125.95(c), the permittee may request the above documentation to be considered as part of the next permit application.*

2.3.3 Entrainment Monitoring

At this time, no additional entrainment monitoring is required beyond what is specified by 40 CFR 122.

2.3.4 Impingement Mortality Monitoring

Monitor intake flow velocity at the bar screens at least once per day to ensure that velocity does not exceed 0.5 fps and shall be monitored at the time of day that it is most likely to be the highest. The permittee may either calculate or directly measure this velocity.

2.3.5 Visual or Remote Inspections

The permittee shall conduct a weekly visual inspection or employ a remote monitoring device during periods when the cooling water intake is in operation. The inspection frequency shall be weekly to ensure the intakes are maintained and operated to function as designed.

2.3.6 Reporting Requirements for Cooling Water Intake

The permittee shall adhere to the reporting requirements listed below:

2.3.6.1 Annual Certification Statement and Report

Submit an annual certification statement signed by the authorized representative with information on the following, no later than January 31st for the previous year:

- Certification that water intake structure technologies are being maintained and operated as set forth in this permit, or a justification to allow a modification of the practices. Include a summary of the required maintenance activities.
- If there are substantial modifications to the operation of any unit that impacts the cooling water withdrawals or operation of the water intake structure, provide a summary of those changes.
- If the information contained in the previous year's annual certification is still applicable, the certification may state as such.

2.3.7 Intake Screen Discharges and Removed Substances

Floating debris and accumulated trash collected on the cooling water intake trash rack shall be removed and disposed of in a manner to prevent any pollutant from the material from entering the waters of the State pursuant to s. NR 205.07 (3) (a), Wis. Adm. Code, except that backwashes may contain fine materials that originated from the intake water source such as sand, silt, small vegetation or aquatic life.

2.3.8 Endangered Species Act

Nothing in this permit authorizes take for the purpose of a facility's compliance with the Endangered Species Act. Refer to 40 CFR §125.98 (b) (1) and (2).

3 In-Plant Requirements

3.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)
101	South Shore FIELD BLANK: Collect mercury field blank using standard sample handling procedures.
102	Jones Island FIELD BLANK: Collect mercury field blank using standard sample handling procedures.
103	Jones Island CSO TREATMENT: 24-hr composite samples for BOD and total suspended solids shall be collected at the discharge point from the inline storage system.
141	South Shore BLENDING: Sample point for reporting diverted flow from the primary clarifiers during high flow events. Flow bypasses the aeration basins and final clarifiers but receives disinfection prior to discharge.
142	CITY WATER INTAKE: A grab sample of raw Lake Michigan water shall be collected from the Linnwood water supply facility, prior to receiving treatment.

3.2 Monitoring Requirements

The permittee shall comply with the following monitoring requirements and limitations.

3.2.1 Sampling Points 101 - Mercury Field Blank – South Shore & 102- Mercury Field Blank – Jones Island

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Mercury, Total Recoverable		ng/L	Monthly	Blank	See section 3.2.1.1 below.

3.2.1.1 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

3.2.2 Sampling Point 103 - Combined Sewage Treatment at JONES ISLAND

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	Start flow measurement at the commencement of operations. Measure flow in daily increments until operation ends and report

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					daily flow on the eDMR. See section 3.2.2.1.
Time		hours	Daily	Calculated	Report the total duration in which the combined sewer treatment process is in operation within a given day (12:00am - 11:59pm). See section 3.2.2.1.
BOD ₅ , Total		mg/L	Daily	24-Hr Comp	Start sampling at the commencement of operation. Sample in daily increments until the operation ends and report daily results on the eDMR. See section 3.2.2.1.
Suspended Solids, Total		mg/L	Daily	24-Hr Comp	Start sampling at the commencement of operation. Sample in daily increments until the operation ends and report daily results on the eDMR. See section 3.2.2.1.

3.2.2.1 Combined Wet Weather Flow Treatment Requirements

The permittee shall utilize Jones Island Water Reclamation Facility (WRF) capacity to the maximum extent practicable during and after storms to provide primary and secondary treatment and disinfection for wastewater collected and stored in the Inline Storage System (ISS). When peak flows exceed Jones Island secondary treatment capacity, flows from the ISS shall receive treatment equivalent to primary treatment and disinfection prior to being discharged. Such discharges are subject to the following provisions;

1. Wet weather discharges that consist of wastewater that has received primary and secondary treatment combined with combined sewer flows from the ISS, must meet the effluent limits for bacteria (fecal coliforms), BOD₅, and total suspended solids applicable to discharges from Outfall 002.
2. The combined sewer treatment process shall be operated during wet weather only when peak flows are in excess of secondary treatment capacity at Jones Island and only after flow to the South Shore WRF is maximized to the extent practicable.
3. The permittee shall ensure that the District’s collection system is designed, operated, and maintained to maximize system storage and conveyance capacity according to accepted best engineering practices.

3.2.3 Sampling Point 141 - South Shore BLENDING

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	Start flow measurement at the commencement of blending operations. Measure flow in daily increments until operation ends and report daily flow

					on the eDMR. See section 3.2.3.1.
Time		hours	Daily	Calculated	Report the total duration of blending within any given day (12:00am - 11:59pm) in which blending occurs. See section 3.2.3.1.

3.2.3.1 Blending Flow

The permittee shall report the volume of wastewater that is diverted around secondary treatment processes whenever in-plant diversion (blending) occurs. See “Blending” requirements in the Standard Requirements section for additional requirements.

3.2.4 Sampling Point 142 – City Water Intake

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Arsenic, Total Recoverable		µg/L	Quarterly	Grab	See section 3.2.4.1
Mercury, Total Recoverable		µg/L	Quarterly	Grab	See section 3.2.4.2

3.2.4.1 Sample Analysis - Arsenic

Samples for arsenic shall be analyzed using a method which provides adequate sensitivity so that results can be quantified at a level of quantitation below the calculated/potential effluent limit of 0.2 ug/L, unless not possible using the most sensitive approved method.

3.2.4.2 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

4 Combined Sewer System Requirements

4.1 Dropshaft Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location
104	NS4 - ISS Dropshaft located at North Cambridge Avenue & East Providence Avenue
105	NS5 - ISS Dropshaft located at East Burleigh Street at the Milwaukee River
106	NS6 - ISS Dropshaft located at East Park Place at the Milwaukee River
107	NS7 - ISS Dropshaft located at North Commerce Street & North Booth Street
108	NS8 - ISS Dropshaft located at North Commerce Street & East Pleasant Street
109	NS9 - ISS Dropshaft located at North Old World 3rd Street & West McKinley Avenue
110	NS10 - ISS Dropshaft located at North Water Street & East St. Paul Avenue
111	NS11 - ISS Dropshaft located at North Humboldt Avenue & East Capitol Drive
112	NS12 - ISS Dropshaft located at North 31st Street & West Capitol Drive
113	CT2 - ISS Dropshaft located at North Hawley Road & West State Street
114	CT3/4 - ISS Dropshaft located at North 44th Street & West Wells Street
115	CT5/6 - ISS Dropshaft located at North 25th Street at the Menomonee River
116	CT7 - ISS Dropshaft located at South 16th Street & West Canal Street
117	CT8 - ISS Dropshaft located at South 3rd Street & West Seeboth Street
118	KK1 - ISS Dropshaft located at South 6th Street & West Cleveland Avenue
119	KK2 - ISS Dropshaft located at South 1st Street & South Chase Avenue
120	KK3 - ISS Dropshaft located at South 4th Street & West Becher Street
121	KK4 - ISS Dropshaft located at South 1st Street & West Lincoln Avenue
122	LMN - ISS Dropshaft located at East Bay Street & East Ward Street
123	LMS - ISS Dropshaft located at South Lincoln Memorial Drive & East Russell Avenue

4.2 Dropshaft Monitoring Requirements

A grab sample shall be taken during each overflow event at ISS dropshaft(s) identified in table 4.1. The permittee shall provide for the collection of grab samples for the pollutants listed in Section 4.2.1 below. The samples shall be collected at the dropshaft junction chamber. Samples shall be taken when the gate closes at the junction chamber to which the outfall diversion chamber is tributary.

4.2.1 Sampling Points 104 - NS4 - Cambridge & Providence; 105- NS5 - Burleigh & Milw. River; 106- NS6 - Park Place & Milw. River; 107- NS7 - Commerce & Booth; 108- NS8 - Commerce & Pleasant; 109- NS9 - Old World 3rd & Mckinley; 110- NS10 - Water & St. Paul; 111- NS11 - Humboldt & Capitol; 112- NS12 - 31st & Capitol; 113- CT2 - Hawley & State; 114- CT3/4 - 44th & Wells; 115- CT5/6 - 25th & Menomonee River; 116- CT7 - 16th & Canal; 117- CT8 - 3rd & Seeboth; 118- KK1 - 6th & Cleveland; 119- KK2 - 1st & Chase; 120- KK3 - 4th & Becher; 121- KK4 - 1st & Lincoln; 122- LMN - Bay & Ward, and 123- LMS - Lincoln Mem. & Russell

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Volume		MG	Per	Calculated	

			Occurrence		
Fecal Coliform		#/100 ml	Per Occurrence	Grab	
E. coli		#/100 ml	Per Occurrence	Grab	
BOD ₅ , Total		mg/L	Per Occurrence	Grab	
Suspended Solids, Total		mg/L	Per Occurrence	Grab	
Phosphorus, Total		mg/L	Per Occurrence	Grab	
Nitrogen, Ammonia (NH ₃ -N) Total		mg/L	Per Occurrence	Grab	

4.3 Combined Sewer Overflow Requirements

Discharges from the combined sewer overflows listed below shall be limited and monitored by the permittee in accordance with the following permit conditions, s. NR 210.205, Wis. Adm. Code, and the U.S. EPA CSO Control Policy.

4.3.1 Inventory of Combined Sewer Overflow (CSO) Outfalls

CSO Outfalls to the Milwaukee River, Table 4.3.1(a)

Serial Number	Location	Associated Dropshaft Sample Point Number	Latitude	Longitude
015-CSO	N. Marshall St. extended	(MIS)	43.05616921	-87.90114712
016-CSO	W. Vliet Street extended, east of N. 3 rd Street	(MIS)	43.04781774	-87.91305281
017-CSO	N. Van Buren Street at E. Brady Street	108 (NS8)	43.05307103	-87.90566693
018-CSO	S. Water Street at E. Bruce Street	(MIS)	43.02534141	-87.9037657
051-CSO	N. Weil Street	107 (NS7)	43.05718576	-87.89917475
089-CSO	E. Capitol Drive	111 (NS11)	43.08931504	-87.89910241
090-CSO	E. Keefe Avenue	104 (NS4)	43.08198484	-87.8925048
091-CSO	E. Edgewood Avenue	104 (NS4)	43.08191551	-87.89149919
092-CSO	E. Auer Avenue	105 (NS5)	43.0765233	-87.89318275
094-CSO	E. Burleigh Street	105 (NS5)	43.07466633	-87.89295328
096-CSO	E. Locust Street	105 (NS5)	43.07110111	-87.89394217
097A-CSO	E. Park Place	106 (NS6)	43.06735984	-87.89443503
098-CSO	E. Bradford Avenue	106 (NS6)	43.06374604	-87.89234066
099-CSO	E. Boylston Street	107 (NS7)	43.05739807	-87.89419929
101-CSO	N. Pulaski Street	107 (NS7)	43.05676834	-87.89750388
102-CSO	N. Humboldt Avenue	107 (NS7)	43.05736134	-87.89772699
103-CSO	N. Marshall Street	107 (NS7)	43.05614443	-87.90119659
103A-CSO	1944 N. Commerce Street	107 (NS7)	43.05677638	-87.90121094
104-CSO	N. Holton Street	107 (NS7)	43.05455721	-87.9046317
106-CSO	North of E. Pleasant Street	108 (NS8)	43.05222066	-87.90743926
107-CSO	E. Walnut Street	108 (NS8)	43.05167025	-87.90786652
108B-CSO	E. Pleasant Street at N. Water Street	108 (NS8)	43.05153962	-87.90724589

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109-CSO	North of W. Cherry Street	108 (NS8)	43.05018321	-87.90949543
110-CSO	W. Cherry Street	108 (NS8)	43.04908316	-87.91215712
111-CSO	E. Lyon Street	108 (NS8)	43.04965569	-87.90883642
112-CSO	E. Ogden Avenue	109 (NS9)	43.04836617	-87.91127593
113-CSO	W. McKinley Avenue (North bank)	109 (NS9)	43.04696199	-87.91354058
113A-CSO	W. McKinley Avenue (South bank)	109 (NS9)	43.04641292	-87.91357219
114-CSO	W. Juneau Avenue	109 (NS9)	43.04550462	-87.91358274
115-CSO	W. Highland Avenue	109 (NS9)	43.04426589	-87.91360919
116-CSO	E. Highland Avenue	109 (NS9)	43.04423764	-87.91282683
117-CSO	W. State Street	109 (NS9)	43.0428927	-87.91363504
118-CSO	E. State Street	109 (NS9)	43.04290333	-87.9125908
119-CSO	W. Kilbourn Avenue	109 (NS9)	43.04162722	-87.91281475
120-CSO	E. Kilbourn Avenue	109 (NS9)	43.04177365	-87.91199217
121-CSO	North of W. Wells Street	109 (NS9)	43.04127342	-87.91258386
122-CSO	W. Wells Street	109 (NS9)	43.04037265	-87.91172621
123-CSO	E. Wells Street	109 (NS9)	43.04061023	-87.91122225
124-CSO	North of W. Wisconsin Avenue	109 (NS9)	43.03988702	-87.91133247
125-CSO	W. Wisconsin Avenue	109 (NS9)	43.03874776	-87.91035523
126-CSO	E. Wisconsin Avenue	110 (NS10)	43.03852466	-87.9096428
127-CSO	W. Michigan Street	110 (NS10)	43.03737326	-87.91012398
128-CSO	E. Michigan Street	110 (NS10)	43.03735485	-87.90948366
129-CSO	North of W. Clybourn Street	110 (NS10)	43.03670486	-87.91010542
130-CSO	W. Clybourn Street	110 (NS10)	43.03605986	-87.91016499
131-CSO	E. Clybourn Street	110 (NS10)	43.03615198	-87.90938052
133-CSO	W. St. Paul Avenue	110 (NS10)	43.03462194	-87.91046051
134-CSO	E. St. Paul Avenue	110 (NS10)	43.03501885	-87.90948054
135-CSO	E. Buffalo Street	110 (NS10)	43.03379587	-87.90968974
136-CSO	E. Chicago Street	110 (NS10)	43.03255661	-87.90995706
137-CSO	S. 1st Place	117 (CT8)	43.03088906	-87.91099883
139-CSO	E. Pittsburgh Avenue	117 (CT8)	43.02977667	-87.90765227
140-CSO	N. Broadway	110 (NS10)	43.03038228	-87.90715897
141-CSO	E. Florida Street	117 (CT8)	43.02773349	-87.90537041
142-CSO	E. Polk Street	110 (NS10)	43.02850013	-87.90441227
143-CSO	E. Bruce Street	117 (CT8)	43.02521578	-87.90376238
144-CSO	E. Lyon Street	108 (NS8)	43.04969451	-87.90878533
146-CSO	N. Arlington Place	107 (NS7)	43.05696186	-87.89541659
147-CSO	E. Juneau Avenue	109 (NS9)	43.04579582	-87.91288057
230-CSO	N. Richards at E. Congress	(MIS)	43.0965371	-87.90701564

CSO Outfalls to the Kinnickinnic River, Table 4.3.1(b)

Serial Number	Location	Associated Dropshaft Sample Point Number	Latitude	Longitude
019-CSO	S. 1st Street	(MIS)	43.00805495	-87.91090825
148-CSO	E. National Avenue	117 (CT8)	43.02294636	-87.90558918
149-CSO	South of E. Walker Street	117 (CT8)	43.02139692	-87.90596281
151-CSO	E. Greenfield Avenue	117 (CT8)	43.01704151	-87.90281715

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152-CSO	S. Kinnickinnic Avenue (North bank)	120 (KK3)	43.00864265	-87.90825291
153-CSO	S. Kinnickinnic Avenue (South bank)	120 (KK3)	43.0081248	-87.90805273
154-CSO	S. 1st Street (North bank)	120 (KK3)	43.00855918	-87.91108589
155-CSO	S. 1st Street (South bank)	120 (KK3)	43.00805752	-87.91126738
156-CSO	S. 2nd Street at Kinnickinnic River	120 (KK3)	43.00844343	-87.91249216
157-CSO	W. Rogers Street	120 (KK3)	43.00823586	-87.91418435
158-CSO	W. Becher Street (North outfall)	120 (KK3)	43.0067321	-87.91423161
159-CSO	W. Becher Street (South outfall)	120 (KK3)	43.00662362	-87.91409056
160-CSO	E. Lincoln Avenue (South outfall)	121 (KK4)	43.00259896	-87.91149873
161-CSO	W. Lincoln Avenue (West bank)	121 (KK4)	43.00284437	-87.91218591
162-CSO	W. Lincoln Avenue (East bank)	121 (KK4)	43.00285696	-87.91176181
163-CSO	S. Chase Avenue (North bank)	119 (KK2)	42.99729569	-87.9122121
164-CSO	S. Chase Avenue (South bank)	119 (KK2)	42.99703942	-87.91221481
165-CSO	S. 6 th St. at W. Cleveland Avenue (Middle outfall)	118 (KK1)	42.99552843	-87.91841002
166-CSO	S. 6 th St. at W. Cleveland Avenue (North outfall)	118 (KK1)	42.99555107	-87.9184095
166A-CSO	S. 6th Street at W. Cleveland Avenue (South outfall)	118 (KK1)	42.99549102	-87.91838558
167-CSO	S. 8th Street	118 (KK1)	42.99694677	-87.92118421
168-CSO	S. 14th Street	118 (KK1)	42.99714641	-87.92982199
169-CSO	S. 27th Street	118 (KK1)	42.9916821	-87.9479935
260-CSO	S. 6 th Street at W. Oklahoma Avenue	(MIS)	42.995012	-87.917594

CSO Outfalls to the Menomonee River, Table 4.3.1(c)

Serial Number	Location	Associated Dropshaft Sample Point Number	Latitude	Longitude
010-CSO	W. Canal Street at 8 th Street	(MIS)	43.03190123	-87.9217891
170-CSO	S. 2 nd Street	117 (CT8)	43.03227299	-87.91234781
172-CSO	N. Emmber Lane (East outfall)	116 (CT7)	43.03254812	-87.92885813
173-CSO	N. 15 th Street (East outfall)	116 (CT7)	43.03292888	-87.93152262
174-CSO	N. 15 th Street (West outfall)	116 (CT7)	43.03293213	-87.93161675
175-CSO	N. 17 th Street	116 (CT7)	43.03293589	-87.93413786
176-CSO	N. 25 th Street	115 (CT5/6)	43.03271016	-87.94497878
177-CSO	N. 26 th Street	115 (CT5/6)	43.03252369	-87.94572932
177A-CSO	123 N. 25 th Street	115 (CT5/6)	43.03218696	-87.94557481
178-CSO	S. 27 th Street (West outfall)	115 (CT5/6)	43.02791588	-87.94793115
180-CSO	S. 35 th Street	115 (CT5/6)	43.02506325	-87.95762023
181-CSO	W. Wisconsin Avenue	114 (CT3/4)	43.03891949	-87.9652677
182-CSO	N. 43 rd Street	114 (CT3/4)	43.04116163	-87.9675224
182A-CSO	4251 W. State Street	114 (CT3/4)	43.04131434	-87.9675798
183-CSO	N. 46 th Street	114 (CT3/4)	43.04158668	-87.97303317
184-CSO	N. Hawley Road	113 (CT2)	43.04259981	-87.98285729
185-CSO	N. 9 th Street extended	116 (CT7)	43.03228947	-87.92287012
262-CSO	N. 59 th Street and W. State Street	(MIS)	43.04229372	-87.98660936

CSO Outfalls to the South Menomonee Canal – Branch of the Menomonee River, Table 4.3.1(d)

Serial Number	Location	Associated Dropshaft Sample Point Number	Latitude	Longitude
061-CSO	Emergency Wastewater Exit Facility	117 (CT8)	43.0312785	-87.91497691
187-CSO	S. 4 th Street	117 (CT8)	43.02986214	-87.91499358
188-CSO	S. 6 th Street at Menomonee River	117 (CT8)	43.02922308	-87.9183335

CSO Outfalls to Burnham Canal – Branch of Menomonee River, Table 4.3.1(e)

Serial Number	Location	Associated Dropshaft Sample Point Number	Latitude	Longitude
189-CSO	S. 9 th Street (East outfall)	116 (CT7)	43.02620804	-87.92242925
190-CSO	S. 9 th Street (West outfall)	116 (CT7)	43.02618821	-87.92248408
191-CSO	S. 11 th Street	116 (CT7)	43.02619891	-87.9252297
193-CSO	S. 13 th Street	116 (CT7)	43.02622808	-87.92787892
194-CSO	S. Muskego Avenue	116 (CT7)	43.02647509	-87.93094226

CSO Outfalls to Lake Michigan, Table 4.3.1(f)

Serial Number	Location	Associated Dropshaft Sample Point Number	Latitude	Longitude
195-CSO	E. Bay Street	122 (LMN)	43.00824562	-87.89198356
196-CSO	E. Russell Avenue	123 (LMS)	43.00052439	-87.88744581

CSO Outfalls to Lincoln Creek, Table 4.3.1(g)

Serial Number	Location	Associated Dropshaft Sample Point Number	Latitude	Longitude
145-CSO	N. 35 th Street and W. Congress Street	112 (NS12)	43.09680508	-87.95633756
197-CSO	W. Hampton Avenue at N. 32 nd Street	(MIS)	43.10508536	-87.95225414

4.3.2 Collection System Operational Requirements

The permittee shall follow each of the following operational requirements:

1. No discharge shall occur during dry weather periods.
2. No discharge shall occur during wet weather periods except when the gate at the dropshaft downstream must be closed to prevent the ISS separated sewer or combined sewer capacity from being exceeded in accordance with the current standard operating procedures for ISS operation, or the capacity of the associated near-surface collector is exceeded.
3. The permittee shall continue to implement techniques to identify overflows during dry weather, such as remote monitoring or periodic inspections.
4. In the event there is a CSO discharge, the reporting requirements in sections 4.3.5 and 9.3.1.1 shall be followed. Area water utilities shall also be notified of the commencement of a CSO. Upon request, the

permittee shall provide the Department any other pertinent information developed regarding the CSO incidents.

4.3.3 Operational and Technology-Based Requirements

The permittee shall comply with the following operational and technology-based requirements:

1. The permittee shall continue to implement proper operation and maintenance programs for the sewer system and all CSO outfalls to reduce the magnitude, frequency, and duration of CSOs. The program shall include regular sewer inspections, sewer and intercepting structure cleaning, equipment and sewer collection system repair or replacement where necessary, and disconnection of illegal connections.
2. The permittee shall continue to implement procedures that will maximize use of the collection system for wastewater storage in order to reduce the magnitude, frequency, and duration of CSOs.
3. The permittee shall review and modify, as appropriate, its existing pretreatment program to minimize CSO impacts from the discharges of industrial users.
4. The permittee shall continue to operate the water reclamation facility (WRF) at maximum treatable flow during all wet weather flow conditions to reduce the magnitude, frequency, and duration of CSOs. The permittee shall deliver all flows to the WRF within the constraints of the treatment capacity of the WRF.
5. Dry weather overflow from CSO outfalls are prohibited. Each dry weather overflow must be reported to the permitting authority as soon as the permittee becomes aware of the overflow. When the permittee detects a dry weather overflow, the permittee shall begin corrective action immediately. The permittee shall inspect the dry weather overflow each subsequent day until the overflow has been eliminated.
6. The permittee shall continue to implement measures to control solid and floatable materials in CSOs including operating a skimmer boat as part of a program to control solids and floatables in the river systems located below the CSO outfalls listed in section 4.3.1.
7. The permittee shall continue to implement a pollution prevention program focused on reducing the impact of CSOs on receiving waters.
8. **Public Notification:** The permittee shall continue to implement a public notification process to inform citizens of when and where CSOs occur. The process must include (a) a mechanism to alert persons of the occurrence of CSOs and (b) a system to determine the nature and duration of conditions that are potentially harmful for users of receiving waters due to CSOs. The permittee shall follow the public notification requirements as specified in 40 CFR 122.38. Starting February 7, 2019 and by May 1 of each calendar year the permittee shall make available to the public an annual notice describing the CSO discharges from the discharge point(s) that occurred in the previous calendar year.
9. The permittee shall continue to monitor CSO outfalls in accordance with section 4.2 to characterize CSO impacts and the efficacy of CSO controls.
10. The permittee has submitted the documentation that demonstrated implementation of each of the nine minimum controls in accordance with Section II.B of the U. S. EPA CSO Control Policy. The permittee submitted this documentation to the Department as an element of its 2020 Facilities Plan, approved by the Department on December 26, 2007.

4.3.4 CSO Performance Standards for Water Quality-Based Requirements

The ISS shall be operated and maintained in a manner to achieve, in any given year, EITHER of the following two performance standards:

1. There shall be no more than six (6) combined sewer overflow (CSO) events in any calendar year. [OR]

2. The total collection and conveyance of combined stormwater and wastewater to Jones Island WRF and South Shore WRF of no less than 85% by volume system wide of the combined sewage collected in the Combined Sewer System (CSS) as the result of precipitation events on an annual average basis. Compliance with this performance standard shall be reported on an annual basis, and calculated as:

$$\text{Annual\% Wet Weather Combined Sewage Capture for Treatment} = \frac{V_{JI+SS} - V_{dry}}{V_{JI+SS} + V_{CSO} - V_{dry}} \times 100$$

Where, V_{CSO} = total annual combined sewer overflow volume

V_{JI+SS} = total annual volume of flow discharged at Jones Island and South Shore

V_{dry} = total annual dry weather flow, calculated by annualizing the average of the ten lowest days of total influent at the Jones Island WRF and the South Shore WRF, as determined by the permittee’s user charge system.

A CSO event is defined as one or more overflows from a combined sewer system, resulting from a precipitation event that does not receive minimum treatment. Minimum treatment is defined as: (a) primary clarification (removal of floatables and settleable solids and may be achieved by any combination of treatment technologies or methods that are shown to be equivalent to primary clarification; (b) solids and floatables disposal; and (c) disinfection.

4.3.4.1 Primary Treatment and Disinfection

In order to minimize combined sewer overflows from the conveyance system and provide the equivalent of primary treatment and disinfection for the maximum feasible volume of wet weather combined sewer flows, the permittee shall operate a combined sewer wet weather flow disinfection facility at the Jones Island Water Reclamation Facility during wet weather. This process consists of a channel that will route excess flow from the ISS directly to disinfection and is subject to the provisions outlined in section 3.2.2 of this permit.

4.3.4.2 Surface Water Quality Monitoring

Among the key pollutants for concern for the Milwaukee area watersheds are nutrients and bacteria. The permittee’s ongoing surface water quality monitoring program described in the most recent Surface Water Quality Monitoring Plan will be used to track water quality through the permit term. The permittee shall provide annual reports of monitoring results by June 30th of the following year as described in the monitoring plan and in accordance with section 8.2 of the permit.

4.3.4.3 Water Quality-Based Requirements – Wet Weather Management

To meet the CSO performance standards in section 4.3.4 to reduce the duration, frequency, and magnitude of the overflows, and to reduce the adverse effects of overflows, the permittee shall implement wet weather management programs, such as the programs identified in the following table. The permittee shall provide biannual reports documenting the implementation of the programs required of this section by March 31st of each year. These reports shall identify the actions taken in the previous two years as outlined in section 8.3 of this permit.

Wet Weather Management Programs	
Program Description	Goal
Reduce the volume and peak flow rate of runoff entering the sewerage system.	<ul style="list-style-type: none"> • Fund green infrastructure implementation on public and private land. • Establish a regional green infrastructure maintenance program. • Implement and enforce runoff management requirements, according to MMSD Rules, Chapter 13.
Reduce inflow related to flooding by reducing the	<ul style="list-style-type: none"> • Undertake watercourse projects that include channel reconstruction

number of structures in the regional floodplain.	<ul style="list-style-type: none"> and removal of structures from the floodplain. Protect or restore riparian land with hydric soils and wetlands.
Reduce inflow and infiltration in tributary sewerage systems	<ul style="list-style-type: none"> Fund private property infiltration and inflow reduction programs with the goal of removing 56 million gallons on an annual basis by the end of the permit term. Implement and enforce the roof drain disconnection requirements of MMSD Rules, sec. 3.118. Implement and enforce wet weather peak flow management requirements for tributary metersheds, according to MMSD Rules, secs. 3.201 and 3.202.
Reduce non-point pollutant loadings into area waterways	<ul style="list-style-type: none"> Acquire riparian buffers and provide treatment using green infrastructure. Support the implementation of agricultural practices that reduce pollutants in runoff. Continue to design and implement the Burnham Canal Wetlands Project which will ultimately use wetlands to treat CSO discharges to Burnham Canal, if they occur.
Improve aquatic habitat to increase the number and diversity of species	<ul style="list-style-type: none"> Prepare a Water Quality Improvement Plan Undertake watercourse projects that include channel reconstruction and removal of structures from the floodplain. Implement the recommendations of the Urban Biodiversity Plan, as approved by the Department as part of the 2050 Facilities Plan. Support federal and state priority projects for reducing beneficial use impairments in the Milwaukee Estuary Area of Concern.

4.3.4.3.1 Green Infrastructure Retention Capacity

The permittee shall facilitate the implementation of green infrastructure retention capacity in watersheds within or tributary to the permittee’s service area. The total green infrastructure retention capacity goal to be achieved during the term of this permit is 50 million gallons with 20 million gallons of that being collected within the combined sewer area.

The permittee shall determine retention capacity using the following procedures:

1. Project-specific modeling;
2. A retention capacity calculating tool, such as the Green Infrastructure Sizing Calculator available at www.freshcoastguardians.com; or
3. The following table;

Green Infrastructure Practices	Unit Retention Capacity
Bioswales	7.5 gallons/square foot
Cisterns/Rain Barrels	1 gallon/gallon
Constructed Wetlands	8.3 gallons/square foot
Floodplain Structure Removal	5,000 gallons/structure
Green Alley or Street	6.2 gallons/square foot
Green Roofs	1 gallons/square foot
Native Landscaping	0.4 gallons/square foot
Porous Pavement	3 gallons/square foot
Rain Gardens	4.4 gallons/square foot
Soil Amendments	0.2 gallons/square foot
Stormwater Trees	25 gallons/tree

Preservation of hydric soils or non-hydric soils with native landscaping	1.5 gallons/square foot
Other Practices	As determined by the District and accepted by the Department

The permittee shall count green infrastructure towards the retention capacity goals when construction is complete. Any green infrastructure practices/control measures that are put in place to fulfill the retention capacity goals must be maintained during the term of this permit.

4.3.4.4 Water Quality-Based Requirements – Regional Water Quality Improvement Plan

The permittee will develop a Water Quality Improvement Plan (WQIP) for the Greater Milwaukee Watersheds within or tributary to the permittee’s planning area. The permittee shall complete the WQIP no later than March 1, 2020.

4.3.5 CSO Discharge Reporting Requirements

The permittee shall report all combined sewer overflow discharges as outlined below:

1. The permittee shall notify the Department by telephone, fax, or email as soon as practicable, but no later than 24 hours from the time the permittee becomes aware of the overflow.
2. The permittee shall, no later than five (5) days from the time the permittee becomes aware of the overflow, provide to the department the information identified in the Standard Requirements section 9.3.1.1 of the permit, using department form number 3400-184. If an overflow lasts for more than five days, an initial report shall be submitted within five days as required and an updated report submitted following cessation of the overflow. If, due to the duration and nature, of the overflow, the permittee is unable to provide the actual timing, volume, and location information on form 3400-184 within five days of becoming aware of the overflow, the missing information shall be provided in an additional report.
3. Notification of Drinking Water Intake Owners: Whenever there is a combined sewer overflow, the permittee shall notify the following owner(s) of drinking water intakes located in surface waters as quickly as practicable, but no greater than 8 hours after becoming aware of the overflow. Owner(s) of Drinking Water Intakes: City of Oak Creek, City of South Milwaukee, City of Cudahy, City of Milwaukee, and the North Shore Water Commission.
4. A permittee that is required to submit wastewater discharge monitoring reports under s. NR 205.07(1)(r), Wis. Adm. Code, shall also report all sanitary sewer overflows and sewage treatment facility overflows on that report.

5 Surface Water Requirements

5.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
001	South Shore EFFLUENT: 24-hr flow proportional composite samples and grab samples shall be collected from the effluent channel adjacent to the effluent pump station after chlorination and dechlorination.
002	Jones Island EFFLUENT: 24-hr flow proportional composite samples and grab samples shall be collected from the effluent channel via the sampler located in the effluent pump station after disinfection and prior to discharge.
003	Jones Island Noncontact Cooling Water: Grab samples shall be collected from the discharge channel.

5.2 Monitoring Requirements and Effluent Limitations

The permittee shall comply with the following monitoring requirements and limitations.

5.2.1 Sampling Point (Outfall) 001 - SOUTH SHORE EFFLUENT

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD ₅ , Total	Weekly Avg	45 mg/L	Daily	24-Hr Flow Prop Comp	
BOD ₅ , Total	Monthly Avg	30 mg/L	Daily	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	Daily	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	Daily	24-Hr Flow Prop Comp	
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Nitrogen, Ammonia (NH ₃ -N) Total	Daily Max	27 mg/L	Daily	24-Hr Flow Prop Comp	Year-round monitoring. Limit effective November – April.
Nitrogen, Ammonia (NH ₃ -N) Total	Weekly Avg	27 mg/L	Daily	24-Hr Flow Prop Comp	Year-round monitoring. Limit effective November – April.
Nitrogen, Ammonia (NH ₃ -N) Total	Monthly Avg	27 mg/L	Daily	24-Hr Flow Prop Comp	Year-round monitoring. Limit effective November – April.
Chlorine, Total Residual	Daily Max	38 µg/L	Daily	Grab	

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Chlorine, Total Residual	Weekly Avg	36 µg/L	Daily	Grab	
Chlorine, Total Residual	Monthly Avg	36 µg/L	Daily	Grab	
Fecal Coliform	Geometric Mean - Wkly	972 #/100 ml	Daily	Grab	Year-round limit
Fecal Coliform	Geometric Mean - Monthly	400 #/100 ml	Daily	Grab	Year-round limit
E. coli		#/100 ml	Daily	Grab	
Phosphorus, Total	Monthly Avg	1.0 mg/L	Daily	24-Hr Flow Prop Comp	
Phosphorus, Total	6-Month Avg	0.7 mg/L	Daily	24-Hr Flow Prop Comp	See section 5.2.1.4
Arsenic, Total Recoverable		µg/L	Quarterly	24-Hr Flow Prop Comp	See section 5.2.1.2
Cadmium, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	See section 5.2.1.2
Chromium, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	See section 5.2.1.2
Copper, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	See section 5.2.1.2
Lead, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	See section 5.2.1.2
Nickel, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	See section 5.2.1.2
Zinc, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	See section 5.2.1.2
Mercury, Total Recoverable	Daily Max	4.1 ng/L	Monthly	Grab	See section 5.2.1.3
Acute WET		TU _a	See Listed Qtr(s)	24-Hr Flow Prop Comp	Sample annually in rotating quarters. See WET section 5.2.1.6.
Chronic WET		TU _c	See Listed Qtr(s)	24-Hr Flow Prop Comp	Sample annually in rotating quarters. See WET section 5.2.1.6.
Temperature Maximum		deg F	3/Week	Continuous	Monitoring in calendar year 2022 (January – December). See section 5.2.1.5 below and schedule section 8.9.

5.2.1.1 Annual Average Design Flow

The annual average design flow of the South Shore Water Reclamation Facility is 113 MGD.

5.2.1.2 Sample Analysis - Arsenic

Samples shall be analyzed using a method which provides adequate sensitivity so that results can be quantified at a level of quantitation below the calculated/potential effluent limit. For arsenic, the level of quantitation should be less than 0.2 ug/L, unless not possible using the most sensitive approved method.

5.2.1.3 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

5.2.1.4 Phosphorus Water Quality Based Effluent Limitation(s)

The 0.7 mg/L as a six-month average limit for phosphorus is an interim limit pending the development of a near shore or whole lake model in accordance with s. NR 217.13(4), Wis. Adm. Code. The permittee shall continue to reduce phosphorus as much as practical from their discharge and continue to minimize phosphorus in their influent. See the Schedules section for optimizing removal of phosphorus. The interim limit for phosphorus is in effect unless:

- (A) A near shore or whole lake model is developed to calculate water quality based effluent phosphorus limits for discharges to Lake Michigan. Upon Department approval of the model, the Department may modify, revoke and reissue, or reissue the permit to incorporate revised limitations.

If the Department incorporates revised phosphorus limitations into the permit, the permittee may submit an Adaptive Management Plan and a completed Request Form 3200-139, an application for Water Quality Trading or an application for a variance.

If a variance is approved for the next reissuance, interim limits and conditions will be imposed in the reissued permit in accordance with s. 283.15, Stats., and applicable regulations. A permittee may apply for a variance to the phosphorus WQBEL at the next reissuance even if the permittee did not apply for a phosphorus variance as part of this permit reissuance.

Additional Requirements: If a water quality based effluent limit has taken effect in a permit, any increase in the limit is subject to s. NR 102.05(1) and ch. NR 207, Wis. Adm. Code. When a six-month average effluent limit is specified for Total Phosphorus the applicable averaging periods are May through October and November through April.

*Note: The Department will prioritize reissuances and revocations, modifications, and reissuances of permits to allow permittees the opportunity to implement adaptive management or nutrient trading in a timely and effective manner.

5.2.1.5 Effluent Temperature Monitoring

For monitoring temperature continuously, collect measurements in accordance with s. NR 218.04(13), Wis. Adm. Code. This means that discrete measurements shall be recorded at intervals of not more than 15 minutes during the 24-hour period. Report the maximum temperature measured during the day on the DMR.

5.2.1.6 Whole Effluent Toxicity (WET) Testing

Primary Control Water: Lake Michigan, offshore and outside of the mixing zone of the discharge and any other discharges

Instream Waste Concentration (IWC): 9%

Dilution series: At least five effluent concentrations and dual controls must be included in each test.

- **Acute:** 100, 50, 25, 12.5, 6.25% and any additional selected by the permittee.
- **Chronic:** 100, 30, 10, 3, 1% and any additional selected by the permittee.

WET Testing Frequency:

Acute tests shall be conducted once each year in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.

- **Acute:** July – September 2020; January – March 2021; October – December 2022; April – June 2023; January – March 2024

Acute WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the last full calendar year of this permit. For example, the next test would be required in April - June 2025.

Chronic tests shall be conducted once each year in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.

- **Chronic:** July – September 2020; January – March 2021; October – December 2022; April – June 2023; January – March 2024

Chronic WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the last full calendar year of this permit. For example, the next test would be required in April - June 2025.

Testing: WET testing shall be performed during normal operating conditions. Permittees are not allowed to turn off or otherwise modify treatment systems, production processes, or change other operating or treatment conditions during WET tests.

Reporting: The permittee shall report test results on the Discharge Monitoring Report form, and also complete the "Whole Effluent Toxicity Test Report Form" (Section 6, "*State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition*"), for each test. The original, complete, signed version of the Whole Effluent Toxicity Test Report Form shall be sent to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921, within 45 days of test completion. The Discharge Monitoring Report (DMR) form shall be submitted electronically by the required deadline.

Determination of Positive Results: An acute toxicity test shall be considered positive if the Toxic Unit - Acute (TU_a) is greater than 1.0 for either species. The TU_a shall be calculated as follows: $TU_a = 100 \div LC_{50}$. A chronic toxicity test shall be considered positive if the Toxic Unit - Chronic (TU_c) is greater than 11.1 for either species. The TU_c shall be calculated as follows: $TU_c = 100 \div IC_{25}$.

Additional Testing Requirements: Within 90 days of a test which showed positive results, the permittee shall submit the results of at least 2 retests to the Biomonitoring Coordinator on "Whole Effluent Toxicity Test Report Forms". The 90-day reporting period shall begin the day after the test which showed a positive result. The retests shall be completed using the same species and test methods specified for the original test (see the Standard Requirements section herein).

5.2.1.7 Notification of Drinking Water System Owners

Whenever there is a bypass, a sanitary sewer overflow, a sewage treatment facility overflow or a scheduled bypass, the permittee shall notify the following owner(s) of drinking water intakes located in surface waters as quickly as practicable, but no greater than eight (8) hours after becoming aware of the bypass or overflow. This notification requirement does not apply to any controlled diversions or blending if specifically allowed in this permit. **Owner(s) of Drinking Water Intakes:** City of Oak Creek, City of South Milwaukee, City of Cudahy, City of Milwaukee, and the North Shore Water Commission.

5.2.2 Sampling Point (Outfall) 002 - JONES ISLAND EFFLUENT

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD ₅ , Total	Weekly Avg	45 mg/L	Daily	24-Hr Flow Prop Comp	
BOD ₅ , Total	Monthly Avg	30 mg/L	Daily	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	Daily	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	Daily	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	51,332 lbs/day	Daily	Calculated	Effective January, March, May, July, August, October and December
Suspended Solids, Total	Weekly Avg	56,832 lbs/day	Daily	Calculated	Effective February
Suspended Solids, Total	Weekly Avg	53,043 lbs/day	Daily	Calculated	Effective April, June, September and November
Suspended Solids, Total	Monthly Avg	30,195 lbs/day	Daily	Calculated	Effective January, March, May, July, August, October and December
Suspended Solids, Total	Monthly Avg	33,430 lbs/day	Daily	Calculated	Effective February
Suspended Solids, Total	Monthly Avg	31,202 lbs/day	Daily	Calculated	Effective April, June, September and November
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Nitrogen, Ammonia (NH ₃ -N) Total		mg/L	Daily	24-Hr Flow Prop Comp	
Chlorine, Total Residual	Daily Max	38 µg/L	Daily	Grab	
Chlorine, Total Residual	Weekly Avg	36 µg/L	Daily	Grab	
Chlorine, Total Residual	Monthly Avg	36 µg/L	Daily	Grab	
Fecal Coliform	Geometric Mean - Monthly	400 #/100 ml	Daily	Grab	Year-round limit
Fecal Coliform	Geometric Mean - Wkly	972 #/100 ml	Daily	Grab	Year-round limit
E. coli		#/100 ml	Daily	Grab	
Phosphorus, Total	Monthly Avg	0.66 mg/L	Daily	24-Hr Flow Prop Comp	
Phosphorus, Total	Monthly Avg	664 lbs/day	Daily	Calculated	Effective January, March, May, July, August, October and December

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Phosphorus, Total	Monthly Avg	735 lbs/day	Daily	Calculated	Effective February
Phosphorus, Total	Monthly Avg	686 lbs/day	Daily	Calculated	Effective April, June, September and November
Arsenic, Total Recoverable		µg/L	Quarterly	24-Hr Flow Prop Comp	See section 5.2.2.2
Cadmium, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	See section 5.2.2.2
Chromium, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	See section 5.2.2.2
Copper, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	See section 5.2.2.2
Lead, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	See section 5.2.2.2
Nickel, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	See section 5.2.2.2
Zinc, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	See section 5.2.2.2
Mercury, Total Recoverable	Daily Max	4.6 ng/L	Monthly	Grab	See section 5.2.2.3
Acute WET		TU _a	See Listed Qtr(s)	24-Hr Flow Prop Comp	Sample annually in rotating quarters. See WET section 5.2.2.5.
Chronic WET		TU _c	See Listed Qtr(s)	24-Hr Flow Prop Comp	Sample annually in rotating quarters. See WET section 5.2.2.5.
Temperature Maximum		deg F	3/Week	Continuous	Monitoring in calendar year 2022 (January – December). See section 5.2.2.4 below and schedule section 8.9.

5.2.2.1 Annual Average Design Flow

The annual average design flow of the Jones Island Water Reclamation Facility is 123 MGD.

5.2.2.2 Sample Analysis - Arsenic

Samples shall be analyzed using a method which provides adequate sensitivity so that results can be quantified at a level of quantitation below the calculated/potential effluent limit. For arsenic, the level of quantitation should be less than 0.2 ug/L, unless not possible using the most sensitive approved method.

5.2.2.3 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include

combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

5.2.2.4 Effluent Temperature Monitoring

For monitoring temperature continuously, collect measurements in accordance with s. NR 218.04(13), Wis. Adm. Code. This means that discrete measurements shall be recorded at intervals of not more than 15 minutes during the 24-hour period. Report the maximum temperature measured during the day on the DMR.

5.2.2.5 Whole Effluent Toxicity (WET) Testing

Primary Control Water: Lake Michigan, offshore and outside of the mixing zone of the discharge and any other discharges

Instream Waste Concentration (IWC): 20%

Dilution series: At least five effluent concentrations and dual controls must be included in each test.

- **Acute:** 100, 50, 25, 12.5, 6.25% and any additional selected by the permittee.
- **Chronic:** 100, 30, 10, 3, 1% and any additional selected by the permittee.

WET Testing Frequency:

Acute tests shall be conducted once each year in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.

- **Acute:** July – September 2020; January – March 2021; October – December 2022; April – June 2023; January – March 2024

Acute WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the last full calendar year of this permit. For example, the next test would be required in April - June 2025.

Chronic tests shall be conducted once each year in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.

- **Chronic:** July – September 2020; January – March 2021; October – December 2022; April – June 2023; January – March 2024

Chronic WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the last full calendar year of this permit. For example, the next test would be required in April – June 2025.

Testing: WET testing shall be performed during normal operating conditions. Permittees are not allowed to turn off or otherwise modify treatment systems, production processes, or change other operating or treatment conditions during WET tests.

Reporting: The permittee shall report test results on the Discharge Monitoring Report form, and also complete the "Whole Effluent Toxicity Test Report Form" (Section 6, "*State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition*"), for each test. The original, complete, signed version of the Whole Effluent Toxicity Test Report Form shall be sent to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921, within 45 days of test completion. The Discharge Monitoring Report (DMR) form shall be submitted electronically by the required deadline.

Determination of Positive Results: An acute toxicity test shall be considered positive if the Toxic Unit - Acute (TU_a) is greater than 1.0 for either species. The TU_a shall be calculated as follows: $TU_a = 100 \div LC_{50}$. A chronic toxicity test shall be considered positive if the Toxic Unit - Chronic (TU_c) is greater than 5.0 for either species. The TU_c shall be calculated as follows: $TU_c = 100 \div IC_{25}$.

Additional Testing Requirements: Within 90 days of a test which showed positive results, the permittee shall submit the results of at least 2 retests to the Biomonitoring Coordinator on "Whole Effluent Toxicity Test Report Forms". The 90-day reporting period shall begin the day after the test which showed a positive result. The retests shall be completed using the same species and test methods specified for the original test (see the Standard Requirements section herein).

5.2.2.6 Notification of Drinking Water System Owners

Whenever there is a bypass, a sanitary sewer overflow, a sewage treatment facility overflow or a scheduled bypass, the permittee shall notify the following owner(s) of drinking water intakes located in surface waters as quickly as practicable, but no greater than eight (8) hours after becoming aware of the bypass or overflow. This notification requirement does not apply to any controlled diversions or blending if specifically allowed in this permit. **Owner(s) of Drinking Water Intakes:** City of Oak Creek, City of South Milwaukee, City of Cudahy, City of Milwaukee, and the North Shore Water Commission.

5.2.2.7 Total Maximum Daily Load (TMDL) – Total Suspended Solids Limitation(s)

Approved TMDL: The Milwaukee River Basin TMDL Waste Load Allocation (WLA) for Total Phosphorus and Total Suspended Solids was approved by the U.S. Environmental Protection Agency in March 2018. The TMDL derived limits are expressed as weekly and monthly average effluent mass limits and are effective starting on the effective date of this permit. The approved TMDL derived limits for Total Suspended Solids are:

Total Suspended Solids (TSS) Effluent Limitations

Month	Weekly Average TSS Effluent Limit (lbs/day)	Monthly Average TSS Effluent Limit (lbs/day)
January	51,332	30,195
February	56,832	33,430
March	51,332	30,195
April	53,043	31,202
May	51,332	30,195
June	53,043	31,202
July	51,332	30,195
August	51,332	30,195
September	53,043	31,202
October	51,332	30,195
November	53,043	31,202
December	51,332	30,195

5.2.2.8 Total Maximum Daily Load (TMDL) – Total Phosphorus Limitation(s)

Approved TMDL: The Milwaukee River Basin TMDL Waste Load Allocation (WLA) for Total Phosphorus and Total Suspended Solids was approved by the U.S. Environmental Protection Agency in March 2018. The TMDL derived limits are expressed as monthly average effluent mass limitations and are effective starting on the effective date of this permit. The approved TMDL derived limits for Total Phosphorus are:

Total Phosphorus Effluent Limitations

Month	Monthly Average TP Effluent Limit (lbs/day)
January	664

February	735
March	664
April	686
May	664
June	686
July	664
August	664
September	686
October	664
November	686
December	664

5.2.3 Sampling Point (Outfall) 003 - JONES ISLAND NCCW

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Monthly	Estimated	
BOD ₅ , Total		mg/L	Monthly	Grab	
Nitrogen, Ammonia (NH ₃ -N) Total		mg/L	Monthly	Grab	
Oil & Grease (Hexane)		mg/L	Monthly	Grab	
Chlorine, Total Residual	Daily Max	38 µg/L	Weekly	Grab	Limit and monitoring apply only when chlorinating.
Chlorine, Total Residual	Monthly Avg	38 µg/L	Weekly	Grab	Limit and monitoring apply only when chlorinating.
Phosphorus, Total		mg/L	Monthly	Grab	
Temperature Maximum		deg F	Daily	Continuous	See section 5.2.3.1 and schedule section 8.8

5.2.3.1 Effluent Temperature Monitoring

For monitoring temperature continuously, collect measurements in accordance with s. NR 218.04(13), Wis. Adm. Code. This means that discrete measurements shall be recorded at intervals of not more than 15 minutes during the 24-hour period. Report the maximum temperature measured during the day on the DMR. For seasonal discharges collect measurements either manually or continuously during the period of operation and report the daily maximum effluent temperature on the DMR.

6 Groundwater Requirements

6.1 Operational Requirements

The permittee shall operate and maintain a groundwater monitoring system for groundwater piezometric level measurement and groundwater quality monitoring for the Inline Storage System (ISS) and the Northwest Side Relief Sewer (NWSRS) in accordance with the following operational requirements. For purposes of this permit, "Inline Storage System" means the three original legs of the ISS (Crosstown, North Shore, and KKLM) and the 27th Street ISS Extension Tunnel; ISS does not include the Northwest Side Relief Sewer.

6.1.1 Water Level Requirements

Operate the ISS in a manner that ensures it will not be filled above the crown of the ISS main tunnel (Elevation - 177.17 MMSD) at its upstream terminus. Water levels in the ISS shall be monitored on a continuous basis. Results of this monitoring shall be reported to the Department on the monthly DMRs under the parameter "Water Surface Elevation of Tunnel". For any event during which the ISS is filled above -177.17 MMSD, the permittee shall notify the Department's Southeast Regional Office by telephone or electronic mail within 24 hours. In addition, the permittee shall notify the Department in writing of each such event by letter within 72 hours.

6.1.2 Net Positive Head Requirements and Compliance Assessment Method

The ISS shall be operated in a manner that ensures a net positive head is maintained to the extent necessary to minimize exfiltration from the storage system. Groundwater monitoring wells 803 (CT-MW- 01) and 806 (CT-MW- 05) shall not be subject to this section. Compliance with this net positive head requirement will be demonstrated by using the multi-step approach described below:

1. **Net Positive Head:** Water levels in all adjacent wells or piezometers (listed in this permit or subsequently approved by the Department) shall be compared to water levels in the ISS. A well or piezometer exhibits a net positive head if it has a hydraulic head greater than the hydraulic head of the ISS during all phases of tunnel operation, as determined according to this procedure:
 - (a) In the case of wells fitted with continuous data loggers, the "net head" shall be computed as the difference between hourly data at the well and tunnel level meter PS0801 (or PS802 if PS801 data are not available) hourly data, (*i.e.*, {data logger reading} – {PS0801 reading}). This difference will be calculated for data measurements taken at approximately the same time.
 - (b) For wells that are not fitted with continuous data loggers (*i.e.*, wells with piezometers or manually read), the "net head" shall be computed as the difference between the reading at the well and the tunnel level meter recorded at approximately the same time (*i.e.*, {well level reading} – {PS0801 reading at same hour as well reading}).
 - (c) All wells demonstrating a net positive head will be deemed in compliance with this net positive head requirement and not subject to further analysis. Wells not demonstrating a net positive head as described here are subject to further analysis as described below.
2. **Groundwater Analysis:** If requested by the Department in writing, groundwater modeling simulations shall be conducted by the permittee to reasonably replicate operation of the ISS during the time periods when well(s) have not demonstrated a net positive head under paragraph 1 above. Modeling simulations and other information will be used by the Department to assess if migration of contaminants from the ISS in the bedrock is, or is not, likely to have occurred beyond a distance of 150 feet from the ISS, which is the design management zone in Permit Section 6.3. If the Department agrees that the groundwater analysis indicates that contaminant migration did not move beyond the 150-foot design management zone boundary during the simulated time period, the permittee will be deemed to be in compliance with the net positive head requirement. If contaminant migration is assessed to have moved beyond the 150-foot design management zone boundary during the simulated time period, the Department shall provide its

conclusions in writing to the permittee and may require the permittee to prepare and implement an action plan that may include the construction of additional monitoring wells.

6.1.3 Procedures for Future Well Abandonment/Inactivation

In the event the permittee would need to abandon a monitoring well during the permit term, the permittee shall follow the requirements outlined below to request Department approval.

Submit all monitoring well abandonment request to the DNR Wastewater Section Chief using [Form 3400-205](#) and copy the WDNR Compliance Engineer for the facility. The submittal should provide the following; the date of the most recent well inspection, location of the well, age of the well, condition of the well, explanation why the well should be abandoned (i.e. well is damaged beyond repair, well is no longer necessary, potential for groundwater contamination) and proposed well replacement or justification why the well is not being replaced. In some cases, the Department will not conduct an official plan review or issue an approval but will provide a letter confirming that the Department has no objection to the proposed work proceeding as a maintenance project. If a well is abandoned submit the abandonment report to the DNR Wastewater Section Chief and copy the WDNR Compliance Engineer for the facility within 60 days of the date of abandonment per s. NR 141.26(4), Wis. Adm. Code.

6.2 Groundwater Level Monitoring Requirements

6.2.1 Groundwater Monitoring System for Depth to GW & GW Elevation

Location of Monitoring Systems: Northwest Side Relief Sewer

Groundwater Level (Only) Monitoring Well Locations			
Well Number	Well ID	Well Location	Level Measurement Type
865	NWSR-1	6751 N. 91 st Street at MMSD Structure	Non-Continuous
875	NWSR-22	Menomonee River Parkway, south of W. Capitol Dr.	Non-Continuous
883	NWSR-31	County Grounds at MMSD facility	Non-Continuous
886	GM-IR-12	Bluemound Country Club	Continuous

Required Monitoring: Monitoring wells that are equipped with continuous data loggers shall be monitored daily and non-continuous wells shall be monitored monthly. The permittee shall report the lowest “Groundwater Elevation” and associated “Depth to Groundwater” measurement during the monitoring period. Data should be reported on a monthly basis using the DMRs and should be reported to the nearest 0.01 feet. For monthly reporting of “Peak Hourly Volume of NWSRS”, the permittee shall report the maximum recorded value for the month.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	MONITORING FREQUENCY	REPORTING FREQUENCY
Depth To Groundwater	feet	*****	N/A	Daily	Monthly
Groundwater Elevation	feet MSL	*****	N/A	Daily	Monthly
Peak Hourly Volume of NWSRS	MG	N/A	N/A	Daily	Monthly

Location of Monitoring Systems: General vicinity of MMSD Inline Storage System

Groundwater Level (Only) Monitoring Well Locations			
Well Number	Well ID	Well Location	Level Measurement

			Type
801	CT-MR-06D	S. 19 th Street and W. Potawatomi Circle	Non-Continuous
803	CT-MW-01	Jones Island, between 5 th and 7 th clarifiers	Continuous
806	CT-MW-05	N. 25 th Street and W. Canal Street	Continuous
807	CT-MW-10	3000 W. Greves Street	Continuous
808	CT-MW-07	W. Wells Street and N. 45 th Street	Continuous
815	NS-MW-05	1301 N. Park Place at Urban Ecology Center	Non-Continuous
816	NS-MW-06	3299 N. Cambridge Avenue	Non-Continuous
818	NS-MW-08	W. River Woods Parkway at Milwaukee River	Continuous
831	CT-MR-08D	4250 N. Sherman Boulevard (BACKGROUND)	Non-Continuous
835	CT-MW-02	101 S. First Street	Non-Continuous
836	CT-MW-06	I-94 and S. 44 th Street, at We Energies Substation	Non-Continuous
838	NS-MR-01D	4910 N. Green Bay Avenue	Non-Continuous
840	CT-MW-11	101 S. First Street	Non-Continuous
841	CT-MW-12	3000 W. Greves Street	Continuous
861	KK-MW-05	400 E. Greenfield Avenue	Continuous
894	WA-AL-4	5650 N. 27 th Street	Non-Continuous
897	J10-36-PZ	Jones Island WRF, behind ISHF Building	Non-Continuous

Required Monitoring: Monitoring wells that are equipped with continuous data loggers shall be monitored daily and non-continuous wells shall be monitored monthly. The permittee shall report the lowest “Groundwater Elevation” and associated “Depth to Groundwater” measurement during the monitoring period to ensure compliance with section 6.1.2 Net Positive Head Requirements. Data should be reported on a monthly basis using the DMRs and should be reported to the nearest 0.01 feet. Should NPH loss occur, then this will be entered into the form as “0.00” and the magnitude of the negative value will be reported in the general remarks section of the DMR.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	MONITORING FREQUENCY	REPORTING FREQUENCY
Depth To Groundwater	feet	*****	N/A	Daily	Monthly
Groundwater Elevation	feet MSL	*****	N/A	Daily	Monthly
Water Surface Elevation of Tunnel (PS0801)	feet MSL	*****	N/A	Daily	Monthly
Net Positive Head	feet	N/A	N/A	Daily	Monthly

6.3 Groundwater Quality Requirements and Limitations

6.3.1 Groundwater Monitoring System for GW Quality - Northwest Side Relief Sewer

For the NWSRS groundwater monitoring wells listed below, the permittee will perform groundwater quality analysis, as soon as practicable following the NWSRS being drained, at all wells for any wet weather events that cause the peak hourly volume in the NWSRS to be greater than or equal to 88 MG.

Location of Monitoring System: General vicinity of MMSD Northwest Side Relief Sewer

Groundwater Quality Monitoring Locations			
Well Number	Well ID	Well Location	Level Measurement Type
884	GM-IR-10	5551 N. 107 th Street	Continuous
885	GM-IR-11	4699 N. Mayfair Road	Continuous

Compliance Well(s) for Enforcement Standards (ESs): Enforcement standards are to be met in groundwater located beyond the 150-foot design management zone. See the Standard Requirements section of this permit for additional conditions related to exceedance of groundwater standards.

Required Monitoring: For monitoring wells that are equipped with continuous data loggers, the permittee shall report the lowest “Groundwater Elevation” and associated “Depth to Groundwater” measurement during the monthly monitoring period. Data should be reported on a monthly basis using the DMRs and should be reported to the nearest 0.01 feet.

Grab samples shall be collected from each well to be monitored per the frequency specified in section 6.3.3. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	MONITORING FREQUENCY	REPORTING FREQUENCY
Depth To Groundwater	feet	*****	N/A	Daily	Monthly
Groundwater Elevation	feet MSL	*****	N/A	Daily	Monthly
Peak Hourly Volume of NWSRS	MG	N/A	N/A	Daily	Monthly
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	Monthly – Per Occurrence	Monthly – Per Occurrence
Nitrogen, Ammonia Dissolved	mg/L	0.97	9.7	Monthly – Per Occurrence	Monthly – Per Occurrence
Total Coliform General	#/100 ml	0	0	Monthly – Per Occurrence	Monthly – Per Occurrence
Nitrogen, Organic Dissolved	mg/L	*****	N/A	Monthly – Per Occurrence	Monthly – Per Occurrence
Chloride, Dissolved	mg/L	125	250	Monthly – Per Occurrence	Monthly – Per Occurrence (see section 6.3.3)
Sulfate, Dissolved	mg/L	125	250	Monthly – Per Occurrence	Monthly – Per Occurrence (see section 6.3.3)

6.3.1.1 Preventive Action Limits To Be Calculated For Indicator Parameters

*****Preventive Action Limits (PALs) for NR 140 Indicator Parameters have not yet been established for this site. For more information see “Indicator Parameter – Preventive Action Limits” in the Standard Requirements section. PALs are not calculated for Depth to Groundwater, Groundwater Elevation, nor Dissolved Organic Nitrogen.

6.3.2 Groundwater Monitoring System for GW Quality - Inline Storage System (ISS)

For the ISS groundwater monitoring wells listed below, the permittee will perform groundwater quality analysis, as soon as practicable following the ISS being drained, at any well that shows an absence of net positive head due to wet weather events as determined according to the procedures in section 6.1.2.

Location of Monitoring System: General vicinity of MMSD Inline Storage System

Groundwater Quality Monitoring Locations			
Well Number	Well ID	Well Location	Level Measurement

WPDES Permit No. WI-0036820-04-0
MILWAUKEE METRO SEW DIST COMBINED

			Type
805	CT-MW-04	S. Emmer Lane and W. Canal Street	Continuous
809	CT-MW-08	5900 W. State Street	Continuous
810	CT-MW-09	7735 W. Harwood Avenue (Wauwatosa Municipal Parking Lot)	Continuous
811	NS-MW-01	401 N. 3 rd Street	Continuous
812	NS-MW-02	310 W. Highland Avenue	Continuous
813	NS-MW-03	280 E. Vine Street	Continuous
814	NS-MW-04	1971 N. Commerce Street	Continuous
817	NS-MW-07	4099 N. Humboldt Boulevard	Continuous
819	NS-MR-03D	3801 N. Morris Boulevard (Shorewood DPW Yard)	Continuous
823	NS-MW-09	980 W. Hampton Avenue	Continuous
824	NS-MW-10	2250 W. Hampton Avenue	Continuous
825	NS-MW-11	3025 W. Ruby Avenue (City of Milwaukee Garage)	Continuous
826	KK-MW-01	400 E. Greenfield Avenue	Continuous
827	KK-MW-02	105 W. Maple Street	Continuous
828	KK-MW-03	2299 S. First Street	Continuous
829	KK-MW-04	400 W. Rosedale Avenue	Continuous
830	LM-MW-01	2395 S. Lincoln Memorial Drive	Continuous
888	CT-MW-26	Jones Island by clarifier #1	Continuous
889	NS-MW-19	3000 W. Hampton Avenue	Continuous
890	NS-MW-20	2800 W. Mill Road at We Energies substation	Continuous

Compliance Well(s) for Enforcement Standards (ESs): Enforcement standards are only applicable in groundwater wells located beyond the 150-foot design management zone. See the Standard Requirements section of this permit for additional conditions related to exceedance of groundwater standards.

Required Monitoring: For monitoring wells that are equipped with continuous data loggers, the permittee shall report the lowest “Groundwater Elevation” and associated “Depth to Groundwater” measurement during the monitoring period to ensure compliance with section 6.1.2 Net Positive Head Requirements. Data should be reported on a monthly basis using the DMRs and should be reported to the nearest 0.01 feet. Report the elevation and depths from PS0801 and wells on the day that the least NPH value occurs.

Grab samples shall be collected from each well to be monitored per the frequency specified in section 6.3.3. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	MONITORING FREQUENCY	REPORTING FREQUENCY
Depth To Groundwater	feet	*****	N/A	Daily	Monthly
Groundwater Elevation	feet MSL	*****	N/A	Daily	Monthly
Water Surface Elevation of Tunnel	feet MSL	*****	N/A	Daily	Monthly
Net Positive Head	feet	N/A	N/A	Daily	Monthly
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	Monthly – Per Occurrence	Monthly – Per Occurrence
Nitrogen, Ammonia Dissolved	mg/L	0.97	9.7	Monthly – Per Occurrence	Monthly – Per Occurrence

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	MONITORING FREQUENCY	REPORTING FREQUENCY
Nitrogen, Ammonia Dissolved (Well 812)	mg/L	3.9 See section 6.3.3	9.7	Monthly – Per Occurrence	Monthly – Per Occurrence
Nitrogen, Ammonia Dissolved (Well 817)	mg/L	3.1 See section 6.3.3	9.7	Monthly – Per Occurrence	Monthly – Per Occurrence
Total Coliform General	#/100 ml	0	0	Monthly – Per Occurrence	Monthly – Per Occurrence
Nitrogen, Organic Dissolved	mg/L	*****	N/A	Monthly – Per Occurrence	Monthly – Per Occurrence
Chloride, Dissolved	mg/L	125	250	Monthly – Per Occurrence	Monthly – Per Occurrence (see section 6.3.3)
Sulfate, Dissolved	mg/L	125	250	Monthly – Per Occurrence	Monthly – Per Occurrence (see section 6.3.3)

6.3.2.1 Preventive Action Limits To Be Calculated For Indicator Parameters

*****Preventive Action Limits (PALs) for NR 140 Indicator Parameters have not yet been established for this site. For more information see “Indicator Parameter – Preventive Action Limits” in the Standard Requirements section. PALs are not calculated for Depth to Groundwater, Groundwater Elevation, nor Dissolved Organic Nitrogen.

6.3.3 Required Response Actions for NR 140 PAL and ES Exceedances

The Preventive Action Limits (PALs) and Enforcement Standards (ESs) for public health parameters are those established in ch. NR 140, Wis. Adm. Code, groundwater quality (except where the Department has granted an exemption under s. NR 140.28 and established an Alternate Concentration Limit).

- Public health parameters: If a PAL for Nitrogen Ammonia, Dissolved; Nitrogen Nitrite + Nitrate as N Dissolved; or Total Coliform is exceeded, monitoring shall occur monthly at that well until the contaminant exceeding a PAL returns to background levels.
- Alternate Concentration Limit: Based on analysis of available data the Department has calculated an alternative concentration limit for Nitrogen Ammonia at wells 812 (NS-MW-02) and 817 (NS-MW-07). In the event the ACL at these wells is exceeded, monitoring shall occur monthly at that well until the PAL returns to background levels.
- Public welfare parameters: In the event a public health parameter PAL is exceeded at a monitoring well subsequent monthly sampling shall include testing for dissolved chloride and dissolved sulfate. This monthly monitoring shall continue until the original contaminant exceeding a PAL returns to a level below the PAL.
- Total Coliform: For total coliform bacteria, the standard for both the preventive action limit and the enforcement standard is that total coliform bacteria are not present in any 100 ml sample using either the membrane filter (MF) technique, the presence-absence (P-A) coliform test, the minimal medium ONPG-MUG (MMO-MUG) test or not present in any 10 ml portion of the 10-tube multiple tube fermentation (MTF) technique.

Groundwater level measurements shall continue to be conducted and reported monthly for each groundwater quality well in section 6.3.1 and 6.3.2, and piezometer well in section 6.2.1.

7 Land Application Requirements

7.1 Sampling Point(s)

The discharge(s) shall be limited to land application of the waste type(s) designated for the listed sampling point(s) on Department approved land spreading sites or by hauling to another facility.

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
004	South Shore (Agrilife), Class B, anaerobically digested liquid sludge. Representative samples shall be collected at the digester prior to land application. ***This outfall is currently inactive and the permittee shall notify the Department prior to use/discharge.***
005	South Shore Class B, anaerobically digested, plate press thickened cake sludge. Representative sample shall be collected at the cake in storage prior to land application.
006	Jones Island Class A, with anaerobically digested primary solids and sometimes anaerobically digested secondary solids, dewatered, hot gas dried sludge. PRODUCTION. Representative samples shall be collected at the composite sampler after drying and before storage. Sewage sludge particle temperature shall be monitored at each dryer for the heat drying requirement and near the bottom of each recycle bin immediately prior to the bin outlet gates to classification for the time-temperature requirement.
008	Jones Island Class A, with anaerobically digested primary solids and sometimes anaerobically digested secondary solids, dewatered, hot gas dried and stored sludge. SHIPPING Representative samples shall be collected during the loading of trucks or railcars.
009	Jones Island Class A, with anaerobically digested primary solids and sometimes anaerobically digested secondary solids, dewatered, hot gas dried and stored sludge. BAGGING. Representative samples shall be collected during bagging at the bagging contractor's facility in Milwaukee, Wisconsin.
010	Jones Island Class B, anaerobically digested, belt filter press cake. Representative samples shall be collected prior to landfill disposal.

7.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

7.2.1 Sampling Point (Outfall) 004 – South Shore (Agrilife)

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Annual	Composite	See section 7.2.1.1
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	See section 7.2.1.1
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	See section 7.2.1.1
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	See section 7.2.1.1
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	See section 7.2.1.1
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	See section 7.2.1.1
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	See section 7.2.1.1
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	See section 7.2.1.1
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	See section 7.2.1.1
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	See section 7.2.1.1

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	See section 7.2.1.1
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	See section 7.2.1.1
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	See section 7.2.1.1
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	See section 7.2.1.1
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	See section 7.2.1.1
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	See section 7.2.1.1
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	See section 7.2.1.1
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	See section 7.2.1.1
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	See section 7.2.1.1
Nitrogen, Ammonium (NH ₄ -N) Total		Percent	Annual	Composite	See section 7.2.1.1
Phosphorus, Total		Percent	Annual	Composite	See section 7.2.1.1
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	See section 7.2.1.1
Potassium, Total Recoverable		Percent	Annual	Composite	See section 7.2.1.1
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	See section 7.2.1.6
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	See section 7.2.1.6

Other Sludge Requirements	
Sludge Requirements	Sample Frequency
List 3 Requirements – Pathogen Control: The requirements in List 3 shall be met prior to land application of sludge.	Annual
List 4 Requirements – Vector Attraction Reduction: The vector attraction reduction shall be satisfied prior to, or at the time of land application as specified in List 4.	Annual

7.2.1.1 Sample Frequency

The monitoring parameters listed in section 7.2.1 have a sample frequency of “Annual” based on the outfall being inactive. If the permittee needs to activate the outfall the sample frequency would increase to “Monthly”. The permittee shall notify the Department prior to use/discharge from Outfall 004.

7.2.1.2 List 2 Analysis

If the monitoring frequency for List 2 parameters is more frequent than "Annual" then the sludge may be analyzed for the List 2 parameters just prior to each land application season rather than at the more frequent interval specified.

7.2.1.3 Changes in Feed Sludge Characteristics

If a change in feed sludge characteristics, treatment process, or operational procedures occurs which may result in a significant shift in sludge characteristics, the permittee shall reanalyze the sludge for List 1, 2, 3 and 4 parameters each time such change occurs.

7.2.1.4 Multiple Sludge Sample Points (Outfalls)

If there are multiple sludge sample points (outfalls), but the sludges are not subject to different sludge treatment processes, then a separate List 2 analysis shall be conducted for each sludge type which is land applied, just prior to land application, and the application rate shall be calculated for each sludge type. In this case, List 1, 3, and 4 and PCBs need only be analyzed on a single sludge type, at the specified frequency. If there are multiple sludge sample points (outfalls), due to multiple treatment processes, List 1, 2, 3 and 4 and PCBs shall be analyzed for each sludge type at the specified frequency.

7.2.1.5 Sludge Which Exceeds the High-Quality Limit

Cumulative pollutant loading records shall be kept for all bulk land application of sludge which does not meet the high-quality limit for any parameter after any exceedance of Table 3 of s. NR 204.07(5)(c), Wis. Adm. Code, is experienced. Such loading records shall be kept for all List 1 parameters for each site land applied. The formula to be used for calculating cumulative loading is as follows:

$$[(\text{Pollutant concentration (mg/kg)} \times \text{dry tons applied/ac}) \div 500] + \text{previous loading (lbs/acre)} = \text{cumulative lbs pollutant per acre}$$

When a site reaches 90% of the allowable cumulative loading for any metal established in Table 2 of s. NR 204.07(5)(b), Wis. Adm. Code, the Department shall be so notified through letter or in the comment section of the annual land application report (Form 3400-55).

7.2.1.6 Sludge Analysis for PCBs

The permittee shall analyze the sludge for Total PCBs once during the permit term prior to land application. The results shall be reported as "PCB Total Dry Wt". Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code. PCB results shall be submitted by January 31, following the specified year of analysis.

7.2.1.7 Lists 1, 2, 3, and 4

<p>List 1 TOTAL SOLIDS AND METALS</p> <p>See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters</p>
Solids, Total (percent)
Arsenic, mg/kg (dry weight)
Cadmium, mg/kg (dry weight)
Copper, mg/kg (dry weight)
Lead, mg/kg (dry weight)
Mercury, mg/kg (dry weight)
Molybdenum, mg/kg (dry weight)
Nickel, mg/kg (dry weight)
Selenium, mg/kg (dry weight)
Zinc, mg/kg (dry weight)

<p>List 2 NUTRIENTS</p> <p>See the Monitoring Requirements and Limitations table above for monitoring frequency for the List 2 parameters</p>
Solids, Total (percent)
Nitrogen Total Kjeldahl (percent)

**List 2
NUTRIENTS**

See the Monitoring Requirements and Limitations table above for monitoring frequency for the List 2 parameters

Nitrogen Ammonium (NH₄-N) Total (percent)

Phosphorus Total as P (percent)

Phosphorus, Water Extractable (as percent of Total P)

Potassium Total Recoverable (percent)

List 3

PATHOGEN CONTROL FOR CLASS B SLUDGE

The permittee shall implement pathogen control as listed in List 3. The Department shall be notified of the pathogen control utilized and shall be notified when the permittee decides to utilize alternative pathogen control.

The following requirements shall be met prior to land application of sludge.

Parameter	Unit	Limit
Fecal Coliform*	MPN/gTS or CFU/gTS	2,000,000
OR, ONE OF THE FOLLOWING PROCESS OPTIONS		
Aerobic Digestion		Air Drying
Anaerobic Digestion		Composting
Alkaline Stabilization		PSRP Equivalent Process

* The Fecal Coliform limit shall be reported as the geometric mean of 7 discrete samples on a dry weight basis.

List 4

VECTOR ATTRACTION REDUCTION

The permittee shall implement any one of the vector attraction reduction options specified in List 4. The Department shall be notified of the option utilized and shall be notified when the permittee decides to utilize an alternative option.

One of the following shall be satisfied prior to, or at the time of land application as specified in List 4.

Option	Limit	Where/When it Shall be Met
Volatile Solids Reduction	≥38%	Across the process
Specific Oxygen Uptake Rate	≤1.5 mg O ₂ /hr/g TS	On aerobic stabilized sludge
Anaerobic bench-scale test	<17 % VS reduction	On anaerobic digested sludge
Aerobic bench-scale test	<15 % VS reduction	On aerobic digested sludge
Aerobic Process	>14 days, Temp >40°C and Avg. Temp > 45°C	On composted sludge
pH adjustment	>12 S.U. (for 2 hours) and >11.5 (for an additional 22 hours)	During the process
Drying without primary solids	>75 % TS	When applied or bagged
Drying with primary solids	>90 % TS	When applied or bagged
Injection	-	When applied
Incorporation	-	Within 6 hours of application

7.2.1.8 Daily Land Application Log

Daily Land Application Log		
Discharge Monitoring Requirements and Limitations		
The permittee shall maintain a daily land application log for biosolids land applied each day when land application occurs. The following minimum records must be kept, in addition to all analytical results for the biosolids land applied. The log book records shall form the basis for the annual land application report requirements.		
Parameters	Units	Sample Frequency
DNR Site Number(s)	Number	Daily as used
Outfall number applied	Number	Daily as used
Acres applied	Acres	Daily as used
Amount applied	As appropriate * /day	Daily as used
Application rate per acre	unit */acre	Daily as used
Nitrogen applied per acre	lb/acre	Daily as used
Method of Application	Injection, Incorporation, or surface applied	Daily as used

*gallons, cubic yards, dry US Tons or dry Metric Tons

7.2.2 Sampling Point (Outfall) 005 - South Shore Cake Sludge

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	BiMonthly	Composite	See section 7.2.2.1
Arsenic Dry Wt	Ceiling	75 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Arsenic Dry Wt	High Quality	41 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Cadmium Dry Wt	Ceiling	85 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Cadmium Dry Wt	High Quality	39 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Copper Dry Wt	Ceiling	4,300 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Copper Dry Wt	High Quality	1,500 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Lead Dry Wt	Ceiling	840 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Lead Dry Wt	High Quality	300 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Mercury Dry Wt	Ceiling	57 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Mercury Dry Wt	High Quality	17 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Molybdenum Dry Wt	Ceiling	75 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Nickel Dry Wt	Ceiling	420 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Nickel Dry Wt	High Quality	420 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Selenium Dry Wt	Ceiling	100 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Selenium Dry Wt	High Quality	100 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Zinc Dry Wt	Ceiling	7,500 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Zinc Dry Wt	High Quality	2,800 mg/kg	BiMonthly	Composite	See section 7.2.2.1
Nitrogen, Total Kjeldahl		Percent	BiMonthly	Composite	See section 7.2.2.1

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Nitrogen, Ammonium (NH ₄ -N) Total		Percent	BiMonthly	Composite	See section 7.2.2.1
Phosphorus, Total		Percent	BiMonthly	Composite	See section 7.2.2.1
Phosphorus, Water Extractable		% of Tot P	BiMonthly	Composite	See section 7.2.2.1
Potassium, Total Recoverable		Percent	BiMonthly	Composite	See section 7.2.2.1
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	See section 7.2.2.5
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	See section 7.2.2.5

Other Sludge Requirements	
Sludge Requirements	Sample Frequency
List 3 Requirements – Pathogen Control: The requirements in List 3 shall be met prior to land application of sludge.	BiMonthly
List 4 Requirements – Vector Attraction Reduction: The vector attraction reduction shall be satisfied prior to, or at the time of land application as specified in List 4.	BiMonthly

7.2.2.1 Sample Frequency

The monitoring parameters listed in section 7.2.1 have a sample frequency of “BiMonthly” based on the amount of sludge anticipated to be generated from Outfall 005. If sludge production exceeds 16,540 dry U.S. tons (15,000 dry metric tons) in a 365-day period, the permittee shall notify the Department prior to discharge and the sample frequency shall be increased to “Monthly”.

7.2.2.2 List 2 Analysis

If the monitoring frequency for List 2 parameters is more frequent than "Annual" then the sludge may be analyzed for the List 2 parameters just prior to each land application season rather than at the more frequent interval specified.

7.2.2.3 Changes in Feed Sludge Characteristics

If a change in feed sludge characteristics, treatment process, or operational procedures occurs which may result in a significant shift in sludge characteristics, the permittee shall reanalyze the sludge for List 1, 2, 3 and 4 parameters each time such change occurs.

7.2.2.4 Multiple Sludge Sample Points (Outfalls)

If there are multiple sludge sample points (outfalls), but the sludges are not subject to different sludge treatment processes, then a separate List 2 analysis shall be conducted for each sludge type which is land applied, just prior to land application, and the application rate shall be calculated for each sludge type. In this case, List 1, 3, and 4 and PCBs need only be analyzed on a single sludge type, at the specified frequency. If there are multiple sludge sample points (outfalls), due to multiple treatment processes, List 1, 2, 3 and 4 and PCBs shall be analyzed for each sludge type at the specified frequency.

7.2.2.5 Sludge Which Exceeds the High-Quality Limit

Cumulative pollutant loading records shall be kept for all bulk land application of sludge which does not meet the high-quality limit for any parameter after any exceedance of Table 3 of s. NR 204.07(5)(c), Wis. Adm. Code, is experienced. Such loading records shall be kept for all List 1 parameters for each site land applied. The formula to be used for calculating cumulative loading is as follows:

$$[(\text{Pollutant concentration (mg/kg)} \times \text{dry tons applied/ac}) \div 500] + \text{previous loading (lbs/acre)} = \text{cumulative lbs pollutant per acre}$$

When a site reaches 90% of the allowable cumulative loading for any metal established in Table 2 of s. NR 204.07(5)(b), Wis. Adm. Code, the Department shall be so notified through letter or in the comment section of the annual land application report (Form 3400-55).

7.2.2.6 Sludge Analysis for PCBs

The permittee shall analyze the sludge for Total PCBs once during the permit term prior to land application. The results shall be reported as "PCB Total Dry Wt". Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code. PCB results shall be submitted by January 31, following the specified year of analysis.

7.2.2.7 Lists 1, 2, 3, and 4

<p>List 1 TOTAL SOLIDS AND METALS</p> <p>See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters</p>
Solids, Total (percent)
Arsenic, mg/kg (dry weight)
Cadmium, mg/kg (dry weight)
Copper, mg/kg (dry weight)
Lead, mg/kg (dry weight)
Mercury, mg/kg (dry weight)
Molybdenum, mg/kg (dry weight)
Nickel, mg/kg (dry weight)
Selenium, mg/kg (dry weight)
Zinc, mg/kg (dry weight)

<p>List 2 NUTRIENTS</p> <p>See the Monitoring Requirements and Limitations table above for monitoring frequency for the List 2 parameters</p>
Solids, Total (percent)
Nitrogen Total Kjeldahl (percent)
Nitrogen Ammonium (NH4-N) Total (percent)
Phosphorus Total as P (percent)
Phosphorus, Water Extractable (as percent of Total P)
Potassium Total Recoverable (percent)

List 3		
PATHOGEN CONTROL FOR CLASS B SLUDGE		
The permittee shall implement pathogen control as listed in List 3. The Department shall be notified of the pathogen control utilized and shall be notified when the permittee decides to utilize alternative pathogen control.		
The following requirements shall be met prior to land application of sludge.		
Parameter	Unit	Limit
Fecal Coliform*	MPN/gTS or CFU/gTS	2,000,000
OR, ONE OF THE FOLLOWING PROCESS OPTIONS		
Aerobic Digestion	Air Drying	
Anaerobic Digestion	Composting	
Alkaline Stabilization	PSRP Equivalent Process	
* The Fecal Coliform limit shall be reported as the geometric mean of 7 discrete samples on a dry weight basis.		

List 4		
VECTOR ATTRACTION REDUCTION		
The permittee shall implement any one of the vector attraction reduction options specified in List 4. The Department shall be notified of the option utilized and shall be notified when the permittee decides to utilize an alternative option.		
One of the following shall be satisfied prior to, or at the time of land application as specified in List 4.		
Option	Limit	Where/When it Shall be Met
Volatile Solids Reduction	≥38%	Across the process
Specific Oxygen Uptake Rate	≤1.5 mg O ₂ /hr/g TS	On aerobic stabilized sludge
Anaerobic bench-scale test	<17 % VS reduction	On anaerobic digested sludge
Aerobic bench-scale test	<15 % VS reduction	On aerobic digested sludge
Aerobic Process	>14 days, Temp >40°C and Avg. Temp > 45°C	On composted sludge
pH adjustment	>12 S.U. (for 2 hours) and >11.5 (for an additional 22 hours)	During the process
Drying without primary solids	>75 % TS	When applied or bagged
Drying with primary solids	>90 % TS	When applied or bagged
Injection	-	When applied
Incorporation	-	Within 6 hours of application

7.2.3 Sampling Point (Outfall) 006 – Jones Island EQ Sludge - PRODUCTION

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Arsenic Dry Wt	High Quality	41 mg/kg	Monthly	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Monthly	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Monthly	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Monthly	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Monthly	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Monthly	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Monthly	Composite	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Selenium Dry Wt	High Quality	100 mg/kg	Monthly	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Monthly	Composite	
Nitrogen, Total Kjeldahl		Percent	Monthly	Composite	
Nitrogen, Ammonium (NH ₄ -N) Total		Percent	Monthly	Composite	
Phosphorus, Total		Percent	Monthly	Composite	
Phosphorus, Water Extractable		% of Tot P	Monthly	Composite	
Potassium, Total Recoverable		Percent	Monthly	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Daily	Composite	See section 7.2.3.9
PCB Total Dry Wt	High Quality	10 mg/kg	Daily	Composite	See section 7.2.3.9
Solids, Total	Daily Min	90 Percent	2/Week	Composite	See section 7.2.3.1 for reporting requirements.
Fecal Coliform	Daily Max	1000 MPN/gTS	Weekly	Grab	See section 7.2.3.4 and List 3 in section 7.2.3.10
Municipal Sludge Priority Pollutant Scan			2/Year	Composite	As specified in s. NR 215.03 (1-4), Wis. Adm. Code

Other Sludge Requirements	
Sludge Requirements	Sample Frequency
List 3 Requirements – Pathogen Control: The requirements in List 3 shall be met prior to land application of sludge.	Weekly
List 4 Requirements – Vector Attraction Reduction: The vector attraction reduction shall be satisfied prior to, or at the time of land application as specified in List 4.	2/Week

7.2.3.1 Total Solids Reporting Requirements

The permittee shall analyze the sludge for Total Solids 2/Week. The lowest recorded value for the month shall be reported on the monthly Land Application Monitoring Form 3400-49. The permittee shall submit the individual weekly results to the Department, via the WDNR Compliance Engineer assigned to the facility, in electronic spreadsheet form at the same time as the 3400-49 forms are submitted.

7.2.3.2 Heat Drying Requirements

Dry the sludge by direct or indirect contact with hot gases to reduce the moisture content of the sludge to 10% or lower. Either the temperature of the sewage sludge particles shall exceed 80° C (176° F) or the wet bulb temperature of the gas in contact with the sludge as the sludge leaves the dryer shall exceed 80° C.

The permittee shall continuously monitor the temperature of sewage sludge particles for each dryer in production. Temperature monitoring shall be conducted in accordance with s. NR 218.04(13), Wis. Adm. Code. The permittee shall maintain a daily log of the sewage sludge particle temperature and periods of production for each dryer.

Recorded temperatures shall be reported as the average temperature for each compliance thermowell located at each dryer where averaging intervals shall not exceed 15 minutes. Also, the permittee shall detail response actions taken during any time period when both the heat drying treatment process and the corresponding time-temperature pathogen control process are not in compliance. The dried sewage sludge product produced during such time shall be recycled for further drying or segregated in silos. Product segregated in silos may be subject to further testing to establish Class A status, or distributed as Class B biosolids, or sent to landfill or other approved means for disposal. This record shall be submitted in electronic spreadsheet form annually to the Department in accordance with Schedule 8.12.

7.2.3.3 Time-Temperature Requirements

An increased sewage sludge temperature shall be maintained for a prescribed period of time according to the following guidelines and the temperature and time period shall be determined using the applicable equation in the table below. The temperature of the sewage sludge shall be 50 degrees Celsius (122 degrees Fahrenheit) or higher.

TOTAL SOLIDS	TEMP	TIME	EQUATION Where: D = time in days t = temp in °C	NOTES
≥7%	≥50° C	≥20 min.	$D = \frac{131,700,000}{10^{0.14t}}$	No heating of small particles by warmed gases or immiscible liquid.
≥7%	≥50° C	≥15 sec.	$D = \frac{131,700,000}{10^{0.14t}}$	Small particles heated by warmed gases or immiscible liquid.

The permittee shall continuously monitor the temperature of sewage sludge particles for each recycle bin in operation. Temperature monitoring shall be conducted in accordance with s. NR 218.04(13), Wis. Adm. Code. The permittee shall record and maintain a daily log of the sludge particle temperature and holding time for each recycling bin, the periods the system was used to demonstrate pathogen control, and a comparison of the sludge holding times in each recycling bin to the required time in days, (D) necessary to demonstrate compliance. Recorded temperatures shall be the average temperature for each compliance thermowell located at each recycle bin where averaging intervals shall not exceed 15 minutes. This record shall be submitted in electronic spreadsheet form annually to the Department in accordance with Schedule 8.12.

7.2.3.4 Fecal Coliform Reporting Requirements

The permittee shall analyze the sludge for Fecal Coliforms weekly. The highest recorded value for the month shall be reported on the monthly Land Application Monitoring Form 3400-49. The permittee shall submit the individual weekly results to the Department, via the WDNR Compliance Engineer assigned to the facility, in electronic spreadsheet form at the same time as the 3400-49 forms are submitted.

7.2.3.5 List 2 Analysis

If the monitoring frequency for List 2 parameters is more frequent than "Annual" then the sludge may be analyzed for the List 2 parameters just prior to each land application season rather than at the more frequent interval specified.

7.2.3.6 Changes in Feed Sludge Characteristics

If a change in feed sludge characteristics, treatment process, or operational procedures occurs which may result in a significant shift in sludge characteristics, the permittee shall reanalyze the sludge for List 1, 2, 3 and 4 parameters each time such change occurs.

7.2.3.7 Multiple Sludge Sample Points (Outfalls)

If there are multiple sludge sample points (outfalls), but the sludges are not subject to different sludge treatment processes, then a separate List 2 analysis shall be conducted for each sludge type which is land applied, just prior to land application, and the application rate shall be calculated for each sludge type. In this case, List 1, 3, and 4 and PCBs need only be analyzed on a single sludge type, at the specified frequency. If there are multiple sludge sample points (outfalls), due to multiple treatment processes, List 1, 2, 3 and 4 and PCBs shall be analyzed for each sludge type at the specified frequency.

7.2.3.8 Sludge Which Exceeds the High-Quality Limit

Cumulative pollutant loading records shall be kept for all bulk land application of sludge which does not meet the high-quality limit for any parameter after any exceedance of Table 3 of s. NR 204.07(5)(c), Wis. Adm. Code, is experienced. Such loading records shall be kept for all List 1 parameters for each site land applied. The formula to be used for calculating cumulative loading is as follows:

$$[(\text{Pollutant concentration (mg/kg)} \times \text{dry tons applied/ac}) \div 500] + \text{previous loading (lbs/acre)} = \text{cumulative lbs pollutant per acre}$$

When a site reaches 90% of the allowable cumulative loading for any metal established in Table 2 of s. NR 204.07(5)(b), Wis. Adm. Code, the Department shall be so notified through letter or in the comment section of the annual land application report (Form 3400-55).

7.2.3.9 Sludge Analysis for PCBs

The permittee shall analyze the sludge for Total PCBs daily. The highest recorded value for the month shall be reported on the monthly Land Application Monitoring Form 3400-49. The permittee shall submit the individual daily results to the Department in electronic form on a monthly basis. This data shall be submitted to the WDNR Compliance Engineer assigned to the facility.

The results shall be reported as "PCB Total Dry Wt". Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code. PCB results shall be submitted by January 31, following the specified year of analysis.

7.2.3.10 Lists 1, 2, 3, and 4

<p>List 1 TOTAL SOLIDS AND METALS</p> <p>See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters</p>
Solids, Total (percent)
Arsenic, mg/kg (dry weight)
Cadmium, mg/kg (dry weight)
Copper, mg/kg (dry weight)
Lead, mg/kg (dry weight)
Mercury, mg/kg (dry weight)
Molybdenum, mg/kg (dry weight)
Nickel, mg/kg (dry weight)
Selenium, mg/kg (dry weight)
Zinc, mg/kg (dry weight)

List 2 NUTRIENTS
See the Monitoring Requirements and Limitations table above for monitoring frequency for the List 2 parameters
Solids, Total (percent)
Nitrogen Total Kjeldahl (percent)
Nitrogen Ammonium (NH ₄ -N) Total (percent)
Phosphorus Total as P (percent)
Phosphorus, Water Extractable (as percent of Total P)
Potassium Total Recoverable (percent)

List 3 PATHOGEN CONTROL FOR CLASS A SLUDGE		
The permittee shall implement pathogen control as listed in List 3. The Department shall be notified if the permittee decides to utilize alternative pathogen control.		
The following requirements shall be met prior to land application of sludge.		
Parameter	Unit	Limit
Fecal Coliform	MPN/gTS	1000
AND, ONE OF THE FOLLOWING PROCESS OPTION		
Heat Drying Time-Temperature based on % Solids (s. NR 204.07(6)(a), Wis. Adm. Code)		

List 4 VECTOR ATTRACTION REDUCTION		
The permittee shall implement the vector attraction reduction options specified in List 4. The Department shall be notified if the permittee decides to utilize an alternative option.		
The following shall be satisfied prior to, or at the time of land application as specified in List 4.		
Option	Limit	Where/When it Shall be Met
Drying with primary solids	>90 % TS	When applied or bagged

7.2.4 Sampling Point (Outfall) 008 – Jones Island EQ Sludge - SHIPPING

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Weight		tons/day	Monthly	Estimated	Maintain a daily log of un-bagged EQ sludge transferred from on-site storage prior to shipping. Report tons/day as a monthly average on the monthly forms.
Solids, Total	Daily Minimum	90 Percent	Monthly	Grab	See section 7.2.4.1 below.
Fecal Coliform	Daily Maximum	1000 MPN/gTS	Monthly	Grab	See section 7.2.4.2 below.

7.2.4.1 Total Solids Reporting Requirements

The permittee shall analyze the sludge for Total Solids Monthly. If more than one sample is collected, then the lowest recorded value for the month shall be reported on the monthly Land Application Monitoring Form 3400-49. The permittee shall submit the individual monthly results to the Department, via the WDNR Compliance Engineer assigned to the facility, in electronic spreadsheet form at the same time as the 3400-49 forms are submitted.

7.2.4.2 Fecal Coliform Reporting Requirements

The permittee shall analyze the sludge for Fecal Coliforms monthly. If more than one sample is collected, then the highest recorded value for the month shall be reported on the monthly Land Application Monitoring Form 3400-49. The permittee shall submit the individual monthly results to the Department, via the WDNR Compliance Engineer assigned to the facility, in electronic spreadsheet form at the same time as the 3400-49 forms are submitted.

7.2.5 Sampling Point (Outfall) 009 – Jones Island EQ Sludge - BAGGING

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Weight		tons/day	Monthly	Estimated	Maintain a daily log of un-bagged EQ sludge transported from on-site storage to bagging facility in Milwaukee. Report tons/day as a monthly average on the monthly forms.
Solids, Total	Daily Minimum	90 Percent	Monthly	Grab	See section 7.2.5.1 below.
Fecal Coliform	Daily Maximum	1000 MPN/gTS	Monthly	Grab	See section 7.2.5.2 below.

7.2.5.1 Total Solids Reporting Requirements

The permittee shall analyze the sludge for Total Solids Monthly. If more than one sample is collected, then the lowest recorded value for the month shall be reported on the monthly Land Application Monitoring Form 3400-49. The permittee shall submit the individual monthly results to the Department, via the WDNR Compliance Engineer assigned to the facility, in electronic spreadsheet form at the same time as the 3400-49 forms are submitted.

7.2.5.2 Fecal Coliform Reporting Requirements

The permittee shall analyze the sludge for Fecal Coliforms monthly. If more than one sample is collected, then the highest recorded value for the month shall be reported on the monthly Land Application Monitoring Form 3400-49. The permittee shall submit the individual monthly results to the Department, via the WDNR Compliance Engineer assigned to the facility, in electronic spreadsheet form at the same time as the 3400-49 forms are submitted.

7.2.6 Sampling Point (Outfall) 010 – Jones Island Filter Press Cake Sludge - LANDFILLED

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Annual	Composite	See section 7.2.6.1

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	See section 7.2.6.1
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	See section 7.2.6.1
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	See section 7.2.6.1
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	See section 7.2.6.1
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	See section 7.2.6.1
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	See section 7.2.6.1
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	See section 7.2.6.1
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	See section 7.2.6.1
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	See section 7.2.6.1
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	See section 7.2.6.1
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	See section 7.2.6.1
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	See section 7.2.6.1
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	See section 7.2.6.1
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	See section 7.2.6.1
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	See section 7.2.6.1
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	See section 7.2.6.1
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	See section 7.2.6.1
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	See section 7.2.6.1
Nitrogen, Ammonium (NH ₄ -N) Total		Percent	Annual	Composite	See section 7.2.6.1
Phosphorus, Total		Percent	Annual	Composite	See section 7.2.6.1
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	See section 7.2.6.1
Potassium, Total Recoverable		Percent	Annual	Composite	See section 7.2.6.1
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	See section 7.2.6.1
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	See section 7.2.6.1

Other Sludge Requirements	
Sludge Requirements	Sample Frequency
List 3 Requirements (section 7.2.8) – Pathogen Control: The requirements in List 3 shall be met prior to land application of sludge.	Annual
List 4 Requirements (section 7.2.8) – Vector Attraction Reduction: The vector attraction reduction shall be satisfied prior to, or at the time of land application as specified in List 4.	Annual

7.2.6.1 Sample Frequency and Analytical Requirements for Landfilled Sludge

The permittee is not required to analyze for List 2,3, and 4 parameters unless land application of sludge is initiated. As long as landfilling is the sole disposal method, only List 1 analysis is required. The metals limits in the table above do not apply to landfilled sludge. Monitoring for landfilled sludge may remain at Annual as long as that is the sole

method of disposal. If sludge is land applied the sample frequency may increase based on the amount of sludge generated in accordance with Table A in s. NR 204.06, Wis. Adm. Code.

7.2.6.2 List 2 Analysis

If the monitoring frequency for List 2 parameters is more frequent than "Annual" then the sludge may be analyzed for the List 2 parameters just prior to each land application season rather than at the more frequent interval specified.

7.2.6.3 Changes in Feed Sludge Characteristics

If a change in feed sludge characteristics, treatment process, or operational procedures occurs which may result in a significant shift in sludge characteristics, the permittee shall reanalyze the sludge for List 1, 2, 3 and 4 parameters each time such change occurs.

7.2.6.4 Multiple Sludge Sample Points (Outfalls)

If there are multiple sludge sample points (outfalls), but the sludges are not subject to different sludge treatment processes, then a separate List 2 analysis shall be conducted for each sludge type which is land applied, just prior to land application, and the application rate shall be calculated for each sludge type. In this case, List 1, 3, and 4 and PCBs need only be analyzed on a single sludge type, at the specified frequency. If there are multiple sludge sample points (outfalls), due to multiple treatment processes, List 1, 2, 3 and 4 and PCBs shall be analyzed for each sludge type at the specified frequency.

7.2.6.5 Sludge Which Exceeds the High-Quality Limit

Cumulative pollutant loading records shall be kept for all bulk land application of sludge which does not meet the high-quality limit for any parameter after any exceedance of Table 3 of s. NR 204.07(5)(c), Wis. Adm. Code, is experienced. Such loading records shall be kept for all List 1 parameters for each site land applied. The formula to be used for calculating cumulative loading is as follows:

$$[(\text{Pollutant concentration (mg/kg)} \times \text{dry tons applied/ac}) \div 500] + \text{previous loading (lbs/acre)} = \text{cumulative lbs pollutant per acre}$$

When a site reaches 90% of the allowable cumulative loading for any metal established in Table 2 of s. NR 204.07(5)(b), Wis. Adm. Code, the Department shall be so notified through letter or in the comment section of the annual land application report (Form 3400-55).

7.2.6.6 Sludge Analysis for PCBs

The permittee shall analyze the sludge for Total PCBs one time during **2019**. The results shall be reported as "PCB Total Dry Wt". Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code. PCB results shall be submitted by January 31, following the specified year of analysis.

7.2.6.7 Lists 1,2,3, and 4

<p>List 1 TOTAL SOLIDS AND METALS</p> <p>See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters</p>
Solids, Total (percent)
Arsenic, mg/kg (dry weight)
Cadmium, mg/kg (dry weight)
Copper, mg/kg (dry weight)
Lead, mg/kg (dry weight)
Mercury, mg/kg (dry weight)
Molybdenum, mg/kg (dry weight)

<p>List 1 TOTAL SOLIDS AND METALS</p> <p>See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters</p>
Nickel, mg/kg (dry weight)
Selenium, mg/kg (dry weight)
Zinc, mg/kg (dry weight)

<p>List 2 NUTRIENTS</p> <p>See the Monitoring Requirements and Limitations table above for monitoring frequency for the List 2 parameters</p>
Solids, Total (percent)
Nitrogen Total Kjeldahl (percent)
Nitrogen Ammonium (NH ₄ -N) Total (percent)
Phosphorus Total as P (percent)
Phosphorus, Water Extractable (as percent of Total P)
Potassium Total Recoverable (percent)

<p>List 3 PATHOGEN CONTROL FOR CLASS B SLUDGE</p> <p>The permittee shall implement pathogen control as listed in List 3. The Department shall be notified of the pathogen control utilized and shall be notified when the permittee decides to utilize alternative pathogen control. The following requirements shall be met prior to land application of sludge.</p>		
Parameter	Unit	Limit
Fecal Coliform*	MPN/gTS or CFU/gTS	2,000,000
OR, ONE OF THE FOLLOWING PROCESS OPTIONS		
Aerobic Digestion	Air Drying	
Anaerobic Digestion	Composting	
Alkaline Stabilization	PSRP Equivalent Process	
* The Fecal Coliform limit shall be reported as the geometric mean of 7 discrete samples on a dry weight basis.		

<p>List 4 VECTOR ATTRACTION REDUCTION</p> <p>The permittee shall implement any one of the vector attraction reduction options specified in List 4. The Department shall be notified of the option utilized and shall be notified when the permittee decides to utilize an alternative option. One of the following shall be satisfied prior to, or at the time of land application as specified in List 4.</p>		
Option	Limit	Where/When it Shall be Met
Volatile Solids Reduction	≥38%	Across the process
Specific Oxygen Uptake Rate	≤1.5 mg O ₂ /hr/g TS	On aerobic stabilized sludge
Anaerobic bench-scale test	<17 % VS reduction	On anaerobic digested sludge
Aerobic bench-scale test	<15 % VS reduction	On aerobic digested sludge
Aerobic Process	>14 days, Temp >40°C and Avg. Temp > 45°C	On composted sludge

List 4

VECTOR ATTRACTION REDUCTION

The permittee shall implement any one of the vector attraction reduction options specified in List 4. The Department shall be notified of the option utilized and shall be notified when the permittee decides to utilize an alternative option.

One of the following shall be satisfied prior to, or at the time of land application as specified in List 4.

Option	Limit	Where/When it Shall be Met
pH adjustment	>12 S.U. (for 2 hours) and >11.5 (for an additional 22 hours)	During the process
Drying without primary solids	>75 % TS	When applied or bagged
Drying with primary solids	>90 % TS	When applied or bagged
Injection	-	When applied
Incorporation	-	Within 6 hours of application

8 Schedules

8.1 Surface Water Intake

No later than 14 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance with the required action. Timely submittal fulfills the written notification requirement.

Required Action	Due Date
Annual Certification: Submit the 2019 Annual Certification on the water intake structure, as specified in section 2.3.6.1.	01/31/2020
Annual Certification: Submit the 2020 Annual Certification on the water intake structure, as specified in section 2.3.6.1.	01/31/2021
Annual Certification: Submit the 2021 Annual Certification on the water intake structure, as specified in section 2.3.6.1.	01/31/2022
Annual Certification: Submit the 2022 Annual Certification on the water intake structure, as specified in section 2.3.6.1.	01/31/2023
Application Materials Required under 40 CFR 122.21(r): Submit the application materials required under 40 CFR 122.21(r) with the application for reissuance of this permit.	09/30/2023
Annual Certification: Submit the 2023 Annual Certification on the water intake structure, as specified in section 2.3.6.1.	01/31/2024

8.2 Surface Water Quality Monitoring Plan

The permittee's ongoing surface water quality monitoring program described in the most recent Surface Water Quality Monitoring plan will be used to track water quality through the permit term.

Required Action	Due Date
Annual Report: The permittee shall submit a report of the monitoring results from the previous year, as described in the most recent monitoring plan.	06/30/2019
Annual Report #2: Submit a report of the monitoring results from the previous year, as described in the monitoring plan.	06/30/2020
Annual Report #3: Submit a report of the monitoring results from the previous year, as described in the monitoring plan.	06/30/2021
Annual Report #4: Submit a report of the monitoring results from the previous year, as described in the monitoring plan.	06/30/2022
Annual Report #5: Submit a report of the monitoring results from the previous year, as described in the monitoring plan.	06/30/2023

8.3 Wet Weather Management

Required Action	Due Date
Submit Biannual Status Report: The permittee shall submit to the Department a biannual progress report summarizing the wet weather management projects and initiatives implemented in the previous	03/31/2020

two permit years. The report shall summarize the green infrastructure practices and control measures that were put in place and provide data analysis on the total retention capacity added for the year.	
Submit Biannual Progress Report #2: The permittee shall submit to the Department the second biannual report on the progress of implementing the selected wet weather management projects. Submittal of the second biannual progress report is required by the Date Due.	03/31/2022
Submit Final Report: The permittee shall submit to the Department the final report on the progress of implementing the selected wet weather management projects during the permit term. The report should provide a summary of the total retention capacity added during the permit term and propose new targets for implementation in the next permit term.	03/31/2023
Biannual Reports After Permit Expiration: In the event this permit is not reissued by the expiration date, the permittee shall continue to submit annual progress reports.	

8.4 Regional Water Quality Improvement Plan (WQIP)

Required Action	Due Date
Plan Completion: The permittee shall complete the Regional Water Quality Improvement Plan and submit it to the Department by March 1, 2020.	03/01/2020

8.5 Mercury Pollutant Minimization Program

As a condition of the mixing zone phase out exception for mercury granted in accordance with s. NR 106.06(2)(br), Wis. Adm. Code, and 40 CFR 132, Appendix F, the permittee shall perform the following actions in accordance with s. NR 106.145, Wis. Adm. Code.

Required Action	Due Date
Submit Annual Status Reports: The permittee shall submit to the Department an annual status report to summarize and evaluate mercury monitoring data and other relevant information collected to document background and effluent levels of mercury. The report shall also document any continuing reasonable cost-effective efforts to identify and reduce potential sources of mercury in the effluent. The first annual report shall be due on the date specified and annually thereafter. Note: If the permittee wishes to apply for an alternative mercury effluent limitation in the next permit, that application is due with the application for permit reissuance, 6 months prior to permit expiration. The permittee should submit or reference the PMP plan as updated by the Annual Status Report or more recent developments as part of that application.	09/30/2019
Submit Annual Status Report #2: The permittee shall submit to the Department the second annual status report on the progress of the PMP. Submittal of the second annual status report is required by the Date Due.	09/30/2020
Submit Annual Status Report #3: The permittee shall submit to the Department the third annual status report on the progress of the PMP. Submittal of the third annual status report is required by the Date Due.	09/30/2021
Submit Annual Status Report #4: The permittee shall submit to the Department the fourth annual status report on the progress of the PMP. Submittal of the fourth annual status report is required by the Date Due.	09/30/2022

Final Status Report: Submit a final report documenting the success in reducing or maintaining mercury concentrations in the effluent. The report shall summarize mercury pollutant minimization activities that have been implemented during the current permit term. The report shall include an analysis of trends in monthly and annual total effluent mercury concentrations based on mercury sampling during the current permit term. The report shall also include an analysis of how influent and effluent mercury varies with time and with significant loading of mercury such as loads from industries into the collection system.	09/30/2023
Annual Reports After Permit Expiration: In the event this permit is not reissued by the expiration date, the permittee shall continue to submit annual mercury status reports.	

8.6 Phosphorus Optimization - South Shore WRF

Required Action	Due Date
<p>Optimization Summary Report: The permittee shall continue to implement phosphorus optimization efforts throughout the permit term and identify any new optimization efforts.</p> <p>The permittee shall submit a final report documenting the success in reducing phosphorus concentrations in the effluent, the report shall summarize the actions taken for continued optimizing removal of phosphorus. The report shall also include an analysis of trends in monthly and annual total effluent phosphorus concentrations based on sampling during the current permit term and include an evaluation of collected effluent data. The final report shall also identify any possible source reduction measures and operational improvements to continue to optimize removal of phosphorus in the future.</p>	09/30/2023

8.7 Continuous Temperature Monitoring - Outfall 003

Required Action	Due Date
Achieve Compliance: The permittee shall install continuous temperature monitoring equipment at Outfall by the Due Date.	06/30/2019

8.8 Continuous Temperature Monitoring - Outfall 001 and 002

Required Action	Due Date
Achieve Compliance: The permittee shall install continuous temperature monitoring equipment at Outfalls 001 and 002 by the Due Date.	12/01/2021

8.9 Groundwater Monitoring Well - Abandonment

Required Action	Due Date
Abandonment: Complete abandonment of monitoring wells 820, 821, 822, 834, 837, 839, 842, 843, 844, 846, 847, 848, 849, 851, 852, 853, 854, 855, 856, 862, 864, 869, 871, 873, 874, 876, 877, 882, 887, 891, 892, 893, 895, 896, and 898. The wells shall be abandoned in accordance with s. NR 141.25, Wisconsin Administrative Code. (Note: Documentation of well abandonment must be	01/01/2020

submitted to the Department within 60 days of well abandonment.)	
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8.10 Groundwater Monitoring Plan - Inline Storage System (ISS)

Required Action	Due Date
Plan Submittal: Submit an updated groundwater monitoring plan for the Inline Storage System (ISS). The updated plan should be consistent with the requirements in section 6 of the permit.	01/01/2020

8.11 Biosolids Management Plan

An updated management plan is required for the biosolids handling and processing systems, as described below.

Required Action	Due Date
<p>Biosolids Management Plan Submittal: Submit an updated management plan, to the Department for review and approval, detailing system controls, operations and maintenance procedures, and compliance monitoring and reporting for biosolids production at each active land application outfall listed in section 7 of the permit. This management plan shall include in sufficient detail; 1) a description of how the pathogen requirements are met including the locations specifying the where the organism density monitoring is completed, the methods used for analyses including hold times and sample collection, the pathogen treatment process including monitoring procedures and locations of monitoring equipment, data collection, and other data to support appropriate pathogen treatment; 2) a description of how the vector attraction reduction requirements are met; 3) an updated laboratory quality assurance and control plan consistent with 40 CFR 503.8; 4) monitoring procedures; 5) a contingency plan for equipment breakdown and/or maintenance and repair; 6) a contingency plan for handling Class A biosolids material that does not meet the Class A requirements specified in ch. NR 204, Wis. Adm. Code, and 40 CFR part 503 specifically as they relate to pathogen control and vector attraction requirements; and 7) any other pertinent information. Any changes to the plan must be approved by the Department prior to implementing the changes.</p> <p>Note: All monitoring requirements, reporting, and limits listed in section 7.2.3 are effective April 1, 2019.</p>	06/30/2019
Update to Biosolids Management Plan: The permittee shall submit an updated management plan once the control system improvements have been completed and new Standard Operating Procedures have been developed.	01/31/2021

8.12 Biosolids Daily Logs

Required Action	Due Date
Daily Log Annual Report Submittal #1: Submit to the Department in electronic spreadsheet form, the applicable information as described in sections 7.2.3.2 and 7.2.3.3 for heat drying and time-temperature requirements. The daily logs shall be submitted by January 31, 2020 for the previous calendar year.	01/31/2020
Daily Log Annual Report Submittal #2: Submit to the Department in electronic spreadsheet form, the applicable information as described in sections 7.2.3.2 and 7.2.3.3 for heat drying and time-temperature requirements. The daily logs shall be submitted by January 31, 2021 for the previous	01/30/2021

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calendar year.	
Daily Log Annual Report Submittal #3: Submit to the Department in electronic spreadsheet form, the applicable information as described in sections 7.2.3.2 and 7.2.3.3 for heat drying and time-temperature requirements. The daily logs shall be submitted by January 31, 2022 for the previous calendar year.	01/31/2022
Daily Log Annual Report Submittal #4: Submit to the Department in electronic spreadsheet form, the applicable information as described in sections 7.2.3.2 and 7.2.3.3 for heat drying and time-temperature requirements. The daily logs shall be submitted by January 31, 2023 for the previous calendar year.	01/31/2023
Daily Log Annual Report Submittal #5: Submit to the Department in electronic spreadsheet form, the applicable information as described in sections 7.2.3.2 and 7.2.3.3 for heat drying and time-temperature requirements. The daily logs shall be submitted by January 31, 2024 for the previous calendar year.	01/31/2024

9 Standard Requirements

NR 205, Wisconsin Administrative Code: The conditions in ss. NR 205.07(1) and NR 205.07(2), Wis. Adm. Code, are included by reference in this permit. The permittee shall comply with all of these requirements. Some of these requirements are outlined in the Standard Requirements section of this permit. Requirements not specifically outlined in the Standard Requirement section of this permit can be found in ss. NR 205.07(1) and NR 205.07(2).

9.1 Reporting and Monitoring Requirements

9.1.1 Monitoring Results

Monitoring results obtained during the previous month shall be summarized and reported on a Department Wastewater Discharge Monitoring Report. The report may require reporting of any or all of the information specified below under 'Recording of Results'. This report is to be returned to the Department no later than the date indicated on the form. A copy of the Wastewater Discharge Monitoring Report Form or an electronic file of the report shall be retained by the permittee.

Monitoring results shall be reported on an electronic discharge monitoring report (eDMR). The eDMR shall be certified electronically by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

If the permittee monitors any pollutant more frequently than required by this permit, the results of such monitoring shall be included on the Wastewater Discharge Monitoring Report.

The permittee shall comply with all limits for each parameter regardless of monitoring frequency. For example, monthly, weekly, and/or daily limits shall be met even with monthly monitoring. The permittee may monitor more frequently than required for any parameter.

9.1.2 Sampling and Testing Procedures

Sampling and laboratory testing procedures shall be performed in accordance with Chapters NR 218 and NR 219, Wis. Adm. Code and shall be performed by a laboratory certified or registered in accordance with the requirements of ch. NR 149, Wis. Adm. Code. Groundwater sample collection and analysis shall be performed in accordance with ch. NR 140, Wis. Adm. Code. The analytical methodologies used shall enable the laboratory to quantitate all substances for which monitoring is required at levels below the effluent limitation. If the required level cannot be met by any of the methods available in NR 219, Wis. Adm. Code, then the method with the lowest limit of detection shall be selected. Additional test procedures may be specified in this permit.

9.1.3 Pretreatment Sampling Requirements

Sampling for pretreatment parameters (cadmium, chromium, copper, lead, nickel, zinc, and mercury) shall be done during a day each month when industrial discharges are occurring at normal to maximum levels. The sampling of the influent and effluent for these parameters shall be coordinated. All 24 hour composite samples shall be flow proportional.

9.1.4 Recording of Results

The permittee shall maintain records which provide the following information for each effluent measurement or sample taken:

- the date, exact place, method and time of sampling or measurements;
- the individual who performed the sampling or measurements;

- the date the analysis was performed;
- the individual who performed the analysis;
- the analytical techniques or methods used; and
- the results of the analysis.

9.1.5 Reporting of Monitoring Results

The permittee shall use the following conventions when reporting effluent monitoring results:

- Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 0.1 mg/L, report the pollutant concentration as < 0.1 mg/L.
- Pollutant concentrations equal to or greater than the limit of detection, but less than the limit of quantitation, shall be reported and the limit of quantitation shall be specified.
- For purposes of calculating NR 101 fees, the 2 mg/l lower reporting limits for BOD₅ and Total Suspended Solids shall be considered to be limits of quantitation
- For the purposes of reporting a calculated result, average or a mass discharge value, the permittee may substitute a 0 (zero) for any pollutant concentration that is less than the limit of detection. However, if the effluent limitation is less than the limit of detection, the department may substitute a value other than zero for results less than the limit of detection, after considering the number of monitoring results that are greater than the limit of detection and if warranted when applying appropriate statistical techniques.

9.1.6 Compliance Maintenance Annual Reports

Compliance Maintenance Annual Reports (CMAR) shall be completed using information obtained over each calendar year regarding the wastewater conveyance and treatment system. The CMAR shall be submitted and certified by the permittee in accordance with ch. NR 208, Wis. Adm. Code, by June 30, each year on an electronic report form provided by the Department.

In the case of a publicly owned treatment works, a resolution shall be passed by the governing body and submitted as part of the CMAR, verifying its review of the report and providing responses as required. Private owners of wastewater treatment works are not required to pass a resolution; but they must provide an Owner Statement and responses as required, as part of the CMAR submittal.

The CMAR shall be certified electronically by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The certification verifies that the electronic report is true, accurate and complete.

9.1.7 Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings or electronic data records for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit for a period of at least 3 years from the date of the sample, measurement, report or application. All pertinent sludge information, including permit application information and other documents specified in this permit or s. NR 204.06(9), Wis. Adm. Code shall be retained for a minimum of 5 years.

9.1.8 Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or correct information to the Department.

9.1.9 Reporting Requirements – Alterations or Additions

The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:

- The alteration or addition to the permitted facility may meet one of the criteria for determining whether a facility is a new source.
- The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification requirement applies to pollutants which are not subject to effluent limitations in the existing permit.
- The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use of disposal sites not reported during the permit application process nor reported pursuant to an approved land application plan. Additional sites may not be used for the land application of sludge until department approval is received.

9.2 System Operating Requirements

9.2.1 Noncompliance Reporting

Sanitary sewer overflows and sewage treatment facility overflows shall be reported according to the 'Sanitary Sewer Overflows and Sewage Treatment Facility Overflows' section of this permit.

The permittee shall report the following types of noncompliance by a telephone call to the Department's regional office within 24 hours after becoming aware of the noncompliance:

- any noncompliance which may endanger health or the environment;
- any violation of an effluent limitation resulting from a bypass;
- any violation of an effluent limitation resulting from an upset; and
- any violation of a maximum discharge limitation for any of the pollutants listed by the Department in the permit, either for effluent or sludge.

A written report describing the noncompliance shall also be submitted to the Department's regional office within 5 days after the permittee becomes aware of the noncompliance. On a case-by-case basis, the Department may waive the requirement for submittal of a written report within 5 days and instruct the permittee to submit the written report with the next regularly scheduled monitoring report. In either case, the written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.

A scheduled bypass approved by the Department under the 'Scheduled Bypass' section of this permit shall not be subject to the reporting required under this section.

NOTE: Section 292.11(2)(a), Wisconsin Statutes, requires any person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance to notify the Department of Natural Resources **immediately** of any discharge not authorized by the permit. **The discharge of a hazardous substance that is not authorized by this permit or that violates this permit may be a hazardous substance spill. To report a hazardous substance spill, call DNR's 24-hour HOTLINE at 1-800-943-0003.**

9.2.2 Flow Meters

Flow meters shall be calibrated annually, as per s. NR 218.06, Wis. Adm. Code.

9.2.3 Raw Grit and Screenings

All raw grit and screenings shall be disposed of at a properly licensed solid waste facility or picked up by a licensed waste hauler. If the facility or hauler are located in Wisconsin, then they shall be licensed under chs. NR 500-555, Wis. Adm. Code.

9.2.4 Sludge Management

All sludge management activities shall be conducted in compliance with ch. NR 204 "Domestic Sewage Sludge Management", Wis. Adm. Code.

9.2.5 Prohibited Wastes

Under no circumstances may the introduction of wastes prohibited by s. NR 211.10, Wis. Adm. Code, be allowed into the waste treatment system. Prohibited wastes include those:

- which create a fire or explosion hazard in the treatment work;
- which will cause corrosive structural damage to the treatment work;
- solid or viscous substances in amounts which cause obstructions to the flow in sewers or interference with the proper operation of the treatment work;
- wastewaters at a flow rate or pollutant loading which are excessive over relatively short time periods so as to cause a loss of treatment efficiency; and
- changes in discharge volume or composition from contributing industries which overload the treatment works or cause a loss of treatment efficiency.

9.2.6 Bypass

This condition applies only to bypassing at a sewage treatment facility that is not a scheduled bypass, approved blending as a specific condition of this permit, a sewage treatment facility overflow or a controlled diversion as provided in the sections titled 'Scheduled Bypass', 'Blending' (if approved), 'SSO's and Sewage Treatment Facility Overflows' and 'Controlled Diversions' of this permit. Any other bypass at the sewage treatment facility is prohibited and the Department may take enforcement action against a permittee for such occurrences under s. 283.89, Wis. Stats. The Department may approve a bypass if the permittee demonstrates all the following conditions apply:

- The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance. When evaluating feasibility of alternatives, the department may consider factors such as technical achievability, costs and affordability of implementation and risks to public health, the environment and, where the permittee is a municipality, the welfare of the community served; and
- The bypass was reported in accordance with the Noncompliance Reporting section of this permit.

9.2.7 Scheduled Bypass

Whenever the permittee anticipates the need to bypass for purposes of efficient operations and maintenance and the permittee may not meet the conditions for controlled diversions in the 'Controlled Diversions' section of this permit, the permittee shall obtain prior written approval from the Department for the scheduled bypass. A permittee's written

request for Department approval of a scheduled bypass shall demonstrate that the conditions for bypassing specified in the above section titled 'Bypass' are met and include the proposed date and reason for the bypass, estimated volume and duration of the bypass, alternatives to bypassing and measures to mitigate environmental harm caused by the bypass. The department may require the permittee to provide public notification for a scheduled bypass if it is determined there is significant public interest in the proposed action and may recommend mitigation measures to minimize the impact of such bypass.

9.2.8 Controlled Diversions

Controlled diversions are allowed only when necessary for essential maintenance to assure efficient operation. Sewage treatment facilities that have multiple treatment units to treat variable or seasonal loading conditions may shut down redundant treatment units when necessary for efficient operation. The following requirements shall be met during controlled diversions:

- Effluent from the sewage treatment facility shall meet the effluent limitations established in the permit. Wastewater that is diverted around a treatment unit or treatment process during a controlled diversion shall be recombined with wastewater that is not diverted prior to the effluent sampling location and prior to effluent discharge;
- A controlled diversion does not include blending as defined in s. NR 210.03(2e), Wis. Adm. Code, and as may only be approved under s. NR 210.12. A controlled diversion may not occur during periods of excessive flow or other abnormal wastewater characteristics;
- A controlled diversion may not result in a wastewater treatment facility overflow; and
- All instances of controlled diversions shall be documented in sewage treatment facility records and such records shall be available to the department on request.

9.2.9 Blending

The Department has determined that blending as defined in s. NR 210.03(2e), Wis. Adm. Code, may occur at this sewage treatment facility. The following requirements shall apply whenever blending operations are in effect:

- Blending may occur temporarily only during wet weather or other high flow conditions when peak wastewater flow to the sewage treatment facility exceeds the maximum design and operating capacity of the biological treatment processes and when necessary to avoid severe property damage to the sewage treatment facility as described in NR 210.12 (2) (a), Wis. Adm. Code.;
- Untreated, or partially treated wastewater that is routed around the biological treatment process, or a portion of a biological treatment process, shall be recombined with the biologically treated wastewater and the combined flow shall be disinfected, if required by this permit, prior to discharge;
- Effluent from the sewage treatment facility shall be monitored to include all wastewater that is discharged from the facility, including those wastewaters that are diverted around the biological treatment process and shall meet the effluent limitations for Outfall 001 included in this permit; and
- Blending under this section and the circumstances that lead to blending shall be reported to the Department by telephone, fax or email no later than 24 hours from the time each blending operation ceases at the sewage treatment facility. Permittees shall also report the time, duration and volume of wastewater routed around the biological treatment process on the wastewater Discharge Monitoring Report (DMR) forms.

9.2.10 Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training as required in ch. NR 114, Wis. Adm. Code, and adequate laboratory and process controls, including appropriate quality assurance

procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

9.2.11 Operator Certification

The wastewater treatment facility shall be under the direct supervision of a state certified operator. In accordance with s. NR 114.53, Wis. Adm. Code, every WPDES permitted treatment plant shall have a designated operator-in-charge holding a current and valid certificate. The designated operator-in-charge shall be certified at the level and in all subclasses of the treatment plant, except laboratory. Treatment plant owners shall notify the department of any changes in the operator-in-charge within 30 days. Note that s. NR 114.52(22), Wis. Adm. Code, lists types of facilities that are excluded from operator certification requirements (i.e. private sewage systems, pretreatment facilities discharging to public sewers, industrial wastewater treatment that consists solely of land disposal, agricultural digesters and concentrated aquatic production facilities with no biological treatment).

9.3 Sewage Collection Systems

9.3.1 Sanitary Sewage Overflows and Sewage Treatment Facility Overflows

9.3.1.1 Overflows Prohibited

Any overflow or discharge of wastewater from the sewage collection system or at the sewage treatment facility, other than from permitted outfalls, is prohibited. The permittee shall provide information on whether any of the following conditions existed when an overflow occurred:

- The sanitary sewer overflow or sewage treatment facility overflow was unavoidable to prevent loss of life, personal injury or severe property damage;
- There were no feasible alternatives to the sanitary sewer overflow or sewage treatment facility overflow such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or preventative maintenance activities;
- The sanitary sewer overflow or the sewage treatment facility overflow was caused by unusual or severe weather related conditions such as large or successive precipitation events, snowmelt, saturated soil conditions, or severe weather occurring in the area served by the sewage collection system or sewage treatment facility; and
- The sanitary sewer overflow or the sewage treatment facility overflow was unintentional, temporary, and caused by an accident or other factors beyond the reasonable control of the permittee.

9.3.1.2 Permittee Response to Overflows

Whenever a sanitary sewer overflow or sewage treatment facility overflow occurs, the permittee shall take all feasible steps to control or limit the volume of untreated or partially treated wastewater discharged, and terminate the discharge as soon as practicable. Remedial actions, including those in NR 210.21 (3), Wis. Adm. Code, shall be implemented consistent with an emergency response plan developed under the CMOM program.

9.3.1.3 Permittee Reporting

Permittees shall report all sanitary sewer overflows and sewage treatment overflows as follows:

- The permittee shall notify the department by telephone, fax or email as soon as practicable, but no later than 24 hours from the time the permittee becomes aware of the overflow;
- The permittee shall, no later than five days from the time the permittee becomes aware of the overflow, provide to the department the information identified in this paragraph using department form number 3400-184. If an overflow lasts for more than five days, an initial report shall be submitted within 5 days as required in this paragraph and an updated report submitted following cessation of the overflow. At a minimum, the following information shall be included in the report:

- The date and location of the overflow;
- The surface water to which the discharge occurred, if any;
- The duration of the overflow and an estimate of the volume of the overflow;
- A description of the sewer system or treatment facility component from which the discharge occurred such as manhole, lift station, constructed overflow pipe, or crack or other opening in a pipe;
- The estimated date and time when the overflow began and stopped or will be stopped;
- The cause or suspected cause of the overflow including, if appropriate, precipitation, runoff conditions, areas of flooding, soil moisture and other relevant information;
- Steps taken or planned to reduce, eliminate and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
- A description of the actual or potential for human exposure and contact with the wastewater from the overflow;
- Steps taken or planned to mitigate the impacts of the overflow and a schedule of major milestones for those steps;
- To the extent known at the time of reporting, the number and location of building backups caused by excessive flow or other hydraulic constraints in the sewage collection system that occurred concurrently with the sanitary sewer overflow and that were within the same area of the sewage collection system as the sanitary sewer overflow; and
- The reason the overflow occurred or explanation of other contributing circumstances that resulted in the overflow event. This includes any information available including whether the overflow was unavoidable to prevent loss of life, personal injury, or severe property damage and whether there were feasible alternatives to the overflow.

NOTE: A copy of form 3400-184 for reporting sanitary sewer overflows and sewage treatment facility overflows may be obtained from the department or accessed on the department's web site at <http://dnr.wi.gov/topic/wastewater/SSOreport.html>. As indicated on the form, additional information may be submitted to supplement the information required by the form.

- The permittee shall identify each specific location and each day on which a sanitary sewer overflow or sewage treatment facility overflow occurs as a discrete sanitary sewer overflow or sewage treatment facility overflow occurrence. An occurrence may be more than one day if the circumstances causing the sanitary sewer overflow or sewage treatment facility overflow results in a discharge duration of greater than 24 hours. If there is a stop and restart of the overflow at the same location within 24 hours and the overflow is caused by the same circumstance, it may be reported as one occurrence. Sanitary sewer overflow occurrences at a specific location that are separated by more than 24 hours shall be reported as separate occurrences; and
- A permittee that is required to submit wastewater discharge monitoring reports under NR 205.07 (1) (r) shall also report all sanitary sewer overflows and sewage treatment facility overflows on that report.

9.3.1.4 Public Notification

The permittee shall notify the public of any sanitary sewer and sewage treatment facility overflows consistent with its emergency response plan required under the CMOM (Capacity, Management, Operation and Maintenance) section of this permit and s. NR 210.23 (4) (f), Wis. Adm. Code. Such public notification shall occur promptly following any overflow event using the most effective and efficient communications available in the community. At minimum, a daily newspaper of general circulation in the county(s) and municipality whose waters may be affected by the overflow shall be notified by written or electronic communication.

9.3.2 Capacity, Management, Operation and Maintenance (CMOM) Program

- The permittee shall have written documentation of the Capacity, Management, Operation and Maintenance (CMOM) program components in accordance with s. NR 210.23(4), Wis. Adm. Code. Such documentation shall be available for Department review upon request. The Department may request that the permittee provide this documentation or prepare a summary of the permittee's CMOM program at the time of application for reissuance of the WPDES permit.
- The permittee shall implement a CMOM program in accordance with s. NR 210.23, Wis. Adm. Code.
- The permittee shall at least annually conduct a self-audit of activities conducted under the permittee's CMOM program to ensure CMOM components are being implemented as necessary to meet the general standards of s. NR 210.23(3), Wis. Adm. Code.

9.3.3 Sewer Cleaning Debris and Materials

All debris and material removed from cleaning sanitary sewers shall be managed to prevent nuisances, run-off, ground infiltration or prohibited discharges.

- Debris and solid waste shall be dewatered, dried and then disposed of at a licensed solid waste facility.
- Liquid waste from the cleaning and dewatering operations shall be collected and disposed of at a permitted wastewater treatment facility.
- Combination waste including liquid waste along with debris and solid waste may be disposed of at a licensed solid waste facility or wastewater treatment facility willing to accept the waste.

9.4 Surface Water Requirements

9.4.1 Permittee-Determined Limit of Quantitation Incorporated into this Permit

For pollutants with water quality-based effluent limits below the Limit of Quantitation (LOQ) in this permit, the LOQ calculated by the permittee and reported on the Discharge Monitoring Reports (DMRs) is incorporated by reference into this permit. The LOQ shall be reported on the DMRs, shall be the lowest quantifiable level practicable, and shall be no greater than the minimum level (ML) specified in or approved under 40 CFR Part 136 for the pollutant at the time this permit was issued, unless this permit specifies a higher LOQ.

9.4.2 Appropriate Formulas for Effluent Calculations

The permittee shall use the following formulas for calculating effluent results to determine compliance with average concentration limits and mass limits and total load limits:

Weekly/Monthly/Six-Month/Annual Average Concentration = the sum of all daily results for that week/month/six-month/year, divided by the number of results during that time period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Weekly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the week.

Monthly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the month.

Six-Month Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the six-month period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Annual Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the entire year.

Total Monthly Discharge: = monthly average concentration (mg/L) x total flow for the month (MG/month) x 8.34.

Total Annual Discharge: = sum of total monthly discharges for the calendar year.

12-Month Rolling Sum of Total Monthly Discharge: = the sum of the most recent 12 consecutive months of Total Monthly Discharges.

9.4.3 Effluent Temperature Requirements

Weekly Average Temperature – The permittee shall use the following formula for calculating effluent results to determine compliance with the weekly average temperature limit (as applicable): Weekly Average Temperature = the sum of all daily maximum results for that week divided by the number of daily maximum results during that time period.

Cold Shock Standard – Water temperatures of the discharge shall be controlled in a manner as to protect fish and aquatic life uses from the deleterious effects of cold shock. ‘Cold Shock’ means exposure of aquatic organisms to a rapid decrease in temperature and a sustained exposure to low temperature that induces abnormal behavior or physiological performance and may lead to death.

Rate of Temperature Change Standard – Temperature of a water of the state or discharge to a water of the state may not be artificially raised or lowered at such a rate that it causes detrimental health or reproductive effects to fish or aquatic life of the water of the state.

9.4.4 Visible Foam or Floating Solids

There shall be no discharge of floating solids or visible foam in other than trace amounts.

9.4.5 Surface Water Uses and Criteria

In accordance with NR 102.04, Wis. Adm. Code, surface water uses and criteria are established to govern water management decisions. Practices attributable to municipal, industrial, commercial, domestic, agricultural, land development or other activities shall be controlled so that all surface waters including the mixing zone meet the following conditions at all times and under all flow and water level conditions:

- a) Substances that will cause objectionable deposits on the shore or in the bed of a body of water, shall not be present in such amounts as to interfere with public rights in waters of the state.
- b) Floating or submerged debris, oil, scum or other material shall not be present in such amounts as to interfere with public rights in waters of the state.
- c) Materials producing color, odor, taste or unsightliness shall not be present in such amounts as to interfere with public rights in waters of the state.
- d) Substances in concentrations or in combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts which are acutely harmful to animal, plant or aquatic life.

9.4.6 Percent Removal

During any 30 consecutive days, the average effluent concentrations of BOD₅ and of total suspended solids shall not exceed 15% of the average influent concentrations, respectively. This requirement does not apply to removal of total suspended solids if the permittee operates a lagoon system and has received a variance for suspended solids granted under NR 210.07(2), Wis. Adm. Code.

9.4.7 Fecal Coliforms

The weekly and monthly limit(s) for fecal coliforms shall be expressed as a geometric mean.

9.4.8 Year-Round Disinfection

Disinfection shall be provided year-round. Monitoring requirements and the limitation for fecal coliforms apply during the period in which disinfection is required. Whenever chlorine is used for disinfection or other effluent uses, the limitations and monitoring requirements for residual chlorine shall apply. A dechlorination process shall be in operation whenever chlorine is used for disinfection or other effluent uses.

9.4.9 Total Residual Chlorine Requirements (When De-Chlorinating Effluent)

Test methods for total residual chlorine, approved in ch. NR 219 - Table B, Wis. Adm. Code, normally achieve a limit of detection of about 20 to 50 micrograms per liter and a limit of quantitation of about 100 micrograms per liter. Reporting of test results and compliance with effluent limitations for chlorine residual and total residual halogens shall be as follows:

- Sample results which show no detectable levels are in compliance with the limit. These test results shall be reported on Wastewater Discharge Monitoring Report Forms as "< 100 µg/L". (Note: 0.1 mg/L converts to 100 µg/L)
- Samples showing detectable traces of chlorine are in compliance if measured at less than 100 µg/L, unless there is a consistent pattern of detectable values in this range. These values shall also be reported on Wastewater Discharge Monitoring Report Forms as "<100 µg/L." The facility operating staff shall record actual readings on logs maintained at the plant, shall take action to determine the reliability of detected results (such as re-sampling and/or calculating dosages), and shall adjust the chemical feed system if necessary to reduce the chances of detects.
- Samples showing detectable levels greater than 100 µg/L shall be considered as exceedances, and shall be reported as measured.
- To calculate average or mass discharge values, a "0" (zero) may be substituted for any test result less than 100 µg/L. Calculated values shall then be compared directly to the average or mass limitations to determine compliance.

9.4.10 Whole Effluent Toxicity (WET) Monitoring Requirements

In order to determine the potential impact of the discharge on aquatic organisms, static-renewal toxicity tests shall be performed on the effluent in accordance with the procedures specified in the *"State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition"* (PUB-WT-797, November 2004) as required by NR 219.04, Table A, Wis. Adm. Code). All of the WET tests required in this permit, including any required retests, shall be conducted on the *Ceriodaphnia dubia* and fathead minnow species. Receiving water samples shall not be collected from any point in contact with the permittee's mixing zone and every attempt shall be made to avoid contact with any other discharge's mixing zone.

9.4.11 Whole Effluent Toxicity (WET) Identification and Reduction

Within 60 days of a retest which showed positive results, the permittee shall submit a written report to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921, which details the following:

- A description of actions the permittee has taken or will take to remove toxicity and to prevent the recurrence of toxicity;
- A description of toxicity reduction evaluation (TRE) investigations that have been or will be done to identify potential sources of toxicity, including some or all of the following actions:

- (a) Evaluate the performance of the treatment system to identify deficiencies contributing to effluent toxicity (e.g., operational problems, chemical additives, incomplete treatment)
 - (b) Identify the compound(s) causing toxicity
 - (c) Trace the compound(s) causing toxicity to their sources (e.g., industrial, commercial, domestic)
 - (d) Evaluate, select, and implement methods or technologies to control effluent toxicity (e.g., in-plant or pretreatment controls, source reduction or removal)
- Where corrective actions including a TRE have not been completed, an expeditious schedule under which corrective actions will be implemented;
 - If no actions have been taken, the reason for not taking action.

The permittee may also request approval from the Department to postpone additional retests in order to investigate the source(s) of toxicity. Postponed retests must be completed after toxicity is believed to have been removed.

9.4.12 Reopener Clause

Pursuant to s. 283.15(11), Wis. Stat. and 40 CFR 131.20, the Department may modify or revoke and reissue this permit if, through the triennial standard review process, the Department determines that the terms and conditions of this permit need to be updated to reflect the highest attainable condition of the receiving water.

9.5 Pretreatment Program Requirements

The permittee is required to operate an industrial pretreatment program as described in the program initially approved by the Department of Natural Resources including any subsequent program modifications approved by the Department, and including commitments to program implementation activities provided in the permittee's annual pretreatment program report, and that complies with the requirements set forth in 40 CFR Part 403 and ch. NR 211, Wis. Adm. Code. To ensure that the program is operated in accordance with these requirements, the following general conditions and requirements are hereby established:

9.5.1 Inventories

The permittee shall implement methods to maintain a current inventory of the general character and volume of wastewater that industrial users discharge to the treatment works and shall provide an updated industrial user listing annually and report any changes in the listing to the Department by May 31 of each year as part of the annual pretreatment program report required herein.

9.5.2 Regulation of Industrial Users

9.5.2.1 Limitations for Industrial Users:

The permittee shall develop, maintain, enforce and revise as necessary local limits to implement the general and specific prohibitions of the state and federal General Pretreatment Regulations.

9.5.2.2 Control Documents for Industrial Users (IUs)

The permittee shall control the discharge from each significant industrial user through individual discharge permits as required by s. NR 211.235, Wis. Adm. Code, and in accordance with the approved pretreatment program procedures and the permittee's sewer use ordinance. The discharge permits shall be modified in a timely manner during the stated term of the discharge permits according to the sewer use ordinance as conditions warrant. The discharge permits shall include at a minimum the elements found in s. NR 211.235(1), Wis. Adm. Code, and references to the approved pretreatment program procedures and the sewer use ordinance.

9.5.2.3 Review of Industrial User Reports, Inspections and Compliance Monitoring

The permittee shall require the submission of, receive, and review self-monitoring reports and other notices from industrial users in accordance with the approved pretreatment program procedures. The permittee shall randomly sample and analyze industrial user discharges and conduct surveillance activities to determine independent of information supplied by the industrial users, whether the industrial users are in compliance with pretreatment standards and requirements. The inspections and monitoring shall also be conducted to maintain accurate knowledge of local industrial processes, including changes in the discharge, pretreatment equipment operation, spill prevention control plans, slug control plans, and implementation of solvent management plans.

The permittee shall inspect and sample the discharge from each significant industrial user as specified in the permittee's approved pretreatment program or as specified in NR 211.235(3). The permittee shall evaluate whether industrial users identified as significant need a slug control plan according to the requirements of NR 211.235(4). If a slug control plan is needed, the plan shall contain at a minimum the elements specified in s. NR 211.235(4)(b), Wis. Adm. Code.

9.5.2.4 Enforcement and Industrial User Compliance Evaluation & Violation Reports

The permittee shall enforce the industrial pretreatment requirements including the industrial user discharge limitations of the permittee's sewer use ordinance. The permittee shall investigate instances of noncompliance by collecting and analyzing samples and collecting other information with sufficient care to produce evidence admissible in enforcement proceedings or in judicial actions. Investigation and response to instances of noncompliance shall be in accordance with the permittee's sewer use ordinance and approved Enforcement Response Plan.

The permittee shall make a semiannual report on forms provided or approved by the Department. The semiannual report shall include an analysis of industrial user significant noncompliance (i.e. the Industrial User Compliance Evaluation, also known as the SNC Analysis) as outlined in s. NR 211.23(1)(j), Wis. Adm. Code, and a summary of the permittee's response to all industrial noncompliance (i.e. the Industrial User Violation Report). The Industrial User Compliance Evaluation Report shall include monitoring results received from industrial users pursuant to s. NR 211.15(1)-(5), Wis. Adm. Code. The Industrial User Violation Report shall include copies of all notices of noncompliance, notices of violation and other enforcement correspondence sent by the permittee to industrial users, together with the industrial user's response. The Industrial User Compliance Evaluation and Violation Reports for the period January through June shall be provided to the Department by November 30 of each year and for the period July through December shall be provided to the Department by May 31 of the succeeding year, unless alternate submittal dates are approved.

9.5.2.5 Publication of Violations

The permittee shall publish a list of industrial users that have significantly violated the municipal sewer use ordinance during the calendar year, in the largest daily newspaper in the area by May 31 of the following year pursuant to s. NR 211.23(1)(j), Wis. Adm. Code. A copy of the newspaper publication shall be provided as part of the annual pretreatment report specified herein.

9.5.2.6 Multijurisdictional Agreements

The permittee shall establish agreements with all contributing jurisdictions as necessary to ensure compliance with pretreatment standards and requirements by all industrial users discharging to the permittee's wastewater treatment system. Any such agreement shall identify who will be responsible for maintaining the industrial user inventory, issuance of industrial user control mechanisms, inspections and sampling, pretreatment program implementation, and enforcement.

9.5.3 Annual Pretreatment Program Report

The permittee shall evaluate the pretreatment program, and submit the Pretreatment Program Report to the Department on forms provided or approved by the Department by May 31 annually, unless an alternate submittal date

is approved. The report shall include a brief summary of the work performed during the preceding calendar year, including the numbers of discharge permits issued and in effect, pollution prevention activities, number of inspections and monitoring surveys conducted, budget and personnel assigned to the program, a general discussion of program progress in meeting the objectives of the permittee's pretreatment program together with summary comments and recommendations.

9.5.4 Pretreatment Program Modifications

- **Future Modifications:** The permittee shall within one year of any revisions to federal or state General Pretreatment Regulations submit an application to the Department in duplicate to modify and update its approved pretreatment program to incorporate such regulatory changes as applicable to the permittee. Additionally, the Department or the permittee may request an application for program modification at any time where necessary to improve program effectiveness based on program experience to date.
- **Modifications Subject to Department Approval:** The permittee shall submit all proposed pretreatment program modifications to the Department for determination of significance and opportunity for comment in accordance with the requirements and conditions of s. NR 211.27, Wis. Adm. Code. Any substantial proposed program modification shall be subject to Department public noticing and formal approval prior to implementation. A substantial program modification includes, but is not limited to, changes in enabling legal authority to administer and enforce pretreatment conditions and requirements; significant changes in program administrative or operational procedures; significant reductions in monitoring frequencies; significant reductions in program resources including personnel commitments, equipment, and funding levels; changes (including any relaxation) in the local limitations for substances enforced and applied to users of the sewerage treatment works; changes in treatment works sludge disposal or management practices which impact the pretreatment program; or program modifications which increase pollutant loadings to the treatment works. The Department shall use the procedures outlined in s. NR 211.30, Wis. Adm. Code for review and approval/denial of proposed pretreatment program modifications. The permittee shall comply with local public participation requirements when implementing the pretreatment program.

9.5.5 Program Resources

The permittee shall have sufficient resources and qualified personnel to carry out the pretreatment program responsibilities as listed in ss. NR 211.22 and NR 211.23, Wis. Adm. Code.

9.6 Groundwater Standard Requirements

9.6.1 Application of NR 140 to Substances Discharged

This permit does not authorize the permittee to discharge any substance in a concentration which would cause an applicable groundwater standard of ch. NR 140, Wis. Adm. Code, to be exceeded. The Department may seek a response under NR 140 if the permittee's discharge causes exceedance of an applicable groundwater standard for any substance, including substances not specifically limited or monitored under this permit.

9.6.2 Groundwater Sampling

Groundwater sampling shall be performed in accordance with procedures contained in the WDNR publications, Groundwater Sampling Desk Reference (PUBL-DG-037-96) and Groundwater Sampling Field Manual (PUBL-DG-038-96).

9.6.3 Indicator Parameter - Preventive Action Limits

Preventive action limits for indicator parameters are calculated using a minimum of eight sample analysis results available from a representative background well in accordance with the procedures in s. NR 140.20, Wis. Adm. Code.

9.6.4 Groundwater Monitoring Forms

Results of the groundwater analyses shall be summarized and reported on Groundwater Monitoring Forms. This report form is to be returned to the Department no later than the date indicated on the form. A copy of the groundwater monitoring form or an electronic file of the form shall be retained by the permittee. Groundwater monitoring results shall be reported on an electronic groundwater monitoring form and certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

9.6.5 Appropriate Formulas for Groundwater

Total Nitrogen = Total Kjeldahl Nitrogen (mg/L) + [NO₂ + NO₃] Nitrogen (mg/L)

Organic Nitrogen (mg/L) = Total Kjeldahl Nitrogen (mg/L) - Ammonia Nitrogen (mg/L)

9.6.6 Reporting Depth to Groundwater

Depth to groundwater shall be reported in feet, to the nearest 0.01 foot, below the top of the well casing. A report shall be on file with the Department stating the well casing top elevation in feet above mean sea level (MSL), to the nearest 0.01 foot, for each groundwater monitoring well.

9.6.7 Groundwater Elevation

Groundwater elevations shall be calculated by subtracting the depth to groundwater measurement from the well casing top elevation and shall be reported in feet above mean sea level (MSL) to the nearest 0.01 foot.

9.6.8 Groundwater Grab Samples

Grab samples shall be taken of the groundwater only after adequate removal or purging of standing water within the well casing has been performed. For those wells which will refill with water as fast as the water can be removed by bailing or pumping, four well volumes shall be removed prior to sample collection and analysis. For those wells which will not refill with water as fast as the water can be removed by bailing or pumping, the existing volume of water inside the well casing shall be removed and samples collected after the well has refilled to at least half the original volume in the well.

9.6.9 Filtering of Groundwater Samples

All groundwater monitoring well samples shall be filtered prior to analysis, except for the portion used to measure pH or field specific conductance, and total coliform, which shall be done using an unfiltered sample. While in-field analysis is preferred for pH and field specific conductance, laboratory analysis done within two hours of sample collection is acceptable. For the portion to be filtered, it is preferred that filtering be performed in the field immediately following sample collection. However, laboratory filtering is acceptable. Filtering shall be performed through a standard 0.45 micron filter.

9.6.10 Groundwater Data Log

A data log shall be used to record the results of all field sampling and analysis events. This log shall include date of sampling event, groundwater sampler's name, well identification, depth from pipetop to water, depth from pipetop to well bottom, time of purging (start to end), volume of water purged, indication of whether the well was purged dry, time of sample withdrawal, and the following applicable field observations: pH, field conductivity, temperature, color, odor and turbidity, indication of whether field filtering was performed and time of filtering, indication of cap and lock replaced, and comments.

9.6.11 Notification of Attaining or Exceeding Groundwater Quality Standards

The permittee shall notify the Department when monitoring results indicate that a Preventive Action Limit or Enforcement Standard has been attained or exceeded. This notification may be provided in the general remarks section of the groundwater monitoring form or by letter attached to the groundwater monitoring form. Any values reported as exceeding a groundwater standard shall be confirmed as being from a representative sample and as a correct laboratory analysis result.

9.6.12 Preventive Action Limit (PAL) Exceedance

Analysis results (from the land treatment monitoring wells) that are less than this permit's PALs indicate that operation of the land treatment system is protective of groundwater quality. Substance concentrations that exhibit a trend over time of being greater than the PAL may indicate that additional technically and economically feasible actions are needed to reduce the discharge of the substance to the groundwater. In such a case, the Department may request an evaluation and response or propose a permit modification to require submittal of a groundwater evaluation report and implementation of a feasible response as specified in NR 140.24(1)(b), Wis. Adm. Code.

9.6.13 Enforcement Standard Exceedance Within the Design Management Zone

Substance concentrations greater than this permit's enforcement standard (ES) in a permittee's monitoring well located within the property boundary and within the design management zone of the land treatment system may indicate that the groundwater concentration exceeds an ES outside of these boundaries. If the Department determines there is reasonable evidence that an ES is being attained or exceeded beyond the property boundary or beyond the design management zone, the Department may request an evaluation and response or propose a permit modification to require an evaluation report and appropriate response as specified in s. NR 140.26, Wis. Adm. Code.

9.6.14 Enforcement Standard Exceedance Outside the Design Management Zone

The permittee's land treatment system shall not cause the concentration of a substance in groundwater to attain or exceed this permit's enforcement standard at any point of present groundwater use, at any point beyond the property boundary, or at any point beyond the design management zone established under s. NR 140.22, Wis. Adm. Code. When this condition is not met, **the permittee shall, within 120 days following notification by the Department of the attainment or exceedance of an ES beyond the compliance boundary, submit a groundwater quality evaluation and response report** as specified in NR 140.26(1)(b), Wis. Adm. Code. The Department may propose modification of this permit to require the permittee to implement additional treatment or other actions as specified in s. NR 140.26, Wis. Adm. Code.

9.7 Land Application Requirements

9.7.1 Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations

In the event that new federal sludge standards or regulations are promulgated, the permittee shall comply with the new sludge requirements by the dates established in the regulations, if required by federal law, even if the permit has not yet been modified to incorporate the new federal regulations.

9.7.2 General Sludge Management Information

The General Sludge Management Form 3400-48 shall be completed and submitted prior to any significant sludge management changes.

9.7.3 Sludge Samples

All sludge samples shall be collected at a point and in a manner which will yield sample results which are representative of the sludge being tested, and collected at the time which is appropriate for the specific test.

9.7.4 Land Application Characteristic Report

Each report shall consist of a Characteristic Form 3400-49 and Lab Report. The Characteristic Report Form 3400-49 shall be submitted electronically by January 31 following each year of analysis.

Following submittal of the electronic Characteristic Report Form 3400-49, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report is true, accurate and complete. The Lab Report must be sent directly to the facility's DNR sludge representative or basin engineer unless approval for not submitting the lab reports has been given.

The permittee shall use the following convention when reporting sludge monitoring results: Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 1.0 mg/kg, report the pollutant concentration as < 1.0 mg/kg .

All results shall be reported on a dry weight basis.

9.7.5 Calculation of Water Extractable Phosphorus

When sludge analysis for Water Extractable Phosphorus is required by this permit, the permittee shall use the following formula to calculate and report Water Extractable Phosphorus:

$$\text{Water Extractable Phosphorus (\% of Total P)} = \frac{[\text{Water Extractable Phosphorus (mg/kg, dry wt)} \div \text{Total Phosphorus (mg/kg, dry wt)}] \times 100$$

9.7.6 Monitoring and Calculating PCB Concentrations in Sludge

When sludge analysis for "PCB, Total Dry Wt" is required by this permit, the PCB concentration in the sludge shall be determined as follows.

Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code.

9.7.7 Annual Land Application Report

Land Application Report Form 3400-55 shall be submitted electronically by January 31, each year whether or not non-exceptional quality sludge is land applied. Non-exceptional quality sludge is defined in s. NR 204.07(4), Wis. Adm. Code. Following submittal of the electronic Annual Land Application Report Form 3400-55, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

9.7.8 Other Methods of Disposal or Distribution Report

The permittee shall submit electronically the Other Methods of Disposal or Distribution Report Form 3400-52 by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied. Following submittal of the electronic Report Form 3400-52, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

9.7.9 Approval to Land Apply

Bulk non-exceptional quality sludge as defined in s. NR 204.07(4), Wis. Adm. Code, may not be applied to land without a written approval letter or Form 3400-122 from the Department unless the Permittee has obtained permission from the Department to self approve sites in accordance with s. NR 204.06 (6), Wis. Adm. Code. Analysis of sludge characteristics is required prior to land application. Application on frozen or snow covered ground is restricted to the extent specified in s. NR 204.07(3) (l), Wis. Adm. Code.

9.7.10 Soil Analysis Requirements

Each site requested for approval for land application must have the soil tested prior to use. Each approved site used for land application must subsequently be soil tested such that there is at least one valid soil test in the four years prior to land application. All soil sampling and submittal of information to the testing laboratory shall be done in accordance with UW Extension Bulletin A-2100. The testing shall be done by the UW Soils Lab in Madison or Marshfield, WI or at a lab approved by UW. The test results including the crop recommendations shall be submitted to the DNR contact listed for this permit, as they are available. Application rates shall be determined based on the crop nitrogen recommendations and with consideration for other sources of nitrogen applied to the site.

9.7.11 Land Application Site Evaluation

For non-exceptional quality sludge, as defined in s. NR 204.07(4), Wis. Adm. Code, a Land Application Site Request Form 3400-053 shall be submitted to the Department for the proposed land application site. The Department will evaluate the proposed site for acceptability and will either approve or deny use of the proposed site. The permittee may obtain permission to approve their own sites in accordance with s. NR 204.06(6), Wis. Adm. Code.

9.7.12 Class A Sludge: Fecal Coliform Density Requirement

The fecal coliform density which must be < 1000 MPN/g TS as required in s. NR 204.07, Wis. Adm. Code, shall be satisfied immediately after the treatment process is completed. If the material is bagged or shipped at that time, no re-testing is required. If the material is stored and is not immediately bagged or shipped, the sludge shall be re-tested to ensure that regrowth of bacteria has not occurred. See Municipal Wastewater Sludge Guidance Memo #3 (Fecal Coliform Monitoring - Sampling and Analytical Procedures).

9.7.13 Class A Sludge: Heat Drying Process

Dry the sludge by direct or indirect contact with hot gases to reduce the moisture content of the sludge to 10% or lower. Either the temperature of the sewage sludge particles shall exceed 80° C (176° F) or the wet bulb temperature of the gas in contact with the sludge as the sludge leaves the dryer shall exceed 80° C.

9.7.14 Class A Sludge: Temperature/Time Process

An increased sewage sludge temperature shall be maintained for a prescribed period of time according to the following guidelines:

TOTAL SOLIDS	TEMP	TIME	EQUATION Where: D = time in days t = temp in °C	NOTES
≥7%	≥50° C	≥20 min.	$D = \frac{131,700,000}{10^{0.14t}}$	No heating of small particles by warmed gases or immiscible liquid.
≥7%	≥50° C	≥15 sec.	$D = \frac{131,700,000}{10^{0.14t}}$	Small particles heated by warmed gases or immiscible liquid.
<7%	>50° C	≥15 sec. T _o <30 min.	$D = \frac{131,700,000}{10^{0.14t}}$	
<7%	≥50° C	≥30 min.	$D = \frac{50,070,000}{10^{0.14t}}$	

In no case shall temperatures calculated using the appropriate equation be less than 50°C.

9.7.15 Class B Sludge: Fecal Coliform Limitation

Compliance with the fecal coliform limitation for Class B sludge shall be demonstrated by calculating the geometric mean of at least 7 separate samples. (Note that a Total Solids analysis must be done on each sample). The geometric mean shall be less than 2,000,000 MPN or CFU/g TS. Calculation of the geometric mean can be done using one of the following 2 methods.

Method 1:

$$\text{Geometric Mean} = (X_1 \times X_2 \times X_3 \dots \times X_n)^{1/n}$$

Where X = Coliform Density value of the sludge sample, and where n = number of samples (at least 7)

Method 2:

$$\text{Geometric Mean} = \text{antilog}[(X_1 + X_2 + X_3 \dots + X_n) \div n]$$

Where X = log₁₀ of Coliform Density value of the sludge sample, and where n = number of samples (at least 7)

Example for Method 2

Sample Number	Coliform Density of Sludge Sample	log ₁₀
1	6.0 x 10 ⁵	5.78
2	4.2 x 10 ⁶	6.62
3	1.6 x 10 ⁶	6.20
4	9.0 x 10 ⁵	5.95
5	4.0 x 10 ⁵	5.60
6	1.0 x 10 ⁶	6.00
7	5.1 x 10 ⁵	5.71

The geometric mean for the seven samples is determined by averaging the log₁₀ values of the coliform density and taking the antilog of that value.

$$(5.78 + 6.62 + 6.20 + 5.95 + 5.60 + 6.00 + 5.71) \div 7 = 5.98$$

$$\text{The antilog of } 5.98 = 9.5 \times 10^5$$

9.7.16 Class B Sludge: Anaerobic Digestion

Treat the sludge in the absence of air for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 15 days at 35° C to 55° C and 60 days at 20° C. Straight-line interpolation to calculate mean cell residence time is allowable when the temperature falls between 35° C and 20° C.

9.7.17 Vector Control: Volatile Solids Reduction

The mass of volatile solids in the sludge shall be reduced by a minimum of 38% between the time the sludge enters the digestion process and the time it either exits the digester or a storage facility. For calculation of volatile solids reduction, the permittee shall use the Van Kleeck equation or one of the other methods described in "Determination of Volatile Solids Reduction in Digestion" by J.B. Farrell, which is Appendix C of EPA's *Control of Pathogens in Municipal Wastewater Sludge* (EPA/625/R-92/013). The Van Kleeck equation is:

$$\text{VSR}\% = \frac{\text{VS}_{\text{IN}} - \text{VS}_{\text{OUT}}}{\text{VS}_{\text{IN}} - (\text{VS}_{\text{OUT}} \times \text{VS}_{\text{IN}})} \times 100$$

Where: VS_{IN} = Volatile Solids in Feed Sludge (g VS/g TS)

VS_{OUT} = Volatile Solids in Final Sludge (g VS/g TS)

VSR% = Volatile Solids Reduction, (Percent)

9.7.18 Vector Control: Drying With Primary Solids

Dry the sludge to 90% total solids when the sludge contains unstabilized solids from primary treatment. This shall be met at the time the sludge is bagged, distributed, land applied or disposed of.

9.7.19 Class B Sludge – Vector Control: Injection

No significant amount of the sewage sludge shall be present on the land surface within one hour after the sludge is injected.

9.7.20 Class B Sludge – Vector Control: Incorporation

Class A sludge shall be surface applied within 8 hours after being discharged from a pathogen treatment process and then be incorporated within 6 hours of surface application.

9.7.21 Landfilling of Sludge

General: Sewage sludge may not be disposed of in a municipal solid waste landfill unless the landfill meets the requirements of chs. NR 500 to 536, Wis. Adm. Code, and is an approved facility as defined in s. 289.01(3), Wis. Stats. Any facility accepting sewage sludge shall be approved by the Department in writing to accept sewage sludge. Disposal of sewage sludge in a municipal solid waste landfill shall be in accordance with ss. NR 506.13 and 506.14. Sewage sludge may not be disposed of in a surface disposal unit as defined in s. NR 204.03(62).

Approval: The permittee shall obtain approval from the Department prior to the disposal of sludge at a Wisconsin licensed landfill.

9.7.22 Sludge Landfilling Reports

The permittee shall report the volume of sludge disposed of at any landfill facility on Form 3400-52. The permittee shall include the name and address of the landfill, the Department license number or other state's designation or license number for all landfills used during the report period and a letter of acceptability from the landfill owner. In addition, any permittee utilizing landfills as a disposal method shall submit to the Department any test results used to indicate acceptability of the sludge at a landfill. Form 3400-52 shall be submitted annually by January 31, following each year sludge is landfilled.

10 Summary of Reports Due

FOR INFORMATIONAL PURPOSES ONLY

Description	Date	Page
Surface Water Intake -Annual Certification	January 31, 2020	51
Surface Water Intake -Annual Certification	January 31, 2021	51
Surface Water Intake -Annual Certification	January 31, 2022	51
Surface Water Intake -Annual Certification	January 31, 2023	51
Surface Water Intake -Application Materials Required under 40 CFR 122.21(r)	September 30, 2023	51
Surface Water Intake -Annual Certification	January 31, 2024	51
Surface Water Quality Monitoring Plan -Annual Report	June 30, 2019	51
Surface Water Quality Monitoring Plan -Annual Report #2	June 30, 2020	51
Surface Water Quality Monitoring Plan -Annual Report #3	June 30, 2021	51
Surface Water Quality Monitoring Plan -Annual Report #4	June 30, 2022	51
Surface Water Quality Monitoring Plan -Annual Report #5	June 30, 2023	51
Wet Weather Management -Submit Biannual Status Report	March 31, 2020	52
Wet Weather Management -Submit Biannual Progress Report #2	March 31, 2022	52
Wet Weather Management -Submit Final Report	March 31, 2023	52
Wet Weather Management -Biannual Reports After Permit Expiration	See Permit	52
Regional Water Quality Improvement Plan (WQIP) -Plan Completion	March 1, 2020	52
Mercury Pollutant Minimization Program -Submit Annual Status Reports	September 30, 2019	52
Mercury Pollutant Minimization Program -Submit Annual Status Report #2	September 30, 2020	52
Mercury Pollutant Minimization Program -Submit Annual Status Report #3	September 30, 2021	52
Mercury Pollutant Minimization Program -Submit Annual Status Report #4	September 30, 2022	52
Mercury Pollutant Minimization Program -Final Status Report	September 30, 2023	53
Mercury Pollutant Minimization Program -Annual Reports After Permit Expiration	See Permit	53
Phosphorus Optimization - South Shore WRF -Optimization Summary Report	September 30, 2023	53
Continuous Temperature Monitoring - Outfall 003 -Achieve Compliance	June 30, 2019	53
Continuous Temperature Monitoring - Outfall 001 and 002 -Achieve Compliance	December 1, 2021	53
Groundwater Monitoring Well - Abandonment -Abandonment	January 1, 2020	54
Groundwater Monitoring Plan - Inline Storage System (ISS) -Plan Submittal	January 1, 2020	54

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Biosolids Management Plan -Biosolids Management Plan Submittal	June 30, 2019	54
Biosolids Management Plan -Update to Biosolids Management Plan	January 31, 2021	54
Biosolids Daily Logs -Daily Log Annual Report Submittal #1	January 31, 2020	54
Biosolids Daily Logs -Daily Log Annual Report Submittal #2	January 30, 2021	55
Biosolids Daily Logs -Daily Log Annual Report Submittal #3	January 31, 2022	55
Biosolids Daily Logs -Daily Log Annual Report Submittal #4	January 31, 2023	55
Biosolids Daily Logs -Daily Log Annual Report Submittal #5	January 31, 2024	55
Compliance Maintenance Annual Reports (CMAR)	by June 30, each year	57
Industrial User Compliance Evaluation and Violation Reports	Semiannual	67
Pretreatment Program Report	Annually	67
General Sludge Management Form 3400-48	prior to any significant sludge management changes	71
Characteristic Form 3400-49 and Lab Report	by January 31 following each year of analysis	71
Land Application Report Form 3400-55	by January 31, each year whether or not non-exceptional quality sludge is land applied	71
Other Methods of Disposal or Distribution Report Form 3400-52	by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied	72
Groundwater Monitoring Forms.	no later than the date indicated on the form	69
Wastewater Discharge Monitoring Report	no later than the date indicated on the form	56

Report forms shall be submitted electronically in accordance with the reporting requirements herein. Any facility plans or plans and specifications for municipal, industrial, industrial pretreatment and non industrial wastewater systems shall be submitted to the Bureau of Water Quality, P.O. Box 7921, Madison, WI 53707-7921. All other submittals required by this permit shall be submitted to:
Southeast Region, 2300 N Dr ML King Drive, Milwaukee, WI 53212