



WPDES PERMIT

STATE OF WISCONSIN

DEPARTMENT OF NATURAL RESOURCES

**PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE
ELIMINATION SYSTEM**

MILWAUKEE METRO 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 (Jones Island Water Reclamation Facility); and 8500 South Fifth Street, Oak Creek, (South Shore Water Reclamation Facility); and Combined Sewer Overflow Discharge Points listed in this permit; and a Noncontact Cooling Water Outfall at the Jones Island Water Reclamation Facility
to

Lake Michigan, Milwaukee Harbor, and Tributary Streams 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


Theera Ratarasarn, P.E.
Wastewater Engineer

12/11/2014
Date Permit Signed/Issued for modification

PERMIT TERM: EFFECTIVE DATE - January 08, 2013
EFFECTIVE DATE OF MODIFICATION: January 1, 2015

EXPIRATION DATE – December 31, 2017

TABLE OF CONTENTS

1 INFLUENT REQUIREMENTS	1
1.1 SAMPLING POINT(S)	1
1.2 MONITORING REQUIREMENTS	1
1.2.1 Sampling Point 701 - JONES ISLAND	1
1.2.2 Sampling Point 702 - SOUTH SHORE	2
2 IN-PLANT REQUIREMENTS	3
2.1 SAMPLING POINT(S)	3
2.2 MONITORING REQUIREMENTS AND LIMITATIONS	3
2.2.1 Sampling Point 101 - Mercury Field Blank - SS	3
2.2.2 Sampling Point 102 - Mercury Field Blank - JI	3
2.2.3 Combined Sewer Wet Weather Flow Treatment Process	3
2.2.4 Sampling Point 103 - Combined Sewer Treatment at - JI	4
3 DROPSHAFT MONITORING REQUIREMENTS	4
3.1.1 Sampling Points	4
3.1.2 Sampling Point 104 - NS4 Dropshaft Number; 105- NS5 Dropshaft Number; 106- NS6 Dropshaft Number; 107- NS7 Dropshaft Number; 108- NS8 Dropshaft Number; 109- NS9 Dropshaft Number; 110- NS10 Dropshaft Number; 111- NS11 Dropshaft Number; 112- NS12 Dropshaft Number; 113- CT2 Dropshaft Number; 114- CT3/4 Dropshaft Number; 115- CT5/6 Dropshaft Number; 116- CT7 Dropshaft Number; 117- CT8 Dropshaft Number; 118- KK1 Dropshaft Number; 119- KK2 Dropshaft Number; 120- KK3 Dropshaft Number; 121- KK4 Dropshaft Number; 122- LMN Dropshaft Number, and 123- LMS Dropshaft Number	5
4 COMBINED SEWER OVERFLOW RELATED REQUIREMENTS	6
4.1 INVENTORY OF COMBINED SEWER OUTFALLS	6
4.1.1 Inventory of Combined Sewer Outfalls to the Milwaukee River	6
4.1.2 Inventory of Combined Sewer Outfalls to the Kinnickinnic River	7
4.1.3 Inventory of Combined Sewer Outfalls to the Menomonee River	8
4.1.4 Inventory of Combined Sewer Outfalls to the So. Menomonee Canal - Branch of Menomonee River	8
4.1.5 Inventory of Combined Sewer Outfalls to Burnham's Canal - Branch of Menomonee River	8
4.1.6 Inventory of Combined Sewer Outfalls to Lake Michigan	9
4.1.7 Inventory of Combined Sewer Outfalls to Lincoln Creek	9
4.2 FACILITIES PLANNING	9
4.3 ASSET MANAGEMENT	9
4.4 CAPACITY IMPROVEMENTS	9
4.5 COLLECTION SYSTEM OPERATIONAL REQUIREMENTS	10
4.6 OPERATIONAL AND TECHNOLOGY-BASED REQUIREMENTS FOR CSOS	10
4.7 CSO PERFORMANCE STANDARDS	11
4.8 INVENTORY OF METERSHEDS AND MUNICIPALITIES WHERE PEAK FLOW REDUCTIONS ARE REQUIRED	12
4.9 WATERSHED PLANNING AND RESTORATION	12
4.10 WET WEATHER MANAGEMENT - GREEN INFRASTRUCTURE	13
5 SEPARATE SEWER OVERFLOW (SSO) REQUIREMENTS	15
5.1 INSPECTION OF OVERFLOW STRUCTURES	15
5.2 SSO POINTS	15
6 . SURFACE WATER REQUIREMENTS	16
6.1 SAMPLING POINT(S)	16
6.2 COMMON PARAGRAPHS FOR SURFACE OUTFALLS	16
6.2.1 Effluent Temperature Monitoring	16
6.2.2 Total Metals Analyses	16
6.2.3 Sample Analysis	16
6.2.4 Mercury Monitoring	16

6.2.5 WET Testing	16
6.3 MONITORING REQUIREMENTS AND EFFLUENT LIMITATIONS	17
6.3.1 Sampling Point (Outfall) 001 - SOUTH SHORE	17
6.3.2 Sampling Point (Outfall) 002 - JONES ISLAND	19
6.3.3 Outfall 003 Jones Island NCCW Discharge	21
6.3.4 Evaluation of Temperature Limitations	22
7 GROUNDWATER MONITORING REQUIREMENTS AND OPERATIONAL REQUIREMENTS FOR THE INLINE STORAGE SYSTEM (ISS)	23
7.1 OPERATIONAL REQUIREMENTS	23
7.1.1 Water Level Requirements	23
7.1.2 Net Positive Head Requirements and Compliance Assessment Method	23
7.1.3 Operational Alternatives	24
7.2 SPECIAL REQUIREMENTS FOR GROUNDWATER MONITORING WELLS	24
7.2.1 Annual Data Reports	24
7.2.2 Groundwater Level Monitoring for Designated Wells	24
7.2.3 Groundwater Monitoring Frequency	27
7.2.4 Point of Standards Application	28
7.2.5 Sampling Procedures	28
7.3 MONITORING REQUIREMENTS AND LIMITATIONS	28
7.3.1 Groundwater Monitoring System for ISS well 801	29
7.3.2 Groundwater Monitoring System for ISS well 804	30
7.3.3 Groundwater Monitoring System for ISS well 805	30
7.3.4 Groundwater Monitoring System for ISS well 809	31
7.3.5 Groundwater Monitoring System for ISS well 810	31
7.3.6 Groundwater Monitoring System for ISS well 811	32
7.3.7 Groundwater Monitoring System for ISS well 812	33
7.3.8 Groundwater Monitoring System for ISS well 813	33
7.3.9 Groundwater Monitoring System for ISS well 814	34
7.3.10 Groundwater Monitoring System for ISS well 817	34
7.3.11 Groundwater Monitoring System for ISS well 819	35
7.3.12 Groundwater Monitoring System for ISS well 821	35
7.3.13 Groundwater Monitoring System for ISS well 823	36
7.3.14 Groundwater Monitoring System for ISS well 824	37
7.3.15 Groundwater Monitoring System for ISS well 825	37
7.3.16 Groundwater Monitoring System for ISS well 826	38
7.3.17 Groundwater Monitoring System for ISS well 827	38
7.3.18 Groundwater Monitoring System for ISS well 828	39
7.3.19 Groundwater Monitoring System for ISS well 829	39
7.3.20 Groundwater Monitoring System for ISS well 830	40
7.3.21 Groundwater Monitoring System for ISS well 831	40
7.3.22 Groundwater Monitoring System for ISS well 832	41
7.3.23 Groundwater Monitoring System for Well 884	42
7.3.24 Groundwater Monitoring System for Well 885	42
7.3.25 Groundwater Monitoring System for Well 887	43
7.3.26 Groundwater Monitoring System for Well 888	43
7.3.27 Groundwater Monitoring System for Well 889	44
7.3.28 Groundwater Monitoring System for Well 890	44
8 LAND APPLICATION REQUIREMENTS	46
8.1 SAMPLING POINT(S)	46
8.2 MONITORING REQUIREMENTS AND LIMITATIONS	46
8.2.1 Sampling Point (Outfall) 004 - Agrilife (South Shore)	46
8.2.2 Sampling Point (Outfall) 005 - South Shore Cake Sludge	50
8.2.3 Sampling Point (Outfall) 006 - Milorganite (Jones Island)	53

9 SCHEDULES	57
9.1 FACILITY PLAN ADAPTIVE IMPLEMENTATION SCHEDULE	57
9.2 FLOW MONITORING DATA ANNUAL REPORTS:	57
9.3 COMBINED SEWER OVERFLOWS AND SOUTH SHORE PARK	58
9.4 MERCURY POLLUTANT MINIMIZATION PROGRAM	58
9.5 ACTIVITIES IDENTIFIED ELSEWHERE IN THE PERMIT	58
9.6 PHOSPHORUS LIMIT AT JONES ISLAND	59
9.7 SOUTH SHORE UPGRADES	61
9.8 JONES ISLAND OUTFALL 003 TEMPERATURE LIMIT	62
10 STANDARD REQUIREMENTS	63
10.1 REPORTING AND MONITORING REQUIREMENTS	63
10.1.1 <i>Monitoring Results</i>	63
10.1.2 <i>Sampling and Testing Procedures</i>	63
10.1.3 <i>Pretreatment Sampling Requirements</i>	63
10.1.4 <i>Recording of Results</i>	63
10.1.5 <i>Reporting of Monitoring Results</i>	64
10.1.6 <i>Compliance Maintenance Annual Reports</i>	64
10.1.7 <i>Records Retention</i>	64
10.1.8 <i>Other Information</i>	65
10.2 SYSTEM OPERATING REQUIREMENTS	65
10.2.1 <i>Noncompliance Notification</i>	65
10.2.2 <i>Flow Meters</i>	65
10.2.3 <i>Raw Grit and Screenings</i>	65
10.2.4 <i>Sludge Management</i>	65
10.2.5 <i>Prohibited Wastes</i>	65
10.2.6 <i>Unscheduled Bypassing</i>	66
10.2.7 <i>Scheduled Bypassing</i>	66
10.2.8 <i>Blending During Wet Weather</i>	67
10.2.9 <i>Proper Operation and Maintenance</i>	67
10.3 SURFACE WATER REQUIREMENTS	67
10.3.1 <i>Permittee-Determined Limit of Quantitation Incorporated into this Permit</i>	67
10.3.2 <i>Appropriate Formulas for Effluent Calculations</i>	68
10.3.3 <i>Visible Foam or Floating Solids</i>	68
10.3.4 <i>Percent Removal</i>	68
10.3.5 <i>Fecal Coliforms</i>	68
10.3.6 <i>Year Round Disinfection</i>	68
10.3.7 <i>Applicability of Alternative Wet Weather Mass Limitations</i>	68
10.3.8 <i>Total Residual Chlorine Requirements (When De-Chlorinating Effluent)</i>	68
10.3.9 <i>Whole Effluent Toxicity (WET) Monitoring Requirements</i>	69
10.3.10 <i>Whole Effluent Toxicity (WET) Identification and Reduction</i>	69
10.4 PRETREATMENT PROGRAM REQUIREMENTS	70
10.4.1 <i>Inventories</i>	70
10.4.2 <i>Regulation of Industrial Users</i>	70
10.4.3 <i>Annual Pretreatment Program Report</i>	71
10.4.4 <i>Pretreatment Program Modifications</i>	71
10.4.5 <i>Program Resources</i>	71
10.5 GROUNDWATER STANDARD REQUIREMENTS	72
10.5.1 <i>Application of NR 140 to Substances Discharged</i>	72
10.5.2 <i>Groundwater Sampling</i>	72
10.5.3 <i>Indicator Parameter - Preventive Action Limits</i>	72
10.5.4 <i>Groundwater Monitoring Forms</i>	72
10.5.5 <i>Appropriate Formulas for Groundwater</i>	72
10.5.6 <i>Reporting Depth to Groundwater</i>	72
10.5.7 <i>Groundwater Elevation</i>	72

WPDES Permit No. WI-0036820-03-1
MILWAUKEE METRO SEW DIST COMBINED

10.5.8 Groundwater Grab Samples	72
10.5.9 Filtering of Groundwater Samples	73
10.5.10 Groundwater Data Log	73
10.5.11 Notification of Attaining or Exceeding Groundwater Quality Standards	73
10.5.12 Preventive Action Limit (PAL) Exceedance	73
10.5.13 Enforcement Standard Exceedance Within the Design Management Zone	73
10.5.14 Enforcement Standard Exceedance Outside the Design Management Zone	73
10.6 LAND APPLICATION REQUIREMENTS	73
10.6.1 Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations	74
10.6.2 General Sludge Management Information	74
10.6.3 Sludge Samples	74
10.6.4 Land Application Characteristic Report	74
10.6.5 Monitoring and Calculating PCB Concentrations in Sludge	74
10.6.6 Land Application Report	75
10.6.7 Other Methods of Disposal or Distribution Report	75
10.6.8 Approval to Land Apply	75
10.6.9 Soil Analysis Requirements	75
10.6.10 Land Application Site Evaluation	75
10.6.11 Class A Sludge: Salmonella Density Requirements	75
10.6.12 Class A Sludge: Heat Drying Process	75
10.6.13 Class B Sludge: Fecal Coliform Limitation	76
10.6.14 Class A Sludge - Vector Control: Injection	76
10.6.15 Class B Sludge - Vector Control: Injection	76
10.6.16 Class A Sludge - Vector Control: Incorporation	76
10.6.17 Class B Sludge - Vector Control: Incorporation	76
11 SUMMARY OF REPORTS DUE	77

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	Sample the Jones Island influent before coarse screening, this is a composite of influent sampling from the high and low siphons and the ISS
702	Sample the South Shore influent before coarse screening

1.2 Monitoring Requirements

The Permittee shall comply with the following monitoring requirements.

1.2.1 Sampling Point 701 - JONES ISLAND

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Continuous	Continuous	
BOD ₅ , Total		mg/L	Daily	24-Hr Comp	
Suspended Solids, Total		mg/L	Daily	24-Hr Comp	
Phosphorus, Total		mg/L	Daily	24-Hr Comp	
Nitrogen, Ammonia (NH ₃ -N) Total		mg/L	Daily	24-Hr Comp	
Cadmium, Total Recoverable		µg/L	Monthly	24-Hr Comp	
Chromium, Total Recoverable		µg/L	Monthly	24-Hr Comp	
Copper, Total Recoverable		µg/L	Monthly	24-Hr Comp	
Lead, Total Recoverable		µg/L	Monthly	24-Hr Comp	
Nickel, Total Recoverable		µg/L	Monthly	24-Hr Comp	
Zinc, Total Recoverable		µg/L	Monthly	24-Hr Comp	
Mercury, Total Recoverable		ng/L	Monthly	24-Hr Comp	See Section 1.2.2.3, below

1.2.2 Sampling Point 702 - SOUTH SHORE

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Continuous	Continuous	
BOD ₅ , Total		mg/L	Daily	24-Hr Comp	
Suspended Solids, Total		mg/L	Daily	24-Hr Comp	
Phosphorus, Total		mg/L	Daily	24-Hr Comp	
Nitrogen, Ammonia (NH ₃ -N) Total		mg/L	Daily	24-Hr Comp	
Cadmium, Total Recoverable		µg/L	Monthly	24-Hr Comp	
Chromium, Total Recoverable		µg/L	Monthly	24-Hr Comp	
Copper, Total Recoverable		µg/L	Monthly	24-Hr Comp	
Lead, Total Recoverable		µg/L	Monthly	24-Hr Comp	
Nickel, Total Recoverable		µg/L	Monthly	24-Hr Comp	
Zinc, Total Recoverable		µg/L	Monthly	24-Hr Comp	
Mercury, Total Recoverable		ng/L	Monthly	24-Hr Comp	See Section 1.2.2.3, below

Note: Sample point 702 is influenced by non-representative TSS measurements. See section 9.8 for compliance schedule to address this.

1.2.2.1 Total Metals Analyses

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

1.2.2.2 Sample Analysis

Samples shall be analyzed using a method which provides adequate sensitivity so that results can be quantified, unless not possible using the most sensitive approved method.

1.2.2.3 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 quantification (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 In-Plant Requirements

2.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
101	Collect mercury field blanks at South Shore using standard sample handling procedures.
102	Collect mercury field blanks at Jones Island using standard sample handling procedures.
103	CSO Treatment processes at the Jones Island plant

2.2 Monitoring Requirements and Limitations

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

2.2.1 Sampling Point 101 - Mercury Field Blank - SS

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

2.2.2 Sampling Point 102 - Mercury Field Blank - JI

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

2.2.3 Combined Sewer Wet Weather Flow Treatment Process

The Permittee shall utilize Jones Island Water Reclamation Facility (WRF) treatment plant 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 facility (aka the Deep Tunnel). When peak flows are in excess of JI secondary treatment capacity, flows from the inline storage facility shall receive treatment equivalent to primary treatment and disinfection prior to being discharged. Such discharges are subject to the following provisions:

- Wet weather discharges that consist of wastewater that has received primary and secondary treatment combined with combined sewer flows from the inline storage facility must meet the effluent limits for Bacteria, BOD₅, and Total Suspended Solids applicable to discharges from Outfall 002.
- This combined sewer treatment process shall be operated during wet weather only when peak flows are in excess of secondary treatment capacity and only after flow to the South Shore WRF is maximized to the extent practicable.

- 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 good engineering practices.

2.2.4 Sampling Point 103 – Combined Sewer Treatment at - JI

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Continuous	Continuous	
BOD ₅ Total		mg/l	Per Occurrence	24-Hr Comp	
Suspended Solids, Total		Mg/l	Per Occurrence	24-Hr Comp	

The BOD and TSS Per Occurrence sampling shall occur at the discharge point from the inline storage system. This sampler shall be installed by August 31, 2013.

3 Dropshaft Monitoring Requirements

During the period beginning on the effective date of this permit, and lasting until the permit is reissued, a grab sample shall be taken during each overflow event at each of the ISS dropshafts identified in the table in Section 3.1.1. The permittee shall provide for the collection of grab samples for the pollutants listed in Section 3.1.2, at the dropshaft junction chamber or an alternative monitoring location approved by the Department. Samples shall be taken when the gate closes at the junction chamber to which the outfall diversion chamber is tributary.

3.1.1 Sampling Points

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
104	NS4 Dropshaft Number - North Cambridge & Providence
105	NS5 Dropshaft Number - Burleigh & Milwaukee River
106	NS6 Dropshaft Number - Park Place & Milwaukee River
107	NS7 Dropshaft Number - Commerce & Booth
108	NS8 Dropshaft Number - Commerce & Walnut
109	NS9 Dropshaft Number - N. 3rd & Park Freeway East
110	NS10 Dropshaft Number - N. Water & St. Paul
111	NS11 Dropshaft Number - N. Humboldt & Capitol
112	NS12 Dropshaft Number - N. 31st & Capitol
113	CT2 Dropshaft Number - Hawley Road
114	CT3/4 Dropshaft Number - N. 44th & Wells
115	CT5/6 Dropshaft Number - N. 25th & Menomonee River
116	CT7 Dropshaft Number - S. 16th & Canal
117	CT8 Dropshaft Number - S. 3rd & Seeboth
118	KK1 Dropshaft Number - S. 6th & Cleveland
119	KK2 Dropshaft Number - S. 1st & Chase
120	KK3 Dropshaft Number - S. 4th & Becher
121	KK4 Dropshaft Number - S. 1st & Lincoln
122	LMN Dropshaft Number - E. Bay & Ward Street
123	LMS Dropshaft Number - Lincoln Memorial Drive & Russell

3.1.2 Sampling Point 104 - NS4 Dropshaft Number; 105- NS5 Dropshaft Number; 106- NS6 Dropshaft Number; 107- NS7 Dropshaft Number; 108- NS8 Dropshaft Number; 109- NS9 Dropshaft Number; 110- NS10 Dropshaft Number; 111- NS11 Dropshaft Number; 112- NS12 Dropshaft Number; 113- CT2 Dropshaft Number; 114- CT3/4 Dropshaft Number; 115- CT5/6 Dropshaft Number; 116- CT7 Dropshaft Number; 117- CT8 Dropshaft Number; 118- KK1 Dropshaft Number; 119- KK2 Dropshaft Number; 120- KK3 Dropshaft Number; 121- KK4 Dropshaft Number; 122- LMN Dropshaft Number, and 123- LMS Dropshaft Number

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Volume		MG	Per Occurrence	Calculated	
Arsenic, Total Recoverable		µg/L	Per Occurrence	Grab	
Cadmium, Total Recoverable		µg/L	Per Occurrence	Grab	
Chromium, Total Recoverable		µg/L	Per Occurrence	Grab	
Copper, Total Recoverable		µg/L	Per Occurrence	Grab	
Lead, Total Recoverable		µg/L	Per Occurrence	Grab	
Nickel, Total Recoverable		µg/L	Per Occurrence	Grab	
Selenium, Total Recoverable		µg/L	Per Occurrence	Grab	
Silver, Total Recoverable		µg/L	Per Occurrence	Grab	
Zinc, Total Recoverable		µg/L	Per Occurrence	Grab	
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 Combined Sewer Overflow Related Requirements

The Permittee shall operate the wastewater treatment, conveyance and storage systems to comply with all requirements of this permit including, but not limited to, this section of the permit. The projects and control requirements enumerated in the permit are intended to manage and further reduce the magnitude, frequency, and duration of combined sewer overflows and continue progress toward attainment of water quality standards, including standards for recreational use of receiving waters.

During the period beginning on the effective date of this permit, and lasting until the permit is reissued, discharges from the combined sewer overflows listed below shall be limited and monitored by the Permittee according to the following conditions:

4.1 Inventory of Combined Sewer Outfalls

4.1.1 Inventory of Combined Sewer Outfalls to the Milwaukee River

<u>SERIAL NUMBER</u>	<u>LOCATION</u>	<u>ASSOCIATED DROP SHAFT</u>
015-CSO	N. Marshall Street at the Milwaukee River	MIS
016-CSO	W. Vliet Street ext'd, east of N. 3rd Street	MIS
017-CSO	N. Van Buren Street at E. Brady Street	NS8
018-CSO	S. Water Street at E. Bruce Street	MIS
051-CSO	Point 300 ft. west of N. Humboldt Ave. & N. Weil Extended	NS7
089-CSO	E. Capitol Drive	NS11
090-CSO	E. Keefe Avenue	NS4
091-CSO	E. Edgewood Avenue	NS4
092-CSO	E. Auer Avenue	NS5
094-CSO	E. Burleigh Street	NS5
096-CSO	E. Locust Street	NS5
097A-CSO	E. Park Pl	NS6
098-CSO	E. Bradford Avenue	NS6
099-CSO	E. Boylston Street	NS7
101-CSO	N. Pulaski Street	NS7
102-CSO	N. Humboldt Avenue	NS7
103-CSO	N. Marshall Street	NS7
103A-CSO	1944 North Commerce St	NS7
104-CSO	N. Holton Street	NS7
106-CSO	N. of E. Pleasant Street	NS8
107-CSO	E. Walnut Street	NS8
108B-CSO	E. Pleasant Street at N. Water St	NS8
109-CSO	N. of W. Cherry Street	NS8
110-CSO	W. Cherry Street	NS8
111-CSO	E. Lyon Street	NS8
112-CSO	E. Ogden Avenue	NS9
113-CSO	W. McKinley Avenue	NS9
113A-CSO	McKinley Ave	NS9
114-CSO	W. Juneau Avenue	NS9
115-CSO	W. Highland Avenue	NS9
116-CSO	E. Highland Avenue	NS9
117-CSO	W. State Street	NS9

118-CSO	E. State Street	NS9
119-CSO	W. Kilbourn Avenue	NS9
120-CSO	E. Kilbourn Avenue	NS9
121-CSO	N. of W. Wells Street	NS9
122-CSO	W. Wells Street	NS9
123-CSO	E. Wells Street	NS9
124-CSO	N. of W. Wisconsin Avenue	NS9
125-CSO	W. Wisconsin Avenue at Milwaukee River	NS9
126-CSO	E. Wisconsin Avenue	NS10
127-CSO	W. Michigan Street	NS10
128-CSO	E. Michigan Street	NS10
129-CSO	N. of W. Clybourn Street	NS10
130-CSO	W. Clybourn Street	NS10
131-CSO	E. Clybourn Street	NS10
133-CSO	W. St. Paul Avenue	NS10
134-CSO	E. St. Paul Avenue	NS10
135-CSO	E. Buffalo Street	NS10
136-CSO	E. Chicago Street	NS10
137-CSO	S. 1st Place	CT8
139-CSO	E. Pittsburgh Avenue	CT8
140-CSO	N. Broadway	NS10
141-CSO	E. Florida Street	CT8
142-CSO	E. Polk Street	NS10
143-CSO	E. Bruce Street	CT8
144-CSO	E. Lyon Street	NS8
146-CSO	N. Arlington Place	NS7
147-CSO	E. Juneau Avenue	NS9
230-CSO	N. Richards at E. Congress	MIS

4.1.2 Inventory of Combined Sewer Outfalls to the Kinnickinnic River

<u>SERIAL NUMBER</u>	<u>LOCATION</u>	<u>ASSOCIATED DROP SHAFT</u>
019-CSO	South First Street at the Kinnickinnic River	MIS
148-CSO	E. National Avenue	CT8
149-CSO	S. of E. Walker Street	CT8
150-CSO	S. of E. Washington Street	CT8
151-CSO	E. Greenfield Avenue	CT8
152-CSO	S. Kinnickinnic Avenue (north bank)	KK3
153-CSO	S. Kinnickinnic Avenue (south bank)	KK3
154-CSO	S. 1st Street (North Bank)	KK3
155-CSO	S. 1st Street (South Bank)	KK3
156-CSO	S. 2nd Street at Kinnickinnic River	KK3
157-CSO	W. Rogers Street	KK3
158-CSO	W. Becher Street (north outfall)	KK3
159-CSO	W. Becher Street (south Outfall)	KK3
160-CSO	E. Lincoln Avenue (south of)	KK4
161-CSO	W. Lincoln Avenue (west bank)	KK4
162-CSO	W. Lincoln Avenue (east bank)	KK4
163-CSO	S. Chase Avenue (north bank)	KK2
164-CSO	S. Chase Avenue (south bank)	KK2

165-CSO	S. 6 th St. at W. Cleveland Avenue (middle outfall)	KK1
166-CSO	S. 6 th St. at W. Cleveland Avenue (north outfall)	KK1
166A-CSO	S. 6th Street at W. Cleveland Avenue (south outfall)	KK1
167-CSO	S. 8th Street	KK1
168-CSO	S. 14th Street	KK1
169-CSO	S. 27th Street at Kinnickinnic River	KK1
260-CSO	S. 6 th Street at W. Oklahoma Ave	MIS

4.1.3 Inventory of Combined Sewer Outfalls to the Menomonee River

<u>SERIAL NUMBER</u>	<u>LOCATION</u>	<u>ASSOCIATED DROP SHAFT</u>
010-CSO	West Canal Street at 8th Street	MIS
170-CSO	S. 2nd Street at Menomonee River	CT8
172-CSO	N. Emmber Lane (east outfall)	CT7
173-CSO	N. 15th Street (east outfall)	CT7
174-CSO	N. 15th Street (west outfall)	CT7
175-CSO	N. 17th Street	CT7
176-CSO	N. 25th Street	CT5/6
177-CSO	N. 26th Street	CT5/6
177A-CSO	123 N. 25th Street	CT5/6
178-CSO	S. 27th Street at Menomonee River (west outfall)	CT5/6
180-CSO	S. 35th Street	CT5/6
181-CSO	W. Wisconsin Avenue at Menomonee River	CT3/4
182-CSO	N. 43rd Street	CT3/4
182A-CSO	4251 W. State Street(CT3,4)	CT3/4
183-CSO	N. 45th Street (60"combined sewer to 72" storm sewer)	CT3/4
184-CSO	N. Hawley Road	CT2
185-CSO	N. 9th Street (Ext'd)	CT7
262-CSO	59 th Street and Trenton	MIS

4.1.4 Inventory of Combined Sewer Outfalls to the So. Menomonee Canal - Branch of Menomonee River

<u>SERIAL NUMBER</u>	<u>LOCATION</u>	<u>ASSOCIATED DROP SHAFT</u>
061-CSO	Emergency Wastewater Exit Facility	
187-CSO	S. 4th Street	CT8
188-CSO	S. 6th Street at Menomonee River	CT8

4.1.5 Inventory of Combined Sewer Outfalls to Burnham's Canal - Branch of Menomonee River

<u>SERIAL NUMBER</u>	<u>LOCATION</u>	<u>ASSOCIATED DROP SHAFT</u>
189-CSO	S. 9th Street (east outfall)	CT7
190-CSO	S. 9th Street (west outfall)	CT7
191-CSO	S. 11th Street	CT7
193-CSO	S. 13th Street	CT7

194-CSO S. Muskego Avenue

CT7

4.1.6 Inventory of Combined Sewer Outfalls to Lake Michigan

SERIAL

NUMBERLOCATIONASSOCIATED DROP SHAFT

195-CSO E. Bay Street

LMN

196-CSO E. Russell Avenue

LMS

4.1.7 Inventory of Combined Sewer Outfalls to Lincoln Creek

SERIAL

NUMBERLOCATIONASSOCIATED DROP SHAFT

145-CSO N. 35th Street and W. Congress St

NS12

197-CSO Hampton Avenue at 32nd Street

MIS

4.2 Facilities Planning

During the term of this permit, the Permittee will initiate development of the ultimate build-out Facilities Plan.

4.3 Asset Management

The Permittee has an ongoing Capacity Assurance, Management, Operation, and Maintenance (CMOM) program and Asset Management (AM) programs that are continually identifying facility improvements and maintenance needs. By June 30 of each year the Permittee will complete and submit to the Department a CMOM update report. The update report will summarize maintenance, repairs, replacements, and other projects carried out in the previous year and projects and major maintenance needs for the upcoming year.

In addition to maintenance, repair, and replacement projects identified through the CMOM program, the following capital improvement projects shall be completed during the term of this permit:

- Jones Island Preliminary Treatment Facility Upgrade: This project will improve the solids removal capability of the preliminary phase of treatment. The target completion date is December 2015.
- Dewatering & Drying (D&D) Facility Belt Filter Press Upgrade: This project will improve the water removal from the biosolids at Jones Island. This should reduce the amount of energy required to produce Milorganite and reduce the carbon emissions from the facility. The target completion date is December 2014.
- Jones Island Aeration Upgrade: This project will improve the secondary aeration efficiency and reduce the amount of energy required and carbon emissions required for this phase of treatment. The target completion date is December 2014.

Private Property Inflow and Infiltration (PPII) Program: MMSD has initiated a significant funding program to reduce inflow and infiltration from private property in the region. MMSD will provide funding within the 28 satellite municipalities to pay for the replacement or rehabilitation of private sewer laterals, removal of private foundation drains, downspout disconnections, and improved stormwater management.

4.4 Capacity Improvements

The Permittee's 2020 Facilities Plan identifies projects that will increase the capacity of the Permittee's system to manage wet weather flows. The following projects will be completed during the term of this permit.

- **South Shore Process Enhancement:** This project will evaluate the feasibility of new high rate treatment technologies to increase the treatment of wet weather flows. It also includes pilot testing of biological/chemical processes for treating wet weather flows. If successful, this project might also create a means of providing additional treatment of flows at Jones Island during wet weather events. The project will also examine the potential of reducing pharmaceuticals and phosphorus from the South Shore and Jones Island effluent. The Permittee shall report on results of this project by July 30, 2014. The report on treatment technologies to increase the treatment of wet weather flows will include an assessment of feasible alternatives for treating combined sewer flows from the in-line storage facility that may not pass through secondary treatment units during certain storm events.
- **South Shore Capacity Improvements:** This project is projected to increase the facility's operating capacity from 300 million gallons per day (MGD) to 320 MGD. The target completion date for the design is December 31, 2017.
- **Inline Storage System (ISS) Pump Station Equipment Upgrade:** This project will improve the equipment for the ISS pump station and will increase its nominal capacity to pump to JI from 150 MGD to 180 MGD. The completion date is October 31, 2014.

4.5 Collection System Operational Requirements

The Permittee shall follow each of the following operational requirements:

- The Permittee shall provide for estimating the duration of each CSO discharge event and for estimating the volume discharged during each overflow event. The Permittee shall provide records of junction chamber levels to verify that no discharges are occurring from any outfall when the gate at the corresponding dropshaft is open, unless the capacity of the associated near surface collector is exceeded.
- No discharge shall occur during dry weather periods.
- 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 then current standard operating procedures for ISS operation, or the capacity of the associated near-surface collector is exceeded.
- All intercepting structures tributary to junction chambers receiving Metropolitan Interceptor Sewer (MIS) overflows during dry weather periods shall be checked monthly.
- In the event of a CSO discharge the reporting requirements in section 10.2.6 or 10.2.7 shall be followed. Area Water Utilities will also be notified of the commencement of a CSO. MMSD shall provide the Department other pertinent information developed by MMSD regarding CSO incidents upon request.

4.6 Operational and Technology-Based Requirements for CSOs

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 consider 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 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 overflows 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.
7. The Permittee shall continue to implement a pollution prevention program focused on reducing the impact of CSOs on receiving waters.
8. 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.
9. The Permittee shall continue to monitor CSO outfalls in accord with section 3 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. The permittee shall implement the 2020 Facilities Plan as described in the adaptive implementation schedule annual reports identified in section 9.1

4.7 CSO Performance Standards

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

- There shall be no more than six combined sewer overflow events in any calendar year. [OR]
- The capture, delivery and treatment at either the Jones Island or South Shore WRF of no less than 85% by volume of the combined sewage collected in the Combined Sewer System (CSS) as the result of precipitation events in a calendar year. Compliance with this performance standard shall be determined on a system-wide annual average basis. 'The volume of the combined sewage collected in the CSS as the result of precipitation events on a system-wide calendar year basis' is defined as:

Volume of flow discharged at Jones Island
 + Volume of flow discharged at South Shore
 + Volume of flow discharged through CSOs
 - Volume of average daily base flow,

In calculating the percentage of wet weather flows captured and treated annual average flows shall be used for flows discharged from Jones Island, South Shore, and the CSOs. Average daily base flow shall be as calculated for MMSD's user charge system.

A CSO event is 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 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.

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, which is a channel that will route excess flow from the ISS directly to disinfection, subject to the provisions in section 2.2.3

Among the key pollutants of concern for the Milwaukee area watersheds are nutrients and bacteria. The Permittee's ongoing surface water quality monitoring program described in the September 2011 Surface Water Quality Monitoring Plan will be used to track water quality through the life of the permit. The Permittee shall provide reports of the monitoring results annually by June 30th of the following year as described in the monitoring plan.

During the term of the permit the Permittee will operate a skimmer boat as part of a program to control solids and floatables in the river systems below the CSO outfalls.

During the term of this permit, and subject to any required federal and state approvals, the Permittee will work with Miller Compressing Inc., in cooperation with the WDNR, US EPA, and the Army Corps of Engineers to plan, design and construct a wetland in the Burnham Canal. It is the intent of this project to restore the western end of the Burnham Canal as a wetland, and to provide additional water quality improvements to this area. Miller Compressing Inc. is currently responsible for certain remediation work in the Canal. Given the complex variables involved, a schedule for completion of this project is not established at this time. The District shall provide written annual status reports by December 31 of each year to the WDNR and USEPA on the status of this project.

4.8 Inventory of Metersheds and Municipalities Where Peak Flow Reductions Are Required

The Permittee shall maintain oversight of sewers tributary to the District to assure local sewers are managed, operated and maintained to maximize the efficiency and effectiveness of the conveyance and treatment facilities and minimize the probability, duration and magnitude of overflows and to reduce the exposure of the public to pathogens carried by wastewater. When MMSD has identified that peak flow reductions are necessary, MMSD shall take actions to compel flow reductions, including enforcement of its rules if necessary.

The Permittee will maintain a list of metersheds and municipalities, where peak flow rate reductions are required in accordance with Subchapter II, Peak Flow Rate Reduction of the Permittee's Chapter 3, 'Management, Operations and Maintenance of Tributary Sewers', and Appendix 5A of the approved 2020 Facilities Plan. The list will include all metersheds that have been modeled or have flow monitoring data that are greater than one standard deviation higher than the geometric mean of all the rates of metersheds of similar area served. A report of this information shall be provided as described in section 9.2.

4.9 Watershed Planning and Restoration

The Permittee will continue to lead and promote watershed-based, water quality improvements. The Permittee will continue and expand on partnerships and implement projects and initiatives, including but not limited to those specifically defined below, in order to reduce pollutant loadings and achieve progress toward restoration of impaired waters.

Watershed based efforts to restore and protect Milwaukee area waterways and Lake Michigan will include, but not be limited to the following:

- **WATERSHED-BASED PERMITTING:** The Permittee will work with the Department, EPA and the municipalities in the Menomonee River Basin to create a framework for a watershed based MS4 permit during the term of this permit.

- **WATER QUALITY TRADING:** The Permittee will participate in the Department task force for developing a statewide water quality trading protocol during the term of this permit.
- **SOUTHEASTERN WISCONSIN WATERSHEDS TRUST, INC:** The Permittee helped to initiate the creation of the Southeastern Wisconsin Watershed Trust, Inc. (SWWT) which is an alliance of stakeholders working together for the purpose of improving water quality. The Permittee and SWWT have developed Watershed Restoration Plans (WRPs) for the Kinnickinnic and Menomonee River Watersheds. The Permittee will continue to work collaboratively with SWWT and support implementation of the WRPs during the term of this permit.
- **BACTERIA PILOT PROJECT:** The Permittee will work with regional partners in the Menomonee River watershed to implement a pilot project focused on implementation of BMP(s) to reduce loadings of bacteria from storm water runoff and to measure effectiveness. Bacteria loadings from storm water in the Milwaukee area watersheds are contributing to identified recreational use impairments. The pilot project may pilot test infiltration practices, similar in concept to the Bradford Beach BMPs, or other BMPs expected to be effective in reducing bacteria loadings. A project specific water quality monitoring program will be implemented to evaluate the BMP(s) impacts on reducing bacteria loadings to the receiving water body.
- **TOTAL MAXIMUM DAILY LOAD (TMDL) DEVELOPMENT FOR ALL THREE MAJOR RIVERS AND THE ESTUARY OF THE MILWAUKEE RIVER:** The Permittee will develop, in cooperation with the Department and EPA and subject to their respective approvals, third party TMDLs for phosphorus, bacteria, and sediment for the Menomonee, Milwaukee, and Kinnickinnic Rivers, and for the Milwaukee River Estuary, within the term of this permit. The Estuary TMDL will also address six beneficial use impairments within the Milwaukee River Estuary Area of Concern. The Permittee shall submit the final TMDL report to the Department by December 31, 2015 and the implementation plan one year after approval of the TMDL by the U.S. Environmental Protection Agency.
- **GREEN INFRASTRUCTURE PORTFOLIO STANDARD:** The Permittee will work with its regional partners to develop methods for tracking green infrastructure implementation and to pilot the development of a green infrastructure portfolio standard. The purpose of the tracking system and standard is to develop a system that can be used to assess and set goals for the increasing use of green infrastructure over time in order to manage wet weather flows.

MMSD-USGS CORRIDOR STUDY: Phase IV of the Corridor Study will be initiated in the term of this permit. This phase of work will consist of comprehensive data collection in an effort to continue and expand the existing information with emphasis on major areas of emerging concern (human pathogens, chronic and bioaccumulative toxicity, personal care products, and pharmaceuticals) and an aquatic biological integrity inventory assessment. The target completion date is December 2015.

4.10 Wet Weather Management – Green Infrastructure

The Permittee intends to implement wet weather management projects that will reduce the volume of runoff entering local collection sewers (or in some cases directly entering the Permittee's conveyances), decrease the risk of flooding of homes and businesses, reduce inflow and infiltration (I/I) during storms, maintain/restore natural hydrology, and reduce pollutant loadings from nonpoint sources into area receiving waters. These projects and initiatives will help reduce the risk and volumes of combined and separate sewer overflows. Beginning in calendar year 2013, and in each calendar year thereafter during the permit term, the Permittee, working with partners as appropriate, must ensure that green infrastructure practices/control measures are put in place and maintained in the MMSD service area. The practices/control measures put in place in 2013 and 2014 must cumulatively have an annual design retention capacity of at least 1 million gallons. The retention capacity from 2013 to 2017 shall be increased from 5 million gallons (per original permit) to 12 million gallons. This is the total "retention capacity requirement" of this permit. If more than the annual design retention capacity is put in place in one year, the incremental amount over the design retention

capacity may be counted toward the retention capacity requirement for subsequent years. The stormwater capture benefits of GreenSeams® acquisitions and improvements to GreenSeams® parcels can be counted toward the retention capacity requirement except that not more than 75% of the green infrastructure retention capacity requirement can be met through capture at GreenSeams® parcels; at least 25% of the green infrastructure retention capacity requirement must be met through implementation of rain gardens, permeable pavement, bioswales, removal of structures, first-flush combined sewer separation, and other green infrastructure stormwater management measures implemented in the MMSD service area, and as described below. From January 1, 2015 to December 31, 2017, Greenseams shall account for no more than 75% of the total remaining Wet Weather Management requirement. Any green infrastructure practices/control measures that are put in place to fulfill the retention capacity requirement must be maintained during the term of this permit.

By March 1 of each year, the Permittee will complete and submit to the Department a Fresh Coast Green Solutions update report. The first year report, due March 1, 2013, will describe projects and initiatives, and recommended retention rates, that may be implemented to achieve compliance with this retention capacity requirement. In subsequent years, the update report will summarize the prior year's estimated amount of storm water retention and will make recommendations for new initiatives under the Fresh Coast Green Solutions program. If changes to the program are recommended, the Department will reply by April 1 of each year with its response to the recommendations.

The Permittee intends to implement flood management projects that will reduce the risk of flooding of homes and businesses and reduce inflow and infiltration (I/I) during large storms, therefore, reducing the risk and volumes of combined and separate sewer overflows from the Permittee's system as well as basement backups. Implementation of these projects will effectively reduce the volume of wet weather flows from entering the Permittee's system. The following green infrastructure projects are currently planned to be initiated during the term of this permit if sufficient funding is available.—All of these projects are green infrastructure practices or control measures which will be evaluated to determine compliance with the retention capacity requirement.

- **Kinnickinnic River Wet Weather Management Project:** The Permittee will continue to move forward with the re-engineering of channelized sections of the Kinnickinnic River. This project will widen and naturalize the channel, providing capacity for flood management and helping to improve water quality.
- **Western Milwaukee Flood Management Project:** MMSD will initiate the design of flood management facilities along the Menomonee River which will help to reduce the risk of flooding of homes and businesses and reduce I/I during large storms.
- **Greenseams Acquisitions of Land for Permanent Conservation Easements:** MMSD will continue to acquire properties in its Greenseams Program, under which MMSD purchases water-absorbing land to manage flooding and improve water quality (and air quality) in the watersheds which are within its service area. The program is projected to continue to be funded under the current six-year financing plan for MMSD.
- **Fresh Coast Green Solutions:** MMSD will fund its Fresh Coast Green Solutions partnership program which provides funds for installation of pervious parking lots, rain barrels, rain gardens, green roofs, and other types of stormwater best management practices projects within its service area, which are designed to reduce I/I into the collection system during wet weather events, thus reducing the risk and volume of sewer overflows.
- **Regional Green Infrastructure:** MMSD will develop an integrated regional green infrastructure plan that will include a hybrid plan that incorporates both green and grey infrastructure.

5 Separate Sewer Overflow (SSO) Requirements

The Permittee shall report any sanitary sewer overflows as required in section 10.2.6 and 10.2.7.

5.1 Inspection of Overflow Structures

Within 24 hours of the conclusion of each rainfall and/or snow melt event which totals 3/4 inch or greater in a 24 hour period, the Permittee shall inspect each permanently installed automatic overflow structure within its sanitary sewerage system which is not equipped with a manually-activated gate or valve for evidence of any overflow occurrence.

5.2 SSO Points

Separate Sewer Overflow Points	
SSO Number	SSO Location
206	Easement 500' south of Milwaukee-Ozaukee Co. line and 200' west of Waverly Road
207	N. 31st St. and W. Fairmont Avenue
209	N. 27th St. and W. Silver Spring Drive
214	W. Hampton Ave at N. Lydell Ave
220	S. Howell Ave at E. Grange Ave
223	W. Villard Ave at N. 27th St.
225	S. 35th St. at W. Manitoba St.
226	W. Roosevelt Drive at N. 35th Street
229	46 th and State Street
231	N. Range Line Road at east side of Milwaukee River
232	S. Kinnickinnic Ave at E. St. Francis Ave.
233	W. Fisher Parkway at N. 106th St.
234	Honey Creek Parkway at W. Portland Ave.
235	Honey Creek Parkway at W. Wisconsin Ave
237	Menomonee R. Parkway, 300 feet E. of N. 68th Ave
242	S. 79th St. extended at W. Dickenson St. extended
243	W. Lincoln Ave 565 feet west of S. 43rd St.
244	N Lydell Ave. at W. Lancaster Ave.
245	N. Lydell Ave. at W. Montclair Ave
247	W. Oklahoma Ave., 100 feet west of S. 74th St.
263	Green Tree Road at Milwaukee River (Lift Station)
264	Ravine Lane Lift Station, Village of Bayside
265	South of Hampton at Lydell in Estabrook Park, north of Milwaukee River
266	South of Hampton at Lydell in Estabrook Park, south of Milwaukee River

6 . Surface Water Requirements

6.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)
001	The South Shore effluent samples shall be collected from the effluent channel adjacent to the effluent pump station after chlorination and dechlorination.
002	The Jones Island effluent samples shall be collected from the effluent channel via the sampler located in the effluent pump station prior to discharge.
003	Noncontact cooling water at Jones Island. Samples shall be collected prior to discharge.

6.2 Common Paragraphs for surface outfalls

6.2.1 Effluent Temperature Monitoring

For manually measuring effluent temperature, grab samples should be collected at 6 evenly spaced intervals during the 24-hour period. Alternative sampling intervals may be approved if the permittee can show that the maximum effluent temperature is captured during the sampling interval. For monitoring temperature continuously, collect measurements in accordance with s. NR 218.04(13). This means that discrete measurements shall be recorded at intervals of not more than 15 minutes during the 24-hour period. In either case, 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.

6.2.2 Total Metals Analyses

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

6.2.3 Sample Analysis

Samples shall be analyzed using a method which provides adequate sensitivity so that results can be quantified, unless not possible using the most sensitive approved method.

6.2.4 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.

6.2.5 WET Testing

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 Watershed Management, 101 S. Webster St.,

P.O. Box 7921, Madison, WI 53707-7921, within 45 days of test completion. The original Discharge Monitoring Report (DMR) form and one copy shall be sent to the contact and location provided on the DMR 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: If $LC_{50} \geq 100$, then $TU_a = 1.0$. If LC_{50} is < 100 , then $TU_a = 100 \div LC_{50}$. A chronic toxicity test shall be considered positive if the Relative Toxic Unit - Chronic (rTU_c) is greater than 1.0 for either species. The rTU_c shall be calculated as follows: If $IC_{25} \geq IWC$, then $rTU_c = 1.0$. If $IC_{25} < IWC$, then $rTU_c = IWC \div IC_{25}$.

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 retests shall be completed using the same species and test methods specified for the original test (see the Standard Requirements section herein).

6.3 Monitoring Requirements and Effluent Limitations

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

6.3.1 Sampling Point (Outfall) 001 - SOUTH SHORE

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Continuous	Continuous	
BOD ₅ , Total	Monthly Avg	30 mg/L	Daily	24-Hr Flow Prop Comp	
BOD ₅ , 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	45 mg/L	Daily	24-Hr Flow Prop Comp	
Chlorine, Total Residual	Daily Max	38 µg/L	Daily	Grab	See 6.3.1.1
Chlorine, Total Residual	Weekly Avg	36 µg/L	Daily	Grab	
Fecal Coliform	Geometric Mean	400 #/100 ml	Daily	Grab	
E. coli		#/100 ml	Daily	Grab	
Phosphorus, Total	Six Month Avg	0.8 mg/L	Daily	24-Hr Flow Prop Comp	See 6.3.1.3
Phosphorus, Total	Twenty-four Month Rolling Average	0.6 mg/L	Daily	24-Hr Flow Prop Comp	Effective May 1, 2015 See 6.3.1.3
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 Maximum	27 mg/L	Daily	24-Hr Flow Prop Comp	November - April
Cadmium, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
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	Grab	
Acute WET		TU _a	Annual	24-Hr Flow Prop Comp	See listed quarters in section 6.3.1.2
Chronic WET		rTU _c	Annual	24-Hr Flow Prop Comp	See listed quarters in section 6.3.1.2
Temperature		Deg F	Weekly	grab	

6.3.1.1 Applicable Mass Limits for Total Residual Chlorine

The applicable mass limits for Total Residual Chlorine are 79 pounds per day (daily maximum), 34 pounds per day (non-wet weather weekly average), and 57 pounds per day (wet weather weekly average). See Standard Requirements for "Applicability of Alternative Wet Weather Limitations" section 10.3.1.

6.3.1.2 Whole Effluent Toxicity (WET) Testing

Primary Control Water: Lake Michigan

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% (if the IWC ≤30%) or 100, 75, 50, 25, 12.5% (if the IWC >30%) and any additional selected by the Permittee.

WET Testing Frequency: Tests are required during the following quarters.

- **Acute:** January-March, 2013; April – June 2014; October-December, 2015; April – June 2016; July-September, 2017
- **Chronic:** January-March, 2013; April – June 2014; October-December, 2015; April – June 2016; July-September, 2017

6.3.1.3 Phosphorus

The 0.8 mg/l six month average phosphorus limit shall be in effect January 8, 2013 and remain in effect through the term of this permit. The six month averaging period shall be May to October and November to April. A supplemental limit of 0.6mg/l based on a rolling twenty-four month average basis shall take effect May 1, 2015. If approved in writing by the Department, the calculation for this twenty-four month rolling average will exclude days that include upsets which are caused by factors outside of the reasonable control of the Permittee. An upset is defined in Wis. Adm.

Code, sec. NR 205.03(41). Initial compliance for the 24-month rolling average shall be determined by data collected from May, 2015 to April, 2017. If a procedure is developed to calculate a water quality based phosphorus effluent limit for near shore discharges to Lake Michigan during the term of the permit the Department will take action to implement those limits through a permit reissuance or modification.

6.3.2 Sampling Point (Outfall) 002 - JONES ISLAND

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Continuous	Continuous	
BOD ₅ , Total	Monthly Avg	30 mg/L	Daily	24-Hr Flow Prop Comp	
BOD ₅ , 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	45 mg/L	Daily	24-Hr Flow Prop Comp	
Chlorine, Total Residual	Daily Max	38 µg/L	Daily	Grab	See 6.3.2.1
Chlorine, Total Residual	Weekly Avg	36 µg/L	Daily	Grab	
Fecal Coliform	Geometric Mean	400 #/100 ml	Daily	Grab	
E. coli		#/100 ml	Daily	Grab	
Nitrogen, Ammonia (NH ₃ -N) Total		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	
Phosphorus, Total	Monthly	0.66 mg/L	Daily	24-Hr Flow Prop Comp	See Section 6.3.2.3
Phosphorus, Total	6 Month average	0.22 mg/L	Daily	24-Hr Flow Prop Comp	See Section 6.3.2.3 and 9.6
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	Daily Max	6.4 ng/L	Monthly	Grab	

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Acute WET		TU _a	Annual	24-Hr Flow Prop Comp	See listed quarters in section 6.3.2.2
Chronic WET		rTU _c	Annual	24-Hr Flow Prop Comp	See listed quarters in section 6.3.2.2
Temperature		Deg F	Weekly	grab	

6.3.2.1 Applicable Mass Limits for Total Residual Chlorine

The applicable mass limits for Total Residual Chlorine are **95 pounds per day (daily maximum)**, **37 pounds per day (non-wet weather weekly average)**, and **57 pounds per day (wet weather weekly average)**. See Standard Requirements for "Applicability of Alternative Wet Weather Limitations" section 10.3.1.

6.3.2.2 Whole Effluent Toxicity (WET) Testing

Primary Control Water: Lake Michigan

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% (if the IWC \leq 30%) or 100, 75, 50, 25, 12.5% (if the IWC $>$ 30%) and any additional selected by the Permittee.

WET Testing Frequency: Tests are required during the following quarters.

- **Acute:** January-March, 2013; April – June 2014; October-December, 2015; April – June 2016; July-September, 2017
- **Chronic:** January-March, 2013; April – June 2014; October-December, 2015; April – June 2016; July-September, 2017

6.3.2.3 Phosphorus

The 0.66 mg/l monthly average limit shall take effect as an interim limit January 1, 2013. The final calculated six month average (May through October and November through April) limit for phosphorus is 0.22mg/l unless;

(A.) As part of the application for the next reissuance, or prior to filing the application, the permittee submits either: 1.) a watershed adaptive management plan and a completed Watershed Adaptive Management Request Form 3200-139; or 2.) an application for water quality trading; or 3.) an application for a variance; or 4.) new information or additional data that supports a recalculation of the numeric limitation; and

(B) The Department modifies, revokes and reissues, or reissues the permit to incorporate a revised limitation before the expiration of the compliance schedule*.

If Adaptive Management or Water Quality Trading is approved as part of the permit application for the next reissuance or as part of an application for a modification or revocation and reissuance, the plan and specification submittal, construction, and final effective dates for compliance with the total phosphorus WQBEL may change in the reissued or modified permit. In addition, the numeric value of the water quality based effluent limit may change based on new information (e.g. a TMDL) or additional data. 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.

The Permittee is required to submit a TMDL for phosphorus for the Milwaukee, Menomonee, Kinnickinnic and Estuary for approval with a final report due December 31, 2015 and implementation plan due one year after approval of the TMDL by the WDNR and U.S Environmental Protection Agency. If the final approved TMDL provides allocations different from the WQBEL for phosphorus in this permit, WDNR will adjust the WQBEL to be consistent with the TMDL either through a permit modification or when this permit is reissued. Changes can be made to the compliance schedule by WDNR as appropriate based on the approved TMDL allocations.

Note: The Department will make a determination regarding possible changes to the compliance schedule and communicate in writing to the Permittee within 60 days after approval of the TMDL Report by the U.S. Environmental Protection Agency.

The final effluent limit becomes effective according to the phosphorus schedule included in section 9.6 of the schedules section of this permit. The phosphorus schedule designates a final compliance date beyond the term of this permit, and is therefore not enforceable during the term of this permit. The Department intends to include the TMDL based limit in the current permit via a permit modification or permit reissuance. The Permittee may request to implement the adaptive management option in NR217.18 at such time as the permit is modified or reissued.

*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.

Note: 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.

6.3.3 Outfall 003 Jones Island NCCW Discharge

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Monthly	Estimated	
Temperature Max		deg F	Daily	Grab	See following table for temperature limits.
BOD ₅ , Total		mg/L	Monthly	Grab	
Chlorine, Total Residual	Daily Max	38 µg/L	Weekly	Grab	Chlorine Residual monitoring only applies when chlorine is added.
Nitrogen, Ammonia (NH ₃ -N) Total		mg/L	Monthly	Grab	
Oil & Grease Total Recoverable (HEM)		mg/L	Monthly	Grab	
Phosphorus, Total		mg/L	Monthly	Grab	

Month	Weekly Average Temperature Maximum
January	51
February	54
March	57
April	61

May	68
June	75
July	80
August	80
September	74
October	64
November	51
December	51

6.3.4 Evaluation of Temperature Limitations

The effluent limitations for “Temperature, Maximum” become effective on July 31, 2017 as specified in section 9.8 of the Schedules section. Monitoring is required continuously upon permit reissuance. Daily maximum temperatures shall be reported so that applicable daily maximum limits can be compared to the reported daily maximum temperatures and applicable weekly average limits can be compared to the weekly averages of the reported daily maximum temperatures. After completion of at least one year of temperature data collection the permittee may request that the Department make a determination of the need for limits under s. NR 106.56, Wis. Adm. Code. Within 60 days of such request the Department shall make that determination. If the Department determines that effluent limitations are unnecessary based on the procedures in NR 106.56, the Department shall notify the permittee that the limitations will not become effective, pursuant to NR106.56(12)(c). The monitoring requirements for “Temperature, Maximum” shall be reduced to weekly and section 9.8 of the permit compliance schedule shall be discontinued at that time.

If, after reviewing the data, the Department determines that effluent limitations for “Temperature, Maximum” are necessary based on the procedures in NR 106.56, the requirement to meet the effluent limitations according to the Schedules section will not be removed nor will the monitoring frequency be reduced. Permittees may then wish to pursue a re-evaluation of the limits based on NR 106 – ‘Subchapters V and VI Effluent Limitations for Temperature’ or NR 102.26 – Site Specific Ambient Temperature. If the re-calculation of limits results in revisions to the temperature limits, a permit modification will be required to include the revised limits in the permit.

7 Groundwater Monitoring Requirements and Operational Requirements for the Inline Storage System (ISS)

7.1 Operational requirements

The Permittee shall operate and maintain a groundwater monitoring system for groundwater piezometric level measurement and groundwater quality monitoring for the 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 (NWSRS).

7.1.1 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 in quarterly and annual reports. For any event during which the ISS is filled above -177.17 MMSD, the Permittee shall notify the Department 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.

7.1.2 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 well CT-MW- 01 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 PS8101 (or PS8102 if PS8101 data are not available) hourly data, (*i.e.*, {data logger reading} – {PS8101 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} – {PS8101 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 7.2.4. 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.

The compliance assessment steps listed above will be done annually and a report will be submitted on or before June 30th of the following year.

7.1.3 Operational Alternatives

Operating the ISS in a manner other than as specified in 7.1.1 and 7.1.2 above is prohibited except in the following cases: 1) when equipment damage or temporary power interruption does not allow the operational requirements to be met, or; 2) when the ISS is not being used to store or transport wastewater.

7.2 Special Requirements for Groundwater Monitoring Wells

The Permittee shall comply with the following special requirements for the groundwater monitoring wells.

7.2.1 Annual Data Reports

The previous year's data shall be reported to the Department after the end of each calendar year in an annual report except for groundwater levels from continuous monitoring locations. This annual report shall be due on June 30th. The permittee shall report groundwater levels from continuous monitoring locations upon request.

7.2.2 Groundwater Level Monitoring for Designated Wells

For monitoring wells CT-MW-01, CT-MW-03, CT-MW-04, CT-MW-05, CT-MW-7, CT-MW-10, CT-MW-26, NS-MW-04, NS-MW-07, NS-MW-10 GM-IR-10, GM-IR-11, GM-IR-12 and KK-MW-01, groundwater level measurements shall be taken on a continuous basis during tunnel fill events, during surcharge events, and following surcharge events (a surcharge event is an event which is sufficient to cause the tunnel to be filled above the crown at its upstream terminus, CT-01, MMSD Datum -177.17). These monitoring locations are grouped below as based on their designation as an ISS or NWSRS as well as their continuity of sampling. The new data loggers shall be installed by December 31, 2013.

ISS Groundwater Level Continuous Monitoring Locations (28)				
Well Number	Well ID*	Well Location	Existing Datalogger	Proposed New Datalogger
803	CT-MW-01	ON JONES ISLAND, BETWEEN 5TH & 7TH CLARIFIERS	X	
804	CT-MW-03	40' S. OF CANAL ST. & 450' W. OF S. 6TH ST.	X	
805	CT-MW-04	EMMBER LA., SW OF W. CANAL ST.	X	
806	CT-MW-05	25TH & W. CANAL ST.	X	
808	CT-MW-07	W. WELLS ST. & N.45TH ST.	X	
809	CT-MW-08	W. STATE ST., 250 E. OF N. 60TH ST.		X
810	CT-MW-09	SE OF HARWOOD AVE. IN WAUWATOSA MUN PARKING LOT		X
807	CT-MW-10	N. 29TH ST & W. GREVES ST.	X	
841	CT-MW-12	APPROX 60' S. OF W. GREVES & N.29TH ST.		X
887	CT-MW-25	MENOMONEE RIVER PKWAY & CHARLES HART PKWY		X

888	CT-MW-26	ON JONES ISLAND, EAST OF WELL C01 BY CLARIFIER #1	X	
826	KK-MW-01	EAST OF GREENFIELD AVE & GREAT LAKES R.F.	X	
827	KK-MW-02	W. MAPLE ST. AT S.1ST ST.		X
828	KK-MW-03	30' W. OF S. 1ST ST., 48' N. OF W. LINCOLN AVE.		X
829	KK-MW-04	W. ROSEDALE AVE. & 95' W. OF I-94 OVERPASS		X
861	KK-MW-05	E. GREENFIELD AVE. & GREAT LAKES R.F.		X
830	LM-MW-01	LINCOLN MEMORIAL DRIVE		X
811	NS-MW-01	N. 3RD ST., W. OF ST PAUL AVE.		X
812	NS-MW-02	W. HIGHLAND AVE. & N. 3RD ST.		X
813	NS-MW-03	E. VINE ST, W. OF N. HUBBARD ST.		X
814	NS-MW-04	N. COMMERCE ST, 1200' NE OF HOLTON VIADUCT	X	
817	NS-MW-07	4150 N. HUMBOLDT BLVD.	X	
818	NS-MW-08	RIVER WOODS PARKWAY AND MILWAUKEE RIVER		X
823	NS-MW-09	LINCOLN PARKWAY, 750 SW OF I-43 OVERPASS		X
824	NS-MW-10	W. HAMPTON AVE., 90' W OF N.22ND ST.	X	
825	NS-MW-11	3025 W. RUBY AVE. (CITY OF MILW. GARAGE PARK LOT)		X
889	NS-MW-19	N. 30TH AND HAMPTON AVE.		X
890	NS-MW-20	S. MILL RD. & SYDNEY PLACE EXTD.		X
* All wells are within 150' of the Inline Storage System (ISS) or within the "Designed Management Zone"(DMZ), except CT-MW-26.				

ISS Groundwater Level Non-Continuous Monitoring Locations (46)			
Well Number	GW ID	Station	Groundwater Location
838	01D	NS-MR-01D	N.GREEN BAY AVE.& W. STARK ST.(DEEP)
857	01S	NS-MR-01S	N.GREEN BAY AVE. & W. STARK ST.(SHALLOW)
837	02D	NS-MR-02D	N.WILSON AVE.& E. CONGRESS ST.(DEEP)
853	02S	NS-MR-02S	N.WILSON AVE.& E. CONGRESS ST.(SHALLOW)
819	03D	NS-MR-03D	MORRIS & BEVERLY SHOREWOOD GARAGE(DEEP)
820	03S	NS-MR-03S	MORRIS & BEVERLY SHOREWOOD GARAGE(SHALLOW)
821	04D	NS-MR-04D	N.NEWHALL & E. PARK PL.(DEEP)
822	04S	NS-MR-04S	N.NEWHALL & E. PARK PL.(SHALLOW)
855	05D	NS-MR-05D	KNAPP ST. & MARKET ST.(DEEP)
854	05S	NS-MR-05S	KNAPP ST. & MARKET ST.(SHALLOW)
801	06D	NS MR-06D	S. 19 th ST. & POTOWATOMI CIRCLE (DEEP)
848	07D	CT-MR-07D	W. WELLS ST. & N. 62ND ST.(DEEP)
847	07S	CT-MR-07S	W. WELLS ST. & N. 62ND ST.(SHALLOW)
831	08D	CT-MR-08D	SHERMAN BLVD., S. OF W. CHAMBER ST.(DEEP)
832	08S	CT-MR-08S	SHERMAN BLVD., S. OF W. CHAMBERS ST.(SHALLOW)
835	C02	CT-MW-02	S. WATER ST. 23' SE OF W. SEEBOTH ST.
836	C06	CT-MW-06	WEBCO SUBSTATION I-94 EASTBOUND APPROX 44TH ST.
840	C11	CT-MW-11	S.WATER ST., 18' SE OF W. SEEBOTH ST.
842	C13	CT-MW-13	WEPCO SUBSTATION I-94 EASTBOUND APPROX. 44TH ST.
839	C14	I30-25-CT	N. 8TH ST. & W. HINMAN ST.(ST PAUL & MARQUETTE INTERCHANGE)

843	C15	I30-CT-DS	W. GREVES ST & W. ST PAUL AVE. DOT INSPECTION STATION
849	C16	C10-05-CT2	W. TRENTON PL. & N. HAWLEY RD.
846	C17	I30-17-CT	N. 72ND ST. & MENOMONEE RIVER N. OF STATE ST.
834	C18	135-PZ-09	W. WELLS ST., E. OF N.45TH PL.
844	C19	130-15-CT1	N.53RD ST. & W. WELLS ST. (DOYNE PARK PARKING LOT)
845	C20	130-15-CT2	N.53RD ST. & W. WELLS ST. (DOYNE PARK PARKING LOT)
897	C22	J10-36-PZ	ON JONES ISLAND BEHIND ISHF BUILDING
898	C24	AC-CT-01	S. WATER ST. & S.DAVIDSON ST.
860	K07	C44-PZ-06	W. BECHER ST., E. OF S. 4TH ST.
862	K08	C10-07-KK	S. 1ST ST. BETWEEN LINCOLN AVE. & CHASE AVE.
863	L02	C10-32-KK	E. LINCOLN AVE. & S. MOUND ST.
815	N05	NS-MW-05	N. OF BELLEVIEW PL., W. OF C & NW R.R.
816	N06	NS-MW-06	N. CAMBRIDGE AVE., S. OF E. HARDFORD AVE.
850	N12	PZ-NS9-DS	PARKING LOT AT NS9 SOUTH OF DROPSHAFT CHANNEL
851	N13	I30-10-NS	N. COMMERCE ST. ADJACENT TO NS7
852	N14	I30-07-NS	E. CHAMBERS & MILWAUKEE RIVER
856	N15	I48-PZ-01	N. LYDELL AVE. & MARNE AVE.
858	N16	130-02-NS1	N. 32ND ST. & W. HAMPTON AVE.
859	N17	130-02-NS2	N. 32ND ST. & W. HAMPTON AVE.
864	N18	I36-PZ-04	N. 2ND ST. & W. ST PAUL AVE.
891	N21	WA-3N	PRIVATE PROPERTY W. OF HAMPTON AVE. (DEEP WELL)
892	N22	WA-2B	NE CORNER OF W. MILL RD and N. SIDNEY PLACE
893	N23	WA-AL-3	N. 27TH & W. CUSTER
894	N24	WA-AL-4	N. 27TH & W. REICHERT
895	N25	WA-AL-5	N. 27TH ST & W. BOBOLINK
896	N26	WA-AL-6	N. 27TH ST. EXT'D (ALDRICH CHEMICAL CO.)

NWSRS Continuous Level Monitoring Locations (3 Data Loggers)

Well Number	MMSD ID	SITE ID	Location
884	G10	GM-IR-10	107TH & SHERIDAN AVE.
885	G11	GM-IR-11	HWY 100 & COURTLAND EXT'D.
886	G12	GM-IR-12	BLUEMOUND COUNTRY CLUB

NWSRS Standpipes (Non-Continuous) Level Monitoring Locations			
Well Number	MMSD ID	SITE ID	Location
865	G01	NWSR-1	DENVER SITE; W. OF 91ST, S. OF DENVER AVE. (7.5' S.E. OF P8)
866	G14	NWSR-14	FOND DU LAC AVE. & MILL RD. JUST N.E.
868	G16	NWSR-16	750' N. OF APPLETON AVE. ON MENOMONEE RIVER PARKWAY
869	G03	NWSR-3	E. OF MENOMONEE RIVER PARKWAY ON APPLETON AVE. E. OF RIVER
870	G18	NWSR-18	209' S. OF SILVERSPRING RD. ON BIKE PATH W. OF MENO. RIVER
871	G19	NWSR-19	835' S. OF SILVERSPRING RD. ON BIKE PATH W. OF MENO. RIVER
872	G06	SHEA-P-6	HWY 100 S. OF HAMPTON AVE. S. OF ODER STRUCTURE (2' S. of 5)
873	G34	NWSR-34	HWY 100 S. OF HAMPTON AVE. W. OF G11 WELL
874	G20	NWSR-20	MENOMONEE RIVER PARKWAY, N. OF CONGRESS ST. ON BIKE PATH
875	G22	NWSR-22	38' E. OF MENOMONEE RIVER PARKWAY S. OF CAPITOL DR.
876	G09	NWSR-9	114' N. OF MENOMONEE RIVER PARKWAY ON HWY. 100
877	G100	NWSR-10	E. OF MENOMONEE RIVER PARKWAY ON AUER AVE.
878	G26	NWSR-26	MENOMONEE RIVER PARKWAY AND TOWERVIEW BLVD.
879	G110	NWSR-11	35' S. OF RIDGE BLVD. ON MENOMONEE RIVER PARKWAY
880	G28	NWSR-28	96TH ST. W. SIDE OF MENOMONEE RIVER PARKWAY
881	G29	NWSR-29	S. OF JACKSON PARK BLVD. & W. OF MENOMONEE RIVER PARKWAY
882	G120	NWSR-12	NE. CORNER OF MENOMONEE RIVER PARKWAY & SWAN BLVD.
883	G31	NWSR-31	COUNTY GROUNDS CT-1 SITE

All groundwater level monitoring wells identified in section 7.2.2 shall be monitored for groundwater elevation. Parameters reported to the Department shall include depth to groundwater measured in feet and groundwater elevation referenced to mean sea level.

7.2.3 Groundwater Monitoring Frequency

The monitoring requirements listed below apply to the ISS groundwater quality monitoring wells and to groundwater monitoring wells for the Northwest Side Relief Sewer as described below. Groundwater quality sampling shall be conducted as specified in the MMSD ISS September 2011 Groundwater Monitoring Plan and subsequent Department approved revisions to this Plan. Groundwater sampling frequency shall be conducted following the schedule below.

- If the ISS volume is greater than or equal to 50 MG: suspend GW pumping operations at all groundwater monitoring wells until ISS volume is less than 50 MG. Scheduled GW level measurement shall continue.
- If the ISS volume is greater than or equal to 300 MG: Download all piezometer and datalogger level data and take level measurements at all standpipes within 72 hours. Suspend GW pumping operations until ISS Volume is less than 50 MG then sample monitoring wells identified in 7.2.2. Note: This may take several days.
- If the NWSRS volume is greater than or equal to 60 MG: Download the three NWSRS (datalogger) wells and take level measurements at all NWSRS standpipes within 72 hours. Suspend all pumping operations until the NWSRS has been drained, then sample the NWSRS wells identified in 7.2.2
- If a PAL for Carbon Total Organic, Nitrogen Organic Dissolved, 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.
- In the event a PAL is exceeded at a monitoring well subsequent monthly sampling shall include testing for chloride dissolved, sulfate dissolved, solids total dissolved, alkalinity total as CaCO_3 , and hardness total as

CaCO₃. This monthly monitoring shall continue until the original contaminant exceeding a PAL returns to a level below the PAL.

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

Groundwater level measurements shall be conducted monthly for each groundwater quality monitoring well and piezometer listed in Section 7.2.2. 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.

7.2.4 Point of Standards Application

The Chapter NR 140 (Wis. Adm. Code) point of standards application for compliance with enforcement standards for the Inline Storage System (which includes the main tunnel, the connecting tunnels between each de-aeration chamber, and the main tunnel, each de-aeration chamber and each dropshaft) and for the Northwest Side Relief Sewer is: any point of present groundwater use, any point beyond the boundary of the property on which facility is located, or any point within the property boundaries beyond the 150' Inline Storage System design management zone (DMZ).

7.2.5 Sampling Procedures

Sampling procedures for groundwater monitoring shall be in accordance with the Permittee's September 2011 Groundwater Monitoring Plan or subsequent Department approved revisions to this plan.

7.3 Monitoring Requirements and Limitations

Groundwater quality analysis will be conducted after each wet weather event where the peak hour volume in the ISS is greater than or equal to 300 MG and/or the peak hourly volume in the NWSRS is greater than or equal to 60 MG. The 26 ISS locations and 2 NWSRS locations of groundwater sampling are listed below.

ISS Groundwater Quality Monitoring Locations (26)			
Well Number	GW ID	Station	Groundwater Location
819	03D	NS-MR-03D	MORRIS & BEVERLY SHOREWOOD GARAGE(DEEP)
821	04D	NS-MR-04D	N.NEWHALL & E. PARK PL.(DEEP)
801	06D	CT-MR-06D	S.19th ST. & POTOWATOMI CIRCLE (DEEP)
831	08D	CT-MR-08D	SHERMAN BLVD., S. OF W. CHAMBER ST.(DEEP)
832	08S	CT-MR-08S	SHERMAN BLVD.,S. OF W. CHAMBERS ST.(SHALLOW)
804	C03	CT-MW-03	40' S. OF CANAL ST. & 450' W. OF S. 6TH ST.
805	C04	CT-MW-04	EMBER LA., SW OF W. CANAL ST.
809	C08	CT-MW-08	W. STATE ST., 250 E. OF N. 60TH ST.
810	C09	CT-MW-09	SE OF HARWOOD AVE. IN WAUWATOSA MUN PARKING LOT
887	C25	CT-MW-25	MENOMONEE RIVER PKWAY & CHARLES HART PKWY
888	C26	CT-MW-26	ON JONES ISLAND, EAST OF WELL C01 BY

			CLARIFIER #1
826	K01	KK-MW-01	EAST OF GREENFIELD AVE & GREAT LAKES R.F.
827	K02	KK-MW-02	W. MAPLE ST. AT S.1ST ST.
828	K03	KK-MW-03	30' W. OF S. 1ST ST., 48' N. OF W. LINCOLN AVE.
829	K04	KK-MW-04	W. ROSEDALE AVE. & 95' W. OF I-94 OVERPASS
830	L01	LM-MW-01	LINCOLN MEMORIAL DRIVE
811	N01	NS-MW-01	N. 3RD ST., W. OF ST PAUL AVE.
812	N02	NS-MW-02	W. HIGHLAND AVE. & N. 3RD ST.
813	N03	NS-MW-03	E. VINE ST, W. OF N. HUBBARD ST.
814	N04	NS-MW-04	N. COMMERCE ST, 1200' NE OF HOLTON VIADUCT
817	N07	NS-MW-07	4150 N. HUMBOLDT BLVD.
823	N09	NS-MW-09	LINCOLN PARKWAY, 750 SW OF I-43 OVERPASS
824	N10	NS-MW-10	W. HAMPTON AVE., 90' W OF N.22ND ST.
825	N11	NS-MW-11	3025 W. RUBY AVE. (CITY OF MILW. GARAGE PARK LOT)
889	N19	NS-MW-19	N. 30TH & HAMPTON AVE.
890	N20	NS-MW-20	S. MILL RD. AND SYDNEY PLACE EXT'D.

NWSRS GROUNDWATER QUALITY MONITORING LOCATIONS (2)			
Well Number	MMSD ID	SITE ID	Location
884	G10	GM-IR-10	107TH & SHERIDAN AVE.
885	G11	GM-IR-11	HWY 100 & COURTLAND EXT'D.

7.3.1 Groundwater Monitoring System for ISS well 801

Location of Monitoring System: S. 19th Street one block north of W. Potawatomi Circle

Wells to be Monitored: CT-MR-06D

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.0 – 8.0	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.25	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.08	N/A	See section 7.2.3

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Carbon, Total Organic	mg/L	2.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.2 Groundwater Monitoring System for ISS well 804

Location of Monitoring System: 40 ft west of Canal St and 450 ft west of South 6th Street

Wells to be Monitored: CT-MW-03

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.3 -8.3	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.3	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.13	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	3.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.3 Groundwater Monitoring System for ISS well 805

Location of Monitoring System: Emmer Lane SW of Canal Street

Wells to be Monitored: CT-MW-04

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.0 – 8.0	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.27	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.21	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	5.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.4 Groundwater Monitoring System for ISS well 809

Location of Monitoring System: West State Street, 250 ft east of N 60th Street

Wells to be Monitored: CT-MW-08

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.1 – 8.1	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.09	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.12	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	3.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.5 Groundwater Monitoring System for ISS well 810

Location of Monitoring System: East of Harwood in Wauwatosa municipal lot

Wells to be Monitored: CT-MW-09

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.4 – 8.4	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.17	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.14	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	2.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.6 Groundwater Monitoring System for ISS well 811

Location of Monitoring System: N 3rd Street, west of St. Paul Avenue

Wells to be Monitored: NS-MW-01

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.4 – 8.4	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.22	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.13	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	4.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.7 Groundwater Monitoring System for ISS well 812**Location of Monitoring System:** West Highland Ave and North 3rd Street**Wells to be Monitored:** NS-MW-02**Required Monitoring:** Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.1 – 8.1	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	14.2	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	39	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	6.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.8 Groundwater Monitoring System for ISS well 813**Location of Monitoring System:** East Vine, west of W. Hubbard Street**Wells to be Monitored:** NS-MW-03**Required Monitoring:** Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.1 – 8.1	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.39	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.2	N/A	See section 7.2.3

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Carbon, Total Organic	mg/L	2.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.9 Groundwater Monitoring System for ISS well 814

Location of Monitoring System: North Commerce, 1200 ft NE of Holton viaduct

Wells to be Monitored: NS-MW-04

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.1 – 8.1	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.27	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.2	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	3.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.10 Groundwater Monitoring System for ISS well 817

Location of Monitoring System: 4150 N. Humboldt Avenue

Wells to be Monitored: NS-MW-07

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.0 – 8.0	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	3.07	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.26	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	4.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.11 Groundwater Monitoring System for ISS well 819

Location of Monitoring System: Morris Street and Beverly Avenue (Shorewood garage) (Deep)

Wells to be Monitored: NS-MR-03D

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.1 – 8.1	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.24	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.06	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	2.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.12 Groundwater Monitoring System for ISS well 821

Location of Monitoring System: North Newhall Ave and East Park Place (Deep)

Wells to be Monitored: NS-MR-04D

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.2 – 8.2	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.29	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.07	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	2.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.13 Groundwater Monitoring System for ISS well 823

Location of Monitoring System: Lincoln Parkway, 750 ft SW of I-43 overpass

Wells to be Monitored: NS-MW-09

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.1 – 8.1	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.26	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.18	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	3.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.14 Groundwater Monitoring System for ISS well 824

Location of Monitoring System: W. Hampton Ave, 90 ft west of N 22nd Street

Wells to be Monitored: NS-MW-10

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.3 – 8.3	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.19	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.18	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	2.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.15 Groundwater Monitoring System for ISS well 825

Location of Monitoring System: 3025 W. Ruby Ave (City of Milwaukee Garage Pkg Lot)

Wells to be Monitored: NS-MW-11

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.4 – 8.4	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.2	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.17	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	2.0	N/A	See section 7.2.3

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
				7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.16 Groundwater Monitoring System for ISS well 826

Location of Monitoring System: East of Greenfield Ave and Great Lakes Research Facility

Wells to be Monitored: KK-MW-01

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.4 – 8.4	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.24	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.22	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	5.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.17 Groundwater Monitoring System for ISS well 827

Location of Monitoring System: West Maple at South 1st

Wells to be Monitored: KK-MW-02

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
pH Field	su	6.3 – 8.3	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.35	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.16	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	2.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.18 Groundwater Monitoring System for ISS well 828

Location of Monitoring System: 30 ft west of S 1st St and 48 ft north of E. Lincoln Ave

Wells to be Monitored: KK-MW-03

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.3 – 8.3	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.22	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.12	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	2.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.19 Groundwater Monitoring System for ISS well 829

Location of Monitoring System: W Rosedale Ave and 95 ft west of I-94 overpass

Wells to be Monitored: KK-MW-04

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.2 – 8.2	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.19	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.16	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	4.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.20 Groundwater Monitoring System for ISS well 830

Location of Monitoring System: Lincoln Memorial Drive

Wells to be Monitored: LM-MW-01

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.5 – 8.5	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.19	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.09	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	2.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.21 Groundwater Monitoring System for ISS well 831

Location of Monitoring System: Sherman Blvd, south of W. Chambers (Deep) (Background)

Wells to be Monitored: CT-MR-08D

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.5 – 8.5	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.24	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.03	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	2.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.22 Groundwater Monitoring System for ISS well 832

Location of Monitoring System: Sherman Blvd south of W. Chambers (Shallow)

Wells to be Monitored: CT-MR-08S

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.6 – 8.6	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/l	2.13	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/l	2.1	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	2.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.23 Groundwater Monitoring System for Well 884**Location of Monitoring System:** NWSRS Monitoring Well, 107th and Sheridan Ave**Wells to be Monitored:** GM-IR-10**Required Monitoring:** Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.5 – 8.5	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.06	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.42	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	1.77	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.24 Groundwater Monitoring System for Well 885**Location of Monitoring System:** NWSRS Monitoring Well. Hwy 100 and Courtland Ext'd**Wells to be Monitored:** GM-IR-11**Required Monitoring:** Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.6 – 8.6	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.04	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.25	N/A	See section 7.2.3

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
				7.2.3
Carbon, Total Organic	mg/L	2.0	N/A	See section 7.2.3
Total Coliform General	#/100 ml	1.0	1.0	See section 7.2.3

7.3.25 Groundwater Monitoring System for Well 887

Location of Monitoring System: Menomonee River Parkway and Charles Hart Parkway

Wells to be Monitored: CT-MW-25

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.1 – 8.1	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.06	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.15	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	1.6	N/A	See section 7.2.3
Total Coliform General	#/100/ml	1.0	1.0	See section 7.2.3

7.3.26 Groundwater Monitoring System for Well 888

Location of Monitoring System: On Jones Island east of Well CO1 by Clarifier #1

Wells to be Monitored: CT-MW-26

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.1 – 8.1	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.14	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.39	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	2.56	N/A	See section 7.2.3
Total Coliform General	#/100ml	1.0	1.0	See section 7.2.3

7.3.27 Groundwater Monitoring System for Well 889

Location of Monitoring System: 30th Street and Hampton Ave

Wells to be Monitored: NS-MW-19 (Well 889)

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.4 – 8.4	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.14	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.23	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	2.22	N/A	See section 7.2.3
Total Coliform General	#/100ml	1.0	1.0	See section 7.2.3

7.3.28 Groundwater Monitoring System for Well 890

Location of Monitoring System: South of Mill Road on Sidney Place Ext'd

Wells to be Monitored: NS-MW-20 (Well 890)

Required Monitoring: Grab samples shall be collected from each well to be monitored per the frequency shown in the table below. The grab samples shall be analyzed for the parameters specified in the table below.

PARAMETER	UNITS	PREVENTIVE ACTION LIMIT	ENFORCEMENT STANDARD	FREQUENCY
Depth To Groundwater	feet	*****	N/A	See section 7.2.3
Groundwater Elevation	feet MSL	*****	N/A	See section 7.2.3
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	See section 7.2.3
pH Field	su	6.1 – 8.1	N/A	See section 7.2.3
Nitrogen, Ammonia Dissolved	mg/L	2.16	N/A	See section 7.2.3
Nitrogen, Organic Dissolved	mg/L	2.25	N/A	See section 7.2.3
Carbon, Total Organic	mg/L	2.39	N/A	See section 7.2.3
Total Coliform General	#/100ml	1.0	1.0	See section 7.2.3

8 Land Application Requirements

8.1 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	Agrilife - anaerobically digested liquid sludge, which is land applied onto agricultural sites.
005	Anaerobically digested cake sludge
006	Milorganite - heat dried sludge, packaged for public marketing and distribution or bulk applied to land

8.2 Monitoring Requirements and Limitations

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

Outfalls 004 and 005 need only be monitored when the permittee uses those modes of sludge production.

8.2.1 Sampling Point (Outfall) 004 - Agrilife (South Shore)

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

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Phosphorus, Water Extractable		Percent	1/ 2 Months	Composite	
Potassium, Total Recoverable		Percent	1/ 2 Months	Composite	
PCB Total Dry Wt		mg/kg	Annual	Composite	
Municipal Sludge Priority Pollutant Scan			Annual	Composite	As specified in ch. 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.	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

8.2.1.1 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.

8.2.1.2 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.

8.2.1.3 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.

8.2.1.4 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. This requirement applies for the entire calendar year in which any exceedance of Table 3 of s. NR 204.07(5)(c) is experienced. Such loading records shall be kept for all List 1 parameters for each site land applied in that calendar year. 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), the Department shall be so notified through letter or in the comment section of the annual land application report (3400-55).

8.2.1.5 Lists 1, 2, 3, and 4

List 1 TOTAL SOLIDS AND METALS	
See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters	
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 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 apply 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
Equivalent Process	Approved by the Department	Varies with process
Injection	-	When applied
Incorporation	-	Within 6 hours of application

8.2.1.6 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
Volume 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

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

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

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

8.2.2.1 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.

8.2.2.2 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.

8.2.2.3 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.

8.2.2.4 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. This requirement applies for the entire calendar year in which any exceedance of Table 3 of s. NR 204.07(5)(c), is experienced. Such loading records shall be kept for all List 1 parameters for each site land applied in that calendar year. 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), the Department shall be so notified through letter or in the comment section of the annual land application report (3400-55).

8.2.2.5 Lists 1, 2, 3, and 4

List 1 TOTAL SOLIDS AND METALS	
See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters	
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)	

List 2**NUTRIENTS**

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

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 apply 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
Equivalent Process	Approved by the Department	Varies with process
Injection	-	When applied
Incorporation	-	Within 6 hours of application

8.2.3 Sampling Point (Outfall) 006 - Milorganite (Jones Island)

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	
Selenium Dry Wt	High Quality	100 mg/kg	Monthly	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Monthly	Composite	
Solids, Total		Percent	Monthly	Composite	
Nitrogen, Total Kjeldahl		Percent	Monthly	Composite	
Phosphorus, Total		Percent	Monthly	Composite	
Phosphorus, Water Extractable		Percent	Monthly	Composite	
Potassium, Total Recoverable		Percent	Monthly	Composite	
PCB Total Dry Wt		mg/kg	Daily	Composite	
Municipal Sludge Priority Pollutant Scan			Annual	Composite	As specified in ch. 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.	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

8.2.3.1 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.

8.2.3.2 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.

8.2.3.3 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.

8.2.3.4 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. This requirement applies for the entire calendar year in which any exceedance of Table 3 of s. NR 204.07(5)(c), is experienced. Such loading records shall be kept for all List 1 parameters for each site land applied in that calendar year. 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), the Department shall be so notified through letter or in the comment section of the annual land application report (3400-55).

8.2.3.5 Lists 1, 2, 3, and 4

List 1 TOTAL SOLIDS AND METALS	
See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters	
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 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	1000
OR		
Salmonella	MPN/4gTS	3
AND, ONE OF THE FOLLOWING PROCESS OPTIONS		
Temp/Time based on % Solids	Alkaline Treatment	
Prior test for Enteric Virus/Viable Helminth Ova	Post test for Enteric Virus/Viable Helminth Ova	
Composting	Heat Drying	
Heat Treatment	Thermophilic Aerobic Digestion	
Beta Ray Irradiation	Gamma Ray Irradiation	
Pasteurization	PFRP Equivalent Process	
* The Fecal Coliform limit shall apply as the geometric mean of 7 discrete samples on a dry weight basis.		

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 apply 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

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
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
Equivalent Process	Approved by the Department	Varies with process
Injection	-	When applied
Incorporation	-	Within 6 hours of application

9 Schedules

9.1 Facility Plan Adaptive Implementation Schedule

Required Action	Date Due
Action: By September 30, 2013 and annually thereafter the Permittee shall submit a report for Department approval stating the status of the schedule for evaluation, design, and capital improvement Projects listed in Chapter 11 of the Approved 2020 Facility Plan. The first report will also include a section that prioritizes, based upon the risk that hydraulic constraints will cause sanitary sewer overflows, the nine Metropolitan Interceptor Sewer projects listed in Table 10-3 item 6 of the approved 2020 Facility Plan.	09/30/2013
Submit Annual Report:	09/30/2014
Submit Annual Report:	09/30/2015
Submit Annual Report:	09/30/2016
Submit Annual Report:	09/30/2017

9.2 Flow Monitoring Data Annual Reports:

Required Action	Date Due
Annual Reports: Starting on June 30, 2013 and annually on the Date Due for subsequent years, MMSD shall submit the evaluation of flow monitoring data, and shall include evaluation of each of the satellite municipalities' rates of compliance with MMSD's peak flow performance standards from Chapter 3 MMSD Rules. MMSD shall submit this evaluation to the DNR by the due date for the period for which the evaluation has been made. A summary of the flow data, including the peak hourly flow, average flow, locations, area metered, and other attributes needed to assess conditions of metersheds shall be submitted in a '*.SHP' or '*.DBF' format. (see section 4.8)	
Submit Annual Report:	06/30/2013
Submit Annual Report:	06/30/2014
Submit Annual Report:	06/30/2015
Submit Annual Report:	06/30/2016
Submit Annual Report:	06/30/2017

9.3 Combined Sewer Overflows and South Shore Park

Required Action	Date Due
Action: Submit a feasibility plan for mitigating impacts to South Shore Park from combined sewer overflows	03/31/2013

9.4 Mercury Pollutant Minimization Program

The Permittee shall continue a pollutant minimization program

Required Action	Date Due
Submit Annual Status Reports: The Permittee shall submit to the Department an annual status report on the progress of the PMP as required by s. NR 106.145(7), Wis. Adm. Code. Submittal of the first annual status report is required by the Date Due. Note: If the Permittee wishes to apply for an alternative mercury effluent limitation, that application is due with the application for permit reissuance by 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.	09/30/2013
Submit Annual Report:	09/30/2014
Submit Annual Report:	09/30/2015
Submit Annual Report:	09/30/2016
Submit Annual Report:	09/30/2017

9.5 Activities identified elsewhere in the permit

The following actions are required elsewhere in the permit and are summarized here for reference.

Required Actions	Date Due
Install flow proportional sampler for sample point 103 (sec 2.2.4)	August 31, 2013
Jones Island Preliminary Treatment Facility Upgrade (sec 4.3)	December 31, 2015
Dewatering and Drying Facility Belt Filter Press Upgrade (sec 4.3)	December 31, 2014
Jones Island Aeration Upgrade (sec 4.3)	December 31, 2014
ISS Pump upgrade (sec 4.4)	October 31, 2014
Complete MMSD USGS Corridor study (sec 4.9)	December 31, 2015
The new data loggers identified in section 7.2.2 shall be installed.	December 31, 2013

9.6 Phosphorus limit at Jones Island

The permittee shall comply with the WQBELs for Phosphorus as specified. No later than 30 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance. If a submittal is required, a timely submittal fulfills the notification requirement.

The Permittee is required to submit a TMDL for phosphorus for the Milwaukee, Menomonee, Kinnickinnic and Estuary for approval with a final report due December 31, 2015 and implementation plan due one year after approval of the TMDL by WDNR and the U.S. Environmental Protection Agency. If the final approved TMDL provides allocations different from the WQBEL for phosphorus in this permit, WDNR will adjust the WQBEL to be consistent with the TMDL either through a permit modification or when this permit is reissued. Changes can be made to the compliance schedule by WDNR as appropriate based on the approved TMDL allocations.

Note: The Department will make a determination regarding possible changes to the compliance schedule and communicate in writing to the Permittee within 60 days after approval of the TMDL Report by the U.S. Environmental Protection Agency.

Required Actions	Date Due
<p>Operation and Needs Review (ONR): The permittee shall prepare and submit to the Department for approval an operational evaluation report. The report shall include an evaluation of collected effluent data, possible source reduction measures, operational improvements or other minor facility modifications that will optimize reductions in phosphorus discharges from the water reclamation facility during the period prior to complying with final phosphorus WQBELs and, where possible, enable compliance with final phosphorus WQBELs by December 31, 2015. The report shall provide a plan and schedule for implementation of the measures, improvements, and modifications as soon as possible, but not later than December 31, 2015 and state whether the measures, improvements, and modifications will enable compliance with final phosphorus WQBELs. Regardless of whether they are expected to result in compliance, the permittee shall implement the measures, improvements, and modifications in accordance with the plan and schedule specified in the operational evaluation report.</p> <p>If the operational evaluation report concludes that the facility can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the permittee shall comply with the final phosphorus WQBEL by December 31, 2015 and is not required to comply with the milestones identified below for years 3 through 9 of this compliance schedule ('Preliminary Compliance Alternatives Plan', 'Final Compliance Alternatives Plan', 'Water Reclamation Facility Upgrade to Meet WQBELs', 'Final Plans and Specifications, 'Complete Construction, 'Achieve Compliance').</p>	December 31, 2013
Submit Final TMDL Report to the Department	December 31, 2015
Submit TMDL implementation plan for the Milwaukee, Menomonee, Kinnickinnic and Estuary for approval (sec 4.9 and 6.3.2.3)	One year after approval of TMDL allocations by EPA
<p>Study of Feasible Alternatives: If the Operational Evaluation Report concludes that the permittee cannot achieve final phosphorus WQBELs with source reduction measures, operational improvements and other minor facility modifications, the permittee shall initiate a study of feasible alternatives for meeting final phosphorus WQBELs and comply with the remaining required actions of this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational</p>	April 30, 2014

improvements, and minor facility modifications, the Department may reopen and modify the permit to include an implementation schedule for achieving the final phosphorus WQBELs sooner than July 31, 2022.	
Compliance Alternatives, Source Reduction, Improvements and Modifications Status: The permittee shall submit a 'Compliance Alternatives, Source Reduction, Operational Improvements and Minor Facility Modification' status report to the Department. The report shall provide an update on the permittee's: (1) progress implementing source reduction measures, operational improvements, and minor facility modifications to optimize reductions in phosphorus discharges and, to the extent that such measures, improvements, and modifications will not enable compliance with the WQBELs, (2) status evaluating feasible alternatives for meeting phosphorus WQBELs.	April 30, 2015
Preliminary Compliance Alternatives Plan: The permittee shall submit a preliminary compliance alternatives plan to the Department. If the plan concludes upgrading of the permittee's water reclamation facility is necessary to achieve final phosphorus WQBELs, the submittal shall include a preliminary engineering design report. If the plan concludes Adaptive Management will be used, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 without the Adaptive Management Plan. If water quality trading will be undertaken, the plan must state that trading will be pursued.	April 30, 2016
Final Compliance Alternatives Plan: The permittee shall submit a final compliance alternatives plan to the Department. If the plan concludes upgrading of the permittee's wastewater treatment is necessary to meet final phosphorus WQBELs, the submittal shall include a final engineering design report addressing the water reclamation facility upgrades, and a facility plan if required pursuant to ch. NR 110 If the plan concludes Adaptive Management will be implemented, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 and an engineering report addressing any treatment system upgrades necessary to meet interim limits pursuant to s. NR 217.18, Wis. Adm. Code. If the plan concludes water quality trading will be used, the submittal shall identify potential trading partners. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit (section 6.3.2.3)	April 30, 2017
Progress Report on Plans & Specifications: Submit progress report regarding the progress of preparing final plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit. (section 6.3.2.3)	April 30, 2018
Final Plans and Specifications: Unless the permit has been modified, revoked and reissued, or reissued to include Adaptive Management, TMDL waste load allocation or Water Quality Trading measures or to include a revised schedule based on factors in s. NR 217.17, the permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41, Stats., specifying treatment plant upgrades that must be constructed to achieve compliance with final phosphorus WQBELs, and a schedule for completing construction of the upgrades by the complete construction date specified below. (Note: Permit modification, revocation and reissuance, and reissuance is subject to s. 283.53(2) Stats.)	April 30, 2019

Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit. (section 6.3.2.3)	
Water reclamation facility Upgrade to Meet WQBELs limit placed in permit through a permit modification or reissuance: The permittee shall initiate construction of the upgrades. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41, Stats. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats. the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit. (section 6.3.2.3)	July 31, 2019
Construction Upgrade Progress Report: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit. (section 6.3.2.3)	July 31, 2020
Complete Construction: The permittee shall complete construction of water reclamation facility upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit. (section 6.3.2.3)	July 31, 2021
Achieve Compliance: The permittee shall achieve compliance with final phosphorus WQBELs. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit. (section 6.3.2.3)	July 31, 2022

9.7 South Shore Upgrades

The following actions shall be taken by the permittee to address high TSS influent test results and the new interim phosphorus limit.

Required Actions	Date Due
Evaluate and Identify desired corrective action for sample point 702 (sec 1.2.2)	June 30, 2013
Complete South Shore Process Enhancement Study and Report (sec4.4)	July 30, 2014
Provide plan to meet 0.6 mg/l P limit (sec 6.3.1.3)	December 31, 2013
Submit any necessary plans to implement solution for sample point 702 (sec 1.2.2)	June 30, 2014
Submit progress report on implementing a solution for sample point 702 and any process or equipment modifications being made to enhance phosphorus removal.	December 31, 2015
Implement solution for sample point 702 (sec1.2.2)	December 31, 2016
South Shore Capacity improvement project Design (sec 4.4)	December 31, 2017

9.8 Jones Island outfall 003 Temperature Limit

The following actions shall be taken by the Permittee to meet the temperature limits for outfall 003 identified in section 6.3.4

Required Actions	Date Due
Establish discharge temperature monitoring point and complete CORMIX modeling of thermal mixing zone.	March 31, 2013
Notification of Options: The permittee shall submit a notification on the potential option(s) for complying with any temperature limits that are needed based on hydraulic modeling of the receiving water in accord with NR 106.58.	October 31, 2013
Complete modeling of thermal mixing zone, using discharge data from new turbines, along with ambient water temperature of receiving water.	December 31, 2015
Submit Plans for meeting temperature limits derived from thermal model.	January 31, 2016
Submit Plans and Specifications, in accordance with s. 281.41, Wis. Stats. for meeting temperature limits	October 31, 2016
Submit progress report to the Department for meeting temperature limits	March 31, 2017
Compliance with temperature limits	July 31, 2017

The Permittee is required to submit a mixing zone model that includes discharge characteristics from the new turbines. If limits derived from the approved model are different from the limits specified in section 6.3.3, WDNR will adjust the WQBEL to be consistent with new limits either through a permit modification or when this permit is reissued. If approved model indicates that no further action is required by Permittee, changes can be made to the compliance schedule by WDNR as appropriate.

Note: The Department will make a determination regarding possible changes to the compliance schedule and communicate in writing to the Permittee within 60 days after approval of the model by WDNR.

10 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, except for s. NR 205.07(1)(v) and (2)(d) regarding bypasses and overflows which are specified in section 10.2.6 through 10.2.8. 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).

10.1 Reporting and Monitoring Requirements

10.1.1 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. When submitting a paper Discharge Monitoring Report form, the original and one copy of the Wastewater Discharge Monitoring Report Form shall be submitted to the return address printed 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.

All Wastewater Discharge Monitoring Reports submitted to the Department should be submitted using the electronic Discharge Monitoring Report system. Permittees who may be unable to submit Wastewater Discharge Monitoring Reports electronically may request approval to submit paper DMRs upon demonstration that electronic reporting is not feasible or practicable.

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.

An Electronic Discharge Monitoring Report Certification sheet shall be signed and submitted with each electronic Discharge Monitoring Report submittal. This certification sheet, which is not part of the electronic report form, shall be signed by a principal executive officer, a ranking elected official or other duly authorized representative and shall be mailed to the Department at the time of submittal of the electronic Discharge Monitoring Report. The certification sheet certifies that the electronic report form is true, accurate and complete. Paper reports shall be signed by a principal executive officer, a ranking elected official, or other duly authorized representative.

10.1.2 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.

10.1.3 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.

10.1.4 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.

10.1.5 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 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.

10.1.6 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 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.

A separate CMAR certification document, that is not part of the electronic report form, shall be mailed to the Department at the time of electronic submittal of the CMAR. The CMAR certification shall be signed and submitted by an authorized representative of the Permittee. The certification shall be submitted by mail. The certification shall verify the electronic report is complete, accurate and contains information from the owner's treatment works.

10.1.7 Records Retention

The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings 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.

10.1.8 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.

10.2 System Operating Requirements

10.2.1 Noncompliance Notification

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 an unanticipated 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.

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**

10.2.2 Flow Meters

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

10.2.3 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 500-536, Wis. Adm. Code.

10.2.4 Sludge Management

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

10.2.5 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.

10.2.6 Unscheduled Bypassing

Except as provided in section 10.2.7, any bypass of wastewater at the treatment works or overflow from the collection system is prohibited, and the Department may take enforcement action against a permittee for such occurrences under s. 283.89, Wis. Stats., unless all of the following occur:

- The bypass or overflow was unavoidable to prevent loss of life, personal injury, or severe property damage.
- There were no feasible alternatives to the bypass or overflow, such as the use of auxiliary treatment facilities, retention of untreated wastes, 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 or overflow which occurred during normal periods of equipment downtime or preventative maintenance.
- The permittee notifies the department of the bypass or overflow. The permittee shall notify the department within 24 hours of initiation of the bypass or overflow occurrence by telephone, voicemail, fax or e-mail. Except for an approved blending event, within 5 days of conclusion of the bypass or overflow occurrence, the permittee shall submit to the department in writing, all of the following information:
 - Reason the bypass or overflow occurred, or explanation of other contributing circumstances that resulted in the event. If the bypass or overflow is associated with wet weather, provide data on the amount and duration of the rainfall or snow melt for each separate event.
 - Date the bypass or overflow occurred
 - Location where the bypass or overflow occurred*.
 - Duration of the bypass or overflow and estimated wastewater volume discharged
 - Steps taken or the proposed corrective action planned to prevent similar future occurrences
 - Any other information the permittee believes is relevant

*For purposes of the five day report CSO reporting will identify dropshaft activity rather than individual CSO locations for those CSOs which do not discharge directly from the MIS system.

These provisions only serve as a limitation on the Department's exercise of enforcement authority, and are not intended to limit enforcement actions brought by other agencies or by any citizen."

10.2.7 Scheduled Bypassing

Bypass Due To Essential Construction or Maintenance (Controlled Diversions)

A bypass which occurs due to essential construction or maintenance to assure efficient operation of the treatment works is allowed but only if the bypass complies with all effluent limitations in this permit. For these bypasses, any wastewater that is diverted around a treatment unit or treatment process shall be recombined with wastewater that is not diverted prior to discharge.

Any bypass due to essential maintenance or construction to assure efficient operation of the treatment works shall be documented in writing and the record shall be made available to the Department upon request.

10.2.8 Blending During Wet Weather

During wet weather flow conditions, an in-plant diversion around a biological treatment process or facility (blending) is approved if all of the following conditions are met:

- The in-plant diversion is only temporary and occurs during a wet weather event when peak wastewater flow to the sewage treatment facility exceeds the maximum design and operating capacity of the biological treatment process
- The diversion is necessary to avoid loss of life, personal injury or severe property damage to the sewage treatment facility due to loss of treatment efficiency from washout of treatment media
- The permittee is effectively implementing a CMOM program designed to reduce, to the maximum extent practicable, the entry of infiltration and inflow into the system.
- The untreated, or partially treated wastewater that is routed around the biological treatment process or a portion of a biological treatment process, has been recombined with the biologically treated wastewater and the combined flow has been disinfected prior to discharge
- Effluent from the sewage treatment facility is monitored to include all wastewater that is discharged from the facility, including those wastewaters that have been diverted around the biological treatment process
- The effluent discharged meets all effluent limitations included in this permit.

If possible, the permittee shall provide at least 10 days advance notice to the Department prior to blending.

Any in-plant diversion under this section shall be reported to the Department by telephone, fax or email no later than 24 hours from the time each diversion operation ceases. Permittees shall also report the time, duration and volume of wastewater routed around the biological treatment process, or routed through an alternative treatment process on the monthly Discharge Monitoring Report (DMR) forms. If no flow is diverted on any given day, a value of zero (0) shall be reported for that day on the DMR form. For each day that blending occurs, the permittee shall submit a copy of the influent flow data on that day. These data shall be sent directly to the DNR basin engineer assigned to this facility.

10.2.9 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. The wastewater treatment facility shall be under the direct supervision of a state certified operator as required in s. NR 108.06(2), Wis. Adm. Code. 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.

10.3 Surface Water Requirements

10.3.1 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.

10.3.2 Appropriate Formulas for Effluent Calculations

The Permittee shall use the following formulas for calculating effluent results to determine compliance with average limits and mass limits:

Weekly/Monthly average concentration = the sum of all daily results for that week/month, divided by the number of results during that time period.

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.

10.3.3 Visible Foam or Floating Solids

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

10.3.4 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.

10.3.5 Fecal Coliforms

The limit for fecal coliforms shall be expressed as a monthly geometric mean.

10.3.6 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 uses, the limitations and monitoring requirements for residual chlorine shall apply. A dechlorination process shall be in operation whenever chlorine is used.

10.3.7 Applicability of Alternative Wet Weather Mass Limitations

An alternative wet weather mass limitation applies when:

- The applicable mass limitation (based on annual average design flow) is exceeded; and
- The Permittee demonstrates to the satisfaction of the Department that the discharge exceedance is caused by and occurs during a wet weather event. For the purposes of this demonstration, a wet weather event occurs during and immediately following periods of precipitation or snowmelt, including but not limited to rain, sleet, snow, hail or melting snow during which water from the precipitation, snowmelt or elevated groundwater enters the sewerage system through infiltration or inflow, or both. The Permittee shall present demonstrations to the Department by attaching them to the Wastewater Discharge Monitoring Report Form(s).

Note: In making this demonstration, the Permittee may want to consider presenting a discussion of normal effluent flow rates, the effluent flow rates that resulted in the exceedance and identification of the event, including intensity and duration, which caused the high flow rates. A graph of effluent flow over time may also be helpful.

10.3.8 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.

10.3.9 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.

10.3.10 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 Watershed Management, 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:

Evaluate the performance of the treatment system to identify deficiencies contributing to effluent toxicity (e.g., operational problems, chemical additives, incomplete treatment)

Identify the compound(s) causing toxicity

Trace the compound(s) causing toxicity to their sources (e.g., industrial, commercial, domestic)

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.

10.4 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:

10.4.1 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.

Regulation of Industrial Users

10.4.1.1 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.

10.4.1.2 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.

The Permittee shall provide a copy of all newly issued, reissued, or modified discharge permits to the Department.

10.4.1.3 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.

At least one time per year the Permittee shall inspect and sample the discharge from each significant industrial user, or more frequently if so specified in the Permittee's approved pretreatment program. At least once every 2 years the Permittee shall evaluate whether each significant industrial user needs a slug control plan. 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.

10.4.1.4 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 30th of each year and for the period July through December shall be provided to the Department by May 31st of the succeeding year, unless alternate submittal dates are approved.

10.4.1.5 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.

10.4.1.6 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.

10.4.2 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.

10.4.3 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.

10.4.4 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.

10.5 Groundwater Standard Requirements

10.5.1 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.

10.5.2 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).

10.5.3 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.

10.5.4 Groundwater Monitoring Forms

Results of the groundwater analyses shall be summarized and reported on Groundwater Monitoring Forms supplied by the Department. This report form is to be returned to the Department no later than the date indicated on the form. The original and one copy of the Groundwater Monitoring Form shall be submitted to your DNR regional office. A copy of the Groundwater Monitoring Form shall be retained by the Permittee.

10.5.5 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)

10.5.6 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.

10.5.7 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.

10.5.8 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.

10.5.9 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, which shall be done using an unfiltered sample. While in-field analysis is preferred for these two tests, 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.

10.5.10 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.

10.5.11 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.

10.5.12 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.

10.5.13 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.

10.5.14 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.

10.6 Land Application Requirements

10.6.1 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.

10.6.2 General Sludge Management Information

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

10.6.3 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.

10.6.4 Land Application Characteristic Report

Each report shall consist of a Characteristic Form 3400-49 and Lab Report, unless approval for not submitting the lab reports has been given. Both reports shall be submitted by January 31 following each year of analysis.

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.

10.6.5 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 the following provisions and Table EM in s. NR 219.04, Wis. Adm. Code.

EPA Method 1668 may be used to test for all PCB congeners. If this method is employed, all PCB congeners shall be delineated. Non-detects shall be treated as zero. The values that are between the limit of detection and the limit of quantitation shall be used when calculating the total value of all congeners. All results shall be added together and the total PCB concentration by dry weight reported. **Note:** It is recognized that a number of the congeners will co-elute with others, so there will not be 209 results to sum.

EPA Method 8082A shall be used for PCB-Aroclor analysis and may be used for congener specific analysis as well. If congener specific analysis is performed using Method 8082A, the list of congeners tested shall include at least congener numbers 5, 18, 31, 44, 52, 66, 87, 101, 110, 138, 141, 151, 153, 170, 180, 183, 187, and 206 plus any other additional congeners which might be reasonably expected to occur in the particular sample. For either type of analysis, the sample shall be extracted using the Soxhlet extraction (EPA Method 3540C) (or the Soxhlet Dean-Stark modification) or the pressurized fluid extraction (EPA Method 3545A). If Aroclor analysis is performed using Method 8082A, clean up steps of the extract shall be performed as necessary to remove interference and to achieve as close to a limit of detection of 0.11 mg/kg as possible. Reporting protocol, consistent with s. NR 106.07(6)(e), should be as follows: If all Aroclors are less than the LOD, then the Total PCB Dry Wt result should be reported as less than the highest LOD. If a single Aroclor is detected then that is what should be reported for the Total PCB result. If multiple Aroclors are detected, they should be summed and reported as Total PCBs. If congener specific analysis is done using Method 8082A, clean up steps of the extract shall be performed as necessary to remove interference and to achieve as close to a limit of detection of 0.003 mg/kg as possible for each congener. If the aforementioned limits of detection cannot be achieved after using the appropriate clean up techniques, a reporting limit that is achievable for the Aroclors or each congener for the sample shall be determined. This reporting limit shall be reported and qualified

indicating the presence of an interference. The lab conducting the analysis shall perform as many of the following methods as necessary to remove interference:

- | | |
|------------------------|---|
| 3620C – Florisil | 3611B - Alumina |
| 3640A - Gel Permeation | 3660B - Sulfur Clean Up (using copper shot instead of powder) |
| 3630C - Silica Gel | 3665A - Sulfuric Acid Clean Up |

10.6.6 Land Application Report

Land Application Report Form 3400-55 shall be submitted by January 31, following each year non-exceptional quality sludge is land applied. Non-exceptional quality sludge is defined in s. NR 204.07(4), Wis. Adm. Code.

10.6.7 Other Methods of Disposal or Distribution Report

The Permittee shall submit Report Form 3400-52 by January 31, following each year sludge is hauled, landfilled, incinerated, or when exceptional quality sludge is distributed or land applied.

10.6.8 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) (I), Wis. Adm. Code.

10.6.9 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.

10.6.10 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.

10.6.11 Class A Sludge: Salmonella Density Requirements

The salmonella density which must be < 3 MPN/4 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 distributed at that time, no re-testing is required. If the material is bagged, distributed or land applied at a later time, the sludge shall be re-tested and this requirement satisfied at that time also, to ensure that regrowth of bacteria has not occurred.

10.6.12 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 or the wet bulb temperature of the gas in contact with the sludge as the sludge leaves the dryer shall exceed 80° C.

10.6.13 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 = \log_{10} 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	6.0×10^5	5.78
2	4.2×10^6	6.62
3	1.6×10^6	6.20
4	9.0×10^5	5.95
5	4.0×10^5	5.60
6	1.0×10^6	6.00
7	5.1×10^5	5.71

The geometric mean for the seven samples is determined by averaging the \log_{10} values of the coliform density and taking the antilog of that value.

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

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

10.6.14 Class A Sludge - Vector Control: Injection

The sludge shall be injected within 8 hours after being discharged from the pathogen treatment process. No significant amount of the sewage sludge shall be present on the land surface within one hour after the sludge is injected.

10.6.15 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.

10.6.16 Class A 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.

10.6.17 Class B Sludge - Vector Control: Incorporation

Class B sludge shall be incorporated within 6 hours of surface application, or as approved by the Department.

11 Summary of Reports Due

FOR INFORMATIONAL PURPOSES ONLY

Description	Date	Page
CMOM update(sec 4.3)	June 30 Annually	9
Report on South Shore Process Enhancement (sec 4.4)	July 30, 2013	10
The Permittee shall provide a report of the surface water monitoring results (sec 4.7)	Annual by June 30th	12
Flow Monitoring Data Semi-Annual Reports: -Submit Annual Report (sections 4.8 & 9.2)	June 30, Annually	12, 57
TMDL for the Menomonee, Milwaukee, Kinnickinnic and Estuary final report and implementation plan (sec 4.9 and 9.6)	December 31, 2015 and one year after TMDL report is approved by EPA and WDNR	13, 59
Report on estimated water captured under "Fresh Coast Green Solutions" (sec 4.10)	March 1 annually	14
Annual Groundwater monitoring report (sec 7.2.1)	June 30 th annually	23
Facility Plan Adaptive Implementation Schedule (sec 9.1)	September 30 Annually	57
Combined Sewer Overflows and South Shore Park –Action (sec 9.4)	March 31, 2013	58
Mercury Pollutant Minimization Program -Submit Annual Report (sec 9.5)	September 30, Annually	58
Submit Operational Needs Report regarding phosphorus limit. (sec 9.6)	December 31, 2013	59
Submit report on Compliance Alternatives, Source Reduction, Improvements and Modifications Status: (sec 9.6)	April, 30, 2015	59
Submit a Preliminary Compliance Alternatives Plan (sec 9.6)	April 30, 2016	59
Submit a final Compliance Alternatives Plan (sec 9.6)	April 30, 2017	59
Report on option to meet thermal limit at 003 (sec 9.8)	October 31, 2013	60
Complete modeling of thermal mixing zone, using discharge data from new turbines, along with ambient water temperature of receiving water.	December 31, 2015	62
Submit Plans for meeting temperature limits-derived from thermal model.	January 31, 2016	62
Submit Plans and Specifications, in accordance with s. 281.41, Wis. Stats. for meeting temperature limits	October 31, 2016	62
Submit progress report to the Department for meeting temperature limits	March 31, 2017	62

Wastewater Discharge Monitoring Report (10.1.1)	no later than the date indicated on the form	61
Compliance Maintenance Annual Reports (CMAR) (sec 10.1.6)	by June 30, each year	62
Industrial User Compliance Evaluation and Violation Reports (sec10.4.2.4)	Semiannual	68
Pretreatment Program Report (sec 10.4.1, 10.4.3)	March 31 Annually	67,68
Groundwater Monitoring Forms (sec 10.5.4)	no later than the date indicated on the form	71
General Sludge Management Form 3400-48 (sec 10.6.2)	prior to any significant sludge management changes	73
Characteristic Form 3400-49 and Lab Report (sec 10.6.4)	by January 31 following each year of analysis	73
Land Application Report Form 3400-55 (sec 10.6.6)	by January 31, following each year non-exceptional quality sludge is land applied	74
Report Form 3400-52 (sec 10.6.7)	by January 31, following each year sludge is hauled, landfilled, incinerated, or when exceptional quality sludge is distributed or land applied	74

Report forms shall be submitted to the address printed on the report form. Any facility plans or plans and specifications for municipal, industrial, industrial pretreatment and non industrial wastewater systems shall be submitted to the Bureau of Watershed Management, 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