

Superior Sewage Disposal System Environment Impacts Evaluation

April 1, 2013

The main plant of the Superior Sewage Disposal System (SSDS) discharges to Superior Bay of Lake Superior. The St Louis River is the major source of flow to Superior Bay. The mercury limit evaluation was based on the background conditions of the St Louis River rather than Lake Superior.

Effluent Levels and Water Flow

Concentration levels in the SSDS waste water treatment plant effluent average 3.4 ng/l. The facility collected 58 valid test results for mercury from November 2003 through October 2011. The upper 99th percentile of 30 day average discharge concentrations, as determined by the procedure specified in NR 106.05(5)(a), is 4.7 ng/l, which exceeds a potential limit of 1.3 ng/l. Drinking water in the area is supplied by Lake Superior. The average design flow of the main plant is rated at 15 million gallons per day which is 23.21 cubic feet per second (cfs). Lake Superior is classified as non-flowing, but the 7 day, 10 year low flow of the St. Louis River is 289 cfs and the 7 day, 2 year low flow is 387 cfs.

Ambient Mercury Concentrations

Wisconsin and Minnesota Department of Natural Resources staff have sampled the St. Louis River. The background mean sample result is 4 ng/L, above the 1.3 ng/L water quality criterion for protection of wildlife. Various studies have put concentrations of rainwater in Wisconsin in the range of 10 ng/L.

Positive Aspects of the Proposed Permit Regarding Mercury

A condition of the variance for the SSDS is to implement a pollutant minimization program (PMP). The facility has a long history of implementing mercury reduction with documented programs beginning in 1998. When the facility applied for the Mercury Green Tier Charter a PMP plan for SSDS was submitted July 31, 2008 and was approved by Randy Case on November 25, 2008. The city has conducted a medical facility inventory, school and educational facility inventory, industry facility inventory and implemented outreach to these and others. The goal of implementing the PMP is to reduce levels of mercury in the influent to the treatment plant, which would then be expected to improve the quality of the plant effluent and in addition reduce the level in the biosolids where much of the mercury is captured. Biosolids from the facility are sent to a landfill. It's expected PMP efforts will continue to have a beneficial effect on concentrations of mercury in Lake Superior and regionally. Mercury levels in the sludge averaged 0.74 mg/kg on a dry weight basis from January 2005 through December 2009 (a total of 19 sample results), below the high quality level of 17 mg/kg and the ceiling concentration for landspreading of 57 mg/kg. The PMP requirement would continue to have the effect of reducing mercury levels in both the effluent and biosolids.

Impact on Threatened/Endangered Species and Human Health

Approval of the proposed mercury variance for SSDS to discharge mercury at concentrations present in the existing effluent and including permit requirements for continued pollutant minimization will likely help improve water quality in the St Louis River and Superior Bay.

Therefore, granting the variance is unlikely to adversely affect threatened or endangered species that live in the area of the discharge nor will it increase the risk to human health. In addition, the effect of any ambient concentrations of mercury above the water quality criterion of 1.5 ng/L for humans will be mitigated by Wisconsin's fish consumption advisory program.

For more detailed information on impacts of mercury variances, see a document titled Environmental Impacts Evaluation for Mercury Variance Requests in Wisconsin (05/23/06 Draft).

STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES
PUBLIC NOTICE OF INTENT TO MODIFY A WISCONSIN POLLUTANT DISCHARGE ELIMINATION
SYSTEM (WPDES) PERMIT No. WI-0025593-08-01

Permittee: Superior Sewage Disposal System, 51 E First St., Superior, WI 54880

Facility Where Discharge Occurs: Superior Sewage Disposal System, Avenue E, Superior, Douglas County, Wisconsin

Receiving Water and Location: Main Plant: Superior Bay of Lake Superior, CSTP 2: A slip emptying into Superior Bay of Lake Superior, CSTP 5: The Nemadji River, CSTP 6: St. Louis Bay of Lake Superior

Brief Facility Description and Summary of Proposed Changes: The City of Superior owns and operates 4 wastewater treatment plants. The Main Plant is an activated sludge facility, which receives the bulk of the domestic, industrial and combined sewer wastewater flow. The plant designed to treat 7,600,000 gallons per day actually handles an average of 3,610,000 gallons per day (2009-2011 data). The facility consists of screen and grit chambers that remove debris. Chemicals are added to enable the phosphorus to settle out of the wastewater. The wastewater then enters the primary clarifier where solids are allowed to settle before entering aeration tanks (air added) where it mixes with activated sludge which breaks down the organic matter. Activated sludge is composed of settled solids containing naturally occurring bacteria recycled from the treatment system. The water is then pumped into a final clarifier where remaining solids are settled out. The treated water (effluent) is disinfected by using chlorination and dechlorination units prior to discharge. The City is working on replacing the chlorination and dechlorination units with an ultraviolet disinfection system. The settled solids (sludge) from the clarifiers that is not used as activated sludge is removed and treated by bacteria and organisms through anaerobic digestion, reducing harmful pathogens to safe levels. Water is removed from the sludge and then the sludge is taken to a landfill for final disposal. Effluent is discharged to Superior Bay of Lake Superior, which is classified as a "Great Lakes Communities" water under Wis. Admin Code NR 102, and is also a public water supply. The other treatment plants are referred to as "Combined Sewer Treatment Plants or "CSTPs". These are not stormwater and or wastewater bypass discharge points, but rather treatment units for a combination of wastewater and stormwater. CSTP 2 located adjacent to the Main Plant receives any excess flows from the Main Plant. Discharges from this facility are intermittent during each month, depending on the incoming wasteload and volume of stormwater from the combined collection system. CSTP 5 and CSTP 6 are physical/chemical treatment facilities. Both plants receive only stormwater and wastewater from domestic sources. At each facility large asphalt-lined retention ponds store collected wastewater. This wastewater can either be pumped back to the Main Plant for treatment during low-flow periods or treated on-site. CSTP 5 is located on the south edge of the City near South Superior, and CSTP 6 is located in the northwest corner of the community in Billings Park. CSTP 5 discharges to the Nemadji River and CSTP 6 discharges to St. Louis Bay.

It is the Department's intention to modify the current the permit. The permit expiration date will remain March 31, 2018. **Proposed Mercury Variance:** The Department has determined that a water quality-based effluent limitation (WQBEL) of 1.3 ng/L for mercury is needed at the main plant to protect wildlife and human health in the above-named receiving water. The permittee has submitted an application for an alternative mercury effluent limitation (AMEL). The facility currently has a pollutant minimization program (PMP) plan for mercury as required under s. NR 106.145(8), Wis. Adm. Code. The Department concludes that the permittee has qualified for a variance based on the information submitted, information on file and the findings provided in s. NR 106.145(1), Wis. Adm. Code. The Department and the permittee have mutually agreed upon an AMEL of 13 ng/l, expressed as a daily maximum, continued influent and effluent monitoring, and permit language requiring continuation of the PMP. The Department proposes to grant the AMEL, which represents a variance to the water quality standard used to derive the WQBEL, as provided for under s. NR 106.145(6), Wis. Adm. Code. The designated use of the receiving water will not change as a result of the variance.

Permit Drafter: Sheri A. Snowbank, DNR, 810 Maple Street, Spooner, WI 54801, (715) 635-4131, sheri.snowbank@wisconsin.gov

Basin Engineer: Eric Devenecia, DNR, 2501 Golf Course Road, Ashland, WI 54806, (715) 685-2925, Eric.DeVenecia@Wisconsin.gov

Persons wishing to comment on or object to the proposed permit action, or to request a public hearing, may write to the Department of Natural Resources at the permit drafter's address. All comments or suggestions received no later than 30 days after the publication date of this public notice will be considered along with other information on file in making a final decision regarding the permit. Anyone providing comments in response to this public notice will receive a notification of the Department's final decision when the permit is issued. Where designated as a reviewable surface water discharge permit, the U.S. Environmental Protection Agency is allowed up to 90 days to

submit comments or objections regarding this permit determination. If no comments are received on the proposed permit from anyone, including U.S. EPA, the permit will be issued as proposed.

The Department may schedule a public informational hearing if requested by any person and shall schedule a public informational hearing if a petition requesting a hearing is received from 5 or more persons or if response to this notice indicates significant public interest pursuant to s. 283.49, Stats. Requests for a public informational hearing shall state the following: the name and address of the person(s) requesting the hearing; the interest in the proposed permit of the person(s) requesting the hearing; the reasons for the request; and the issues proposed to be considered at the hearing.

Information on file for this permit action, including the draft permit and fact sheet (if required), may be inspected and copied at the permit drafter's or basin engineer's office, Monday through Friday (except holidays), between 9:00 a.m. and 3:30 p.m. Please call the permit drafter or basin engineer for directions to their office location, if necessary. Information on this permit action may also be obtained by calling the permit drafter at (715) 635-4131 or by writing to the Department. Reasonable costs (usually 20 cents per page) will be charged for copies of information in the file other than the public notice and fact sheet. Permit information is also available on the internet at: <http://dnr.wi.gov/topic/wastewater/PublicNotices.html>. Pursuant to the Americans with Disabilities Act, reasonable accommodation, including the provision of informational material in an alternative format, will be made to qualified individuals upon request.

PUBLISHING NEWSPAPER: Superior Telegram, 1226 Ogden Avenue, Superior, WI 54880-1590

Date Notice Issued: April 10, 2013



WPDES PERMIT

STATE OF WISCONSIN

DEPARTMENT OF NATURAL RESOURCES

PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM

SUPERIOR SEWAGE DISPOSAL SYSTEM

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

**MAIN PLANT AND CSTP 2: 51 EAST 1ST STREET
CSTP 5: 61ST STREET AND BIRCH AVENUE
CSTP 6: TEXAS AVENUE AND 17TH STREET**

To the following receiving waters in Douglas County within the St. Louis and Lower Nemadji Rivers Watershed of the Lake Superior Basin

**MAIN PLANT: SUPERIOR BAY OF LAKE SUPERIOR
CSTP 2: A SLIP EMPTYING INTO SUPERIOR BAY
CSTP 5: THE NEMADJI RIVER
CSTP 6: ST. LOUIS BAY OF LAKE SUPERIOR**

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

Kathy Bartilson
St. Croix Watershed Program Supervisor

Date Permit Signed/Issued

**PERMIT TERM: EFFECTIVE DATE - April 01, 2013
MODIFICATION DATE - June 01, 2013**

EXPIRATION DATE - March 31, 2018

TABLE OF CONTENTS

1 INFLUENT REQUIREMENTS	1
1.1 SAMPLING POINT(S)	1
1.2 MONITORING REQUIREMENTS	1
1.2.1 <i>Sampling Point 701 - INFLUENT MAIN PLANT</i>	1
1.2.2 <i>Sampling Point 702 - INFLUENT CSTP 2 ;</i>	2
1.2.3 <i>Sampling Point 705 - INFLUENT CSTP 5 , and 706- INFLUENT CSTP 6</i>	2
2 COMBINED SEWER OVERFLOW INVENTORY AND REQUIREMENTS	3
2.1 CSO LONG TERM CONTROL PLAN	3
2.1.1 <i>LTCP Post Construction Monitoring Plan</i>	3
2.1.2 <i>LTCP Updates</i>	3
2.2 INVENTORY OF OVERFLOW LOCATIONS	3
2.2.1 <i>Inventory of Overflow Locations within the Combined Sewer Districts</i>	3
3 TIER 2 INDUSTRIAL STORMWATER REQUIREMENTS	3
3.1 STORMWATER SOURCE AREAS	3
3.2 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)	4
3.2.1 <i>Purpose of SWPPP</i>	4
3.2.2 <i>Required SWPPP Content</i>	4
3.2.3 <i>Incorporation of Other Plans by Reference</i>	4
3.2.4 <i>SWPPP Retention</i>	4
3.3 MONITORING REQUIREMENTS	4
3.3.1 <i>Purpose</i>	4
3.4 EVALUATION OF NON-STORM WATER DISCHARGES	5
3.5 STORMWATER RECORDS RETENTION	6
4 CAPACITY, MANAGEMENT, OPERATION, AND MAINTENANCE (CMOM) PLAN	6
4.1 GENERAL STANDARDS	6
4.2 CMOM PLAN	6
4.2.1 <i>Goals</i>	6
4.2.2 <i>Organization</i>	6
4.2.3 <i>Legal Authority</i>	6
4.2.4 <i>Operation and Maintenance</i>	7
4.2.5 <i>Design and Performance Standards</i>	7
4.2.6 <i>Overflow Emergency Response Plan</i>	7
4.3 CMOM PLAN DOCUMENTATION AND AUDITS	8
5 IN-PLANT REQUIREMENTS	9
5.1 SAMPLING POINT(S)	9
5.2 MONITORING REQUIREMENTS AND LIMITATIONS	9
5.2.1 <i>Sampling Point 101 - Mercury field blank</i>	9
6 SURFACE WATER REQUIREMENTS	10
6.1 SAMPLING POINT(S)	10
6.2 MONITORING REQUIREMENTS AND EFFLUENT LIMITATIONS	10
6.2.1 <i>Sampling Point (Outfall) 001 - EFFLUENT MAIN PLANT</i>	10
6.2.2 <i>Sampling Point (Outfall) 002 - EFFLUENT CSTP 2</i>	14
6.2.3 <i>Sampling Point (Outfall) 003 - EFFLUENT CSTP 5 and 004- EFFLUENT CSTP 6</i>	16
7 LAND APPLICATION REQUIREMENTS	18
7.1 SAMPLING POINT(S)	18
7.2 MONITORING REQUIREMENTS AND LIMITATIONS	18
7.2.1 <i>Sampling Point (Outfall) 006 - Belt-Pressed Cake Sludge</i>	18

8 SCHEDULES	19
8.1 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)	19
8.2 WATER QUALITY BASED EFFLUENT LIMITS (WQBELS) FOR TOTAL PHOSPHORUS	19
8.3 MERCURY POLLUTANT MINIMIZATION PROGRAM	21
8.4 CAPACITY, MANAGEMENT, OPERATION, AND MAINTENANCE (CMOM)	21
8.5 LTCP POST CONSTRUCTION MONITORING PLAN	21
8.6 SEMI ANNUAL REPORTS	21
9 STANDARD REQUIREMENTS	23
9.1 REPORTING AND MONITORING REQUIREMENTS	23
9.1.1 <i>Monitoring Results</i>	23
9.1.2 <i>Sampling and Testing Procedures</i>	23
9.1.3 <i>Pretreatment Sampling Requirements</i>	23
9.1.4 <i>Recording of Results</i>	23
9.1.5 <i>Reporting of Monitoring Results</i>	24
9.1.6 <i>Compliance Maintenance Annual Reports</i>	24
9.1.7 <i>Records Retention</i>	24
9.1.8 <i>Other Information</i>	25
9.2 SYSTEM OPERATING REQUIREMENTS	25
9.2.1 <i>Noncompliance Notification</i>	25
9.2.2 <i>Flow Meters</i>	25
9.2.3 <i>Raw Grit and Screenings</i>	25
9.2.4 <i>Sludge Management</i>	25
9.2.5 <i>Prohibited Wastes</i>	26
9.2.6 <i>Bypassing</i>	26
9.2.7 <i>Bypass Due To Essential Construction or Maintenance (Controlled Diversions)</i>	26
9.2.8 <i>Scheduled Bypassing</i>	27
9.2.9 <i>Proper Operation and Maintenance</i>	27
9.3 SURFACE WATER REQUIREMENTS	27
9.3.1 <i>Permittee-Determined Limit of Quantitation Incorporated into this Permit</i>	27
9.3.2 <i>Appropriate Formulas for Effluent Calculations</i>	27
9.3.3 <i>Effluent Temperature Requirements</i>	28
9.3.4 <i>Visible Foam or Floating Solids</i>	28
9.3.5 <i>Percent Removal</i>	28
9.3.6 <i>Fecal Coliforms</i>	28
9.3.7 <i>Year Round Disinfection</i>	28
9.3.8 <i>Whole Effluent Toxicity (WET) Monitoring Requirements</i>	28
9.3.9 <i>Whole Effluent Toxicity (WET) Identification and Reduction</i>	29
9.4 PRETREATMENT PROGRAM REQUIREMENTS	29
9.4.1 <i>Inventories</i>	29
9.4.2 <i>Regulation of Industrial Users</i>	29
9.4.3 <i>Annual Pretreatment Program Report</i>	31
9.4.4 <i>Pretreatment Program Modifications</i>	31
9.4.5 <i>Program Resources</i>	31
9.5 LAND APPLICATION REQUIREMENTS	31
9.5.1 <i>Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations</i>	31
9.5.2 <i>General Sludge Management Information</i>	32
9.5.3 <i>Sludge Samples</i>	32
9.5.4 <i>Land Application Characteristic Report</i>	32
9.5.5 <i>Calculation of Water Extractable Phosphorus</i>	32
9.5.6 <i>Monitoring and Calculating PCB Concentrations in Sludge</i>	32
9.5.7 <i>Annual Land Application Report</i>	33
9.5.8 <i>Other Methods of Disposal or Distribution Report</i>	33
9.5.9 <i>Approval to Land Apply</i>	33
9.5.10 <i>Soil Analysis Requirements</i>	33

<i>9.5.11 Land Application Site Evaluation</i>	34
<i>9.5.12 Landfilling of Sludge</i>	34
<i>9.5.13 Sludge Landfilling Reports</i>	34
10 SUMMARY OF REPORTS DUE	35

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	MAIN PLANT: Representative samples shall be taken immediately downstream of the aerated grit chamber.
702	COMBINED SEWER TREATMENT PLANT 2: Representative samples shall be taken immediately downstream of the automatic bar screens.
705	COMBINED SEWER TREATMENT PLANT 5: Representative samples shall be taken just upstream from the Parshall flume in the drum screen room.
706	COMBINED SEWER TREATMENT PLANT 6: Representative samples shall be taken just upstream from the Parshall flume in the drum screen room.

1.2 Monitoring Requirements

The permittee shall comply with the following monitoring requirements.

1.2.1 Sampling Point 701 - INFLUENT MAIN PLANT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Continuous	Continuous	
CBOD ₅		mg/L	Daily	24-Hr Comp	
Suspended Solids, Total		mg/L	Daily	24-Hr Comp	
Phosphorus, 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	
Cyanide, Total		µg/L	Monthly	Grab	
Mercury, Total Recoverable		ng/L	Quarterly	Grab	See the "Mercury Monitoring" footnote for more information.

1.2.1.1 Metal Analysis

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

1.2.1.2 Sample Analysis

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

1.2.1.3 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of EPA 821-R-01-023 Guidance for Implementation and Use of EPA Method 1631 for the Determination of Low-Level Mercury. 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.

1.2.2 Sampling Point 702 - INFLUENT CSTP 2 ;

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
BOD ₅ , Total		mg/L	Daily	24-Hr Comp	
Suspended Solids, Total		mg/L	Daily	24-Hr Comp	

1.2.2.1 Sampling Requirements

A minimum of one 24-hour composite sample shall be taken for each 24 hours of continuous discharge. For discharges lasting less than 24 hours, one composite sample must be taken during the hours of discharge.

1.2.3 Sampling Point 705 - INFLUENT CSTP 5 , and 706- INFLUENT CSTP 6

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	

1.2.3.1 Sampling Requirements

A minimum of one 24-hour composite sample shall be taken for each 24 hours of continuous discharge. For discharges lasting less than 24 hours, one composite sample must be taken during the hours of discharge.

2 Combined Sewer Overflow Inventory and Requirements

During the permit period, discharges from the sewer overflows listed below shall be limited and monitored by the permittee according to the following conditions:

2.1 CSO Long Term Control Plan

The Permittee shall implement and comply with the CSO Long Term Control Plan (LTCP) dated July 1, 2011 for the purpose of assuring CSO discharges do not cause or contribute to water quality standard exceedances. The LTCP conforms to the "Demonstration" Approach under Section II.C. of USEPA's "Combined Sewer Overflow (CSO) Control Policy" ("CSO Policy"), issued April 19, 1994 and addresses the nine required LTCP elements discussed in sections II.C.1 through II.C.9 of the CSO Policy.

2.1.1 LTCP Post Construction Monitoring Plan

The permittee shall submit a CSO Post Construction Monitoring Plan that demonstrates CSTP 5 & 6 are in compliance with water quality standards. The plan shall be developed in accordance with EPA's "CSO Post Construction Compliance Monitoring Guidance" from May 2012. See section 8.5 herein for more information.

2.1.2 LTCP Updates

By March 31st and September 30th of each year the facility shall submit a semi annual report containing information demonstrating compliance with the LTCP per section 8.6 herein. To keep the LTCP document current, a revised and updated LTCP shall be submitted with these reports when changes to the plan are made. The semi annual report shall include the following:

- The status of implementation of the plan, related plans, and programs, including the status of meeting plan/program actions, and shall provide corrective actions for identified deficiencies.
- A summary of the number of plan/program related actions and activities conducted during the period.
- The operator in charge and a duly authorized representative shall certify their review of the report submittal.

2.2 Inventory of Overflow Locations

2.2.1 Inventory of Overflow Locations within the Combined Sewer Districts

Name	Location	Notes
CSO#5	61 st Street and Birch Avenue	Overflow located in the screw pump structure.
CSO#6	Texas Avenue	Overflow located in the screw pump structure.
CSO#2	51 East 1 st Street	Overflow located on North berm.

3 Tier 2 Industrial Stormwater Requirements

3.1 Stormwater Source Areas

- The Main Plant campus (including CSTP 2), limited to property owned or managed by the City
- CSTP 5 and CSTP 6, limited to property owned or managed by the City

3.2 Stormwater Pollution Prevention Plan (SWPPP)

The permittee shall implement a Stormwater Pollution Prevention Plan (SWPPP) for the facility. The SWPPP shall be submitted as specified in the Schedules of Compliance Section 8.1 found herein.

3.2.1 Purpose of SWPPP

The SWPPP prepared by the permittee has: 1) identified the sources of stormwater and non-stormwater contamination to the stormwater drainage system; 2) identified and prescribed appropriate "source area control" best management practices (BMP) to reduce pollutants in contaminated stormwater prior to discharge and for each BMP describe the maintenance and servicing necessary to ensure that the BMP performs as intended; 3) prescribed actions needed either to bring non-stormwater discharges under a WPDES permit or to remove these discharges from the storm drainage system; 4) prescribed an implementation schedule to ensure that the stormwater management actions contained in the SWPPP are carried out and evaluated on a regular basis.

3.2.2 Required SWPPP Content

The SWPPP shall conform to the requirements specified in s. NR 216.27(3), Wis. Adm. Code.

3.2.3 Incorporation of Other Plans by Reference

When plans are developed or activities are conducted in accordance with other federal, state, or local regulatory approvals that meet the requirements of ch. NR 216, Wis. Adm. Code, these plans may be incorporated into the SWPPP by reference to avoid unnecessary duplication of regulatory requirements.

3.2.4 SWPPP Retention

The SWPPP shall be kept at the facility and made available to the Department upon request. If stormwater discharges are made to a municipal system that is subject to a WPDES permit, the SWPPP shall also be made available to that municipality upon request

3.2.4.1 SWPPP Amendments

The permittee shall amend the SWPPP if any of the following circumstances occur:

- When expansion, production increases, process modifications, changes in material handling or storage, or other activities are planned which will result in significant increases in the exposure of pollutants to storm water discharged either to waters of the state or to storm water treatment devices. The amendment shall contain a description of the new activities that contribute to the increased pollutant loading, planned source control activities that will be used to control pollutant loads, an estimate of the new or increased discharge of pollutants following treatment, and when appropriate, a description of the effect of the new or increased discharge on existing storm water treatment facilities.
- The comprehensive annual facility site compliance inspection, quarterly visual inspection of storm water quality, or other means reveals that the provisions of the SWPPP are ineffective in controlling storm water pollutants discharged to waters of the state.
- Upon written notice that the Department finds the SWPPP to be ineffective in achieving the conditions of this permit.

3.3 Monitoring Requirements

3.3.1 Purpose

Monitoring includes site inspections and non-stormwater discharge assessments. The purpose of monitoring is to evaluate storm water outfalls for the presence of non-storm water discharges; and evaluate the effectiveness of the permittee's pollution prevention activities in controlling contamination of storm water discharges.

3.4 Evaluation of Non-Storm Water Discharges

The permittee shall evaluate storm water outfalls for non-storm water contributions to the storm drainage system for the duration of the permit. Any monitoring shall be representative of non-stormwater discharges from the facility.

- Evaluations shall take place during dry periods, and may include either end of pipe screening or detailed testing of the storm sewer collection system.
- Either of the following monitoring procedures is acceptable
 - A detailed testing of the storm sewer collection system may be performed. Acceptable testing methods include dye testing, smoke testing, or video camera observation.
 - End of pipe screening shall consist of visual observations made at least twice per year at each outfall of the storm sewer collection system. Instances of dry weather flow, stains, sludge, color, odor, or other indications of a non-storm water discharge shall be recorded.
- Results of the non-storm water evaluations shall include: date of testing, test method, outfall location, testing results, and potential significant sources of non-storm water discovered through testing. The permittee shall maintain completed non-stormwater discharge evaluation reports on-site with the SWPPP and make them available to the Department upon request.
- If the permittee identifies an unauthorized discharge of pollutants, the permittee shall immediately take action to cease the discharge and shall contact the department to determine if WPDES permit authorization is required.

3.4.1.1 Evaluation of Storm Water Discharges

The permittee shall continue to evaluate storm water outfalls for storm water contributions to the storm drainage system. Any monitoring shall be representative of the storm water discharges from the facility.

3.4.1.2 Annual Facility Site Compliance Inspection

The permittee shall perform and document the results of the Annual Facility Site Compliance Inspections (AFSCI). The inspections shall be adequate to verify that the site drainage conditions and potential pollution sources identified in the SWPPP remain accurate, and that the best management practices prescribed in the SWPPP are being implemented, properly operated and adequately maintained. Information reported shall include: the inspection date, inspection personnel, scope of the inspection, major observations, and revisions needed in the SWPPP. The permittee shall maintain completed AFSCI inspection reports on-site with the SWPPP and make them available to the Department upon request.

3.4.1.3 Quarterly Visual Inspections

The permittee shall perform and document quarterly visual inspections of storm water discharge quality at each storm water discharge outfall. Inspections shall be conducted within the first 30 minutes of discharge or as soon thereafter as practical, but not exceeding 60 minutes. The inspections shall include any observations of color, odor, turbidity, floating solids, foam, oil sheen, or other obvious indicators of storm water pollution. Information reported shall include the inspection date, inspection personnel, visual quality of the storm water discharge, and probable sources of any observed storm water contamination. The permittee shall maintain copies of completed quarterly inspection reports on-site with the SWPPP and make them available to the Department upon request.

3.5 Stormwater Records Retention

Pursuant to ss. NR 216.29(7), Wis. Adm. Code, all stormwater records (e.g. inspection reports, sampling results, etc.) shall be retained for 5 years beyond the date that record was made and shall be made available to the department upon request.

4 Capacity, Management, Operation, and Maintenance (CMOM) Plan

4.1 General Standards

- The sewage collection system is properly managed, operated, and maintained at all times.
- The sewage collection system provides adequate capacity to convey all peak design flows.
- All feasible steps are taken to eliminate excessive infiltration and inflow as defined in NR 110.03(14) Wis Adm Code, cease sanitary sewer overflows and sewage treatment facility overflows and mitigate the impact of such overflows on waters of the State, the environment and public health.
- A process is in place to notify the public and other affected parties of any incidents of overflows from the sewerage system.
- Annual reports are submitted in accordance with provisions of NR 208 Wis Adm Code. Develop a written summary of the CMOM program and make it and the audit available to any member of the public upon request

4.2 CMOM Plan

A CMOM plan shall be submitted to the Department per the Schedule of Compliance Section 8.4 found herein. The plan will identify goals; organization; legal authority; operation and maintenance; design and performance standards and an overflow emergency response plan.

4.2.1 Goals

The permittee shall develop a capacity, management operation and maintenance (CMOM) plan which complies with the general standards identified in Section 4.1 found herein.

4.2.2 Organization

Identify persons responsible for implementing the CMOM Plan including administration, management, and maintenance personnel or positions, lines of authority, internal and external communications responsibilities and the person or persons who shall report all overflow events to the Department and to the public.

4.2.3 Legal Authority

Legally binding authorities, such as sewer use ordinances and service agreements, shall assure the following:

- Infiltration and inflow sources to building sewers, private interceptor sewers and other sources of private property are subject to oversight and control;
- New sewers and connections, including buildings sewers and private interceptor sewers are designed, constructed, installed, tested and inspected to meet all applicable current engineering and construction standards;
- New and rehabilitated sewers, lift stations and other collection system components or appurtenances are installed, tested and inspected to meet all applicable current standards;

- If applicable, sewage flows from municipal satellite or other privately owned sewage collection systems and are, as necessary, monitored and controlled; and
- Solid or viscous pollutants, such as fats, oils and greases, are not discharged into the sewage collection system in amounts which will cause or contribute to obstruction to the flow of the sewer.

4.2.4 Operation and Maintenance

Operation and maintenance equipment, activities and protocols, including identification of personnel or positions responsible, shall, as appropriate and applicable to the system include the following:

- Adequate maintenance of facilities and equipment including equipment and replacement parts inventories, especially critical replacement parts
- A map of the sewage collection system
- A management system for the collection and use of information to identify and prioritize appropriate operation and maintenance activities, including identification of structural deficiencies and implementation activities to address such deficiencies.
- A description of routine preventive operation and maintenance activities such as inspections, televising, cleaning, flow monitoring, root removal, and rehabilitation.
- A program to periodically assess the capacity of the sewage collection system and treatment facilities
- The identification of activities to prevent and correct frequent and recurring building backups caused by sewage collection system hydraulic constraints.
- Appropriate training on a regular basis

4.2.5 Design and Performance Standards

The following standards and procedures shall be established or adopted to maintain control over the design, construction and inspection of the sewage collection system, including building sewers and private interceptor sewers on private property;

- Standards and specifications for the design and installation of new sewers, lift stations and other appurtenances; and rehabilitation and repair projects.
- Procedures and requirements for inspecting and testing the installation of new sewers, pumps, and other appurtenances and repair projects.

4.2.6 Overflow Emergency Response Plan

An overflow emergency response plan shall identify measures to protect public health and the environment from sanitary sewer overflows and sewage treatment facility overflows and building backups caused by excessive flow or other hydraulic constraints to the sewage collection system and shall include protocols to implement the following:

- Ensure that responsible personnel are made aware of all overflows;
- Ensure that there is a prompt and appropriate response to and investigation of all overflows to protect, to the extent possible, water quality, the environment, and public health;
- Ensure appropriate reporting and notification. The overflow emergency response plan shall identify the public health and other officials who will receive notification and identify the protocols and procedures for notification of the public who may be effected by an overflow. Whenever there is a significant or potentially significant risk to the public health, public notification shall include personal contacts with persons who may be at risk from the affects of the overflow; and

- Ensure that appropriate personnel are aware of and follow the plan and are appropriately trained;

4.3 CMOM Plan Documentation and Audits

By March 31st and September 30th of each year the permittee shall submit an audit report per section 8.6 herein. The permittee shall also share the audit reports with various interested parties on the implementation and performance of its CMOM plan. The communication system should allow interested parties to provide input to the permittee's CMOM plan. The audit report shall include the following:

- Develop and maintain written documentation of the CMOM Plan and components.
- To keep the CMOM plan current, revisions shall be identified within the audit report when changes to the plan are made.
- The status of CMOM Plan implementation, related plans and programs, including the status of meeting plan/program actions, and shall identify deficiencies and provide corrective actions to be performed in compliance with the provisions of this section.
- The operator in charge and a duly authorized representative shall certify their review of the audit report.

5 In-Plant Requirements

5.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
101	This is the field blank sample and it shall be collected using standard sample handling procedures

5.2 Monitoring Requirements and Limitations

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

5.2.1 Sampling Point 101 - Mercury field blank

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Mercury, Total Recoverable		ng/L	Quarterly	Blank	See the "Mercury Monitoring" footnote for more information.

5.2.1.1 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of EPA 821-R-01-023 Guidance for Implementation and Use of EPA Method 1631 for the Determination of Low-Level Mercury. 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 Surface Water Requirements

6.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
001	MAIN PLANT: Representative samples shall be collected immediately following disinfection. The permittee is authorized to discharge to Superior Bay within the Lake Superior drainage basin. The average annual design flow for the facility is 7.6 MGD.
002	COMBINED SEWER TREATMENT PLANT 2: Representative samples shall be collected after chlorination and dechlorination on the discharge line leading to the slip. The permittee is authorized to discharge to Superior Bay within the Lake Superior drainage basin.
003	COMBINED SEWER TREATMENT PLANT 5: Representative samples shall be collected in the effluent discharge pipe prior to discharge. The permittee is authorized to discharge to the Nemadji River within the Lake Superior drainage basin.
004	COMBINED SEWER TREATMENT PLANT 6: Representative samples shall be collected in the effluent discharge pipe prior to discharge. The permittee is authorized to discharge to St. Louis Bay within the Lake Superior drainage basin.

6.2 Monitoring Requirements and Effluent Limitations

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

6.2.1 Sampling Point (Outfall) 001 - EFFLUENT MAIN PLANT

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
CBOD ₅	Monthly Avg	25 mg/L	Daily	24-Hr Comp	
CBOD ₅	Weekly Avg	40 mg/L	Daily	24-Hr Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	Daily	24-Hr Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	Daily	24-Hr Comp	
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Phosphorus, Total	Monthly Avg	1.0 mg/L	Daily	24-Hr Comp	See the "Phosphorus" footnotes for more information. This interim limit expires March 31, 2018.

Monitoring Requirements and Effluent Limitations					
Phosphorus, Total	Monthly Avg	0.7 mg/L	Daily	24-Hr Comp	See the "Phosphorus" footnotes for more information. This limit becomes effective March 31, 2018.
Temperature Maximum		deg F	Continuous	Measure	
Nitrogen, Ammonia (NH ₃ -N) Total	Daily Max - Variable	mg/L	Per Agreement	24-Hr Comp	See the "Ammonia Monitoring" footnote for more information.
Nitrogen, Ammonia Variable Limit		mg/L	Per Agreement	24-Hr Comp	See the "Ammonia Monitoring" footnote for more information.
Fecal Coliform	Geometric Mean	400 #/100 ml	2/Week	Grab	Disinfection is required year round.
E. coli		#/100 ml	2/Week	Grab	Disinfection is required year round.
Chlorine, Total Residual	Daily Max	38 µg/L	Daily	Grab	See the "Chlorine Monitoring" footnote for more information.
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	
Cyanide, Total		µg/L	Monthly	Grab	
Hardness, Total as CaCO ₃		mg/L	Monthly	24-Hr Comp	
Mercury, Total Recoverable	Daily Max	13 ng/L	Quarterly	Grab	See the "Mercury Monitoring" footnote and "Mercury Pollutant Minimization Program" Schedule for more information.
Acute WET		TU _a	See Listed Qtr(s)	24-Hr Comp	See the "Whole Effluent Toxicity (WET) Testing" footnote for more information.
Chronic WET		rTU _c	See Listed Qtr(s)	24-Hr Comp	See the "Whole Effluent Toxicity (WET) Testing" footnote for more information.

6.2.1.1 Ammonia Monitoring

Sample results for pH shall be used to calculate the Nitrogen Ammonia Variable Limit (See the Variable Limits Table). The daily maximum ammonia limit is effective during the permit term. If the pH is below 7.2 su during November through April (winter) or below 7.7 su during May through October (summer) the limit does not apply because the calculated limit values exceed the winter 40 mg/L and the summer 20 mg/L threshold values applicable for municipal treatment facilities (NR 106.33(2) Wis. Adm. Code). Total ammonia (NH₃-N) sampling shall occur on days when the pH levels are such that the daily maximum ammonia limit is in effect, at least one sample is required each month. Report the applicable variable limit on the electronic Discharge Monitoring Report (eDMR) in the Ammonia Variable Limit column. The variable limit should be left blank if there is no limit to report.

Variable (Daily Maximum) Effluent Ammonia Limits for SSDS at Outfall 001					
Maximum Effluent pH	Daily Max. Limit	Maximum Effluent pH	Daily Max. Limit	Maximum Effluent pH	Daily Max. Limit
< 7.2*	No Limit	7.8	16 mg/L	8.5	4.3 mg/L
7.2	39 mg/L	7.9	14 mg/L	8.6	3.5 mg/L
7.3	35 mg/L	8.0	11 mg/L	8.7	2.9 mg/L
7.4	31 mg/L	8.1	9.3 mg/L	8.8	2.5 mg/L
7.5	27 mg/L	8.2	7.6 mg/L	8.9	2.1 mg/L
7.6	23 mg/L	8.3	6.3 mg/L	9.0	1.8 mg/L
7.7*	19 mg/L	8.4	5.2 mg/L		

*Daily maximum ammonia limits are not required when calculated limit values exceed 20 mg/L in summer (May - Oct., w/pH < 7.7) or 40 mg/L during winter (Nov. - April, w/pH < 7.2).

6.2.1.2 Total Metals Analysis

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

6.2.1.3 Sample Analysis

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

6.2.1.4 Chlorine Monitoring

The limits and monitoring requirements for Total Residual Chlorine will be suspended once the Ultraviolet disinfection unit is fully functional. The permittee shall notify the Lake Superior basin wastewater engineer when chlorine is no longer in use. This action shall take place without public notice thereof.

6.2.1.5 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of EPA 821-R-01-023 Guidance for Implementation and Use of EPA Method 1631 for the Determination of Low-Level Mercury. 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.

6.2.1.6 Phosphorus Water Quality Based Effluent Limitations

See the Schedules section of this permit for more information on phosphorus effluent limitations.

The interim limit is 1 mg/L. The final water quality based effluent limit for phosphorus is **(0.7 mg/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.

*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.

6.2.1.7 Alternative Approaches to Phosphorus WQBEL Compliance

Rather than upgrading its wastewater treatment facility to comply with WQBELs for total phosphorus, the permittee may use Water Quality Trading or the Watershed Adaptive Management Option, to achieve compliance under ch. NR 217, Wis. Adm. Code, provided that the permit is modified, revoked and reissued, or reissued to incorporate any such alternative approach. A permittee may also implement an upgrade to its wastewater treatment facility in combination with Water Quality Trading or the Watershed Adaptive Management Option to achieve compliance, provided that the permit is modified, revoked and reissued, or reissued to incorporate any such alternative approach. If the Final Compliance Alternatives Plan concludes that a variance will be pursued, the Plan shall provide information regarding the basis for the variance.

Submittal of Permit Application for Next Reissuance and Adaptive Management or Pollutant Trading Plan or Variance Application: The permittee shall submit the permit application for the next reissuance at least 6 months prior to expiration of this permit. If the permittee intends to pursue adaptive management to achieve compliance with the phosphorus water quality based effluent limitation, the permittee shall submit with the application for the next reissuance: a completed Watershed Adaptive Management Request Form 3200-139, the completed Adaptive Management Plan and final plans for any system upgrades necessary to meet interim limits pursuant to s. NR 217.18. If the permittee intends to pursue pollutant trading to achieve compliance, the permittee shall submit an application for water quality trading with the application for the next reissuance. If system upgrades will be used in combination with pollutant trading to achieve compliance with the final water quality-based limit, the reissued permit will specify a schedule for the necessary upgrades. If the permittee intends to seek a variance, the permittee shall submit an application for a variance with the application for the next reissuance.

6.2.1.8 Total Phosphorus Limits and Potential Modeling Results

This facility is within the limits of the St. Louis River Lake Superior Bay TMDL boundaries. Depending on the final report, this permit may be modified or reissued in the future to include a more restrictive limit or mass limits for phosphorus.

6.2.1.9 Whole Effluent Toxicity (WET) Testing

Primary Control Water: A grab sample from Superior Bay

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

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

- 2013 – 3rd quarter (July – September)
- 2014 – 2nd quarter (April – June)
- 2015 – 1st quarter (January – March)
- 2016 – 4th quarter (October – December)
- 2017 – 3rd quarter (July – September)

Reporting: The permittee shall report test results on the Discharge Monitoring Report form, and also complete the "Whole Effluent Toxicity Test Report Form" (Section 6, "State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition"), for each test. The original, complete, signed version of the Whole Effluent Toxicity Test Report Form shall be sent to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921, within 45 days of test completion. The 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 90 day reporting period shall begin the day after the test which showed a positive result. The retests shall be completed using the same species and test methods specified for the original test (see the Standard Requirements section herein).

6.2.2 Sampling Point (Outfall) 002 - EFFLUENT CSTP 2

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 Comp	
BOD ₅ , Total	Weekly Avg	45 mg/L	Daily	24-Hr Comp	
Suspended Solids, Total	Monthly Avg	60 mg/L	Daily	24-Hr Comp	
Phosphorus, Total	Monthly Avg	1.0 mg/L	Daily	24-Hr Comp	

Monitoring Requirements and Effluent Limitations					
Fecal Coliform	Geometric Mean	400 #/100 ml	Daily	Grab	Disinfection is required year round.
E. coli		#/100 ml	Daily	Grab	Disinfection is required year round.
Chlorine, Total Residual	Daily Max	38 µg/L	Daily	Grab	
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Nitrogen, Ammonia Variable Limit		mg/L	Monthly	24-Hr Comp	See the "Ammonia Monitoring" footnote for more information
Nitrogen, Ammonia (NH ₃ -N) Total	Daily Max - Variable	mg/L	Monthly	24-Hr Comp	
Temperature Maximum		deg F	Weekly	Continuous	
Acute WET		TU _a	Annual	24-Hr Comp	See the "Whole Effluent Toxicity (WET) Testing" footnote for more information.

6.2.2.1 Sampling Requirements

Sampling is required only during discharge events. A minimum of one 24-hour sample shall be taken for each 24 hours of continuous discharge. For discharges lasting less than 24 hours, one composite sample must be taken during the hours of discharge.

6.2.2.2 Ammonia Monitoring

Sample results for pH shall be used to calculate the Nitrogen Ammonia Variable limit (see the Variable Limits table). If the pH is below 7.2 su during November through April (winter) or below 7.7 su during May through October (summer) the limit does not apply because the calculated limit values exceed the winter 40 mg/L and the summer 20 mg/L threshold values applicable for municipal treatment facilities (NR 106.33(2) Wis. Adm. Code). When possible ammonia (NH₃-N) total sampling shall occur on days when the pH levels are such that the daily maximum ammonia limit is in effect. Report the applicable variable limit on the electronic Discharge Monitoring Report (eDMR) in the Ammonia Variable Limit column. The variable limit should be left blank if there is no limit to report.

Variable (Daily Maximum) Effluent Ammonia Limits for SSDS at Outfall 002					
Maximum Effluent pH	Daily Max. Limit	Maximum Effluent pH	Daily Max. Limit	Maximum Effluent pH	Daily Max. Limit
< 7.2*	No Limit	7.8	16 mg/L	8.5	4.3 mg/L
7.2	39 mg/L	7.9	14 mg/L	8.6	3.5 mg/L
7.3	35 mg/L	8.0	11 mg/L	8.7	2.9 mg/L
7.4	31 mg/L	8.1	9.3 mg/L	8.8	2.5 mg/L
7.5	27 mg/L	8.2	7.6 mg/L	8.9	2.1 mg/L
7.6	23 mg/L	8.3	6.3 mg/L	9.0	1.8 mg/L

7.7*	19 mg/L	8.4	5.2 mg/L		
*Daily maximum ammonia limits are not required when calculated limit values exceed 20 mg/L in summer (May - Oct., w/pH < 7.7) or 40 mg/L during winter (Nov. - April, w/pH < 7.2).					

6.2.2.3 Whole Effluent Toxicity (WET) Testing

Primary Control Water: a grab sample from Superior Bay

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.

WET Testing Frequency: Three acute WET tests are required during the permit term. The WET testing protocol titled "Acute Whole Effluent Toxicity Testing at CSTP 2, CSTP 5, and CSTP 6" developed as a requirement in WPDES Permit No. WI-0025593-06 shall be followed. Any additional WET testing performed by the facility shall be reported to the Department. Any year that a WET test is not performed shall also be indicated in the General Remarks section of the electronic Discharge Monitoring Report – short form and submitted.

Reporting: The permittee shall report test results on the Discharge Monitoring Report form, and also complete the "Whole Effluent Toxicity Test Report Form" (Section 6, "State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition"), for each test. The original, complete, signed version of the Whole Effluent Toxicity Test Report Form shall be sent to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921, within 45 days of test completion. The 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 LC₅₀ ≥ 100, then TU_a = 1.0. If LC₅₀ is < 100, then TU_a = 100 ÷ LC₅₀.

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

6.2.3 Sampling Point (Outfall) 003 - EFFLUENT CSTP 5 and 004- EFFLUENT CSTP 6

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
BOD ₅ , Total	Monthly Avg	30 mg/L	Daily	24-Hr Comp	
BOD ₅ , Total	Weekly Avg	45 mg/L	Daily	24-Hr Comp	
Suspended Solids, Total	Weekly Avg	65 mg/L	Daily	24-Hr Comp	
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Phosphorus, Total	Monthly Avg	1.0 mg/L	Daily	24-Hr Comp	
Fecal Coliform		#/100 ml	Daily	Grab	Fecal coliform monitoring is required May through September annually.
E. coli		#/100 ml	Daily	Grab	E. coli monitoring is required May through

Monitoring Requirements and Effluent Limitations					
					September annually.
Nitrogen, Ammonia (NH ₃ -N) Total		mg/L	Monthly	24-Hr Comp	
Acute WET		TU _a	Annual	24-Hr Comp	See the "Whole Effluent Toxicity (WET) Testing" footnote for more information.

6.2.3.1 Sampling Requirements

Sampling is required only during discharge events. A minimum of one 24-hour sample shall be taken for each 24 hours of continuous discharge. For discharges lasting less than 24 hours, one composite sample must be taken during the hours of discharge.

6.2.3.2 Whole Effluent Toxicity (WET) Testing

Primary Control Water: for CSTEP 5 a grab sample from the Nemadji River and for CSTEP 6 a grab sample from the St. Louis River

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.

WET Testing Frequency: Three acute WET tests are required for each plant during the permit term. The WET testing protocol titled "Acute Whole Effluent Toxicity Testing at CSTEP 2, CSTEP 5, and CSTEP 6" developed as a requirement in WPDES Permit No. WI-0025593-06 shall be followed. Any additional WET testing performed by the facility shall be reported to the Department. Any year that a WET test is not performed shall also be indicated in the General Remarks section of the electronic Discharge Monitoring Report – short form and submitted.

Reporting: The permittee shall report test results on the Discharge Monitoring Report form, and also complete the "Whole Effluent Toxicity Test Report Form" (Section 6, "State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition"), for each test. The original, complete, signed version of the Whole Effluent Toxicity Test Report Form shall be sent to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921, within 45 days of test completion. The 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 $TU_a = 100 \div LC_{50}$.

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

7 Land Application Requirements

7.1 Sampling Point(s)

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

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
006	This sample point is for belt-pressed sludge that is landfilled. The amount of biosolids taken to the landfill must be reported annually on form 3400-52. This report is due annually on January 31.

7.2 Monitoring Requirements and Limitations

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

7.2.1 Sampling Point (Outfall) 006 - Belt-Pressed Cake Sludge

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
PCB Total Dry Wt		mg/kg	Once	Composite	

7.2.1.1 Sludge Analysis for PCBs

The permittee shall analyze the sludge for Total PCBs one time during **the 2015 calendar year**. The results shall be reported as "PCB Total Dry Wt". Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code and the conditions specified in Standard Requirements of this permit. PCB results shall be submitted by January 31, following the specified year of analysis.

8 Schedules

8.1 Stormwater Pollution Prevention Plan (SWPPP)

The SWPPP plan shall include the Main Plant campus (including CSTP 2, CSTP 5 and CSTP 6) limited to property owned or managed by the City.

Required Action	Date Due
<p>Submit a SWPPP: The permittee shall submit a SWPPP to the Department. The SWPPP shall conform to the requirements specified in NR 216.27(3), Wis. Adm. Code which includes:</p> <ol style="list-style-type: none"> 1. Identification of the individual responsible for the SWPPP 2. Facility site description and drainage base map 3. Summary of existing sampling data or observations 4. Potential sources of storm water contamination 5. Status of non-storm water discharges to the storm sewer 6. Source area control best management practices 7. Compliance with runoff management performance standards 8. Residual pollutants 9. Stormwater treatment best management practices 10. Facility monitoring plan 11. SWPPP implementation schedule 12. Certification and signature 	04/01/2014

8.2 Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus

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.

Required Action	Date Due
<p>Operational Evaluation Report: 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 treatment plant during the period prior to complying with final phosphorus WQBELs and, where possible, enable compliance with final phosphorus WQBELs by April 1, 2016. The report shall provide a plan and schedule for implementation of the measures, improvements, and modifications as soon as possible, but not later than April 1, 2016 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</p>	04/01/2014

<p>April 1, 2016 and is not required to comply with the milestones identified below except for the Asset Management Plan due April 1, 2016.</p>	
<p>Initiate 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 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 March 31, 2018.</p>	04/01/2015
<p>Final Compliance Alternative Plan: The permittee shall submit a final compliance alternatives plan to the Department.</p> <p>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 treatment plant upgrades, and a facility plan if required pursuant to ch. NR 110, Wis. Adm. Code.</p> <p>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.</p> <p>If the plan concludes water quality trading will be used, the submittal shall identify potential trading partners.</p> <p>Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	04/01/2016
<p>Asset Management Plan: Items such as the condition of existing physical structures and mechanicals should be evaluated within the context of an "Asset Management Plan". The Asset Management Plan shall identify the condition of existing mechanical assets, evaluate operational and maintenance procedures, repair and replacement schedules, and report deficiencies and recommend corrective actions. The plan shall also provide an evaluation of unit process design capacities, suggest recommended changes, and implementation schedules as appropriate.</p> <p>The plan will be used to establish and define items necessary for further evaluation to complete a comprehensive facility plan to address a possible major system upgrade.</p>	04/01/2016
<p>Final Plans and Specifications: Unless the permit has been modified, revoked and reissued, or reissued to include Adaptive Management or Water Quality Trading measures or to include a revised schedule based on factors in s. NR 217.17, Wis. Adm. Code, 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 are subject to s. 283.53(2), Stats.)</p> <p>Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	09/30/2016
<p>Treatment Plant Upgrade to Meet WQBELs: 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</p>	04/01/2017

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.	
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	03/31/2018
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.	03/31/2018

8.3 Mercury Pollutant Minimization Program

The permittee shall continue to implement a pollutant minimization program as defined in s. NR 106.145(2), Wis. Adm. Code.

Required Action	Date Due
Submit Annual Status Report: 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.	01/31/2014
Submit Annual Status Report: 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.	01/31/2015
Submit Annual Status Report: 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.	01/31/2016
Submit Annual Status Report: 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.	01/31/2017
Submit Annual Status Report: 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.	01/31/2018

8.4 Capacity, Management, Operation, and Maintenance (CMOM)

Required Action	Date Due
Draft CMOM: Submit a draft CMOM as described in Section 4 found herein.	09/30/2013
Final CMOM: Submit a final CMOM. Begin Semi Annual reports March 31, 2014.	06/30/2014

8.5 LTCP Post Construction Monitoring Plan

Required Action	Date Due
Progress Report: Submit a progress report.	04/01/2014
Final Report: Submit a final plan following the EPA guidance document "Post Construction Compliance Monitoring Guidance" dated May 2012.	04/01/2015

8.6 Semi Annual Reports

The semi annual reports include updates to the Capacity, Management, Operations, and Maintenance Plan (CMOM) and Combined Sewer Overflow Long Term Control Plan (CSO LTCP)

Required Action	Date Due
Submit Report #1: Submit semi annual reports.	09/30/2013
Submit Report #2: Submit semi annual reports.	03/31/2014
Submit Report #3: Submit semi annual reports.	09/30/2014
Submit Report #4: Submit semi annual reports.	03/31/2015
Submit Report #5: Submit semi annual reports.	09/30/2015
Submit Report #6: Submit semi annual reports.	03/31/2016
Submit Report #7: Submit semi annual reports.	09/30/2016
Submit Report #8: Submit semi annual reports.	03/31/2017
Submit Report #9: Submit semi annual reports.	09/30/2017
Submit Report #10: Submit semi annual reports.	03/31/2018

9 Standard Requirements

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

9.1 Reporting and Monitoring Requirements

9.1.1 Monitoring Results

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

Monitoring results shall be reported on an electronic discharge monitoring report (eDMR). The eDMR shall be certified electronically by a principal executive officer, a ranking elected official or other duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

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

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

9.1.2 Sampling and Testing Procedures

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

9.1.3 Pretreatment Sampling Requirements

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

9.1.4 Recording of Results

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

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

- the analytical techniques or methods used; and
- the results of the analysis.

9.1.5 Reporting of Monitoring Results

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

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

9.1.6 Compliance Maintenance Annual Reports

Compliance Maintenance Annual Reports (CMAR) shall be completed using information obtained over each calendar year regarding the wastewater conveyance and treatment system. The CMAR shall be submitted 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.

9.1.7 Records Retention

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

9.1.8 Other Information

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

9.2 System Operating Requirements

9.2.1 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**

9.2.2 Flow Meters

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

9.2.3 Raw Grit and Screenings

All raw grit and screenings shall be disposed of at a properly licensed solid waste facility or picked up by a licensed waste hauler. If the facility or hauler are located in Wisconsin, then they shall be licensed under chs. NR 500-536, Wis. Adm. Code.

9.2.4 Sludge Management

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

9.2.5 Prohibited Wastes

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

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

9.2.6 Bypassing

Except as provided in section 6.2.7, 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.

9.2.7 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.

9.2.8 Scheduled Bypassing

Any construction or normal maintenance which results in a bypass of wastewater is prohibited unless authorized by the Department in writing. If the Department determines that there is significant public interest in the proposed action, the Department may schedule a public hearing or notice a proposal to approve the bypass. Each request shall specify the following minimum information:

- Proposed date of bypass.
- Estimated duration of the bypass.
- Alternatives to bypassing.
- Measures to mitigate environmental harm caused by the bypass.
- Estimated volume of the bypass.

9.2.9 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.

9.3 Surface Water Requirements

9.3.1 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.

9.3.2 Appropriate Formulas for Effluent Calculations

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

Weekly/Monthly/Six-Month/Annual Average Concentration = the sum of all daily results for that week/month/six-month/year, divided by the number of results during that time period.

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

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

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

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

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

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

9.3.3 Effluent Temperature Requirements

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

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

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

9.3.4 Visible Foam or Floating Solids

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

9.3.5 Percent Removal

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

9.3.6 Fecal Coliforms

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

9.3.7 Year Round Disinfection

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

9.3.8 Whole Effluent Toxicity (WET) Monitoring Requirements

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

9.3.9 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:
 - (a) Evaluate the performance of the treatment system to identify deficiencies contributing to effluent toxicity (e.g., operational problems, chemical additives, incomplete treatment)
 - (b) Identify the compound(s) causing toxicity
 - (c) Trace the compound(s) causing toxicity to their sources (e.g., industrial, commercial, domestic)
 - (d) Evaluate, select, and implement methods or technologies to control effluent toxicity (e.g., in-plant or pretreatment controls, source reduction or removal)
- Where corrective actions including a TRE have not been completed, an expeditious schedule under which corrective actions will be implemented;
- If no actions have been taken, the reason for not taking action.

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

9.4 Pretreatment Program Requirements

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

9.4.1 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 March 31 of each year as part of the annual pretreatment program report required herein.

9.4.2 Regulation of Industrial Users

9.4.2.1 Limitations for Industrial Users:

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

9.4.2.2 Control Documents for Industrial Users (IUs)

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

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

9.4.2.3 Review of Industrial User Reports, Inspections and Compliance Monitoring

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

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.

9.4.2.4 Enforcement and Industrial User Compliance Evaluation & Violation Reports

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

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

9.4.2.5 Publication of Violations

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

9.4.2.6 Multijurisdictional Agreements

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

9.4.3 Annual Pretreatment Program Report

The permittee shall evaluate the pretreatment program, and submit the Pretreatment Program Report to the Department on forms provided or approved by the Department by March 31 annually, unless an alternate submittal date is approved. The report shall include a brief summary of the work performed during the preceding calendar year, including the numbers of discharge permits issued and in effect, pollution prevention activities, number of inspections and monitoring surveys conducted, budget and personnel assigned to the program, a general discussion of program progress in meeting the objectives of the permittee's pretreatment program together with summary comments and recommendations.

9.4.4 Pretreatment Program Modifications

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

9.4.5 Program Resources

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

9.5 Land Application Requirements

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

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

9.5.2 General Sludge Management Information

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

9.5.3 Sludge Samples

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

9.5.4 Land Application Characteristic Report

Each report shall consist of a Characteristic Report Form 3400-49 and Lab Report. The Characteristic Report Form 3400-49 shall be submitted electronically by January 31 following each year of analysis. Following submittal of the electronic Characteristic Report Form 3400-49, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete. The Lab Report must be sent directly to the facility's DNR sludge representative or basin engineer unless approval for not submitting the lab reports has been given.

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

All results shall be reported on a dry weight basis.

9.5.5 Calculation of Water Extractable Phosphorus

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

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

9.5.6 Monitoring and Calculating PCB Concentrations in Sludge

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

Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with 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

9.5.7 Annual Land Application Report

The Annual Land Application Report Form 3400-55 shall be submitted electronically by January 31 each year whether or not non-exceptional quality sludge is land applied. Non-exceptional quality sludge is defined in s. NR 204.07(4), Wis. Adm. Code. Following submittal of the electronic Annual Land Application Report Form 3400-55, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

9.5.8 Other Methods of Disposal or Distribution Report

The permittee shall submit electronically the Other Methods of Disposal or Distribution Report Form 3400-52 by January 31 each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied. Following submittal of the electronic Report Form 3400-52, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

9.5.9 Approval to Land Apply

Bulk non-exceptional quality sludge as defined in s. NR 204.07(4), Wis. Adm. Code, may not be applied to land without a written approval letter or Form 3400-122 from the Department unless the Permittee has obtained permission from the Department to self approve sites in accordance with s. NR 204.06 (6), Wis. Adm. Code. Analysis of sludge characteristics is required prior to land application. Application on frozen or snow covered ground is restricted to the extent specified in s. NR 204.07(3) (1), Wis. Adm. Code.

9.5.10 Soil Analysis Requirements

Each site requested for approval for land application must have the soil tested prior to use. Each approved site used for land application must subsequently be soil tested such that there is at least one valid soil test in the four years prior to land application. All soil sampling and submittal of information to the testing laboratory shall be done in

accordance with UW Extension Bulletin A-2100. The testing shall be done by the UW Soils Lab in Madison or Marshfield, WI or at a lab approved by UW. The test results including the crop recommendations shall be submitted to the DNR contact listed for this permit, as they are available. Application rates shall be determined based on the crop nitrogen recommendations and with consideration for other sources of nitrogen applied to the site.

9.5.11 Land Application Site Evaluation

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

9.5.12 Landfilling of Sludge

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

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

9.5.13 Sludge Landfilling Reports

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

10 Summary of Reports Due

FOR INFORMATIONAL PURPOSES ONLY

Description	Date	Page
Stormwater Pollution Prevention Plan (SWPPP) -Submit a SWPPP	April 1, 2014	19
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Operational Evaluation Report	April 1, 2014	19
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Initiate Study of Feasible Alternatives	April 1, 2015	20
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Final Compliance Alternative Plan	April 1, 2016	20
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Asset Management Plan	April 1, 2016	20
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Final Plans and Specifications	September 30, 2016	20
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Treatment Plant Upgrade to Meet WQBELs	April 1, 2017	21
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Complete Construction	March 31, 2018	21
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Achieve Compliance	March 31, 2018	21
Mercury Pollutant Minimization Program -Submit Annual Status Report	January 31, 2014	21
Mercury Pollutant Minimization Program -Submit Annual Status Report	January 31, 2015	21
Mercury Pollutant Minimization Program -Submit Annual Status Report	January 31, 2016	21
Mercury Pollutant Minimization Program -Submit Annual Status Report	January 31, 2017	21
Mercury Pollutant Minimization Program -Submit Annual Status Report	January 31, 2018	21
Capacity, Management, Operation, and Maintenance (CMOM) -Draft CMOM	September 30, 2013	21
Capacity, Management, Operation, and Maintenance (CMOM) -Final CMOM	June 30, 2014	21
LTCP Post Construction Monitoring Plan -Progress Report	April 1, 2014	21
LTCP Post Construction Monitoring Plan -Final Report	April 1, 2015	21
Semi Annual Reports -Submit Report #1	September 30, 2013	22
Semi Annual Reports -Submit Report #2	March 31, 2014	22
Semi Annual Reports -Submit Report #3	September 30, 2014	22
Semi Annual Reports -Submit Report #4	March 31, 2015	22
Semi Annual Reports -Submit Report #5	September 30, 2015	22

Semi Annual Reports -Submit Report #6	March 31, 2016	22
Semi Annual Reports -Submit Report #7	September 30, 2016	22
Semi Annual Reports -Submit Report #8	March 31, 2017	22
Semi Annual Reports -Submit Report #9	September 30, 2017	22
Semi Annual Reports -Submit Report #10	March 31, 2018	22
Compliance Maintenance Annual Reports (CMAR)	by June 30, each year	24
Industrial User Compliance Evaluation and Violation Reports	Semiannual	30
Pretreatment Program Report	Annually	31
General Sludge Management Form 3400-48	prior to any significant sludge management changes	32
Characteristic Report Form 3400-49 and Lab Report	by January 31 following each year of analysis	32
The Annual Land Application Report Form 3400-55	by January 31 each year whether or not non-exceptional quality sludge is land applied	33
electronically the Other Methods of Disposal or Distribution Report Form 3400-52	by January 31 each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied	33
Wastewater Discharge Monitoring Report	no later than the date indicated on the form	23

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:
Northern Region - Rhinelander, 107 Sutliff Ave., Rhinelander, WI 54501

CORRESPONDENCE/MEMORANDUM

DATE: March 19, 2012

FILE REF: 3200

TO: Sheri Snowbank, NOR - Spooner

FROM: Dan Peerenboom, NOR - Rhinelander

Dan Peerenboom 3/19/2012

SUBJECT: Effluent Limit Recommendations for Superior Sewage Disposal System

This memo is in response to your request for effluent limit recommendations prior to reissuing Wisconsin Pollution Discharge Elimination System (WPDES) Permit No. WI-0025593. The City of Superior is located in northwest Douglas County and operates the Superior Sewage Disposal System (SSDS).

This review included consideration of the current SSDS permit and evaluated the need for water quality based effluent limitations (WQBELs) using Chapters NR 102, 104, 105, 106, 207, and 217, Wisconsin Administrative Code. The limit recommendations are summarized in the tables below. More detailed descriptions of the limit calculations and recommendations are provided later within this memo.

The limit recommendations for Outfall 001 are for the regulation of effluent discharges to the Superior Bay portion of Lake Superior from the "Main Plant" wastewater treatment facility operated by the SSDS. Superior Bay has a cold water sport fish classification and Lake Superior is used for the City's public drinking water supply. The WQBEL review did not involve reconsideration of the existing limits for the "conventional pollutants" including; CBOD, TSS, pH and fecal coliform bacteria.

SSDS - Effluent Limit Recommendations for Outfall 001 (Main Plant)			
Parameter	Daily Maximum	Weekly Average	Monthly Average
Ammonia, as NH ₃ -N (limit varies w/eff. pH)	Variable Limit		
CBOD - Carbonaceous Bio. Oxygen Demand		40 mg/L	25 mg/L
Chlorine, Total Residual	38 ug/L		
Fecal Coliform Bacteria (geomean)			400 cts/100 mL (year round)
pH (std. units)	6.0 (minimum) 9.0 (maximum)		
Phosphorus, Total			1.0 mg/L
Suspended Solids, Total (TSS)		45 mg/L	30 mg/L
WET Testing	Annual WET Testing (Acute and Chronic)		

Effluent limit recommendations for three combined sewer treatment plant (CSTP) outfalls are also noted below. The CSTPs treat intermittent discharges of combined sewer overflows (CSOs) and are located on different water bodies but each is in close proximity to Lake Superior. Similar to past WQBEL reviews the CSTPs are considered as discharges to water bodies that support cold water sport fish communities and are used to provide public water supply.

CSTP-2 (Outfall 002) is an aerated lagoon facility located adjacent to the main plant and has intermittent discharges to Superior Bay. CSTP-5 (Outfall 003) and CSTP-6 (Outfall 004) are physical/chemical treatment facilities that discharge to the Nemadji River (CSTP-5) and the St. Louis Bay portion of the St. Louis River (CSTP-6) and no changes to the current limits are recommended. During the six year period from July 2005 to June 2011 discharge events occurred 5 to 10 times annually at each outfall with CSTP discharges occurring on about 20 calendar dates each year.

SSDS - Effluent Limit Recommendations for Outfalls 002, 003 and 004 (CSTPs 2,5 & 6)			
Parameter	Daily Maximum	Weekly Average	Monthly Average
Ammonia, as NH ₃ -N, at CSTP-2 only	Variable Limit		
Biochemical Oxygen Demand (BOD)		45 mg/L	30 mg/L
pH (std. units)	6.0 (minimum) 9.0 (maximum)		
Phosphorus, Total			1 mg/L
Suspended Solids, Total (TSS) at CSTP-2			60 mg/L
Suspended Solids, Total (TSS), CSTP-5 & CSTP-6		65 mg/L	
Chlorine, Total Residual, for CSTP-2 only	38 ug/L		
Fecal Coliform Bacteria (geomean), at CSTP-2 only			400 cts/100 mL (year round)
WET Testing	Three Acute WET Tests During Permit Term		

Water Quality Based Effluent Limit Recommendations & Discussion

Water Quality Based Effluent Limitations (WQBELs). The design flow for the SSDS facility is more than 1 MGD so comprehensive effluent monitoring for toxic substances is required and the reported data were considered in the WQBEL evaluation. The Water Quality Based Effluent Limits Calculations Summary – Outfall 001 notes 16 toxic substances were detected in discharges from the main plant.

The summary also lists the WQBELs for each substance based on the most stringent applicable water quality criteria (WQC) and includes a recommendation for whether or not limits are necessary. The total residual chlorine limit may be dropped if chlorine use for disinfection is discontinued.

Water Quality Based Effluent Limits Calculations Summary for SSDS Outfall 001

Substance Detected	Criteria	Most Stringent Limit	Effluent Concentration	Limit Recommendation
Arsenic	HCC	2.2 ug/L (Monthly Ave.)	0.61 ug/L 30-d p99 = 0.72 ug/L	No Limit
Antimony	HTC	62 ug/L (Monthly Ave.)	0.5 ug/L	No Limit
Cadmium	ATC	17 ug/L (Daily Max.)	0.09 ug/L	No Limit
Chloride	ATC	1,500 ug/L (Daily Max.)	165 mg/L	No Limit
Chlorine (limit is also required at CSTP-2)	ATC	38 ug/L (Daily Max.)	Not detect in >99% of 4,515 samples	Retain Current Limit
Chloroform	HCC	580 ug/L (Monthly Ave.)	1.5 ug/L	No Limit
Chromium	CTC	790 ug/L (Weekly Ave.)	1.5 ug/L	No Limit
Copper	ATC	53 ug/L (Daily Max.)	5.6 ug/L	No Limit
Cyanide	ATC	45 ug/L (Daily Max.)	4.4 ug/L	No Limit
Dichlorobenzene	HCC	132 ug/L (Monthly Ave.)	0.4 ug/L	No Limit
Lead	HTC	110 ug/L (Monthly Ave.)	0.6 ug/L	No Limit
Mercury	WC	9.3 ng/L (Monthly Ave.)	3.4 ng/L 30d-p99 = 4.7 ng/L	No Limit
Nickel	CTC	475 ug/L (Weekly Ave.)	3.3 ug/L	No Limit
Selenium	CTC	55 ug/L (Weekly Ave.)	1.3 ug/L	No Limit
Zinc	ATC	400 ug/L (Daily Max.)	21 ug/L	No Limit

ATC = acute toxicity criteria, CTC = chronic toxicity criteria, WC = wildlife criteria, HTC = human threshold criteria, HCC = human cancer criteria.

Effluent monitoring for toxic substances for the CSTP outfalls has been less extensive and a partial summary of prior limit reviews has been included with this memo (see Attachment 1). The only recommended WQBELs are for ammonia and total residual chlorine at CSTP-2 (Outfall 002).

Ammonia. Daily maximum effluent ammonia limits are recommended for Outfalls 001 and 002 with limits based on effluent pH at the time of discharge as noted in the table below.

The 2006 WQBEL review for the SSDS concluded effluent ammonia limits were necessary for Outfalls 001 and 002. During the current permit term the limit recommendations were amended several times due to the availability of additional monitoring data, refinements to the criteria used for limit calculations and consideration of upgrades being made to the treatment works. Facility upgrades include the installation of equipment for effluent pH adjustment to assure compliance with daily maximum effluent ammonia limits.

Variable (Daily Maximum) Effluent Ammonia Limits for SSDS at Outfalls 001 & 002					
Effluent pH	Daily Limit	Effluent pH	Daily Limit	Effluent pH	Daily Limit
7.2 < pH ≤ 7.3	39 mg/L	7.8 < pH ≤ 7.9	16 mg/L	8.4 < pH ≤ 8.5	5.2 mg/L
7.3 < pH ≤ 7.4	35 mg/L	7.9 < pH ≤ 8.0	14 mg/L	8.5 < pH ≤ 8.6	4.3 mg/L
7.4 < pH ≤ 7.5	31 mg/L	8.0 < pH ≤ 8.1	11 mg/L	8.6 < pH ≤ 8.7	3.5 mg/L
7.5 < pH ≤ 7.6	27 mg/L	8.1 < pH ≤ 8.2	9.3 mg/L	8.7 < pH ≤ 8.8	2.9 mg/L
7.6 < pH ≤ 7.7	23 mg/L	8.2 < pH ≤ 8.3	7.6 mg/L	8.8 < pH ≤ 8.9	2.5 mg/L
7.7 < pH ≤ 7.8	19 mg/L	8.3 < pH ≤ 8.4	6.3 mg/L	8.9 < pH ≤ 9.0	2.1 mg/L

Daily maximum ammonia limits are not required when calculated limit values exceed 20 mg/L in summer (May - Oct., w/pH < 7.7) or 40 mg/L during winter (Nov. - April, w/pH < 7.2).

As part of the WQBEL review past effluent monitoring results for ammonia and pH reported from 1999 through 2011 were matched by date and compared with the limits noted in the variable limits table. For the Main Plant (Outfall 001) 150 pairs of data were available for review and based on the effluent pH at the time of discharge only one of the effluent ammonia concentrations reported for the same date would have exceeded a daily maximum limit. For CSTP-2 (Outfall 002) 78 pairs of data were reviewed and based on the effluent pH at the time of discharge none of the effluent ammonia concentrations reported for that date would have exceeded a daily maximum limit.

Weekly and monthly (chronic) average effluent ammonia limits are not recommended for the Main Plant (Outfall 001). Chronic limits calculated for this outfall exceed the 20 mg/L (summer) and 40 mg/L (winter) threshold for limits except for a monthly average limit (35 mg/L) during winter. However the 30-day p99 value (20.6 mg/L) is lower than the calculated monthly average limit during winter.

Weekly and monthly (chronic) average effluent ammonia limits are not recommended for CSTP-2. Discharges from CSTP-2 are infrequent, short in duration and occur during wet weather. Chronic limits calculated for this outfall exceed the 20 mg/L (summer) and 40 mg/L (winter) threshold for limits except for a monthly average limit (35 mg/L) during winter. However the maximum reported monitoring result of 25.6 mg/L (81 samples) and the 30-day p99 value (10.1 mg/L) are lower than the calculated limit.

Daily maximum (acute) effluent ammonia limits are not recommended for CSTP-5 or CSTP-6. Both the 1-day p99 value and the maximum effluent ammonia concentration reported are lower than the calculated limits for either outfall. An evaluation of monitoring results, 71 data pairs for effluent ammonia and effluent pH, collected on the same dates also indicated that if limits had been in effect no daily limits would have been exceeded with only a single result greater than 1/5 of the corresponding limit value.

Weekly and monthly (chronic) average effluent ammonia limits are not recommended for CSTP-5 or CSTP-6. Discharges from these outfalls are infrequent, short in duration and occur during wet weather when stream flows are well above low flow conditions. Chronic limits calculated for either outfall based on the minimum observed stream flows during CSO discharges greatly exceed the 20 mg/L (summer) and 40 mg/L (winter) limit thresholds. In addition, the maximum reported monitoring results (78 samples) and both the 4-day and 30-day p99 values for both locations are lower than chronic limits calculated assuming low flow stream conditions.

Mercury. The mercury WQBEL review evaluated 58 representative effluent sample results and an effluent limitation for mercury is not recommended. The limit calculation assumes the SSDS request for a mixing zone phase-out exception will be granted and the SSDS will be required to continue with their Mercury Pollution Minimization Program efforts. A summary of the SSDS mercury monitoring results, a description of the pollution minimization program (PMP) reporting requirements and a draft mixing zone phase-out exemption recommendation are provided in Attachment 3.

Phosphorus. The current SSDS permit contains a 1.0 mg/L monthly average effluent phosphorus limit for Outfalls 001, 002, 003 and 004 that should be continued when the permit is reissued. NR 217.04 (1)(a)1 requires a 1.0 mg/L limit for municipal wastewater treatment facilities discharging more than 150 pounds of phosphorus per month and applies to the SSDS. The 1.0 mg/L limit is considered a technology based limit (TBL) with compliance required at all major (> 1 MGD) municipal wastewater treatment facilities.

In addition to the TBL recent revisions to the administrative rules regulating phosphorus require that WQBELs for phosphorus also be considered. The December 1, 2010 rule revisions set phosphorus water quality criteria (WQC) for various types of water bodies in NR 102.06 and NR 217 Subchapter III defines the methods for calculating phosphorus WQBELs. Although NR 102.06 (5)(b) sets a WQC of 5 ug/L for Lake Superior no phosphorus WQBEL, or interim limits, are recommended because near shore and/or whole lake modeling for setting waste load allocations are not yet complete.

During the current permit term effluent phosphorus concentrations at Outfall 001 averaged 0.44 mg/L and the 30-day p99 value for 1,790 daily samples is 0.58 mg/L. Effluent phosphorus concentrations from the CSTPs averaged 0.40 mg/L with a flow proportioned (weighted) average of 0.30 mg/L. The SSDS may be able to improve phosphorus removal at the main plant by increasing chemical feed rates.

If future modeling results in phosphorus loading allocations that are lower than current discharges the SSDS may need to consider additional control methods that could include; treatment optimization, pollutant trading with other dischargers (point or nonpoint sources), requesting alternate phosphorus limits (APL) or the development of an adaptive management strategy that combines a broad range of control methods.

Thermal Limits. Administrative rule changes to Chapters NR 102 and NR 106 took effect in October 2010 and established thermal WQC for discharges to all surface waters. Thermal limits for SSDS outfalls are not recommended because all calculated limit values are much higher than the observed or expected effluent temperatures.

Although Superior Bay is considered part of Lake Superior it is possible the St Louis River affects thermal conditions near Outfalls 001 and 002 so the limits evaluation considered the requirements for both stream and lake discharges. The table below summarizes the results of the limit calculations and the conditions for a stream discharge are more stringent for Outfall 001 but the conditions for a lake discharge are more stringent for Outfall 002.

Daily maximum effluent temperature limits are not recommended because the calculated limit values are much higher than effluent temperatures are likely to approach. The calculated daily limit for Outfall 001 is 120 degrees F year-round and at Outfall 002 the only limit below 100 degrees F is 93 degrees F in October. To date the maximum effluent temperature reported at either outfall is 76 degrees F.

Weekly average effluent temperature limits are not recommended. Weekly limits would only apply at Outfall 001 from April to August and during October at Outfall 002. Limit values range from 87 to 116 degrees F and its unlikely effluent temperatures will approach these limits. To date effluent temperatures reported during all months are lower than the corresponding limit values by at least 24 degrees.

Effluent Temperature Limit Calculations Summary for SSDS (Outfalls 001 & 002)					
Main Plant – Outfall 001			CSTP-2 – Outfall 002		
Month	Calculated Weekly Limit	Calculated Daily Limit	Month	Calculated Weekly Limit	Calculated Daily Limit
January	NA	120 deg F	January	NA	120 deg F
February	NA	120 deg F	February	NA	120 deg F
March	NA	120 deg F	March	NA	110 deg F
April	101 deg F	120 deg F	April	NA	110 deg F
May	94 deg F	120 deg F	May	NA	120 deg F
June	98 deg F	120 deg F	June	NA	113 deg F
July	116 deg F	120 deg F	July	NA	100 deg F
August	114 deg F	120 deg F	August	NA	109 deg F
September	NA	120 deg F	September	NA	103 deg F
October	NA	120 deg F	October	87	93 deg F
November	NA	120 deg F	November	NA	120 deg F
December	NA	120 deg F	December	NA	120 deg F

The applicable thermal water quality criteria are described in Table 2 (stream discharge) and Table 5 (lake discharge) in NR 102.25 (2). The limit calculation methodology used to derive the limits in this table are described in NR 106.55 (6) & (7) and are based on the limit calculation formulas noted below:

For stream discharge $WQBEL = [((WQC - Ta)(Qs + (1 - f)Qe))/Qe] + Ta$

For lake discharge $WQBEL = [((WQC - Ta)/e^{-a}) + Ta$

Because these outfalls are in close proximity the thermal limit calculations for Outfall 002 were flow weighted to include additional volume equal to the simultaneous discharges from Outfall 001.

Effluent temperature limits are not recommended for CSTP-5 or CSTP-6. In addition to the discharges being infrequent and of relatively short duration they occur during wet weather conditions when stream flow volumes increase. The 2006 WQBEL review included a detailed evaluation to correlate CSTP discharges with stream flows in the period from 1997 to 2006. During CSTP discharges the minimum observed stream flows provided dilution ratios of more than 50:1. For flow ratios exceeding 30:1 the only limit to consider is a daily maximum effluent temperature limit of 120 degrees F. Discharge temperatures approaching 120 degrees F are not expected and to date the maximum reported CSTP temperature is 76 degrees F. Therefore no thermal limits are recommended for CSTP-5 or CSTP-6.

Attachment 1

Water Quality Based Effluent Limits Calculations Summary for CSTP Outfalls

Substance	Daily Limits - based on acute toxicity criteria	Effluent Concentration	Limit Recommendation
Arsenic	680 ug/L	Not Detected	No Limit
Cadmium	8 ug/L	Not Detected	No Limit
Chloride	1,500 mg/L	120 mg/L	No Limit
Chlorine, retain limit at CSTP-2 (Outfall 002)	38 ug/L	Not Detected	No Limits at Outfalls 003 & 004
Chromium	3,600 ug/L	4 ug/L	No Limit
Copper	59 ug/L	10 ug/L	No Limit
Cyanide	45 ug/L	5 ug/L	No Limit
Dieldrin	0.5 ug/L	Not Detected	No Limit
Endrin	0.2 ug/L	Not Detected	No Limit
Lead	210 ug/L	2.2 ug/L	No Limit
Mercury	1.7 ug/L	Not Detected	No Limit
Nickel	2,700 ug/L	Not Detected	No Limit
Pentachlorophenol	6.4 ug/L	Not Detected	No Limit
Toxaphene	1.5 ug/L	Not Detected	No Limit
Zinc	240 ug/L	36 ug/L	No Limit

Past monitoring at CSTP-2 reported "not-detected" for most sample results for chlorine, cyanide and lead but, when present, concentrations of these substances were below levels for concern. Chlorides were detected but were present below levels for concern.

Attachment 2

Whole Effluent Toxicity (WET) Evaluation & Monitoring Recommendations

WET testing is used to measure, predict, and control the discharge of toxic substances that may be harmful to aquatic life. In WET tests, organisms are exposed to a series of effluent concentrations for a given time. Acute tests predict the concentration that causes lethality of aquatic organisms during a 48-96 hour exposure. Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure.

WET Test Results for Outfall 001 (SSDS - Main Plant)							
Test Date	Acute Results LC ₅₀ (%)			RPF data?	Chronic Results IC ₂₅ (%)		
	<i>C. dubia</i>	Fathead	Pass/Fail		<i>C. dubia</i>	Fathead	Pass/Fail
03/03/98	>100	>100	P	Yes	>100	>100	P
04/28/98	>100	>100	P	Yes	>100	>100	P
08/31/98	>100	>100	P	Yes	>100	>100	P
10/30/98	>100	>100	P	Yes	>100	>100	P
10/03/01	-	-	-	-	>100	>100	P
12/31/01	>100	>100	P	Yes	>100	>100	P
09/09/02	>100	>100	P	Yes	>100	29.8	P
05/12/03	>100	>100	P	Yes	-	-	-
01/19/04	>100	>100	P	Yes	>80	>80	P
03/01/05	>100	87.1	*Fail	Yes	-	-	-
04/18/05	>100	>100	P	Yes	-	-	-
08/15/06	>100	>100	P	Yes	>100	>100	P
09/10/07	>100	>100	P	Yes	70.6	45.2	P
04/25/08	>100	>100	P	Yes	-	-	-
08/04/08	>100	>100	P	Yes	>100	42.5	P
08/03/09	>100	>100	P	Yes	43.4	>100	P
09/20/10	>100	>100	P	Yes	>100	>100	P
09/12/11	>100	>100	P	Yes	>100	>100	P

WET data prior to 1998 may not be representative and has not been included for RPF calculations.
 *Fail – effluent ammonia levels on 03/01/05 (two samples 26.6 and 34.4 mg/L) may have caused acute test failure (fathead minnow toxicity) - an acute limit (daily max.) for ammonia is recommended.

Acute WET: In order to assure that discharges by the SSDS are not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC₅₀ greater than 100% effluent.

Chronic WET: In order to assure that the discharges by the SSDS are not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid IC₂₅ greater than the instream waste concentration (IWC). The IWC is an estimate of the proportion of effluent to total volume of water (receiving water + effluent). The IWC of 9% shown in the WET Checklist summary for Outfall 001 was calculated based on a 10:1 dilution ratio.

Dilution Series: According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Wis. Adm. Code), the default acute dilution series is: 6.25, 12.5, 25, 50, 100%, and the default chronic dilution series is 100, 75, 50, 25, 12.5%. The permittee or Department staff may choose other dilution series, but alternate dilution series must be specified in the WPDES permit. For guidance on selecting an alternate dilution series, see Chapter 2.11 of the WET Guidance Document.

Receiving water: According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Wis. Adm. Code) receiving water must be used as the dilution water and primary control in WET tests, unless other dilution water is approved by the Department prior to use. The dilution water used in WET tests shall be grab samples collected from the receiving water location, upstream/out of the influence of the mixing zone and any other known discharge. The receiving water location must be specified in the WPDES permit.

WET Checklist: Department staff uses the WET Checklist when deciding whether WET limits and monitoring are needed. As toxicity potential increases, more points accumulate and more monitoring is needed to insure that toxicity is not occurring. The completed WET Checklists and monitoring recommendations are summarized in the tables below. (For more information see Chapter 1.3 of the WET Guidance Document, at: <http://www.dnr.state.wi.us/org/water/wm/ww/biomon/biomon.htm>).

WET Monitoring and Limit Recommendations: Based on historical WET data and RPF calculations as required in s. NR 106.08, Wis. Adm. Code. Based on the point totals generated on the WET Checklists, the information given above, and Chapter 1.3 of the WET Guidance Document WET limits are not recommended. Annual WET testing for acute and chronic toxicity is recommended for Outfall 001 and three acute WET tests are recommended for each of the CSTP discharges during the next permit term. WET tests for Outfall 001 should be conducted during the months from June through October to reduce the potential for effluent ammonia to interfere the test results.

Whole Effluent Toxicity (WET) Checklist Summary – SSDS Outfall 001		
Factors Considered for Toxicity Potential	ACUTE (points)	CHRONIC (points)
1. IWC	1A. Not Applicable (0)	1B. IWC = 9% (0)
2. HISTORICAL DATA	2A. 17 tests used, RPF = 0 (0)	2B. 10 tests used, RPF = 0.1 (0)
3. EFFLUENT VARIABILITY	3A. Little variability, no upsets or violations & consistent operations (0)	3B. Same as Acute (0)
4. STREAM CLASSIFICATION	4A. Lake Superior (CW/PWS) (15)	4B. Same as Acute (15)
5. CHEMICAL SPECIFIC DATA	5A. Limits for ammonia & chlorine, 15 other substances detected (9)	5B. No chronic limits for 17 detected substances (3)
6. ADDITIVES	6A. One biocide (chlorine) and three WQ conditioners are used. (6)	6B. Additives are used more often than once every fourth day. (6)
7. DISCHARGE CATEGORY	7A. No primary industries (0)	7B. Same as Acute (0)
8. WASTEWATER TREATMENT	8A. Secondary Treatment (0)	8B. Same as Acute (0)
9. DOWNSTREAM IMPACTS	9A. None from discharge. (0)	9B. Same as Acute (0)
TOTAL POINTS	30 Points	24 Points
Recommended Testing	Annual Testing Recommended	Annual Testing Recommended

Acute WET Test Results for SSDS Outfalls 002, 003 and 004 (CSTPs 2, 5 & 6)							
Test Date	<i>C. dubia</i>	Fathead	Pass/Fail	RPF?			
Outfall 002 (CSTP-2) eight acute tests -- all passed							
05/09/02	>100	>100	P	Yes	-	-	-
04/29/03	>100	>100	P	Yes	-	-	-
03/31/04	>100	>100	P	Yes	-	-	-
03/27/05	>100	>100	P	Yes	-	-	-
03/30/06	>100	>100	P	Yes	-	-	-
04/08/08	>100	>100	P	Yes	-	-	-
03/18/09	>100	>100	P	Yes	-	-	-
08/03/10	>100	>100	P	Yes	-	-	-
Outfall 003 (CSTP-5) nine acute tests -- all passed							
04/11/02	>100	>100	P	Yes	-	-	-
07/11/03	>100	>100	P	Yes	-	-	-
03/29/04	>100	>100	P	Yes	-	-	-
03/31/05	>100	>100	P	Yes	-	-	-
04/03/06	>100	>100	P	Yes	-	-	-
09/20/07	>100	>100	P	Yes	-	-	-
04/08/08	>100	>100	P	Yes	-	-	-
03/19/09	>100	>100	P	Yes	-	-	-
03/13/10	>100	>100	P	Yes	-	-	-
Outfall 004 (CSTP-6) seven acute tests -- all passed							
04/12/02	>100	>100	P	Yes	-	-	-
07/11/03	>100	>100	P	Yes	-	-	-
03/29/04	>100	>100	P	Yes	-	-	-
06/15/05	>100	>100	P	Yes	-	-	-
04/03/06	>100	>100	P	Yes	-	-	-
03/19/09	>100	>100	P	Yes	-	-	-
03/15/10	>100	>100	P	Yes	-	-	-

WET Checklist Summary for SSDS Outfalls 002, 003, and 004 and Acute WET Test Recommendations (CSTP Outfalls #'s 2, 5 and 6)	
1. IWC	Not Applicable (0)
2. Historical Data	24 Acute WET tests at the three CSTPs -- all have passed (0)
3. Effluent Variability	Varies at all CSTPs (5)
4. Stream Class	Each CSTP is a direct or indirect tributary to Lake Superior (15)
5. Chemical Data	CSTP-2 ammonia & chlorine limits (9), no limits at CSTP-5 or CSTP-6 (1)
6. Additives	CSTP-2 has disinfection (4) and no additive use at CSTPs 5 & 6 (0)
7. Discharge Category	Each outfall has an intermittent CSTP discharge (0)
8. Treatment Level	Treatment -- primary at CSTP-5 (8) & CSTP-6 (8), secondary at CSTP-2 (0)
9. Downstream Impacts	No impact (0)
Total Points	CSTP-2 has 33 points, CSTP-5 has 28 points and CSTP-6 has 29 points
Recommended Testing	Three Acute Tests during permit term

Attachment 3

Effluent Mercury Monitoring Results and Limit Recommendation for SSDS

Sample Date	Effluent Hg (ng/L)	Sample Date	Effluent Hg (ng/L)	Sample Date	Effluent Hg (ng/L)
11/13/2003	1.9	07/28/2005	8.4	11/28/2007	1.7
12/12/2003	4.4	08/10/2005	2.5	01/25/2008	2.4
01/15/2004	4.1	09/20/2005	3.8	05/28/2008	2.9
02/13/2004	2.5	10/11/2005	7.6	07/23/2008	1.1
03/16/2004	1.4	11/08/2005	1.3	10/28/2008	1.5
04/20/2004	4.6	12/20/2005	1.9	01/09/2009	13.7
05/21/2004	4.5	01/05/2006	1.7	02/04/2009	2.1
06/24/2004	3.8	02/14/2006	2.2	04/22/2009	1.9
07/14/2004	2.5	03/09/2006	2.4	08/11/2009	1.6
08/19/2004	2	04/18/2006	1.1	10/21/2009	2.2
09/20/2004	3.4	05/03/2006	6.2	01/20/2010	1.1
10/13/2004	2.9	06/07/2006	1.6	04/13/2010	4
11/16/2004	2.8	07/13/2006	2.5	07/28/2010	13.2
12/17/2004	3.4	08/02/2006	4.1	11/09/2010	1.24
01/12/2005	1.7	09/19/2006	3.7	02/16/2011	2.17
02/16/2005	9.9	10/11/2006	3.5	06/08/2011	5.83
03/10/2005	3.5	11/16/2006	2.5	08/23/2011	2.1
04/05/2005	3	12/14/2006	1.7	10/19/2011	6.07
05/17/2005	2.7	04/19/2007	3.3	-	-
06/23/2005	2.8	09/06/2007	1.5	-	-

Average = 3.4 ng/L

30-day p99 = 4.7 ng/L

Calculated Monthly Average Effluent Limitation = 9.3 ng/L

Effluent Limit Recommendation: No Limit Required

Field blanks: Sample results of "not detected" were reported for 31 of 57 field blank, 22 results were between the LOD (0.1 ng/L) and LOQ (0.3 ng/L), and two results of 0.4 ng/L and two results of 0.5 ng/L were reported.

DRAFT - Mixing Zone Phase-Out Exception for Mercury - SSDS

The Superior Sewage Disposal System (SSDS) has requested an exception to the proposed mixing zone phase out when calculating effluent limitations for mercury beyond November 15, 2010 under the exception for technical and economic considerations to the mixing zone phase-out for bioaccumulating chemicals of concern (BCC's) at 40 CFR, Part 132, Appendix F, Procedure 3 C. 6. In consideration of requirements contained at the above reference, the Wisconsin Department of Natural Resources (WDNR) determines that:

- The SSDS is in compliance with and shall continue to comply with all applicable requirements of Clean Water Act sections 118, 301, 302, 303, 304, 306, 307, 401, and 402, including existing categorical effluent limits and water quality based effluent limits (WQBELs).
- The SSDS will accept a permit compliance schedule requiring they continue implementation of a Mercury Pollution Minimization Plan (PMP) meeting the requirements of s. 106.145(7). WDNR believes the finding at s. 106.145(1)(a) sufficiently demonstrates that controls beyond a PMP would result in unreasonable economic effects because controls to remove mercury using wastewater treatment technology are not feasible or cost-effective.
- The SSDS wastewater treatment facility discharge to Superior Bay is considered a direct discharge to Lake Superior. Under s. NR 106.06(4)(b)2 WQBELs are calculated using a mixing or dilution calculation of one part effluent to ten parts receiving water. The WQBEL for mercury using this procedure is 9.3 ng/L.
- The size of the mixing zone is defined by a 10:1 dilution ratio. There are no regulatory requirements nor does data and information exist to allow WDNR to make a scientifically and valid determination of an alternative size of the mixing zone that could be attained with current available and economically feasible technology.
- By definition, the water quality criteria are met at the edge of the mixing zone.
- There is currently no applicable TMDL for mercury in Lake Superior and available data indicate the concentration of mercury in Lake Superior meets all applicable water quality criteria.
- With a mixing zone exemption a WQBEL for mercury is not required. The requirements for authorizing the exception and the circumstances under which it is being granted are essentially the same as those for granting a variance to water quality standards. WDNR has analyzed the potential impacts to endangered and threatened species as part of its variance process. The analysis concluded that approval of mercury variances, with more stringent permit requirements for PMPs, is unlikely to adversely affect bald eagles or other listed species that occur within the State of Wisconsin.

Therefore, WDNR grants a mixing zone phase out exemption for effluent discharges from the wastewater treatment facility operated by the SSDS due to technical and economic considerations.

The granting of this exception to the SSDS shall apply only to the 5-year permit term of the proposed WPDES permit. The SSDS will need to make a similar request and DNR will need to make a similar determination for a further continuation of a mixing zone, if those actions become appropriate for the next permit term.

Permit Language. Standard language for mercury sample collection procedures is available and should be included when the permit is reissued. The permit compliance schedule should require annual status reports on the Mercury Pollution Minimization Program efforts including descriptions of any unique features or special points of emphasis in the plan. Planned actions and due dates should be identified in the PMP plan and the permit compliance schedule.

Mercury Pollutant Minimization Program

The permittee shall begin or continue to implement a pollutant minimization program that meets the requirements of s. NR 106.145(7), Wis. Adm. Code.

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 annual status reports is required by the March 31 of each year.	

DATE: December 28, 2012 FILE REF: 3200

TO: Sheri Snowbank, NOR - Spooner

FROM: Dan Peerenboom, NOR – Rhinelander *Daniel J. Peerenboom, P. E., December 28, 2012*

SUBJECT: Revised Water Quality Based Effluent Limit Recommendations for SSDS

This memo revises the Superior Sewage Disposal System (SSDS) water quality based effluent limit (WQBEL) recommendations for phosphorus and mercury, as noted below. The revisions are based on consideration of background levels for these parameters in the St Louis River system, in addition to Lake Superior, as suggested in several comments received during the public notice of the draft WPDES permit.

Phosphorus: A monthly average effluent phosphorus limit of 0.7 mg/L is recommended.

Mercury: A monthly average effluent mercury limit of 1.3 ng/L is recommended, unless an alternative mercury effluent limitation is granted (w/AMEL of 13 ng/L – daily maximum).

Phosphorus. Previous WQBEL reviews for SSDS made effluent limit recommendations for toxic substances based on the water body classification described in NR 104.10(3)(b) designating Superior Bay as a Great Lakes fish and aquatic life community. However administrative rule revisions to NR 102 and NR 217 were enacted in December 2010 that established phosphorus water quality criteria (WQC) for all fish and aquatic life water bodies. The rules set a 100 ug/L WQC for the St Louis River and specify that Superior Bay be considered part of the river system for phosphorus regulation.

The March 19, 2012 WQBEL review memo used to prepare the draft WPDES for SSDS did not propose changing the current (1.0 mg/L) phosphorus limit and suggested that comprehensive modeling was necessary to more accurately assess whether a phosphorus WQBEL was necessary.

However, review comments by EPA indicate DNR must provide a phosphorus WQBEL recommendation that includes consideration for discharges to the St Louis River by SSDS and the Western Lake Superior Sanitary District (WLSSD – City of Duluth, MN). A summary of the limit calculation and discussion of factors used in the analysis are described later in this memo including a WQBEL recommendation for phosphorus of 0.7 mg/L (monthly ave.). Although a delay in the initial imposition of the limit may be considered it is recommended the WQBEL take effect during the next permit term.

Future modeling efforts could result in phosphorus loading allocations that are lower than the discharges associated with the 0.7 mg/L phosphorus WQBEL recommended in this memo. These types of models could include waste load allocation mass limits from a TMDL for the St Louis River or the waters of Superior Bay. If more stringent limits are required in the future options SSDS could consider include; treatment optimization, pollutant trading with other dischargers (point or nonpoint sources), requesting an alternate phosphorus limit (APL) or developing an adaptive management strategy combining several of these control methods.

Mercury. During the draft permit public notice period several comments were received suggesting the mercury limit evaluation be based on the background conditions of the St Louis River rather than Lake Superior. Although the WQC for mercury (1.3 ng/L - wildlife) is the same for both the lake and river their background conditions differ. Monitoring data suggest mercury levels in Lake Superior (ave. = 0.5 ng/L) are less than the WQC but mercury levels in the St Louis River (ave. = 4 ng/L) are higher than the WQC.

The St Louis River is the major source of flow to Superior Bay so it is reasonable to consider the mercury levels in the river to be representative of background conditions when evaluating the need for limits. A summary of the SSDS mercury monitoring results is included as an attachment to this memo.

Because mercury levels in the river exceed the WQC no assimilative capacity is available so consideration of mixing or dilution is unnecessary and an effluent limit set equal to the most stringent WQC (1.3 ng/L) is recommended. The SSDS will also be required to continue with their Mercury Pollution Minimization Program (PMP) efforts.

Summary of Revised Effluent Limit Recommendations for Mercury and Phosphorus at SSDD (Outfall 001 - Main Plant)			
Parameter	Daily Maximum	Weekly Average	Monthly Average
Phosphorus, Total			1.0 mg/L (TBL)
			0.7 mg/L (WQBEL)
Mercury, Total	13 ng/L (w/AMEL)		1.3 ng/l (w/o AMEL)
<p>When reissued the phosphorus TBL (1.0 mg/L) can remain in effect until the recommended phosphorus WQBEL (0.7 mg/L – monthly ave.) takes effect. A delay in the initial imposition of the WQBEL may be considered to allow SSDS time to optimize their existing phosphorus control operations.</p>			

cc Tom Mugan, Diane Figiel and Amanda Minks, WT - Madison
 Eric DeVenecia (Ashland), Lonn Franson (Hayward), and Kathy Bartilson (Spooner) – NOR
 (Staff copies sent electronically via email)

Phosphorus WQBEL Calculation for SSDS & WLSSD Discharges to the St Louis River

Phosphorus WQBEL Recommendation: 0.7 mg/L (monthly average)

The phosphorus WQBEL calculation formula is described in NR 217.13(2) and is noted below;

$[(WQC)(Q_s + (1-f)Q_e) - (Q_s - fQ_e)(C_s)] / Q_e = \text{Limitation (expressed as a monthly ave.)}$,

$[(100 \text{ ug/L})(791 \text{ cfs} + (1-0)79.2 \text{ cfs}) - ((791 \text{ cfs} - 0(79.2 \text{ cfs}))(39 \text{ ug/L})] / 79.2 \text{ cfs} = 709 \text{ ug/L (0.7 mg/L)}$

WQC is the water quality criteria value and NR 102 specifies the WQC for the St Louis River is 100 ug/L.

Q_s (791 cfs) is the receiving water flow rate. The St Louis River dam at Scanlon MN is a USGS gaging site with more than 100 years of daily flow records. Flows have trended lower from (2002-11) so the ten year period (3,652 results) was used to calculate a 7-day one percent low flow estimate of 747 cfs.

The basin drainage area at Scanlon is 3,430 sq. mi. and 3,634 sq. mi. at the mouth of the river so the low flow estimate was increased by a proportionate amount (44 cfs). No flow adjustment was made to include the Nemadji River discharge to Superior Bay (7Q₂ = 49 cfs) downstream of the SSDS outfall.

Q_e (79.2 cfs) is the effluent flow volume (51.2 MGD). For this calculation the Q_e value is the sum of the combined design flow volumes for WLSSD (43.6 MGD) and SSDS (7.6 MGD). The (f) value represents the fraction of Q_e from the St Louis River. Both cities use Lake Superior for their water supply so f = 0.

C_s is the upstream phosphorus concentration in the St Louis River. Data from five SWIMS monitoring sites (ID #s 1001489, -90, -91, -92, & -93) provide 44 results meeting NR 217 requirements and have a median value of 39 ug/L.

The WQBEL calculation assumes SSDS and WLSSD will be subject to the same regulatory requirements and both facilities will receive the same effluent concentration limit for phosphorus.

The SSDS may also be subject to limits based on a St Louis River TMDL or modeling of Lake Superior waters that could be expressed as phosphorus mass limits or possibly result more stringent effluent concentration limits in the future.

In the past five years no monthly average effluent phosphorus concentration has exceeded 1 mg/L but values of more than 0.7 mg/L have been reported four times. Therefore, delaying initial imposition of the WQBEL may be permitted to allow SSDS time to optimize their existing phosphorus control operations. However the limit should be required to take effect during the next permit term.

The WQBEL recommendation is based on the St Louis River WQC and SSDS is not considered a direct Great Lakes discharge under NR 217.13(4) so a BAT limit (0.6 mg/L six-month ave.) does not apply.

Effluent Mercury Monitoring Results and Limit Recommendation for SSDS

Sample Date	Effluent Hg (ng/L)	Sample Date	Effluent Hg (ng/L)	Sample Date	Effluent Hg (ng/L)
11/13/2003	1.9	07/28/2005	8.4	11/28/2007	1.7
12/12/2003	4.4	08/10/2005	2.5	01/25/2008	2.4
01/15/2004	4.1	09/20/2005	3.8	05/28/2008	2.9
02/13/2004	2.5	10/11/2005	7.6	07/23/2008	1.1
03/16/2004	1.4	11/08/2005	1.3	10/28/2008	1.5
04/20/2004	4.6	12/20/2005	1.9	01/09/2009	13.7
05/21/2004	4.5	01/05/2006	1.7	02/04/2009	2.1
06/24/2004	3.8	02/14/2006	2.2	04/22/2009	1.9
07/14/2004	2.5	03/09/2006	2.4	08/11/2009	1.6
08/19/2004	2	04/18/2006	1.1	10/21/2009	2.2
09/20/2004	3.4	05/03/2006	6.2	01/20/2010	1.1
10/13/2004	2.9	06/07/2006	1.6	04/13/2010	4
11/16/2004	2.8	07/13/2006	2.5	07/28/2010	13.2
12/17/2004	3.4	08/02/2006	4.1	11/09/2010	1.24
01/12/2005	1.7	09/19/2006	3.7	02/16/2011	2.17
02/16/2005	9.9	10/11/2006	3.5	06/08/2011	5.83
03/10/2005	3.5	11/16/2006	2.5	08/23/2011	2.1
04/05/2005	3	12/14/2006	1.7	10/19/2011	6.07
05/17/2005	2.7	04/19/2007	3.3	-	-
06/23/2005	2.8	09/06/2007	1.5	-	-

Calculated Effluent Limitation: 1.3 ng/L
(WQBEL set equal to the WQC for wildlife)

Eff. Monitoring Results: Ave. = 3.4 ng/L
1-d p99 = 13 ng/L & 30-d p99 = 4.7 ng/L

Mercury Limit Recommendations: 1.3 ng/L monthly ave. or 13 ng/L daily max. (w/AMEL)

The primary flow to St Louis Bay is from the St Louis Rive so mercury concentrations in the river were used as the background condition for the WQBEL calculation. WLSSD reported 13 mercury samples for the river that averaged about 4 ng/L and all results exceed the WQC of 1.3 ng/L for wildlife. Because background conditions exceed the WQC the WQBEL is set equal to the criteria (1.3 ng/L).

Permit Modification Fact Sheet

1 General Information

Permit Number:	WI-0025593-08-0	
Permittee Name:	SUPERIOR SEWAGE DISPOSAL SYSTEM	
Address:	51 E FIRST ST	
City/State/Zip:	SUPERIOR WI 54880	
Discharge Location:	Main Plant and Combined Sewer Treatment Plant (CSTP) 2: 51 East 1 st Street CSTP 5: 61 st Street and Birch Ave CSTP 6: Texas Avenue and 17 th Street	
Receiving Water:	Main Plant: Superior Bay of Lake Superior CSTP 2: A slip emptying into Superior Bay of Lake Superior CSTP 5: The Nemadji River CSTP 6: St. Louis Bay of Lake Superior Wisconsin's latest approved 303d list shows the Lake Superior shoreline as impaired due to a fish tissue consumption advisory, with mercury and PCBs as causative pollutants. St Louis River AOC is listed as impaired for several chemicals, (WI 2008 Category 5 TMDL list); pathogens, nutrients, unspecified metals, PAHs, PCBs, Mercury. With the following impairments Chronic Aquatic toxicity and contaminated fish. The AOC boundary includes the Nemadji River at the point just before & where it meets Lake Superior, St Louis River just before & where it discharges into Lake Superior and Lake Superior. Superior Bay, Hog Island inlet is listed for Poor Fish & Aquatic life conditions	
StreamFlow (Q _{7,10}):	The low flow of the Nemadji River is 32 cfs near the discharge from CSTP 5. The other plants discharge into lake conditions (non-flowing).	
Stream Classification:	Superior Bay and the slip are classified as Great Lakes Communities and a cold water sport fisheries and public water supplies. The Nemadji and St. Louis Bay are warm water sport fish communities. All are used recreationally. Effluent limits are based on the Great Lakes, cold water classification, since these are all Lake Superior tributaries.	
Design Flow(s)	Daily Maximum	Main Plant: 15.0 MGD CSTP 2: 75 MGD (Maximum flow from CSTP pumps) CSTP 5: 8.0 MGD (Plant alone, without combined sewer storage) CSTP 6: 8.0 MGD (Plant alone, without combined sewer storage)
	Weekly Maximum	Main Plant: 12.39 MGD CSTP 2: 30 MGD (Plant alone, without combined sewer storage) CSTP 5: 6.0 MGD (Plant alone, without combined sewer storage) CSTP 6: 6.0 MGD (Plant alone, without combined sewer storage)
	Monthly Maximum	Main Plant: 10.46 MGD CSTP 2: 20 MGD (Plant alone, without combined sewer storage) CSTP 5: 2.0 MGD (Plant alone, without combined sewer storage) CSTP 6: 2.0 MGD (Plant alone, without combined sewer storage)

	Annual Average	Main Plant: 7.6 MGD CSTP 2: 2.2 MGD (Plant alone, without combined sewer storage) CSTP 5: 0.3 MGD (Plant alone, without combined sewer storage) CSTP 6: 0.3 MGD (Plant alone, without combined sewer storage)
Significant Industrial Loading?	Yes, the City has a pretreatment program and is the control authority for regulation of industrial discharges to the City's system.	
Operator at Proper Grade?	Yes	
Pretreatment Program Approval Date:	January 1, 1994 (effective date for the start of the program)	

2 Facility Description

The City of Superior owns and operates 4 wastewater treatment plants (See the Existing Facilities City Wide diagram for plant locations). The Main Plant is an activated sludge facility, which receives the bulk of the domestic, industrial and combined sewer wastewater flow. The plant designed to treat 7,600,000 gallons per day actually handles an average of 3,610,000 gallons per day (2009-2011 data). The facility consists of screen and grit chambers that remove debris. Chemicals are added to enable the phosphorus to settle out of the wastewater. The wastewater then enters the primary clarifier where solids are allowed to settle before entering aeration tanks (air added) where it mixes with activated sludge which breaks down the organic matter. Activated sludge is composed of settled solids containing naturally occurring bacteria recycled from the treatment system. The water is then pumped into a final clarifier where remaining solids are settled out. The treated water (effluent) is disinfected by using chlorination and dechlorination units prior to discharge. The City is working on replacing the chlorination and dechlorination units with an ultraviolet disinfection system. The settled solids (sludge) from the clarifiers that is not used as activated sludge is removed and treated by bacteria and organisms through anaerobic digestion, reducing harmful pathogens to safe levels. Water is removed from the sludge and then the sludge is taken to the Superior landfill for final disposal. Effluent is discharged to Superior Bay of Lake Superior, which is classified as a "Great Lakes Communities" water under Wis. Admin Code NR 102, and is also a public water supply (See the Water Flow Schematic – Main Plant & CSTP 2 for more information).

The other treatment plants are referred to as "Combined Sewer Treatment Plants or "CSTPs". These are not stormwater and or wastewater bypass discharge points, but rather treatment units for a combination of wastewater and stormwater. CSTP 2 located adjacent to the Main Plant receives any flows in excess of that which can be handled effectively by the Main Plant. Any diversions from CSTP 2, from the Main Plant occur prior to the bar screens (See the Water Flow Schematic – Main Plant & CSTP 2 for more information). Discharges from this facility are intermittent during each month, depending on the incoming wasteload and volume of stormwater from the combined collection system. From 2009 to 2011 there was an average of 17 days of discharge each year. The facility consists of an aerated lagoon where naturally occurring bacteria and organisms already present in the wastewater break down the organic matter until the wastewater is able to meet discharge standards. The effluent is disinfected by chlorination and dechlorination before being discharged to a boat slip tributary to Superior Bay.

CSTP 5 and CSTP 6 are physical/chemical treatment facilities. Both plants receive only stormwater and wastewater from domestic sources. At each facility large asphalt-lined retention ponds store collected wastewater. This wastewater can either be pumped back to the Main Plant for treatment during low-flow periods or treated on-site by two stage settling with coarse and fine screening (See the Water Flow Schematic – CSTP 5 & CSTP6 for more information). CSTP 5 is located on the south edge of the City near South Superior, and CSTP 6 is located in the northwest corner of the community in Billings Park. The plants are operated about 15 days each year (2009 to 2011 data) after large rainfall and snowmelt events. CSTP 5 discharges to the Nemadji River and CSTP 6 discharges to St. Louis Bay.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)
701 INFLUENT MAIN PLT	An average of 3.613 MGD (2009-2011 data)	MAIN PLANT: Representative samples shall be taken immediately downstream of the aerated grit chamber.
702 INFLUENT CSTP 2	Flow is not a required parameter.	COMBINED SEWER TREATMENT PLANT 2: Representative samples shall be taken immediately downstream of the automatic bar screens.
705 INFLUENT CSTP 5	From 2009-2011 data: <ul style="list-style-type: none"> ▪ Discharged about 17 days a year ▪ During days of discharge average flow 2.593 MGD ▪ Maximum flow was 8.478 MGD ▪ Minimum flow was 0.014 MGD 	COMBINED SEWER TREATMENT PLANT 5: Representative samples shall be taken just upstream from the Parshall flume in the drum screen room.
706 INFLUENT CSTP 6	From 2009-2011 data: <ul style="list-style-type: none"> ▪ Discharged about 14 days a year ▪ During days of discharge average flow 3.537 MGD ▪ Maximum flow was 8.748 MGD ▪ Minimum flow was 0.009 MGD 	COMBINED SEWER TREATMENT PLANT 6: Representative samples shall be taken just upstream from the Parshall flume in the drum screen room.
001 EFFLUENT MAIN PLT	Flow is not a required parameter.	MAIN PLANT: Representative samples shall be collected immediately following disinfection. The permittee is authorized to discharge to Superior Bay within the Lake Superior drainage basin. The average annual design flow for the facility is 7.6 MGD.
002 EFFLUENT CSTP 2	From 2009-2011 data: <ul style="list-style-type: none"> ▪ Discharged about 17 days a year ▪ During days of discharge average flow 16.16 MGD ▪ Maximum flow was 35.816 MGD ▪ Minimum flow was 0.001 MGD 	COMBINED SEWER TREATMENT PLANT 2: Representative samples shall be collected after chlorination and dechlorination on the discharge line leading to the slip. The permittee is authorized to discharge to Superior Bay within the Lake Superior drainage basin.
003 EFFLUENT CSTP 5	Flow is not a required parameter. At this outfall Influent equals effluent.	COMBINED SEWER TREATMENT PLANT 5: Representative samples shall be collected in the effluent discharge pipe prior to discharge. The permittee is authorized to discharge to the Nemadji River within the Lake Superior drainage basin.
004 EFFLUENT CSTP 6	Flow is not a required parameter. At this outfall Influent equals effluent.	COMBINED SEWER TREATMENT PLANT 6: Representative samples shall be collected in the effluent discharge pipe prior to discharge. The permittee is authorized to discharge to St. Louis Bay within the Lake Superior drainage basin.
006 SLUDGE	600 dry US tons per year (information from application)	This sample point is for belt-pressed sludge that is landfilled. The amount of biosolids taken to the landfill must be reported

Sample Point Designation

Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, Waste Type/sample Contents and Treatment Description (as applicable)
		annually on form 3400-52. This report is due annually on January 31.
101 IN-PLANT	Flow is not a required parameter.	This is the field blank sample and it shall be collected using standard sample handling procedures

3 Influent - Proposed Monitoring

3.1 Sample Point Number: 701- INFLUENT MAIN PLANT

Monitoring Requirements and Limitations

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Continuous	Continuous	
CBOD5		mg/L	Daily	24-Hr Comp	
Suspended Solids, Total		mg/L	Daily	24-Hr Comp	
Phosphorus, Total		mg/L	Daily	24-Hr Comp	
Cadmium, Total Recoverable		ug/L	Monthly	24-Hr Comp	
Chromium, Total Recoverable		ug/L	Monthly	24-Hr Comp	
Copper, Total Recoverable		ug/L	Monthly	24-Hr Comp	
Lead, Total Recoverable		ug/L	Monthly	24-Hr Comp	
Nickel, Total Recoverable		ug/L	Monthly	24-Hr Comp	
Zinc, Total Recoverable		ug/L	Monthly	24-Hr Comp	
Cyanide, Total		ug/L	Monthly	Grab	
Mercury, Total Recoverable		ng/L	Quarterly	Grab	See "Mercury Monitoring" footnote for more information.

3.2 Modification from Previous Permit:

No changes from the permit effective April 1, 2013.

3.3 Sample Point Number: 702- INFLUENT CSTP 2

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
BOD5, Total		mg/L	Daily	24-Hr Comp	
Suspended Solids, Total		mg/L	Daily	24-Hr Comp	

3.4 Modification from Previous Permit:

No changes from the permit effective April 1, 2013.

3.5 Sample Point Number: 705- INFLUENT CSTP 5, and 706- INFLUENT CSTP 6

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Continuous	Continuous	
BOD5, Total		mg/L	Daily	24-Hr Comp	
Suspended Solids, Total		mg/L	Daily	24-Hr Comp	

3.6 Modification from Previous Permit:

No changes from the permit effective April 1, 2013.

4 Inplant - Proposed Monitoring and Limitations

4.1 Sample Point Number: 101- Mercury field blank

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Mercury, Total Recoverable		ng/L	Quarterly	Blank	See the "Mercury Monitoring" footnote for more information.

4.2 Modification from Previous Permit:

No changes from the permit effective April 1, 2013.

5 Surface Water - Proposed Monitoring and Limitations

5.1 Sample Point Number:001- EFFLUENT MAIN PLANT

Monitoring Requirements and Limitations

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
CBOD5	Monthly Avg	25 mg/L	Daily	24-Hr Comp	
CBOD5	Weekly Avg	40 mg/L	Daily	24-Hr Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	Daily	24-Hr Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	Daily	24-Hr Comp	
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Phosphorus, Total	Monthly Avg	1.0 mg/L	Daily	24-Hr Comp	See the "Phosphorus" footnotes for more information. This interim limit expires March 31, 2018.
Phosphorus, Total	Monthly Avg	0.7 mg/L	Daily	24-Hr Comp	See the "Phosphorus" footnotes for more information. This limit begins March 31, 2018
Temperature, Maximum		deg F	Daily	Continuous	
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	Per Agreement	24-Hr Comp	See the "Ammonia Monitoring" footnote for more information.
Nitrogen, Ammonia Variable Limit		mg/L	Per Agreement	24-Hr Comp	See the "Ammonia Monitoring" footnote for more information.
Fecal Coliform	Geometric Mean	400 #/100 ml	2/Week	Grab	Disinfection is required year round.
E. coli		#/100 ml	2/Week	Grab	Disinfection is required year round.
Chlorine, Total Residual	Daily Max	38 ug/L	Daily	Grab	See the "Chlorine Monitoring" footnote for more information.
Cadmium, Total Recoverable		ug/L	Monthly	24-Hr Comp	
Chromium, Total Recoverable		ug/L	Monthly	24-Hr Comp	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Copper, Total Recoverable		ug/L	Monthly	24-Hr Comp	
Lead, Total Recoverable		ug/L	Monthly	24-Hr Comp	
Nickel, Total Recoverable		ug/L	Monthly	24-Hr Comp	
Zinc, Total Recoverable		ug/L	Monthly	24-Hr Comp	
Cyanide, Total		ug/L	Monthly	Grab	
Hardness, Total as CaCO ₃		mg/L	Monthly	24-Hr Comp	
Mercury, Total Recoverable	Daily Max	13 ng/L	Quarterly	Grab	See the "Mercury Monitoring" footnote for more information.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Comp	See the "Whole Effluent Toxicity (WET) Testing" footnote for more information.
Chronic WET		rTUc	See Listed Qtr(s)	24-Hr Comp	See the "Whole Effluent Toxicity (WET) Testing" footnote for more information.

5.2 Modification from Previous Permit

Mercury - At the main plant a monthly average limit of 1.3 ng/L for mercury, set equal to the wildlife criteria has been calculated for the facility. The Superior Sewage Disposal System (SSDS) has requested a variance to the mercury limit. An alternative mercury effluent limitation under s. 106.145, Wisconsin Administrative Code represents a variance to water quality standards authorized by s. 283.15, Wis. Stats. This request has been granted and the permit (effective April 1, 2013) will be modified to include a 13 ng/L daily maximum limit. The granting of this variance to the SSDS shall apply only to the 5-year permit term of the proposed WPDES permit. The permittee shall continue to implement a mercury pollutant minimization program with the addition of permit required submittal of annual reports.

5.3 Sample Point Number: 002- EFFLUENT CSTP 2

Monitoring Requirements and 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 Comp	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
BOD5, Total	Weekly Avg	45 mg/L	Daily	24-Hr Comp	
Suspended Solids, Total	Monthly Avg	60 mg/L	Daily	24-Hr Comp	
Phosphorus, Total	Monthly Avg	1.0 mg/L	Daily	24-Hr Comp	
Fecal Coliform	Geometric Mean	400 #/100 ml	Daily	Grab	Disinfection is required year round.
E. coli		#/100 ml	Daily	Grab	Disinfection is required year round.
Chlorine, Total Residual	Daily Max	38 ug/L	Daily	Grab	
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Nitrogen, Ammonia Variable Limit		mg/L	Monthly	24-Hr Comp	See the "Ammonia Monitoring" footnote for more information
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	Monthly	24-Hr Comp	
Temperature, Maximum		deg F	Weekly	Continuous	
Acute WET		TUa	Annual	24-Hr Comp	See the "Whole Effluent Toxicity (WET) Testing" footnote for more information.

5.4 Modification from Previous Permit:

No changes from the permit issued April 1, 2013.

5.5 Sample Point Number: 003- EFFLUENT CSTP 5 and 004- EFFLUENT CSTP 6

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
BOD5, Total	Monthly Avg	30 mg/L	Daily	24-Hr Comp	
BOD5, Total	Weekly Avg	45 mg/L	Daily	24-Hr Comp	
Suspended Solids, Total	Weekly Avg	65 mg/L	Daily	24-Hr Comp	
pH Field	Daily Max	9.0 su	Daily	Grab	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
pH Field	Daily Min	6.0 su	Daily	Grab	
Phosphorus, Total	Monthly Avg	1.0 mg/L	Daily	24-Hr Comp	
Fecal Coliform		#/100 ml	Daily	Grab	Fecal coliform monitoring is required May through September annually.
E. coli		#/100 ml	Daily	Grab	E. coli monitoring is required May through September annually.
Nitrogen, Ammonia (NH ₃ -N) Total		mg/L	Monthly	24-Hr Comp	
Acute WET		TUa	Annual	24-Hr Comp	See the "Whole Effluent Toxicity (WET) Testing" footnote for more information.

5.6 Modification from Previous Permit:

No changes from the permit issued April 1, 2013.

5.7 Sample Point Number: 006- Belt- Pressed Cake Sludge

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
PCB Total Dry Wt		mg/kg	Once	Composite	

5.8 Modification from Previous Permit:

No changes from the permit issued April 1, 2013.

6 Compliance Schedules

6.1 Modification from Previous Permit:

No changes from the permit issued April 1, 2013.

The Superior Sewage Disposal System (SSDS) requested and was granted a variance to the calculated mercury effluent limitation. As part of that approval the facility is required to continue implementation of a Mercury Pollution Minimization Plan (PMP) meeting the requirements of s. 106.145(7). During the previous permit term the facility maintained their PMP through the Wisconsin Green Tier program.

7 Attachments:

Water Flow Schematic(s) – Main Plant & CSTEP 2 and CSTEP 5 & 6

Existing Facilities City Wide diagram

“Effluent Limits Recommendations for Superior Sewage Disposal System (WI-0025593)” memo dated March 19, 2012

“Revised Water Quality Based Effluent Limit Recommendations for SSDS” dated December 28, 2012.

“Variance Impact Evaluation for Superior Sewage Disposal System” memo dated April 1, 2013

8 Other Comments:

The permit issued April 1, 2013 was reviewed by the EPA with concurrence given by letter on February 1, 2013.

9 Proposed Expiration Date:

The expiration date is March 31, 2018

Prepared By:

Sheri A. Snowbank Wastewater Specialist

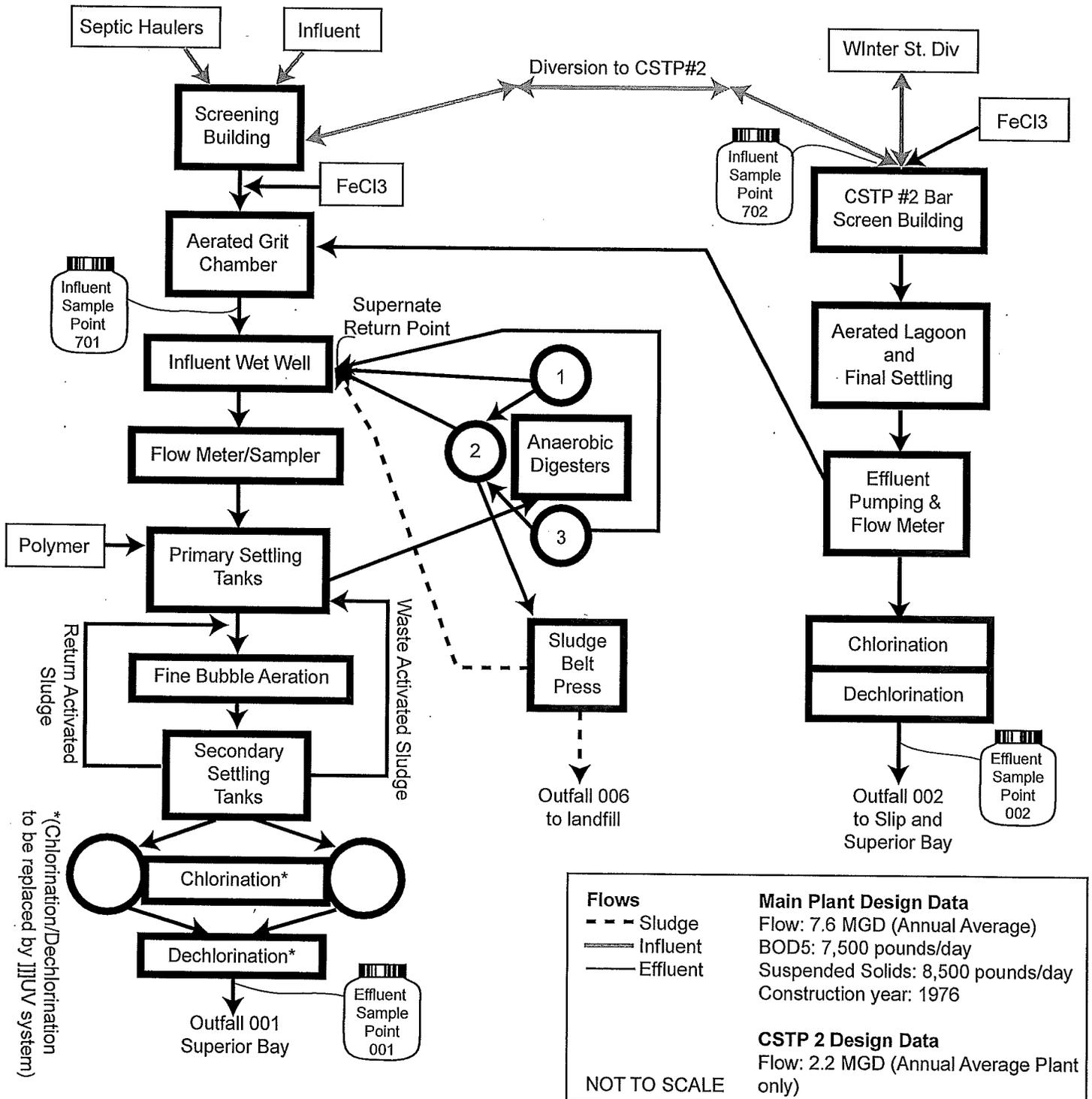
Date: January 30, 2013

cc: Lonn Franson, Hayward

Eric deVenecia, Ashland

Superior Sewage Disposal System Main Plant and CSTP 2 - Flow Schematic

The City of Superior operates four wastewater treatment facilities. The Main Plant is an activated sludge facility with phosphorus removal and a year-round chlorination/dechlorination process (this is being upgraded to an ultraviolet disinfection system). Effluent is discharged to Superior Bay of Lake Superior. Sludge is treated in anaerobic digestors, thickened with a belt press and landfilled. The other plants are retention and treatment facilities for sanitary wastewater and stormwater collected in the City's combined sewers. They are referred to a "Combined Sewer Treatment Plants" (CSTP). CSTP 2 is an aerated lagoon located near the Main Plant that discharges to an adjacent slip which empties into Superior Bay. It is operated after heavy precipitation events. Otherwise collected water can be pumped back to the Main Plant for treatment.



Superior Sewage Disposal System CSTP 5 and CSTP 6 - Flow Schematic

The City of Superior operates four wastewater treatment facilities. The Main Plant is an activated sludge facility that discharges to Superior Bay of Lake Superior. The other plants are retention and treatment facilities for sanitary wastewater and stormwater collected in the City's combined sewers. They are referred to as "Combined Sewer Treatment Plants" (CSTP). CSTP 2 is an aerated lagoon located near the Main Plant (See diagram *Main Plant and CSTP 2 - Flow Schematic*) that discharges to an adjacent slip which empties into Superior Bay. CSTP plants 5 and 6 consist of large asphalt-lined detention ponds with two stage settling with coarse and fine screening for treatment. The CSTP plants are operated after heavy precipitation events. Otherwise collected water can be pumped back to the Main Plant for treatment. CSTP 5 is located on 61st Street and Birch Avenue and discharges to the Nemadji River. CSTP 6 is located on Texas Avenue and 17th Street and discharges to St. Louis Bay of Lake Superior.

