Permit Fact Sheet

General Information

Permit Number:	WI-0023370-10-4 ***Modification**	
Permittee Name:	BELOIT CITY	
Address:	555 Willowbrook Road	
City/State/Zip:	BELOIT WI 53511	
Discharge Location:	East bank of Rock River immediately south of Shirland Ave bridge, approximately 2 miles southwest of the treatment plant located at 555 Willowbrook Road, Beloit, WI. (SW ¼ of SE ¼ of Section 35, T1N R12E - Lat:42.4964 – Lon: -89.0415)	
Receiving Water:	Rock River (Turtle Creek Watershed, LR01, Lower Rock River Basin) in Rock County. Rock River at Beloit is 303(d) listed as impaired for total phosphorus.	
StreamFlow ($Q_{7,10}$):	219 cfs	
Stream Classification:	Warm Water Sport Fish (WWSF), Non-public Water Supply	
Design Flow(s)	Daily Maximum	18.3 MGD
	Weekly Maximum	14.6 MGD
	Monthly Maximum	13.2 MGD
	Annual Average	11.0 MGD
Significant Industrial Loading?	<25% of Influent Flow – 2 Categorical 9 other Significant User: TRU Aseptics, Beloit Box Board, Fairbanks-Morse, Frito Lay, Hormel, IPMPC Foods, Kerry Foods, Kettle Foods, Beloit Memorial Hospital and Genecor	
Operator at Proper Grade?	Yes – Required: Advanced – A1, B, C, D, P, L & SS OIC (Rodney Knoble #31034) Held: Advanced – A1, B, C, D, P, L & OIT - SS	
Approved Pretreatment Program?	October 14, 1983	

Facility Description

The City of Beloit operates a wastewater treatment facility (WWTF) providing secondary treatment to a combination of domestic, commercial and industrial wastewater. The WWTF serves the City of Beloit and portions of several small surrounding communities. Treatment units include preliminary influent screening press, grit removal, primary settling, anoxic selector, advanced activated sludge with ammonia and biological phosphorus removal, final clarification, and seasonal effluent chlorine (sodium hypochlorite) contact disinfection and dechlorination (sodium bisulfite). ~~Biosolids are thickened and/or dewatered using a gravity belt thickener and belt filter press, anaerobically digested and stored prior to land application or landfilling.~~

The City of Beloit WWTP is in the Rock River Basin. A total maximum daily load (TMDL) was developed for the Rock River Basin to determine the maximum amounts of phosphorus and sediment that can be discharged to protect and improve water quality. The Rock River Basin's TMDL was approved by the Environmental Protection Agency (EPA) in September 2011. The entire report can be found at: http://dnr.wi.gov/topic/TMDLs/RockRiver/Final_Rock_River_TMDL_Report_with_Tables.pdf.

Beloit administers a local industrial pretreatment program approved by the Department on October 14, 1983. The collection system for the City of Beloit is a 100% separate sewer system with no constructed overflow points. The City is also covered under a "no exposure certification" for storm water. The Department has found the City to be in substantial compliance with its current permit.

The sludge treatment at the facility changed effective with permit modification #4 effective September 2025 to include class A sewage sludge treatment utilizing heat drying meeting continuously monitored temperatures of ≥80 deg C, daily monitored percent solids of ≥10% solids and discrete fecal coliform monitoring of ≤1000 MPN/g TS. New solids handling equipment include twin sludge screening units, a single centrifuge (Flottweg), a cake sludge hopper, a belt type heat drying sludge treatment equipment (Veolia), a sludge storage silo, and a biosolids dust collection system.

Class B sludge will no longer be directly land applied by the permittee. The permittee plans to contract for any Class B land application which includes transportation. This land application may be to sites approved for the facility or to sites approved by the WPDES permitted contract hauler. Additionally, the WPDES permitted contractor may discharge Beloit's Class B sludge into DNR approved, WPDES permitted contractor owned storage facilities.

Additionally, the permittee plans to distribute and transport EQ biosolids to area farms and potentially other end users. While the end user may desire to pick-up EQ biosolids directly from the facility, the permittee may contract for transportation, distribution and application of bulk EQ biosolids.

**Permit modification effective 1/1/2022 to incorporate water quality trading for compliance with final TMDL total phosphorus limits in the months of September and October. This permit modification includes terms and conditions related to the Water Quality Trading Plan (WQT-2021-0008). The reissued permit inadvertently did not have a section specific to E. coli limits. This permit modification also added that section into the Surface Water Section. Additionally, the permittee notified the department of a timeline for compliance with E. coli limits and therefore the department altered the compliance schedule to reflect the updated timeline for compliance.*

*Permit Modification #2 effective 7/1/2022 for a typographical effort discovered by the department in Monitoring Table 2.2.1. The sample frequency and sample type were incorrectly stated for the *E. coli* parameter with the 10% Exceedance limit type. In error, the sample frequency was originally stated as "weekly" and the sample type was stated as "grab", however based on how the limit is determined they should be "monthly" and "calculated", respectively.

*Permit modification #3 completed to remove chloride sampling and limits as the permittee has converted to UV disinfection. Changes for modification #3 are highlighted in light green.

*Permit Modification #4 completed to add requirements in the Land Application Section for Class A Sludge. Changes made in modification #4 are only in the Land Application Section and Standard Requirements Section of the Permit. The permittee requested this modification due to changes in operations due to equipment upgrade/maintenance for the Class B sludge treatment. These upgrades resulted in Beloit installing treatment to meet Class A sludge requirements. Changes for modification #4 are highlighted in orange.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
701	4.56 MGD (Jan 2015 – Mar 2020	Influent: 24-Hr flow proportional sampler and flow meter located after preliminary screening but before grit removal in the basement of the process building.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
001	4.48 MGD (Jan 2015 – Mar 2020)	Effluent: 24-Hr flow proportional composite sampler and flow meter located in the disinfection building basement. Grab sample taken after the chlorinate/dechlorinate disinfection in the chlorine contact tank, prior to discharge to the Rock River.
002	852 MT	Anaerobically digested, thickened, Liquid, Class B. Representative sludge samples shall be collected from the on-site storage tank recirculation line. This outfall is provided for operational flexibility should treatment equipment failure occur. Sampling required only when discharge occurs.
005	1759 MT	Anaerobically digested, thickened, Cake, Class B. Representative sludge samples shall be collected from the cake pump after the belt press. This outfall is provided for operational flexibility should treatment equipment failure occur. Sampling required only when discharge occurs.
007	New Class B Outfall	Land Application: Anaerobically digested, centrifuge Cake Sludge, Class B. Representative samples shall be collected from the cake hopper. This outfall is provided for operational flexibility should treatment equipment failure occur. Sampling required only when discharge occurs.
011	New Class A Sampling Point	Land Application (Sample Point): Class A, sewage sludge cake, treated by heat drying process and sampled from the dryer. Pathogen test monitoring requirements include List 3 quarterly during periods when sewage sludge is distributed as EQ product or land applied.
008	New Class A Outfall	Land Application: Class A, sewage sludge cake, anaerobically digested, centrifuged, heat dried and sampled from the sludge storage silo.
009	New Class A Outfall	Land Application: Class A, dust from biosolids Class A thermal treatment dryer. Representative samples collected from the dust collection system. This outfall is approved for discharge to landfill only. No land application or EQ distribution is authorized.
107	N/A – flow reporting not required	Collect the mercury field blank using sample handling procedures specified in NR 106.145(9), Wisconsin Administrative Code.

1 Influent - Proposed Monitoring

Sample Point Number: 701- INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	Monthly	24-Hr Flow Prop Comp	
CBOD5		mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	Daily	24-Hr Flow Prop Comp	
Cadmium, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	
Chromium, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	
Copper, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	
Lead, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	
Nickel, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	
Zinc, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	
Mercury, Total Recoverable		ng/L	Quarterly	24-Hr Flow Prop Comp	See Mercury section

Changes from Previous Permit:

Monthly BOD sampling added for CMAR and design loading purposes.

Explanation of Limits and Monitoring Requirements

Tracking of $CBOD_5$, and suspended solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in Standard Requirements of the permit. Metals sampling required for facilities with pretreatment programs.

Mercury monitoring frequency reduced from monthly to once every 3 months because adequate representative results meeting the data quality requirements in ss. NR 106.145(9) and (10), Wis. Adm. Code, were generated during the previous permit term. This reduced monitoring frequency is consistent with the mercury field blank and effluent sample frequencies contained in this permit. Influent sampling frequency is based upon size of facility. Influent metals monitoring in combination with effluent metals monitoring used to calculate local industrial pretreatment limits.

2 Inplant - Proposed Monitoring and Limitations

Sample Point Number: 107- 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 Mercury section.

Changes from Previous Permit:

No changes.

2.1.1 Explanation of Monitoring Requirements

Frequency of mercury field blank analysis reduced from monthly to once every 3 months because adequate representative results meeting the data quality requirements in ss. NR 106.145(9) and (10), Wis. Adm. Code, were generated during the previous permit term. This reduced monitoring frequency is consistent with the mercury influent and effluent sample frequencies contained in this permit.

3 Surface Water - Proposed Monitoring and Limitations

Sample Point Number: 001- EFFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
CBOD5	Weekly Avg	40 mg/L	5/Week	24-Hr Flow Prop Comp	
CBOD5	Monthly Avg	25 mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	Daily	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	Daily	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	2,276 lbs/day	Daily	Calculated	January
Suspended Solids, Total	Weekly Avg	2,811 lbs/day	Daily	Calculated	February
Suspended Solids, Total	Weekly Avg	3,155 lbs/day	Daily	Calculated	March

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Suspended Solids, Total	Weekly Avg	2,973 lbs/day	Daily	Calculated	April
Suspended Solids, Total	Weekly Avg	2,740 lbs/day	Daily	Calculated	May
Suspended Solids, Total	Weekly Avg	2,579 lbs/day	Daily	Calculated	June
Suspended Solids, Total	Weekly Avg	2,043 lbs/day	Daily	Calculated	July
Suspended Solids, Total	Weekly Avg	1,597 lbs/day	Daily	Calculated	August
Suspended Solids, Total	Weekly Avg	1,082 lbs/day	Daily	Calculated	September
Suspended Solids, Total	Weekly Avg	1,750 lbs/day	Daily	Calculated	October
Suspended Solids, Total	Weekly Avg	2,680 lbs/day	Daily	Calculated	November
Suspended Solids, Total	Weekly Avg	2,235 lbs/day	Daily	Calculated	December
Suspended Solids, Total	Monthly Avg	1,778 lbs/day	Daily	Calculated	January
Suspended Solids, Total	Monthly Avg	2,196 lbs/day	Daily	Calculated	February
Suspended Solids, Total	Monthly Avg	2,465 lbs/day	Daily	Calculated	March
Suspended Solids, Total	Monthly Avg	2,323 lbs/day	Daily	Calculated	April
Suspended Solids, Total	Monthly Avg	2,141 lbs/day	Daily	Calculated	May
Suspended Solids, Total	Monthly Avg	2,015 lbs/day	Daily	Calculated	June
Suspended Solids, Total	Monthly Avg	1,596 lbs/day	Daily	Calculated	July
Suspended Solids, Total	Monthly Avg	1,248 lbs/day	Daily	Calculated	August
Suspended Solids, Total	Monthly Avg	845 lbs/day	Daily	Calculated	September

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Suspended Solids, Total	Monthly Avg	1,367 lbs/day	Daily	Calculated	October
Suspended Solids, Total	Monthly Avg	2,094 lbs/day	Daily	Calculated	November
Suspended Solids, Total	Monthly Avg	1,746 lbs/day	Daily	Calculated	December
Nitrogen, Ammonia (NH3-N) Total	Daily Max	17 mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	17 mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	17 mg/L	3/Week	24-Hr Flow Prop Comp	
~~Chlorine, Total Residual~~	~~Daily Max~~	~~38 ug/L~~	~~Daily~~	~~Grab~~	~~May through September~~
~~Chlorine, Total Residual~~	~~Weekly Avg~~	~~31 ug/L~~	~~Daily~~	~~Grab~~	~~May through September~~
~~Chlorine, Total Residual~~	~~Monthly Avg~~	~~31 ug/L~~	~~Daily~~	~~Grab~~	~~May through September~~
Fecal Coliform	Geometric Mean - Monthly	400 #/100 ml	2/Week	Grab	Interim limit effective May through September annually until the final E. coli limit goes into effect per the Effluent Limitations for E. coli Schedule.
E. coli		#/100 ml	2/Week	Grab	Monitoring only May through September annually until the final limit goes into effect per the Effluent Limitations for E. coli Schedule.
E. coli	Geometric Mean - Monthly	126 #/100 ml	2/Week	Grab	Limit Effective May through September annually per the Effluent Limitations for E. coli Schedule.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit Effective May through September annually per the Effluent Limitations for E. coli Schedule. See the E. coli

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					Percent Limit section. Enter the result in the DMR on the last day of the month.
Phosphorus, Total	Monthly Avg	1.0 mg/L	Daily	24-Hr Flow Prop Comp	Limit effective throughout the permit term, as it represents a minimum control level. See "Water Quality Trading (WQT)" sections for more information.
~~Phosphorus, Total~~	~~Monthly Avg~~	~~33 lbs/day~~	~~Daily~~	~~Calculated~~	~~January, April~~
~~Phosphorus, Total~~	~~Monthly Avg~~	~~35.1 lbs/day~~	~~Daily~~	~~Calculated~~	~~February~~
~~Phosphorus, Total~~	~~Monthly Avg~~	~~30.8 lbs/day~~	~~Daily~~	~~Calculated~~	~~March~~
~~Phosphorus, Total~~	~~Monthly Avg~~	~~31.3 lbs/day~~	~~Daily~~	~~Calculated~~	~~May~~
~~Phosphorus, Total~~	~~Monthly Avg~~	~~30.4 lbs/day~~	~~Daily~~	~~Calculated~~	~~June~~
~~Phosphorus, Total~~	~~Monthly Avg~~	~~23.5 lbs/day~~	~~Daily~~	~~Calculated~~	~~July~~
~~Phosphorus, Total~~	~~Monthly Avg~~	~~20.3 lbs/day~~	~~Daily~~	~~Calculated~~	~~August~~
~~Phosphorus, Total~~	~~Monthly Avg~~	~~18.5 lbs/day~~	~~Daily~~	~~Calculated~~	~~September starting in 2022. See Phosphorus section and schedule.~~
~~Phosphorus, Total~~	~~Monthly Avg~~	~~20.2 lbs/day~~	~~Daily~~	~~Calculated~~	~~October starting in 2022. See Phosphorus section and schedule.~~
~~Phosphorus, Total~~	~~Monthly Avg~~	~~24.4 lbs/day~~	~~Daily~~	~~Calculated~~	~~November~~
~~Phosphorus, Total~~	~~Monthly Avg~~	~~29.5 lbs/day~~	~~Daily~~	~~Calculated~~	~~December~~
Phosphorus, Total		lbs/day	Daily	Calculated	Report daily mass discharged using Equation 1a. in the Water Quality Trading (WQT) section.
WQT Credits Used (TP)		lbs/month	Monthly	Calculated	Report WQT TP Credits

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
WQT Computed Compliance (TP)	Monthly Avg	33 lbs/day	Monthly	Calculated	Limit is effective January & April annually. Report the WQT TP Computed Compliance value using Equation 4a. in the Water Quality Trading (WQT) section. Value entered on the last day of the month.
WQT Computed Compliance (TP)	Monthly Avg	35.1 lbs/day	Monthly	Calculated	Limit is effective February annually.
WQT Computed Compliance (TP)	Monthly Avg	30.8 lbs/day	Monthly	Calculated	Limit is effective March annually.
WQT Computed Compliance (TP)	Monthly Avg	31.3 lbs/day	Monthly	Calculated	Limit is effective May annually.
WQT Computed Compliance (TP)	Monthly Avg	30.4 lbs/day	Monthly	Calculated	Limit is effective June annually.
WQT Computed Compliance (TP)	Monthly Avg	23.5 lbs/day	Monthly	Calculated	Limit is effective July annually.
WQT Computed Compliance (TP)	Monthly Avg	20.3 lbs/day	Monthly	Calculated	Limit is effective August annually.
WQT Computed Compliance (TP)	Monthly Avg	18.5 lbs/day	Monthly	Calculated	Limit is effective starting September 2022.
WQT Computed Compliance (TP)	Monthly Avg	20.2 lbs/day	Monthly	Calculated	Limit is effective starting October 2022.
WQT Computed Compliance (TP)	Monthly Avg	24.4 lbs/day	Monthly	Calculated	Limit is effective November annually.
WQT Computed Compliance (TP)	Monthly Avg	29.5 lbs/day	Monthly	Calculated	Limit is effective December annually.
WQT TP Annual Credits Used	Annual Total	1074.5 lbs/year	Annual	Calculated	Limit effective in 2022. The sum of total monthly credits used may not exceed Table 2 values listed below.
WQT TP Annual Credits Used	Annual Total	2149 lbs/year	Annual	Calculated	Limit effective in 2023, 2024 and 2025. The sum of total monthly credits used may not exceed Table 2 values listed below.
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	Quarterly	Calculated	
Acute WET		TU_a	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET Section
Chronic WET		TU_c	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET Section
Cadmium, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	
Chromium, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	
Copper, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	
Lead, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	
Nickel, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	
Zinc, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	
Mercury, Total Recoverable		ng/L	Quarterly	Grab	See Mercury section.
Chloride		mg/L	4/Month	24-Hr Flow Prop Comp	Monitoring only in 2024
Temperature Maximum		deg F	3/Week	Continuous	Monitoring only in 2024

Changes from Previous Permit

Modification #3 completed to remove chlorine sampling and limits.

Modification changed a typographical error in Monitoring table 2.2.1, the sample type were incorrectly stated for the *E. coli* parameter with the 10% Exceedance limit type. In error, the sample type was originally stated as "grab" but it should be "calculated".

Flow sample frequency updated for eDMR reporting purposes. Weekly and monthly average ammonia limits added. Monthly average chlorine limit added. Chloride and Temperature sampling year updated to 2024. Final Phosphorus TMDL mass limits added ~~along with a schedule for September and October~~ and the phosphorus concentration technology

based limit (TBEL) has been updated. *Reporting requirements and schedule(s) for Water Quality Trading (WQT) are added with the permit modification. The modified permit contains the additional information on compliance determinations, annual reporting and re-opening of the permit. The schedule included is for the use of water quality trading for phosphorus compliance effective July 1, 2021. Additionally, the E. coli section additionally explaining the limits was not included in the original permit. That section has been added.*

Fecal coliform monitoring and limits have been replaced with *Escherechia coli* (*E. coli*) monitoring and limits. *E. coli* monitoring is required at the permit effective date. An interim fecal coliform limit of 400 #/100 ml as a monthly geometric mean will apply from the permit effective date through the end of a compliance schedule. At the end of the compliance schedule, *E. coli* limits of 126 #/100 ml as a monthly geometric mean that may never be exceeded and 410 #/100 ml as a daily maximum that may not be exceeded more than 10 percent of the time in any calendar month will apply.

Explanation of Limits and Monitoring Requirements

Water Quality Based Limits,WET Requirements and Disinfection

Refer to the WQBEL memo for the detailed calculations, prepared by Sarah Luck dated June 9, 2020 used for this reissuance.

BOD_5, CBOD5, pH, DO, Fecal Coliform, and Total Suspended Solids – The categorical limitations and requirements for $CBOD_5$, TSS, pH, and DO are carried over into this permit. These limitations are not subject to change at this time because the receiving water characteristics have not changed.

In pervious permit terms Beloit requested $CBOD_5$ substitution for BOD_5 limits pursuant to s. NR 210.07 (4), Wis. Adm. Code. Permittees with approved $CBOD_5$ limits are still required to sample for influent BOD_5 but at a reduced frequency for CMAR reporting purposes. The addition of BOD_5 sampling is in the influent sample point. $CBOD_5$ sampling at 5/Week frequency was approved previously and is continued in this permit term. Review of the last five years of data indicated they averaged less than 10 mg/L and had no compliance issues at the wastewater treatment plant or pretreatment facilities that discharge to Beloit.

On May 1, 2020 revisions to the bacteria surface water criteria became effective. Therefore, this permit has been updated to include the existing fecal coliform limit as an interim limit along with E-*coli* monitoring and a compliance schedule to meet required *E. coli* limits. The interim fecal coliform limit is effective until the final *E. coli* limit becomes effective per the Schedule.

Rock River TMDL Total Suspended Solids - Weekly average and monthly average mass limits for total suspended solids were required to comply with the Rock River TMDL and were derived consistent with the assumptions and requirements of the EPA-approved WLA for the Rock River. There are no changes. The approved total suspended solids TMDL limits for this permittee are included in the following table:

Total Suspended Solids (TSS) Effluent Limitations

Month	Monthly Avg. TSS Effluent Limit (lbs/day)	Weekly Avg. TSS Effluent Limit (lbs/day)
Jan	1778	2276
Feb	2196	2811
March	2465	3155
April	2323	2973
May	2141	2740
June	2015	2579

Month	Monthly Avg. TSS Effluent Limit (lbs/day)	Weekly Avg. TSS Effluent Limit (lbs/day)
July	1596	2043
Aug	1248	1597
Sept	845	1082
Oct	1367	1750
Nov	2094	2680
Dec	1746	2235

Ammonia – Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Table 2C and Table 4B of ch. NR 105, Wis. Adm. Code (effective March 1, 2004). Subchapter IV of ch. NR 106 establishes procedures for calculating water quality-based effluent limitations (WQBELs) for ammonia (effective March 1, 2004). Weekly average and monthly average ammonia limits are required in accordance with the federal regulation 40 CFR 122.45(d), limits in this permit are to be expressed as weekly average and monthly average limits whenever practicable. Weekly and monthly average limits were added to meet this regulation.

Chlorine – ~~Because chlorine (Sodium hypochlorite) is added to the effluent for seasonal disinfection during the months of May through September, effluent limits are recommended to assure proper operation of the dechlorination (Sodium bisulfite) system. Weekly average and monthly average chlorine limits are required in accordance with the federal regulation 40 CFR 122.45(d), limits in this permit are to be expressed as weekly average and monthly average limits whenever practicable (see limit memo).~~ Chlorine is no longer used for disinfection and the facility now uses UV disinfection. Therefore, monitoring and limitations for Chlorine have been removed with permit modification #3.

***E. Coli* -** Revisions to bacteria surface water quality criteria to protect recreational uses and accompanying *E. coli* WPDES permit implementation procedures became effective May 1, 2020. See changes from previous permit above and the *E-coli* section of the WQBEL for more information. The new rule requires that WPDES permits for facilities with required disinfection include monitoring for *E. coli* while facilities are disinfecting during the recreation period and establish effluent limitations for *E. coli* established in s. NR 210.06 (2), Wis. Adm Code. The administrative code rule changes included the following actions: revised the bacteria water quality criteria from fecal coliform to *E. coli* to protect recreation in ch. NR 102, Wis. Adm. Code.; removed fecal coliform criteria for certain individual waters from ch. NR 104, Wis. Adm. Code.; revised permit requirements for publicly and privately owned sewage treatment works in ch. NR 210, Wis. Adm. Code.; and, updated approved analytical methods for bacteria in ch. NR 219, Wis. Adm. Code.

Phosphorus – Phosphorus rules became effective December 1, 2010 per NR 217, Wis. Adm. Code, that required the permittee to comply with water quality based effluent limits (WQBELs) for total phosphorus. For this permit term, the permittee has indicated that they are interested in utilizing water quality trading to meet final TMDL mass limits. However, at the time of permit reissuance an approved water quality trading plan was not available. After review of the available data from the current permit term it appears that the permittee can consistently meet the final TMDL mass limits except for the months of September and October. The permit also includes a monthly average mg/L limit year-round that serves to establish a minimum control value. The limit was updated and is now the TBEL of 1.0 mg/L monthly average effective year-round upon reissuance *and will be retained in the permit*.

The wastewater treatment facility is not able to meet the WQBEL for the months of September and October. This permit authorizes the use of trading as a tool to demonstrate compliance with the phosphorus WQBELs. This permit includes terms and conditions related to the Water Quality Trading Plan (WQT-2021-0008) or approved amendments thereof. The total 'WQT TP Credits' available are designated in the approved WQT Plan. The City is implementing a variety of management practices including crop cover, barnyard practices, and grassed waterways on agricultural lands. The WQT Plan proposes the generation of a range of 1074.5 lbs/yr to 2149 lbs/yr of phosphorus credits for the next five years. Since credits generated during a calendar year are not applicable to only just a few months, Beloit may also use WQT

generated credits throughout the year. Therefore, reporting compliance for the rest of the year has also been updated to the "WQT Calculated Compliance" parameter.

Additional WQT subsections in the permit provide information on compliance determinations, annual reporting and re-opening of the permit.

Rock River TMDL Total Phosphorus - Mass limits were calculated to comply with the Rock River TMDL and were derived consistent with the assumptions and requirements of the EPA-approved WLA for the Rock River. The final effluent mass limits for phosphorus are expressed as monthly averages and is effective for all months upon reissuance except for September and October that become effective per the Schedule. The approved total phosphorus TMDL mass limits for this permittee are included in the following table below:

Month	Monthly Average Total P Effluent Limit (lbs/day)
Jan	33.0
Feb	35.1
March	30.8
April	33.0
May	31.3
June	30.4
July	23.5
Aug	20.3
Sept	18.5
Oct	20.2
Nov	24.4
Dec	29.5

Total Nitrogen Monitoring (NO2+NO3, TKN and Total N): The Department has included effluent monitoring for Total Nitrogen in the permit through the authority under §§ 283.55(1)(e), Wis. Stats., which allows the department to require the permittee to submit information necessary to identify the type and quantity of any pollutants discharged from the point source, and through s. NR 200.065(1)(h), Wis. Adm. Code, which allows for this monitoring to be collected during the permit term. Quarterly effluent monitoring for Total Nitrogen is included in the permit because of the potential for higher nitrogen loading resulting from higher flows (major facilities), higher concentrations, or both. More information on the justification to include total nitrogen monitoring in wastewater permits can be found in the "Guidance for Total Nitrogen Monitoring in Wastewater Permits" dated October 1, 2019.

Whole Effluent Toxicity: Whole effluent toxicity (WET) testing requirements and limits (if applicable) are determined in accordance with ss. NR 106.08 and NR 106.09 Wis. Adm. Code, as revised August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at http://dnr.wi.gov/topic/wastewater/wet.html). Annual WET testing in rotating quarters is required as listed in the permit.

Mercury – Actual flow is greater than 1.0 MGD so the mercury influent, effluent and field blank monitoring requirements for Major WWTFs in Subchapter III, NR 106.145, Wis. Adm. Code, apply. Mercury effluent and field blank data generated during the previous permit term were evaluated for sampling and analysis requirements in accordance with ss. NR 106.145 (9) and (10), Wis. Adm. Code. The 30-day Upper 99th percentile (30-day P99) of effluent results calculated using the procedures in s. NR 106.05(5), Wis. Adm. Code, was less than the calculated limit, so a limit is not necessary (see WQBEL memo). The permit requires Beloit to continue quarterly influent, field blank and effluent monitoring. The permittee's success in implementing a Pollutant Minimization Program designed to minimize mercury influent to the plant should be continued.

Toxics – Metals monitoring throughout the permit term is required for all permittee's with approved pretreatment programs. Sampling is required quarterly year-round throughout the permit term.

Temperature: Requirements for Temperature are included in NR 102 Subchapter II Water Quality Standards for Temperature and NR 106 Subchapter V Effluent Limitations for Temperature. Thermal discharges must meet the Public Health criterion of 120 degrees F and the Fish & Aquatic Life criteria which are established to protect aquatic communities from lethal and sub-lethal thermal effects. Sampling in 2024 for permit reissuance purposes has been included for permit reissuance purposes.

Chloride: effluent concentrations calculated using the procedures in s. NR 106.05 (5), Wis. Adm. Code, were below the associated acute and chronic limitations, so a limit is not needed (WQBEL). The permit requires monitoring in the fourth year of the permit term for permit reissuance purposes.

4 Land Application - Proposed Monitoring and Limitations

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
002	B	Liquid	Anaerobic Digestion & Fecal Coliform	Injection & Incorporation	Land Application & Landfill	852 MT
005	B	Cake	Anaerobic Digestion & Fecal Coliform	Injection, Incorporation, VSR	Land Application & Landfill	1759 MT
007	B	Cake	Anaerobic Digestion & Fecal Coliform	Injection, Incorporation, VSR	Land Application & Landfill	New Outfall
011	A	Cake	N/A	N/A	N/A	New Sampling Point
008	A	Cake	Heat Drying	Injection, Incorporation, or EQ Distribution		New Outfall
009	A	Dust	N/A	N/A	Landfill	New Outfall
Does sludge management demonstrate compliance? **Yes**						
Is additional sludge storage required? **No**						

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? **No** If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in landapplying sludge from this facility						
Is a priority pollutant scan required? **Last completed in 2018. Will be required in 2028 (next permit term).** Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

Sample Point Number: 002- Anaerobic Liquid Sludge and 005- Anaerobic Cake Sludge

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

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Zinc Dry Wt	Ceiling	7,500 mg/kg	1/ 2 Months	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	1/ 2 Months	Composite	
Nitrogen, Total Kjeldahl		Percent	1/ 2 Months	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	1/ 2 Months	Composite	
Phosphorus, Total		Percent	1/ 2 Months	Composite	
Phosphorus, Water Extractable		% of Tot P	1/ 2 Months	Composite	
Potassium, Total Recoverable		Percent	1/ 2 Months	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Once in 2021
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once in 2021
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Annual	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

No changes.

Modification -4: **PFAS** – Annual monitoring is included in the permit pursuant municipal s. NR 204.06(2)(b)9, Wis. Adm. Code.

Explanation of Limits and Monitoring Requirements

Requirements for land application of municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. Ceiling and high quality limits for metals in sludge are specified in s. NR 204.07(5), Wis. Adm. Code. Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07 (7), Wis. Adm. Code for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k), Wis. Adm. Code. Radium requirements are addressed in s. NR 204.07(3)(n), Wis. Adm. Code. Per s. NR 204.06(2)(c)3, Table A, Wis. Adm. Code, municipal treatment facilities land applying and/or landfilling between 1,654 and16,540 Dry U.S. Tons of sludge per 365 day period shall monitor sludge once per 60 days.

PFAS: The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA has released a draft assessment which documents the potential public health risks associated with land applying biosolids contaminated with PFOA and/or PFOS, and the department is currently evaluating this information. In the interim, the department has developed the "Interim Strategy for Land Application of Biosolids and Industrial Sludges Containing PFAS".

Collecting sludge data on PFAS concentrations from a wide range of wastewater treatment facilities will help protect public health from exposure to elevated levels of PFAS and determine the department's implementation of EPA's recommendations. To quantitate this risk, PFAS sampling has been included in the proposed WPDES permit pursuant to ss. NR 214.18(5)(b) and NR 204.06(2)(b)9., Wis. Adm. Code.

Sample Point Number: 007 – Digested Sludge Cake Hopper

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

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Ammonium (NH_4-N) Total		Percent	1/ 2 Months	Composite	
Phosphorus, Total		Percent	1/ 2 Months	Composite	
Phosphorus, Water Extractable		% of Tot P	1/ 2 Months	Composite	
Potassium, Total Recoverable		Percent	1/ 2 Months	Composite	
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Grab	Calculated	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

Modification -4: Outfall 007 added with the modification for inclusion of Class A biosolids.

Explanation of Limits and Monitoring Requirements

Requirements for land application of municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. Ceiling and high quality limits for metals in sludge are specified in s. NR 204.07(5), Wis. Adm. Code. Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07 (7), Wis. Adm. Code for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k), Wis. Adm. Code. Per s. NR 204.06(2)(c)3, Table A, Wis. Adm. Code, municipal treatment facilities land applying and/or landfilling between 1,654 and16,540 Dry U.S. Tons of sludge per 365 day period shall monitor sludge once per 60 days.

PFAS: The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA has released a draft assessment which documents the potential public health risks associated with land applying biosolids contaminated with PFOA and/or PFOS, and the department is currently evaluating this information. In the interim, the department has developed the "Interim Strategy for Land Application of Biosolids and Industrial Sludges Containing PFAS".

Collecting sludge data on PFAS concentrations from a wide range of wastewater treatment facilities will help protect public health from exposure to elevated levels of PFAS and determine the department's implementation of EPA's recommendations. To quantitate this risk, PFAS sampling has been included in the proposed WPDES permit pursuant to ss. NR 214.18(5)(b) and NR 204.06(2)(b)9, Wis. Adm. Code.

Sampling Point 011 – Pathogen Treatment Monitoring

Changes from Previous Permit:

Modification -4: Outfall 011 added with the modification for inclusion of Class A biosolids.

Explanation of Limits and Monitoring Requirements

This sampling point is for pathogen treatment monitoring as part of the requirements of Class A sludge.

The United States Environmental Protection Agency (USEPA) developed 40 CFR 503 relating to the treatment and use of sewage sludge, commonly referred to as biosolids, when treated. 40 CFR 503 only pertains to sewage sludge requirements when the sewage sludge is land applied, surface disposed or incinerated. However, this is not the case with respect to the requirements of ch. NR 204, Wis. Adm. Code. The State of Wisconsin is a delegated entity for implementing 40 CFR 503 and delegated entities such as the State of Wisconsin may have more stringent requirements for sewage sludge than required by USEPA. Algae solids generated during the treatment of domestic sewage is treated as sewage sludge pursuant to the definition of sewage sludge in Wisconsin Administrative Code:

Section NR 204.03(55), Wis. Adm. Code: “Sewage sludge" or “sludge" or “biosolids" means the solid, semi-solid or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes scum or solids removed in primary, secondary or advanced wastewater treatment processes and material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works. (emphasis added)

Sampling Point (Outfall) 008 – Class A Cake Sludge (Heat dried)

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	1/ 2 Months	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	1/ 2 Months	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	1/ 2 Months	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	1/ 2 Months	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	1/ 2 Months	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	1/ 2 Months	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	1/ 2 Months	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	1/ 2 Months	Composite	
Lead Dry Wt	High Quality	300 mg/kg	1/ 2 Months	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	1/ 2 Months	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	1/ 2 Months	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	1/ 2 Months	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nickel Dry Wt	Ceiling	420 mg/kg	1/ 2 Months	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	1/ 2 Months	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	1/ 2 Months	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	1/ 2 Months	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	1/ 2 Months	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	1/ 2 Months	Composite	
Nitrogen, Total Kjeldahl		Percent	1/ 2 Months	Composite	Required in sampling time periods in which land application and/or EQ distribution occurs.
Nitrogen, Ammonium (NH_4-N) Total		Percent	1/ 2 Months	Composite	Required in sampling time periods in which land application and/or EQ distribution occurs.
Phosphorus, Total		Percent	1/ 2 Months	Composite	Required in sampling time periods in which land application and/or EQ distribution occurs.
Phosphorus, Water Extractable		% of Tot P	1/ 2 Months	Composite	Required in sampling time periods in which land application and/or EQ distribution occurs.
Potassium, Total Recoverable		Percent	1/ 2 Months	Composite	Required in sampling time periods in which land application and/or EQ distribution occurs.
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Annual	Calculated	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

Modification -4: Outfall 008 added with the modification for inclusion of Class A biosolids.

Explanation of Limits and Monitoring Requirements

This sampling point is for the land application or EQ distribution of Class A sludge.

The United States Environmental Protection Agency (USEPA) developed 40 CFR 503 relating to the treatment and use of sewage sludge, commonly referred to as biosolids, when treated. 40 CFR 503 only pertains to sewage sludge requirements when the sewage sludge is land applied, surface disposed or incinerated. However, this is not the case with respect to the requirements of ch. NR 204, Wis. Adm. Code. The State of Wisconsin is a delegated entity for implementing 40 CFR 503 and delegated entities such as the State of Wisconsin may have more stringent requirements for sewage sludge than required by USEPA. Algae solids generated during the treatment of domestic sewage is treated as sewage sludge pursuant to the definition of sewage sludge in Wisconsin Administrative Code:

Section NR 204.03(55), Wis. Adm. Code: “Sewage sludge" or “sludge" or “biosolids" means the solid, semi-solid or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes scum or solids removed in primary, secondary or advanced wastewater treatment processes and material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works. (emphasis added)

Sampling Point (Outfall) 009 – Class A Biosolids Dust

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

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	

Changes from Previous Permit:

Modification -4: Outfall 009 added with the modification for inclusion of Class A biosolids.

Explanation of Limits and Monitoring Requirements

This Outfall is for Landfill disposal of dust from the dryer belt.

The United States Environmental Protection Agency (USEPA) developed 40 CFR 503 relating to the treatment and use of sewage sludge, commonly referred to as biosolids, when treated. 40 CFR 503 only pertains to sewage sludge requirements when the sewage sludge is land applied, surface disposed or incinerated. However, this is not the case with respect to the requirements of ch. NR 204, Wis. Adm. Code. The State of Wisconsin is a delegated entity for implementing 40 CFR 503 and delegated entities such as the State of Wisconsin may have more stringent requirements for sewage sludge than required by USEPA. Algae solids generated during the treatment of domestic sewage is treated as sewage sludge pursuant to the definition of sewage sludge in Wisconsin Administrative Code:

Section NR 204.03(55), Wis. Adm. Code: “Sewage sludge" or “sludge" or “biosolids" means the solid, semi-solid or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes scum or solids removed in primary, secondary or advanced wastewater treatment processes and material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works. (emphasis added)

5 Compliance Schedules

~~5.1 Total Phosphorus Compliance~~

~~The permittee shall comply with the final TMDL phosphorus mass limits for the months of September and October as specified.~~

~~Required Action~~	~~Due Date~~
~~**Phosphorus Compliance Report**: The permittee shall submit a report summarizing the actions taken towards compliance with the final phosphorus mass limits for the months of September and October. If the permittee intends to utilize water quality trading (WQT) for final compliance, this report shall include an approvable water quality trading plan.~~	~~03/31/2021~~
~~**Achieve Compliance**: The permittee shall achieve compliance with final Phosphorus TMDL mass limitations for the months of September and October.~~	~~06/30/2022~~

~~**Explanation of Schedule**~~

~~A schedule is included in the permit to provide time for the permittee to complete actions required to submit an approvable water quality trading plan while coming into compliance with the limits as soon as reasonably possible. Final TMDL phosphorus mass limits for September and October will become effective per the schedule unless the permittee~~

~~submits an approvable WQT plan and the Department completes a permit modification with 30-day public notice prior to the limit effective date.~~

Schedule removed at Permit Modification to reflect change to WQT for Phosphorus compliance. Schedule numbers shifted to reflect removal of Schedule 5.1 Total Phosphorus.

5.1 Effluent Limitations for E. coli

The permittee shall comply with surface water limitations for E. coli as specified. No later than 14 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

Required Action	Due Date
Status Update: The permittee shall submit information within the discharge monitoring report (DMR) comment section documenting the steps taken in preparation for properly monitoring and testing for E. coli including, but not limited to, selected test method and location of sampling.	11/21/2020
Operational Evaluation Report: The permittee shall prepare and submit an Operational Evaluation Report to the Department for review and approval. The report shall include an evaluation of collected effluent data and proposed operational improvements that will optimize efficacy of disinfection at the treatment plant during the period prior to complying with final E. coli limitations and, to the extent possible, enable compliance with the final E. coli limitations. The report shall include a plan and schedule for implementation of the operational improvements. These improvements shall occur as soon as possible, but not later than **April 30, 2022**. The report shall state whether the operational improvements are expected to result in compliance with the final E. coli limitations. The permittee shall implement the operational improvements in accordance with the approved plan and schedule specified in the Operational Evaluation Report and in no case later than **April 30, 2022**. If the Operational Evaluation Report concludes that the operational improvements are expected to result in compliance with the final E. coli limitations, the permittee shall comply with the final E. coli limitations by **April 30, 2022** and the permittee is not required to comply with subsequent milestones identified below in this compliance schedule (‘Submit Facility Plan’, 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet Limitations', ‘Construction Upgrade Progress Report’, 'Complete Construction', 'Achieve Compliance'). FACILITY PLAN - If the Operational Evaluation Report concludes that operational improvements alone are not expected to result in compliance with the final E. coli limitations, the permittee shall initiate development of a facility plan for meeting final E. coli limitations and comply with the remaining required actions in this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final E. coli limitations using the existing treatment system with only operational improvements, the Department may reopen and modify the permit to include an implementation schedule for achieving the final E. coli limitations sooner than **April 30, 2025**.	10/31/2021
~~**Submit Facility Plan**: If the Operational Evaluation Report concluded that the permittee cannot achieve final E. coli limitations with operational improvements alone, the permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code. The permittee may submit an abbreviated facility plan if the Department determines that the modifications are minor.~~	~~04/30/2022~~
~~**Final Plans and Specifications**: The permittee shall submit final construction plans to the Department for approval pursuant to ch. NR 108, Wis. Adm. Code, specifying treatment plant~~	~~03/31/2023~~

~~upgrades that must be constructed to achieve compliance with final E. coli limitations and a schedule for completing construction of the upgrades by the complete construction date specified below.~~	
~~**Treatment Plant Upgrade to Meet Limitations**: The permittee shall initiate bidding, procurement, and/or construction of the project. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41. Stats., prior to initiating activities defined as construction under ch. NR 108, Wis. Adm. Code. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications.~~	~~09/30/2023~~
Construction Upgrade Progress Report: The permittee shall submit a progress report on construction upgrades.	~~09/30/2024~~ 09/30/2022
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades.	~~03/31/2025~~ 03/31/2023
Achieve Compliance: The permittee shall achieve compliance with final E. coli limitations.	~~04/30/2025~~ 04/30/2023

Explanation of *E. coli* Schedule

A compliance schedule is included in the permit to provide time for the permittee to investigate options for meeting new effluent *E. coli* water quality-based effluent limits while coming into compliance with the limits as soon as reasonably possible. *The schedule has been updated reflect the outcome of the Operational Evaluation Report and the dates in the schedule reflect the timeline for compliance with E. coli limitations.*

5.2 Mercury Pollutant Minimization Plan

Required Action	Due Date
Final Mercury Report: Submit a report summarizing the mercury pollutant minimization measures implemented during the current permit term and the success in maintaining effluent quality at or below the current concentrations. The report shall include an analysis of trends in quarterly and annual average mercury concentrations and total mass discharge of mercury based on mercury sampling and flow data covering the current permit term. The report shall also include an analysis of how influent and effluent mercury varies with time and with significant loadings of mercury such as loads from industries or collection system maintenance.	03/31/2025

Explanation of Schedule

A schedule is included in the permit as this is the first permit term for Beloit following a permit term with a mercury variance. While no mercury limit is required (see WQBEL) the permittee must continue to maintain the mercury PMPs.

5.3 Water Quality Trading (WQT) Management Plan

Required Action	Due Date
Submit Progress Report on Management Practices Installation: Submit a progress report on the installation of management practices as identified in the Water Quality Management Plan WQT-2021-0008 as approved by the Department.	03/31/2022

Complete Installation of Management Practices: Complete the installation of management practices as identified in the Water Quality Management Plan WQT-2021-0008 as approved by the Department.	06/30/2022
Management Practices: The Management Practices as identified in the Water Quality Trading Plan shall become effective and the permittee shall submit a completed Management Practice Registration Form 3400-207 for each site.	06/30/2022
Comply with Total Phosphorus Limits: Comply with the TP limits as specified in Table 2.2.1.	07/01/2022

Explanation of Schedule

The permittee has determined that the best compliance option to meet phosphorus limits is water quality trading (WQT). This schedule is included to meet the requirements of WQT.

5.4 Annual Water Quality Trading (WQT) Report

Required Action	Due Date
Annual WQT Report: Submit an annual WQT report that shall cover the first year of the permit term. The WQT Report shall include: The number of pollutant reduction credits (lbs/month) used each month of the previous year to demonstrate compliance; The source of each month's pollutant reduction credits by identifying the approved water quality trading plan that details the source; A summary of the annual inspection of each nonpoint source management practice that generated any of the pollutant reduction credits used during the previous year; and Identification of noncompliance or failure to implement any terms or conditions of this permit with respect to water quality trading that have not been reported in discharge monitoring reports.	01/31/2023
Annual WQT Report #2: Submit an annual WQT report that shall cover the previous year.	01/31/2024
Annual WQT Report #3: Submit an annual WQT report that shall cover the previous year.	01/31/2025
Annual WQT Report #4: Submit the 4th annual WQT report. If the permittee wishes to continue to comply with phosphorus limits through WQT in subsequent permit terms, the permittee shall submit a revised WQT plan including a demonstration of credit need, compliance record of the existing WQT, and any additional practices needed to maintain compliance over time.	01/31/2026
Annual WQT Report Required After Permit Expiration: In the event that this permit is not reissued by the expiration date, the permittee shall continue to submit annual WQT reports by January 31 each year covering the total number of pollutant credits used, the source of the pollution reduction credits, a summary of annual inspection reports performed, and identification of noncompliance or failure to implement any terms or conditions of the approved water quality trading plan for the previous calendar year.	

Explanation of Schedule

The permittee has determined that the best compliance option to meet phosphorus limits is water quality trading (WQT). This schedule for annual reporting is included to meet the requirements of WQT.

5.5 Sludge Management Plan

A sludge management plan is required.

Required Action	Due Date
Sludge Management Plan Submittal for Class A facilities: Submit a sludge management plan (SMP) to optimize the sludge management performance and demonstrate compliance with Ch. NR 204, Wis. Adm. Code, by the Due Date. This management plan shall include sufficient detail of the sludge management program for the facility. The plan shall include separate sections for each type of sewage sludge included in this permit. The SMP shall provide standardized information for communication to operators and the department including but not limited to the following: 1) Specify information on the sludge treatment processes for each sampling point and outfall; 2) Show and describe sample point and outfall monitoring locations on a schematic and provide photos of the specific sampling points; 3) Show, describe and tabulate the monitoring requirements at each sampling point and outfall locations; 4) Show, describe and explain sampling protocols for each location listing parameters to be monitored including: a)Pollutants, b)Nutrients, c)Pathogen treatment process requirements including treatment temperature, moisture content (total solids) and pathogen densities (fecal concentrations), d)Vector Reduction appropriate for the pathogen treatment process such as but not limited to temperatures, volatile solids reduction, moisture content, etc. as required by the WPDES permit and Ch. NR 204, Wis. Adm. Code; 5) Monitoring frequencies at each sample point and outfall; 6) Analytical methods with appropriate hold times and chain of custody procedures; 7) Documentation relating to temperature monitoring data recording, retrieval and printing out the data when requested; 8) Storage, verification monitoring, loading, transportation and discharge details associated with all outfalls; 9) Collection, storage, disposal information for sludge detailing pickups including loading and similar details; 10) Collection, storage and disposal processes of sludge when the sludge does not meet minimum requires to meet Class A and EQ requirements. [Note: EQ and Class A are similar, but are different. Explain.] 11) Identify land application sites; 12) Describe site limitations; 13) Address vegetative cover management and removal including loading to crop needs, crop harvesting; 14) Specific the availability of storage for sludge;	12/01/2025

15) Describe the type of transportation and spreading vehicles; 16) Track site loadings to facility's land application sites; 17) Address contingency plans for adverse weather and odor/nuisance abatement; 18) Address construction contingencies when treatment equipment is out of service; and 19)Include any other pertinent information. Once approved, all sludge management activities shall be conducted in accordance with the plan. Any changes to the plan must be approved by the department prior to implementing the changes. Note: The SMP is a living document and should be designed and constructed to allow for future updates. Consider providing an overview to explain the facilities solids flow processes, then using sections and appendices to provide more details. The use of appendices to explain start up, operation and shutdown of the sludge treatment units is encouraged to show that all sludge particles meet Class A requirements.	

Explanation of Schedule

An up-to-date Sludge Management Plan is required that documents how the permittee will manage the land application of biosolids consistent with ch. NR 204, Wis. Adm. Code

Special Reporting Requirements

None

Other Comments:

None

Attachments:

~~Substantial Compliance Determination – July 3, 2020~~

~~Water Quality Based Effluent Limits – June 9, 2020~~

Water Quality Trading Conditional Approval Letter – July 7, 2021

Water Quality Trading Plan – March 30, 2021

Public Notice

Proposed Expiration Date:

September 30, 2025

Justification Of Any Waivers From Permit Application Requirements

None

Prepared By:

Jennifer Jerich, Wastewater Specialist

Date: 6/12/2020

Date post Fact Check: 7/6/2020; updates made for clarity

Date post Public Notice: 8/25/2020; minor editorial changes for clarity

Date Modification: 11/4/2021, Changes post Modification PN: 12/20/2021 minor editorial change for clarity and for ensuring permit and fact sheet match.

Modification #2 Date: 7/1/2022, changes to correct error in E. coli sample type.

Modification #3 Date: 10/16/20224, removal of chlorine limits and monitoring.

Modification #4 Date: 7/17/20025, Updating of Land Application section for the inclusion of Class A sludge.