

Permit Modification Fact Sheet

Changes from the previous permit fact sheet are highlighted in grey.

General Information

Permit Number:	WI-0020192-10-1	
Permittee Name:	Hartford Water Pollution Control Facility	
Address:	109 N Main St	
City/State/Zip:	Hartford WI 53027	
Discharge Location:	Plant located at 1600 Liberty Avenue. Outfall located on north bank of the Rubicon River, approx. 100 feet east of Liberty Avenue bridge. (Lat: 43.33033° N, Long: 88.41067° W)	
Receiving Water:	Rubicon River (Rubicon River Watershed, Upper Rock River Basin) in Washington County	
Stream Flow (Q _{7,10}):	1.3 cfs (updated October 2019)	
Stream Classification:	Warmwater sport fish community, non-public water supply	
Design Flow(s)	Daily Maximum	10.0 MGD (from 1994 facility plan)
	Weekly Maximum	9.7 MGD (calculated using design flow worksheet)
	Monthly Maximum	5.5 MGD (from 1994 facility plan)
	Annual Average	3.6 MGD (from 1994 facility plan)
Significant Industrial Loading?	Yes, as stated in the 2023 permit application, there are six significant industrial users; Grande Cheese Co., Signicast Corporation, Quadgraphics, Broan Nutone, Helgesen, and Hartford Finishing.	
Operator at Proper Grade?	Yes, the OIC is certified in all of the plant's subclasses. Hartford is an Advanced plant in subclasses; A1 (Suspended Growth), B (Solids Separation), C (Biological Solids/Sludge Handling), P (Total Phosphorus), D (Disinfection, L (Laboratory), and SS (Sanitary Sewage Collection System).	
Approved Pretreatment Program?	Not Applicable	

Facility Description

The City of Hartford operates a 3.6 million gallon per day (MGD) activated sludge wastewater treatment facility that serves approximately 17,000 people and six significant industries. Treatment consists of screening, grit removal, three-ring oxidation ditch that was upgraded to allow for biological phosphorus removal, final clarification, anthracite filters, and ultraviolet disinfection. Cascade steps at the end of the discharge flume provide additional aeration before the effluent is discharged to the Rubicon River. Biosolids processes include gravity settling, and liquid sludge storage before being land applied onto Department approved agricultural fields. Based on data reported during the permit term, the plant is currently operating at about 60% of its maximum monthly design flow and 53% of its design BOD loading. The Department has found the facility to be in substantial compliance with the current permit (WI-0020192-09-0).

Substantial Compliance Determination

Enforcement During Last Permit – No formal enforcement action was taken during the last permit term.

After a desk top review of all discharge monitoring reports, CMARs, land application reports, compliance schedule items, and a facility inspection on September 20, 2022, conducted by DNR wastewater engineer, Nick Lent, this facility has been found to be in substantial compliance with their current permit.

Schedules in the permit are included per the recommendations identified in the inspection report dated January 4, 2023.

Fact Sheet Organization

This fact sheet identifies changes in permit conditions that the department has made when reissuing the Hartford Water Pollution Control Facility WPDES permit. This fact sheet contains all content required under s. NR 201, Wis. Adm. Code, as applicable. The permit remains in effect until the permit is either revoked and reissued, modified, or reissued. The tables and sections that follow were taken from the permit and are numbered in this fact sheet as they are numbered in the permit. For complete explanations of derived effluent limitations including evaluation of the performance of the land treatment system, please refer to the attached technical memorandum: Water Quality-Based Effluent Limitations for Hartford Water Pollution Control Facility WPDES Permit No. WI-0020192-10 dated May 9, 2023.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, Waste Type/sample Contents and Treatment Description (as applicable)
701	2.05 MGD (2018-2023 annual average from reported influent flow data)	INFLUENT: 24-hr flow proportional composite sample shall be taken from the wet well force main after bar screening. Flow is measured after the wet well.
001	N/A	EFFLUENT: 24-hour flow proportional composite samples shall be taken just prior to ultraviolet disinfection. Grab samples shall be taken after step aeration.
003	254 dry U.S. tons (2023 estimated production from permit application)	CLASS B BIOSOLIDS: Aerobically digested liquid sludge; may be gravity (tank) thickened and/or belt thickened. Representative samples shall be taken from the storage tank prior to land application.
103	N/A	FIELD BLANK: Collect total recoverable mercury field blanks using standard sample handling procedures.

1 Influent - Proposed Monitoring

1.1 Sample Point Number: 701- INFLUENT 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	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	3/Week	24-Hr Flow Prop Comp	

Mercury, Total Recoverable		ng/L	Quarterly	Grab	See 'Mercury Monitoring' subsection in the permit.
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Changes from Previous Permit:

Influent monitoring requirements were re-evaluated for the proposed permit term and no changes are needed from the previous permit.

Explanation of Limits and Monitoring Requirements

BOD₅ and Total Suspended Solids: Tracking of BOD₅, and Suspended Solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code

Mercury, Total Recoverable: Mercury monitoring is included in the proposed permit pursuant to s. NR 106.145, Wis. Adm. Code. Required field blanks for Mercury monitoring per ss. NR 106.145(9) and (10), Wis. Adm. Code, requirements. The permittee shall collect a mercury field blank for each set of mercury samples (a set of samples may include a combination of influent, effluent or other samples all collected on the same day). The permittee shall report results of influent and effluent samples and field blanks to the Department on Discharge Monitoring Reports.

2 Inplant - Proposed Monitoring and Limitations

2.1 Sample Point Number: 103- 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 Monitoring' subsection in the permit.

Changes from Previous Permit:

Field blank monitoring requirements were re-evaluated for the proposed permit term and no changes are needed from the previous permit.

Explanation of Limits and Monitoring Requirements

Required field blanks for Mercury monitoring per ss. NR 106.145(9) and (10), Wis. Adm. Code, requirements. The permittee shall collect a mercury field blank for each set of mercury samples (as set of samples may include a combination of influent, effluent or other samples all collected on the same day). The permittee shall report results of influent and effluent samples and field blanks to the Department on Discharge Monitoring Reports.

3 Surface Water - Proposed Monitoring and Limitations

3.1 Sample Point Number: 001- MECHANICAL PLANT EFFLUENT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Weekly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	Effective November through April
BOD5, Total	Weekly Avg	5.0 mg/L	3/Week	24-Hr Flow Prop Comp	Effective May through October
BOD5, Total	Monthly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	Effective November through April
BOD5, Total	Monthly Avg	5.0 mg/L	3/Week	24-Hr Flow Prop Comp	Effective May through October
Suspended Solids, Total	Weekly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	Effective year-round
Suspended Solids, Total	Monthly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	Effective year-round
Suspended Solids, Total	Weekly Avg	401 lbs/day	3/Week	Calculated	Effective January, March, May, July, August, October, and December
Suspended Solids, Total	Weekly Avg	443 lbs/day	3/Week	Calculated	Effective February
Suspended Solids, Total	Weekly Avg	414 lbs/day	3/Week	Calculated	Effective April, June, September, and November
Suspended Solids, Total	Monthly Avg	295 lbs/day	3/Week	Calculated	Effective January, March, May, July, August, October, and December
Suspended Solids, Total	Monthly Avg	326 lbs/day	3/Week	Calculated	Effective February
Suspended Solids, Total	Monthly Avg	305 lbs/day	3/Week	Calculated	Effective April, June, September, and November
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Dissolved Oxygen	Daily Min	7.0 mg/L	Daily	Grab	
E. coli	Geometric Mean - Monthly	126 #/100 ml	2/Week	Grab	Limit effective immediately May through September annually.

E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit effective immediately May through September annually. See the E. coli Percent Limit section below. Enter the result in the DMR on the last day of the month.
Nitrogen, Ammonia (NH3-N) Total	Daily Max	7.8 mg/L	4/Week	24-Hr Flow Prop Comp	Effective year-round
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	7.8 mg/L	4/Week	24-Hr Flow Prop Comp	Effective October through March
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	4.9 mg/L	4/Week	24-Hr Flow Prop Comp	Effective April
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	3.6 mg/L	4/Week	24-Hr Flow Prop Comp	Effective May through September
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	4.3 mg/L	4/Week	24-Hr Flow Prop Comp	Effective November through March
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	2.7 mg/L	4/Week	24-Hr Flow Prop Comp	Effective April
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	1.2 mg/L	4/Week	24-Hr Flow Prop Comp	Effective May through September
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	3.8 mg/L	4/Week	24-Hr Flow Prop Comp	Effective October
Phosphorus, Total	Monthly Avg	0.225 mg/L	3/Week	24-Hr Flow Prop Comp	
Phosphorus, Total	6-Month Avg	0.075 mg/L	3/Week	24-Hr Flow Prop Comp	
Phosphorus, Total	6-Month Avg	2.25 lbs/day	3/Week	Calculated	See permit subsection 'Total Maximum Daily Load (TMDL) Limitations for Total Phosphorus'.
Chloride	Weekly Avg	570 mg/L	4/Month	24-Hr Flow Prop Comp	This is an interim limit. Sampling shall be done on four consecutive days one week per month. See the 'Chloride Variance' subsection and the Schedules section in permit for applicable chloride target value.

Chloride		lbs/day	4/Month	Calculated	Chloride mass = daily concentration (mg/L) x daily flow (MGD) x 8.34
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	See permit subsection 'Nitrogen Series Monitoring'.
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	See permit subsection 'Nitrogen Series Monitoring'.
Nitrogen, Total		mg/L	Quarterly	Calculated	See permit subsection 'Nitrogen Series Monitoring'. Total Nitrogen = Total Kjeldahl N (mg/L) + (Nitrite + Nitrate Nitrogen) (mg/L)
PFOS		ng/L	Quarterly	Grab	Monitoring only. See permit subsections 'PFOS/PFOA Sampling and Reporting Requirements' and 'PFOS/PFOA Minimization Plan Determination of Need' and permit schedule 'PFOS/PFOA Minimization Plan Determination of Need'.
PFOA		ng/L	Quarterly	Grab	Monitoring only. See permit subsections 'PFOS/PFOA Sampling and Reporting Requirements' and 'PFOS/PFOA Minimization Plan Determination of Need' and permit schedule 'PFOS/PFOA Minimization Plan Determination of Need'.
Acute WET	Monthly Avg	TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See permit subsection 'Whole Effluent Toxicity (WET) Testing'.
Chronic WET	Monthly Avg	1.1 TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See permit subsection 'Whole Effluent Toxicity (WET) Testing'.
Mercury, Total Recoverable		ng/L	Quarterly	Grab	See 'Mercury Monitoring' subsection in the permit.

Temperature Maximum		deg F	Daily	Continuous	Monitoring during calendar year 2027 only. See ‘Schedules’ section in permit.
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Changes from Previous Permit

Flow: Reporting of flow monitoring was added to the permit.

E. coli: Fecal coliform monitoring and limits have been replaced with Escherichia coli (E. coli) monitoring and limits. E. coli limits of 126 #/100 ml as a monthly geometric mean may not 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.

Fecal Coliform: Monitoring and limits were replaced with E. coli as the bacteria indicator organism.

PFOS and PFOA – Monitoring once every two months is included in the permit in accordance with s. NR 106.98(2)(b), Wis. Adm. Code. The monitoring frequency has been reduced from 1/ 2 Months to Quarterly.

Temperature Maximum - Daily continuous monitoring included for **calendar year 2027** (fourth year of proposed permit).

Chloride – The interim limit of 570 mg/L is recommended to continue. This interim limit was previously demonstrated as the highest level achievable. The 4-day P99 is a statistically significant prediction of the highest weekly average to occur given a set of reported data. Though this value has increased to 635 mg/L during the current permit term, it is not recommended to increase the interim limit from 570 mg/L in this permit term. A schedule is included in the permit to continue implementing source reduction measures to achieve a target concentration of 500 mg/L in the effluent.

Explanation of Limits and Monitoring Requirements

Monitoring frequencies

Taking into consideration guidance and requirements in administrative code, effluent monitoring frequencies for Hartford Water Pollution Control Facility’s permit were determined to be appropriate for pollutants that have final effluent limits in effect during this permit term.

Categorical Limits

Total Suspended Solids, BOD₅, pH, and Dissolved Oxygen: Standard municipal wastewater requirements for total suspended solids, and pH are included based on ch. NR 210, Wis. Adm. Code, ‘Sewage Treatment Works’ requirements for discharges to fish and aquatic life streams. Chapter NR 102, Wis. Adm. Code, ‘Water Quality Standards for Surface Waters’ also specifies requirements for pH for fish and aquatic life streams.

Water Quality Based Limits, WET Requirements and Disinfection

Refer to the “Water Quality-Based Effluent Limitations for Hartford Water Pollution Control Facility WPDES Permit No. WI-0020192-10” dated May 9, 2023, and prepared by Water Resources Engineer, Nicole Krueger.

- **Ammonia Nitrogen:** Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Tables 2C and 4B of ch. NR 105, Wis. Adm. Code. Subchapter IV of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for ammonia. Weekly average and monthly average limits were not changed from the limits in the current permit.
- **Total Phosphorus** - The proposed permit will be Hartford’s third permit term under new administrative rules for phosphorus discharges that took effect December 1, 2010. The final water quality based effluent limits are 0.075 mg/L and 2.25 lbs/day as a six-month average (November-April and May-October) and 0.225 mg/L monthly average became effective July 1, 2020. These limits are continued in the permit.
- **Chloride** –The 1-day P99 effluent concentrations for chloride were below the applicable acute limitation, so a

daily maximum limit is not required. The calculated 4-day P99 of 635 mg/L is above the applicable chronic limitation of 412 mg/L, so a chronic (weekly average) limit needs to be continued for the reissued permit. However, the permittee has re-applied for a variance from the chronic chloride water quality criterion, which requires EPA approval. An interim limit of 570 mg/L is continued in the permit, equivalent to the 4-day P99 from the previous permit term. As a condition of this variance, a target value of 500 mg/L and the implementation of chloride source reduction measures, intended to lead to compliance with the target value by the end of the permit term, are also included in the proposed permit. See the schedules section for the chloride compliance schedule. Acute and chronic chloride toxicity criteria for the protection of aquatic life are included in Tables 1 and 5 of ch. NR 105, Wis. Adm. Code; Subchapter IV of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for chloride.

Chloride Source Reduction Measures:

1. Annually review and update chloride sampling program.
2. Continue to monitor and sample commercial and industrial customers for high chloride discharges. Determine progress or identify new sources based on mass balance updates.
3. Continue annual chloride sampling at each municipal supply well.
4. Conduct semi-annual (twice per year) meetings with industrial users focused on practices to reduce chloride loading. Document action items in annual chloride progress reports.
5. Evaluate progress of source reductions from industrial users and if reductions in chloride loading is not demonstrated then initiate development and implementation of local limits.
6. Update ordinance to require new and replacement softeners to be demand initiated, high efficiency.
7. Implement a residential water softener tune-up and replacement incentives program.
8. Continue chloride education programs including letters to commercial and industrial contributors, letters with sewer and water bills, educational materials on the City's website, and educating public works department drivers on road salt/brine practices.

Refer to the "Source Reduction Measures Plan for Chloride" report dated May 31, 2023 and revised June 29, 2023, and prepared by SEH Inc for additional proposed measures.

- **Mercury** – Representative data shows there is no reasonable potential for Hartford to exceed the water quality-based 1.3 ng/L monthly average limit, therefore no mercury limit is recommended in the proposed permit. Quarterly mercury monitoring is included in the proposed permit. Requirements for mercury are included in s. NR 106.145, Wis. Adm. Code (effective November 2002).
- **Temperature Maximum** – Available temperature data indicated the apparent need for sub-lethal weekly average temperature limitations for the months of October - December pursuant to the procedures in ch. NR 106, Wis. Adm. Code. Therefore, sub lethal weekly average effluent limitations should be included in the proposed permit. However, ch. NR 106.59(4), Wis. Adm. Code, allows publicly operated treatment works to perform a dissipative cooling (DC) demonstration, which if successful, justifies exclusion of sub lethal weekly average effluent temperature limits in municipal discharge permits. Hartford has submitted a successful DC demonstration which was approved by the Department in 2012 and the permittee has stated that there haven't been any significant changes in the expected effluent temperatures and industrial loading has recently decreased. Because the previous study was completed during a month (February) where there is not reasonable potential for a limit, a new DC study is recommended to be completed during the months of October, November, or December where there is reasonable potential for temperature limits.

The proposed permit includes daily temperature maximum monitoring in the fourth year of the permit, calendar year 2027, and will be used for the next permit reissuance.

- **Total Nitrogen Monitoring (NO₂+NO₃, TKN and Total N):** Based on the "Guidance for Total Nitrogen Monitoring in WPDES Permits" dated October 2012, quarterly effluent monitoring for Total Nitrogen is required for municipal majors discharging to the Mississippi River Basin.
- **PFOS and PFOA** – NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. At the first reissuance of a WPDES permit after August 1, 2022, the new rule requires WPDES permits for major municipal dischargers with an average flow rate greater than 1 MGD but less

than 5 MGD, to monitor for PFOS and PFOA once every two months pursuant to s. NR 106.98(2)(b), Wis. Adm. Code. A sample frequency of 1/2 months means one sample is taken during any two-month period. Examples of 1/2 month sample would be every other month (Jan, March, May, etc.) or back-to-back months with a break in between (February & March, May & June, Aug & Sept, etc.). DMR Short Forms will be generated for the following time periods: January-February, March-April, May-June, July-August, September-October, and November-December. At a minimum one sample result will be present on each form.

Pursuant to s. NR 205.066, Wis. Adm. Code, the department may specify the monitoring frequency for PFOS and PFOA on a case-by-case basis after the initial 24 months of sampling. After a review of the data submitted with the Year 2 Report on Effluent Discharges, the department has determined that it is warranted to reduce the sampling frequency in this case. The department is requiring continued monitoring of these compounds to complete the permit term to ensure that the current effluent quality is maintained. At the next permit reissuance, the department will make another determination as to whether further reduction or removal of monitoring is warranted, based on the continued sampling results.

- **Whole effluent toxicity (WET)** – WET testing requirements and limits 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>)
- **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. 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.

Total Maximum Daily Load (TMDL) Limitations

- **Total Suspended Solids** - Waste load allocations specified in TMDLs are expressed as WQBELs (water quality based effluent limits). 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. The approved total suspended solids TMDL limits for this permittee are included in the following table, expressed as weekly average and monthly average effluents limits, and are effective immediately:

Month	Monthly Average TSS Effluent Limit (lbs/day)	Weekly Average TSS Effluent Limit (lbs/day)
January	295	401
February	326	443
March	295	401
April	305	414
May	295	401
June	305	414
July	295	401
August	295	401
September	305	414
October	295	401
November	305	414
December	295	401

- **Total Phosphorus** – Waste load allocations (WLA) specified in TMDLs are expressed as WQBELs (water quality based effluent limits). Monthly average mass limits for total phosphorus 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. The approved TMDL limits for Total Phosphorus are included below:

3.1.1.1 Total Phosphorus TMDL Wasteload Allocations

Month	Monthly Average Total Phosphorus Effluent Limit (lbs/day)
January	56.82
February	75.14
March	58.79
April	46.66
May	40.78
June	35.98
July	36.49
August	36.80
September	40.65
October	39.56
November	41.42
December	47.98

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)
003	Class B	Liquid	Fecal Coliform	Injection	Land Application	254 dry U.S. tons (2022 permit application)
Does sludge management demonstrate compliance? Yes						
Is additional sludge storage required? No						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No						
Is a priority pollutant scan required? No						
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.						

4.1 Sample Point Number: 003- CLASS B BIOSOLIDS

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Quarterly	Composite	

Arsenic Dry Wt	Ceiling	75 mg/kg	Quarterly	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Quarterly	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Quarterly	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Quarterly	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Quarterly	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Quarterly	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Quarterly	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Quarterly	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Quarterly	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Quarterly	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Quarterly	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Quarterly	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Quarterly	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Quarterly	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Quarterly	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Quarterly	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Quarterly	Composite	
Nitrogen, Total Kjeldahl		Percent	Quarterly	Composite	
Nitrogen, Ammonium (NH ₄ -N) Total		Percent	Quarterly	Composite	
Phosphorus, Total		Percent	Quarterly	Composite	
Phosphorus, Water Extractable		% of Tot P	Quarterly	Composite	
Potassium, Total Recoverable		Percent	Quarterly	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Sample once in calendar year 2024 . See 'Sludge Analysis for PCBs' subsection in permit.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Sample once in calendar year 2024 . See 'Sludge Analysis for PCBs' subsection in permit.
PFOA + PFOS		µg/kg	Annual	Calculated	Report the sum of PFOS and PFAS. 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.
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Changes from Previous Permit:

PFAS: Annual monitoring is included in the permit pursuant to s. NR 204.06(2)(b)9., Wis. Adm. Code.

PCB Total Dry Wt: A composite sample analyzed for PCBs shall be taken once in calendar year 2024. The last sample collection for PCBs was in 2020.

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). Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07(7) for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k). Land application of waste shall be done in accordance with the permit conditions and applicable codes. All land application sites shall be approved prior to their use. To receive a list of approved sites, or to be notified of potential approvals, contact the WDNR compliance staff.

Water extractable phosphorus (WEP) is the coefficient for determining plant available phosphorus from measured total phosphorus. In Wisconsin, the Penn State Method is utilized and is expressed in percent. While a total P may be significant, the WEP may show that only a small percentage of the P is available to plants because of factors such as treatment processes and chemical addition that “tie-up” phosphorus limiting the amount of phosphorus that is plant available. As part of the Wisconsin’s nutrient management plan (NMP) requirements, the accounting of all fertilizers must be included over the NMP cycle. The fertilizer value of the waste needs to be communicated to the farmer and accounted for in the NMP.

PFAS: The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA is currently developing a risk assessment to determine future land application rates and expects to release this risk assessment by the end of 2024. 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.

5 Schedules

5.1 Chloride Source Reduction Measures (Target Value)

As a condition of the variance to the water quality based effluent limitation(s) for chloride granted in accordance with s. NR 106.83(2), Wis. Adm. Code, the permittee shall perform the following actions.

Required Action	Due Date
Annual Chloride Progress Report: Submit an annual chloride progress report related to the source reduction activities for the previous year. The annual chloride progress report shall: Indicate which chloride source reduction measures or activities in the Source Reduction Plan have been implemented and state which, if any, source reduction measures from the Source Reduction Plan were not pursued and why. Include an assessment of whether each implemented source reduction measure appears to be effective or ineffective at reducing pollutant discharge concentrations and identify actions planned for the upcoming year; Include an analysis of trends in weekly, monthly and annual average chloride concentrations and total mass discharge of chloride based on chloride sampling and flow data; and Include an analysis of how effluent chloride varies with time and with significant loadings of chloride. Note that the interim limitation listed in the Surface Water section of this permit remains enforceable until new enforceable limits are established in the next permit issuance. The first annual chloride progress report is to be submitted by the Date Due.	01/31/2025
Annual Chloride Progress Report #2: Submit the chloride progress report as defined above.	01/31/2026
Annual Chloride Progress Report #3: Submit the chloride progress report as defined above.	01/31/2027
Annual Chloride Progress Report #4: Submit the chloride progress report as defined above.	01/31/2028
Final Chloride Report: Submit the final chloride report documenting the success in meeting the chloride target value of 500 mg/L, as well as the anticipated future reduction in chloride sources and chloride effluent concentrations. The report shall summarize chloride source reduction measures that have been implemented during the current permit term and state which, if any, source reduction measures from the approved Source Reduction Plan were not pursued and why. The report shall include an analysis of trends in weekly, monthly and annual average chloride concentrations and total mass discharge of chloride based on chloride sampling and flow data covering the current permit term. The report shall also include an analysis of how influent and effluent chloride varies with time and with significant loadings of chloride such as loads from industries or road salt intrusion into the collection system. Additionally, the report shall include proposed target values and source reduction measures for negotiations with the department if the permittee intends to seek a renewed chloride variance per s. NR 106.83, Wis. Adm. Code, for the reissued permit. Note that the target value is the benchmark for evaluating the effectiveness of the chloride source reduction measures, but is not an enforceable limitation under the terms of this permit.	09/30/2028
Annual Chloride Reports After Permit Expiration: In the event that this permit is not reissued on time, the permittee shall continue to submit annual chloride reports each year covering source reduction measures implemented and chloride concentration and mass discharge trends.	

Explanation of Schedule

This compliance schedule is a condition of receiving a variance from the chronic water quality-based chloride limit of 410 mg/L. Since a schedule is being granted, an interim limit is required, and for Hartford that limit is established as 570 mg/L. The schedule requires that annual reports shall indicate which source reduction measures Hartford has implemented during each calendar year, and an analysis of chloride concentration and mass discharge data based on chloride sampling and flow data. The annual reports shall document progress made towards meeting the chloride target value of 500 mg/L by the end of the permit term.

5.2 PFOS/PFOA Minimization Plan Determination of Need

Required Action	Due Date
Report on Effluent Discharge: Submit a report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations. This analysis should also include a comparison to the applicable narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code. This report shall include all PFOS and PFOA data collected including any voluntary influent, intake, in-plant, collection system sampling, and blank sample results.	04/30/2025
Report on Effluent Discharge and Evaluation of Need: Submit a final report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations of data collected over the last 24 months. The report shall also provide a comparison on the likelihood of the facility needing to develop a PFOS/PFOA minimization plan. This report shall include all PFOS and PFOA data collected including any voluntary influent, intake, in-plant, collection system sampling, and blank sample results. The permittee shall also submit a request to the department to evaluate the need for a PFOS/PFOA minimization plan. If the Department determines a PFOS/PFOA minimization plan is needed based on a reasonable potential evaluation, the permittee will be required to develop a minimization plan for Department approval no later than 90 days after written notification was sent from the Department. The Department will modify or revoke and reissue the permit to include PFOS/PFOA minimization plan reporting requirements along with a schedule of compliance to meet WQBELs. Effluent monitoring of PFOS and PFOA shall continue as specified in the permit until the modified permit is issued.	04/30/2026
If, however, the Department determines there is no reasonable potential for the facility to discharge PFOS or PFOA above the narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code, no further action is required and effluent monitoring of PFOS and PFOA shall continue as specified in the permit.	

Explanation of Schedule

As stated above, NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. S. NR 106.98, Wis. Adm. Code, specifies steps to generate data in order to determine the need for reducing PFOS and PFOA in the discharge. Data generated per the effluent monitoring requirements will be used to determine the need for developing a PFOS/PFOA minimization plan. As part of the schedule, the permittee is required to submit two annual Reports on Effluent Discharge.

If the Department determines that a minimization plan is needed, the permit will be modified or revoked/reissued to include additional requirements.

5.3 Updated Dissipative Cooling Proposal

Required Action	Due Date
Submit Dissipative Cooling Study: An updated dissipative cooling proposal for the existing outfall meeting the following requirements shall be submitted by the date due for determining the need for sub-lethal effluent limitations at the time of next permit reissuance: 1) A written description of the physical characteristics of the receiving water or outfall that encourage rapid dilution, diffusion, dispersion, or dissipation of heat; 2) A written description of the presence or absence of other thermal loads to the receiving stream; 3) The minimum and maximum effluent temperature for each calendar week monitored. Note: The months of October, November, and December have the highest potential for thermal limit exceedances. It is recommended that monitoring is conducted during these months, at minimum. The study shall also include any site-specific information collected as part of the study, including: 1) Information regarding the biological quality of the animal and plant community of the receiving water including, but not limited to, species composition, richness, diversity, density, distribution, age structure, spawning incidence, and presence of any state or federally listed threatened or endangered species; 2) Data concerning the physical characteristics of the receiving water or permitted outfalls that encourage rapid dilution, diffusion, dispersion, and/or dissipation of heat; 3) The minimum and maximum temperature of the receiving water upstream of all permitted outfalls for each calendar month monitored.	09/30/2028

Explanation of Schedule

The last dissipative cooling study was completed in February 2012. The results of the study showed that there is an unaffected zone of free passage on the opposite side of the river from the outfall, and that the stream returned to 3.5 degrees F of the ambient temperature within 70 feet of the discharge. The department used this information in the last two permit reissuances to conclude that sub-lethal effluent limitations for temperature were not needed pursuant to ss. NR 106.59(4) and (8), Wis. Adm. Code. Representative highest monthly effluent temperatures measured during the permit term exceeded calculated weekly average limits for the months of October, November, and December. This schedule requires an updated study to justify continuation of no temperature limitations during the months listed above in the next permit reissuance.

Attachments:

PFOS and PFOA Water Quality-Based Effluent Limitations for the Hartford Water Pollution Control Facility -WPDES Permit No. (WI-0020192) in Outagamie County, by Amy Garbe, PE, Wastewater Engineer, dated May 1, 2026

Proposed Expiration Date:

April 30, 2029

Justification Of Any Waivers From Permit Application Requirements

No waivers were given from permit application requirements.

Prepared By:

Bryan Hartsook, P.E. – Southeast Region Wastewater Field Supervisor

For FACT CHECK: September 22, 2023

For PUBLIC NOTICE: October 13, 2023

For REISSUANCE: April 16, 2024

Revised By: Sarah Donoughe, Wastewater Specialist-Adv

Date: July 1, 2026

DATE: May 1, 2026

TO: Sarah Donoughe – NER

FROM: Kari Fleming – WY/3

SUBJECT: PFOS and PFOA Water Quality-Based Effluent Limitations for the Hartford Water Pollution Control Facility -WPDES Permit No. (WI-0020192) in Washington County

This is in response to your request for an evaluation of the need for PFOS and PFOA limitations for the Hartford Water Pollution Control Facility. This municipal wastewater treatment facility (WWTF) discharges to the Rubicon River, located in the Rubicon River Watershed in the Upper Rock River Basin.

The current permit, effective since May 2024, has monitoring only for PFOS and PFOA. The following review is based on new regulations which are now in effect throughout the state of Wisconsin and recommendations are made in accordance with chapters NR 102, 104, 105, 106, 207, and 217 of the Wisconsin Administrative Code, where applicable.

Receiving Water Information

- Name: Rubicon River
- Classification: Warm Water Sport Fish (WWSF) community, non-public water supply. Cold Water and Public Water Supply criteria are used for bioaccumulating compounds of concern, because the discharge is within the Great Lakes basin.
- Flow: The following 7-Q10 and 7-Q2 values are from USGS for Station #05424097, where Outfall 001 is located:
 - 7-Q10 = 1.3 cfs (cubic feet per second)
 - 7-Q2 = 2.0 cfs
 - 90-Q10 = 1.7 cfs
 - Harmonic Mean Flow = 3.8 cfs, using a drainage area of 29.5 mi²

The Harmonic Mean has been estimated based on average flow and the 7-Q10 using an equation from U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991, EPA/505/2-90-001, pgs. 88-89).

- % of Flow used to calculate limits: 25%

Effluent Information

- Flow: Average Design Flow = 3.6 MGD (million gallons per day)
For reference, the actual average flow from January 2024 to March 2026 was 1.86 MGD.
- Effluent characterization: This facility is categorized as a major municipality.

The following table lists the statistics for effluent PFOS and PFOA levels from February 2021 and May 2024 through March 2026.

	PFOS ng/L	PFOA ng/L
1-day P ₉₉	10.66	5.46
4-day P ₉₉	6.37	4.66
30-day P ₉₉	4.21	4.21
Mean	3.23	3.96

Std	2.07	0.57
Sample Size	13	13
Range	1.7-9.25	3.1-4.97

Water Quality Based Limit – PFOS and PFOA

Administrative rules for PFOS and PFOA took effect on August 1, 2022. These rule revisions include additions to ch. NR 102 (s. NR 102.05), Wis. Adm. Code, which establish PFOS and PFOA standards for surface waters. Revisions to ch. NR 106 (s. NR 106, Subchapter VIII), Wis. Adm. Code establish procedures for determining water quality based effluent limits for PFOS and PFOA, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

PFOS

Due to PFOS being a bioaccumulating compound of concern (BCC), no mixing zone is allowed pursuant to s. NR 106.98(4), Wis. Adm. Code. Therefore, the effluent limit for PFOS is set equal to criterion (8 ng/L).

PFOA

The conservation of mass equation is described in s. NR 106.06(4)(b)1. Wis. Adm. Code, and includes variables of water quality criterion (WQC), receiving water flow rate (Qs), effluent flow rate (Qe), and upstream PFOA concentrations (Cs) provided below.

$$\text{Limitation} = [(WQC)(Qs + (1-f) Qe) - (Qs - f Qe) (Cs)] / Qe$$

Where:

WQC = 95 ng/L for the Rubicon River

Qs = 25% of the harmonic mean pursuant s. NR 106.06(4)(c)10., Wis. Adm. Code = 0.95 cfs

Cs = background concentration of PFOA in the receiving water pursuant to s. NR 106.06(4)(e), Wis. Adm. Code

Qe = effluent flow rate = 3.6 MGD = 5.57 cfs

f = the fraction of effluent withdrawn from the receiving water = 0

After substituting the appropriate variables, the calculated PFOA limit is 111 ng/L.

Reasonable Potential Determination

In accordance with s. NR 106.98(4)(a), Wis. Adm. Code, **the discharge does not have reasonable potential to cause or contribute to an exceedance of the water quality criterion for PFOS** because the 30-day P₉₉ of reported effluent PFOS data is less than the calculated WQBEL (8 ng/L). Therefore, **a WQBEL is not required.**

The discharge does not have reasonable potential to cause or contribute to an exceedance of the water quality criterion for PFOA because the 30-day P₉₉ of reported effluent PFOA data is less than the calculated WQBEL (111 ng/L). Therefore, **a WQBEL is not required.**

Conclusions

The discharge has no reasonable potential to cause or contribute to an exceedance of the water quality criterion for PFOS nor PFOA. Therefore, no WQBELs are required.

Pursuant to s. NR 205.066, Wis. Adm. Code, the department may specify the monitoring frequency for

PFOS and PFOA on a case-by-case basis after the initial 24 months of sampling. **After a review of the available data, the department has determined that it is warranted to reduce the sampling frequency in this case to quarterly.**

If there are any questions or comments on these recommendations, please contact Amy Garbe by telephone at (608) 716-9968 or by email at Amy.Garbe@wisconsin.gov.

Attachments (2) – P99 Calculations

PREPARED BY:



Amy Garbe, P.E., Wastewater Engineer

date: 5/1/26

cc: Nick Lent, Basin Engineer – SER/Milwaukee
Nate Willis, P.E., PFAS Implementation Coordinator – CO

Attachment 1 – PFOS P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -				
= = = = =				
SUBSTANCE:				
NUMBER OF				
VALUES:	-----			
TOTAL	13			
DETECTED	13			
NON-DETECTED				
d	0			
m	3.23462			
mean of all data	3.23462			
s	2.07218			
n	-----	-----	-----	
	1	4	30	
d^n	0	0	0	
p	0.99	0.99	0.99	
Z_p	2.32679	2.32679	2.32679	
1+(s/m)^2	1.4104	1.4104	1.4104	
(sigma_d)^2	0.34387	0.34387	0.34387	
mu_d	1.00197	1.00197	1.00197	
(sigma_dn)^2	0.34387	0.09767	0.01359	
mu_dn	1.00197	1.12507	1.16712	
P_99 exponent	2.36642	1.85225	1.43834	
P_99	-----	-----	-----	
	10.66	6.37	4.21	
	-----	-----	-----	

Data Summary

Feb-21	9.25
May-24	3.8
Jul-24	5
Oct-24	2.5
Dec-24	1.7
Feb-25	1.9
Apr-25	3.4
Jun-25	2.2
Jul-25	1.9
Sep-25	2.4
Dec-25	2.1
Jan-26	1.9
Mar-26	4

Attachment 2 – PFOA P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -						
=						
SUBSTANCE:						
NUMBER OF						
VALUES:					Data Summary	
TOTAL	13				Feb-21	4.97
DETECTED	13				May-24	3.7
NON-DETECTED	0				Jul-24	3.8
					Oct-24	3.5
d	0				Dec-24	3.1
					Feb-25	3.1
m	3.95923				Apr-25	4.3
					Jun-25	3.6
mean of all data	3.95923				Jul-25	4.1
					Sep-25	3.9
s	0.56637				Dec-25	4.4
					Jan-26	4.5
					Mar-26	4.5
n	1	4	30			
d^n	0	0	0			
p	0.99	0.99	0.99			
Z_p	2.32679	2.32679	2.32679			
1+(s/m)^2	1.02046	1.02046	1.02046			
(sigma_d)^2	0.02026	0.02026	0.02026			
mu_d	1.36592	1.36592	1.36592			
(sigma_dn)^2	0.02026	0.0051	0.00068			
mu_dn	1.36592	1.3735	1.37571			
P_99 exponent	1.69708	1.53971	1.43647			
P_99	5.46	4.66	4.21			