

Permit Fact Sheet for Modification

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

General Information

Permit Number:	WI-0000922-09-1
Permittee Name:	Wisconsin Electric Power Company (We Energies) - Port Washington Generating Station
Address:	231 West Michigan PO Box 2046
City/State/Zip:	Milwaukee WI 53201-2046
Discharge Location:	We Energies - Port Washington Generating Station (43° 23' 9.9"/-87° 52' 7.4")
Receiving Water:	Lake Michigan, into the Port Washington Harbor near confluence with Sauk Creek in Ozaukee County
Stream Flow (Q _{7.10}):	Not applicable
Stream Classification:	Cold water community, Great Lakes, public water supply

Facility Description

We Energies Port Washington Generating Station (“PWGS”), operates a steam electric generating plant located on the western shore of Lake Michigan in Port Washington, Wisconsin. The five-unit coal fired 400-megawatt power plant was retired in 2004. It was re-powered from coal to gas, with the first of two power blocks becoming operational in July 2005, and the second in May 2008. The generating station consists of two 617-megawatt gas fired combined cycle units (1234 megawatts total). Each unit or power block consists of two combustion turbine generators, two heat recovery steam generators, and a steam turbine generator. Operations of the facility are dependent on weather and market conditions.

The gas fired generating station utilizes once through cooling water at a design intake flow (DIF) rate of 808.42 million gallons per day (MGD), slightly less than the maximum design capacity of the former coal fired power plant (814 MGD). The wastewater consists primarily of once through noncontact condenser cooling water. Process wastewater includes discharges from the boiler makeup water treatment system, heat recovery steam generator blowdown tanks, and oil and water separator effluent. Sanitary wastewater is conveyed to the Port Washington Sewage Treatment Plant.

Wastewater discharges are regulated at internal sampling points (103, 105-108, & 110-111) that contain the steam electric power generating categorical limits in ch. NR 290, Wis. Adm. Code. Limits for these internal sampling points are explained in **Attachment 1**. The various process wastewater sources comply with effluent limits without treatment. The only treatment systems are two oil and water separators, which receive wastewater sources that may be contaminated with petroleum products including various sumps, floor and equipment drains, building foundation drain tiles, and transformer pit drains.

Water quality-based effluent limits apply at Outfall 001 to Lake Michigan. The current permit requires monitoring flow rate at Outfall 002 which is made up of heated effluent from Outfall 001 that is recirculated back into the water intake channel for deicing purposes and zebra and quagga mussel control. The effluent from Outfall 002 goes back through the system and is ultimately discharged through Outfall 001 prior to the sampler.

All sample point descriptions have been updated to better reflect discharge type, sample point location, and sample type. ~~All other changes made from the previous permit have been shaded gray.~~

Substantial Compliance Determination

Port Washington Generating Station has a solid record of compliance. After a review of records and a virtual facility inspection on 7/29/2021, the facility has been found to be in substantial compliance with their current permit.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)
901	478 MGD for Jan 2016 – Oct 2020	INTAKE: Lake Michigan cooling water intake structure and background water quality monitoring. Grab or 24-hour flow proportional composite samples are collected at the intake tunnel inside the Traveling Screen Room.
902	N/A – NEW SAMPLE POINT	EMERGENCY INTAKE: Lake Michigan (Port Washington Harbor) emergency cooling water intake structure, which is infrequently used. Flow rate monitoring only and notification to the Department is required when used per permit section 1.2.2.4.
001	448 MGD for Jan 2016 – Oct 2020	EFFLUENT: Combined wastewater discharge includes non-contact condenser cooling water, low volume wastewater, oil/water separator discharge, and other untreated minor flows. Grab and 24-hour flow proportional composite samples are collected at the discharge tunnel inside the Traveling Screen Room.
002	30 MGD for Jan 2016 – Oct 2020 Intermittent discharge.	ALTERNATE USE: Alternate outfall which recirculates heated effluent from Outfall 001 back into the water intake channel. This outfall is mainly used to prevent ice formation in the intake channel in the winter and for macroinvertebrate (zebra and quagga mussel) control with thermal treatments. Flow monitoring only and notification to the Department is required prior to thermal treatment per permit section 3.2.2.2.
103	0.047 MGD for Jan 2016 – Oct 2020	LOW VOLUME WASTEWATER (LVW): Combined low volume wastewater discharge includes boiler makeup water treatment system wastewater (multi-media filter backwash and reverse osmosis reject water), process water sampling drains, and demineralized water storage tank overflow line for Power Block 2. Grab and 24-hour flow proportional composite samples are collected from a sampling tap on the water treatment equipment wastewater discharge piping.
105	0.032 MGD for Jan 2016 – Oct 2020	BOILER BLOWDOWN LVW: Heat recovery steam generator (HRSG) #11 blowdown tank discharge. Grab samples taken from a sample tap on the HRSG #11 blowdown tank discharge piping.
106	0.024 MGD for Jan 2016 – Oct 2020	BOILER BLOWDOWN LVW: Heat recovery steam generator (HRSG) #12 blowdown tank discharge. Grab samples taken from a sample tap on the HRSG #12 blowdown tank discharge piping.
107	0.042 MGD for Jan 2016 – Oct 2020	BOILER BLOWDOWN LVW: Heat recovery steam generator (HRSG) #21 blowdown tank discharge. Grab samples taken from a sample tap on the HRSG #21 blowdown tank discharge piping.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)
108	0.029 MGD for Jan 2016 – Oct 2020	BOILER BLOWDOWN LVW: Heat recovery steam generator (HRSG) #22 blowdown tank discharge. Grab samples taken from a sample tap on the HRSG #22 blowdown tank discharge piping.
110	0.031 MGD for Jan 2016 – Oct 2020	OIL/WATER SEPARATOR: Oil/water separator effluent from Power Block 2. Grab samples taken from a drain/sample tap on the oil/water separator #2 effluent piping.
111	0.008 MGD for Jan 2016 – Oct 2020	OIL/WATER SEPARATOR: Oil/water separator effluent from Power Block 1. Grab samples taken from a drain/sample tap on oil/water separator #1 effluent piping.
120	N/A – NEW SAMPLE POINT	FIELD BLANK: Sample point for reporting results of mercury field blanks collected using standard sample handling procedures.
601	DELETED – all monitoring requirements now associated with sample point 901	INTAKE BACKGROUND: Lake Michigan cooling water intake for background water quality monitoring. Grab or 24-hour flow proportional composite samples are collected at the intake tunnel inside the Traveling Screen Room.

1 Influent – Cooling Water Intake Structure - Proposed Monitoring

1.1 Sample Point Number: 901- COOLING WATER INTAKE

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Calculated	Flow is calculated using pump run times and pump design capacity from pump curves.
Intake Water Used Exclusively For Cooling		% Flow	Annual	Calculated	See section 1.3.3.1 for additional submittal requirements for calculation methods.
Temperature Average		deg F	Daily	Continuous	
Temperature Maximum		deg F	Daily	Continuous	
Arsenic, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	See ‘Total Metals Analyses’ and ‘Sample Analysis’ sections in the permit. If the facility is unable to collect a

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
					composite sample, a grab sample may be used instead. In which case, a note should be made within the comment section of the DMR.
Mercury, Total Recoverable		ng/L	Quarterly	Grab	Monitoring to occur during calendar years 2025, 2026, and 2027. See 'Mercury Monitoring' section in the permit.

1.1.1 Changes from Previous Permit

Flow Rate – Reporting now required under sample point 901 instead of under sample point 601.

Intake Water Use – Annual reporting of the % used for cooling has been added.

Temperature Average – Reporting now required under sample point 901 instead of under sample point 601. Sample type updated to continuous.

Arsenic, Total Recoverable – Reporting now required under sample point 901 instead of under sample point 601. Sample type updated to 24-hr flow proportional composite.

Mercury, Total Recoverable – Reporting now required under sample point 901 instead of under sample point 601. Quarterly monitoring was added during the last three years of the permit.

Phosphorus, Total – Monitoring was removed.

1.1.2 Explanation of Requirements

Cooling Water Intake Structure (CWIS): The department has made a conditional determination that the current intake structure meets the 0.5 feet per second maximum design intake velocity option for complying with the impingement mortality BTA standards (s. NR 111.12(1)(a)(2), Wis. Adm. Code). In order to confirm this conditional BTA determination, the permittee must investigate engineering solutions to modify and/or replace the current flow control gate of the emergency intake and implement one of evaluated engineering solutions by the date required in section 4.4 of the permit. In addition, the permittee must also conduct a study on the impingement mortality covering a 12-month period after the flow control gate has been sealed. The permittee shall submit a report which includes the results of the impingement mortality study and compares those results to the results of prior impingement mortality studies.

The department has determined that the BTA for entrainment is current design and operation of the intake system with the addition and operation of a variable frequency drive (VFD) on at least one intake pump. The VFD shall be operated in a manner that minimizes the amount of water withdrawn while meeting plant needs. For additional information and requirements, refer to the “316(b) Cooling Water Intake Structure (CWIS) Evaluation” report dated November 18, 2022 and revised April 18, 2023.

Sample Point 601 to 901: Monitoring requirements were moved from the previous Sample Point 601 – Intake Background to Sample Point 901 – Intake. The location of 601 and 901 were the same as both sample points were for intake water. To simplify matters, the various monitoring/reporting parameters were combined under one sampling point.

Flow Rate & Intake Water Use – Reporting for both of these parameters were added to track the use of the water intake.

Temperature: Monitoring and reporting of the maximum temperature is necessary for the calculation of the heat discharged as described in paragraph 3.2.2.3 in the permit. The intake temperature is used for calculating the amount of heat discharged using the change in temperature between the intake and the outfall, or ΔT .

Arsenic, Total Recoverable: PWGS monitors influent arsenic from sampling point 901 (previously 601) to compare to the effluent to determine if additional mass from the facility is added to Lake Michigan. Section NR 106.06(6), Wis. Adm. Code, allows a facility to demonstrate that a pollutant present in intake water, which is passed through the facility and discharged does not cause, have the reasonable potential to cause, or contribute to the excursion of water quality criteria in the receiving water. Intake monitoring is necessary to make this determination at the next reissuance. The sample type may be grab or 24-hr flow proportional composite. If the permittee is unable to collect a composite sample due to operations, a grab sample is acceptable and should be denoted within the DMR general comments.

Mercury, Total Recoverable: Quarterly mercury monitoring during the last three years of the permit (2025, 2026 & 2027) is included in the proposed permit to compare to the effluent to determine if additional mass from the facility is added to Lake Michigan. Section NR 106.06(6), Wis. Adm. Code, allows a facility to demonstrate that a pollutant present in intake water, which is passed through the facility and discharged does not cause, have the reasonable potential to cause, or contribute to the excursion of water quality criteria in the receiving water. Intake monitoring is necessary to make this determination at the next reissuance, if there is reasonable potential for a limit exceedance. In accordance with s. NR 106.145(9)(a), Wis. Adm. Code, the sample type may be grab or 24-hr flow proportional composite; however, due to the level of sensitivity needed for analysis, the sample type has been identified as grab.

Phosphorus, Total: Optional monitoring of total phosphorus was included in the previous permit as an operational parameter. It was included to help evaluate the impact from the water treatment additives on the effluent phosphorus. Due to the parameter being an optional operational parameter, reporting on discharge monitoring reports was removed. If We Energies chooses to continue intake phosphorus sampling, this data shall be reported as part of the ‘Phosphorus Optimization’ schedule item 4.3.

1.2 Sample Point Number: 902- EMERGENCY INTAKE

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Per Occurrence	Estimated	A new methodology to estimate flow rate will need to be established by the permittee and approved by the department prior to reporting on the DMR.
Intake Water Used Exclusively For Cooling		% Flow	Annual	Calculated	See section 1.3.3.1 for additional submittal requirements for calculation methods.

1.2.1 Changes from Previous Permit

The use of the emergency intake was permitted in the previous permit; however, there was no separate sample point associated with the structure. The new sample point 902 has been created and included in this permit for reporting of flow parameters.

Flow Rate – Reporting of the flow rate per occurrence has been added.

Intake Water Use – Reporting of the % used for cooling per occurrence has been added.

1.2.2 Explanation of Requirements

Cooling Water Intake Structure (CWIS): The emergency cooling water intake is included as a component of the water intake system technologies and is also considered to be BTA. Because of its limited use on an emergency basis its environmental impact is minimized.

Use of the emergency water intake (permit section 1.2.2.2) is limited to only when necessary, and the Department must be notified whenever it's used for emergencies or for testing opening the intake gate. Use must be minimized because the emergency water intake lacks adequate technologies to prevent impingement and entrainment.

Flow Rate & Intake Water Use – Reporting for both of these parameters were added to track the use of the emergency water intake.

1.3 Intake Standard Requirements

1.3.1 Changes from Previous Permit

Future BTA: References to ch. NR 111, Wis. Adm. Code added.

1.3.2 Explanation of Requirements

Future BTA: s. NR 111.40(2)(c), Wis. Adm. Code, specifies the application materials for a facility of this type. A reduced list of application materials can be requested as authorized under s. NR 111.42(1)(a), Wis. Adm. Code.

Visual Inspections: The permittee is required to conduct visual or remote inspections of the intake structure at least weekly during periods of operation, pursuant to s. NR 111.14(4), Wis. Adm. Code.

Reporting Requirements: The permittee is required to submit an annual certification statement and report, pursuant to s. NR 111.15, Wis. Adm. Code.

Intake Screen Discharges and Removed Substances: Floating debris and accumulated trash collected on the cooling water intake trash rack shall be removed and disposed of in a manner to prevent any pollutant from the material from entering the waters of the State pursuant to s. NR 205.07 (3) (a), Wis. Adm. Code.

Endangered Species Act: This permit does not authorize take of threatened or endangered species. 40 CFR §125.98 (b) (1) requires the inclusion of this provision in all permits subject to 316(b) requirements. Contact the state Natural Heritage Inventory (NHI) staff with inquiries regarding incidental take of state-listed threatened and endangered species and the US Fish and Wildlife Service with inquiries regarding incidental take of federally-listed threatened and endangered species.

2 Inplant - Proposed Monitoring and Limitations

2.1 Sample Point Number: 103- LOW VOLUME WASTEWATER

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Suspended Solids, Total	Daily Max	100 mg/L	Monthly	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	Monthly	24-Hr Flow Prop Comp	
Oil & Grease (Hexane)	Daily Max	20 mg/L	Quarterly	Grab	
Oil & Grease (Hexane)	Monthly Avg	15 mg/L	Quarterly	Grab	

2.1.1 Changes from Previous Permit

Flow Rate – Sample type updated to continuous and sample frequency updated to daily.

Suspended Solids, Total – Sample type updated to 24-hr flow proportional composite.

Oil & Grease – Sample frequency updated to quarterly.

2.1.2 Explanation of Limits and Monitoring Requirements

Sampling Point 103 is a low volume waste stream consisting of wastewater from the filter backwash and reverse osmosis (RO) reject stream. The boiler makeup water treatment system consists of a multi-media filter for suspended solids removal, and reverse osmosis (RO) and electrodeionization (EDI) to remove dissolved impurities. Water treatment additives are used to prevent scaling, pH adjustment, and for dechlorination of the municipal make-up water (refer to the WQBEL for additives discussion). The EDI rinse water and reject are used as blowdown quench water and discharge at Sampling Points 105, 106, 107, and 108. These low volume waste streams are routed to the discharge tunnel and commingle with the noncontact condenser cooling water that discharges at Outfall 001.

The permit includes the steam electric power generating categorical limits from ch. NR 290, Wis. Adm. Code, see **Attachment 1** for additional details. Because the estimated effluent concentration of the water treatment additives is less than the additive use restriction, the additives are approved for use and inclusion of the use restriction in the permit is unnecessary.

Flow Rate – Sample type updated from total daily to continuous and sample frequency updated from 2x/month to daily. This is due to the presence of an inline flow meter which measures and records flow readings on a continuous basis. Reporting of the flow rate was increased to daily to track discharge on a daily continuous basis. On days of no flow, a result of zero will be entered (per permit standard requirement section 5.1.4).

Suspended Solids, Total – During the previous permit term, total suspended solids (TSS) results averaged 2.2 mg/L with 21% being reported as non-detects and no reported limit violations. Using best professional judgement (BPJ), the department has determined the sampling frequency is sufficient to verify compliance with the monthly average and daily maximum limits. Sample type was updated to 24-hr flow proportional composite due to the fact that the composite sampler is based off of the inline continuous flow meter and so the sample is flow proportional.

Oil & Grease – Annual results were all reported as non-detects; however, the sampling frequency has been increased to quarterly to be consistent with other power generation facilities and to better verify compliance with the monthly average and daily maximum limits.

2.2 Sample Point Number: 105- BLOWDOWN #11; 106- BLOWDOWN #12; 107- BLOWDOWN #21; 108- BLOWDOWN #22

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Calculated	Flow is calculated using pump run times and pump design capacity from pump curves.
Suspended Solids, Total	Daily Max	100 mg/L	Monthly	Grab	
Suspended Solids, Total	Monthly Avg	30 mg/L	Monthly	Grab	
Oil & Grease (Hexane)	Daily Max	20 mg/L	Quarterly	Grab	
Oil & Grease (Hexane)	Monthly Avg	15 mg/L	Quarterly	Grab	

2.2.1 Changes from Previous Permit

Flow Rate – Sample type updated to continuous and sample frequency updated to daily.

Oil & Grease – Sample frequency updated to quarterly.

2.2.2 Explanation of Limits and Monitoring Requirements

Each power block has two gas fired combustion turbine generators and two heat-recovery steam generators. Each heat recovery steam generator (HRSG) has a blowdown tank discharge, which are identified as #11 and #12 for Power Block 1, and #21 and #22 for Power Block 2. The blowdown tanks are identified as Sampling Points 105, 106, 107, and 108 respectively. Water treatment additives are used to prevent scaling, corrosion control, and pH adjustment (refer to attachment on water treatment additives). The average combined design flow for all 4 sampling points is 0.123 MGD. The discharge also includes steam drain lines, and quench water consisting of a mixture of municipal water, RO/EDI rinse water and EDI reject water from the boiler makeup water treatment system. These low volume waste streams are routed to the discharge tunnel and commingle with the condenser cooling water that discharges at Outfall 001.

The permit includes the steam electric power generating categorical limits from ch. NR 290, Wis. Adm. Code, see **Attachment 1** for additional details. Because the estimated effluent concentration of the water treatment additives is less than the additive use restriction, the additives are approved for use and inclusion of the use restriction in the permit is unnecessary.

Flow Rate – Sample type updated from total daily to calculated and sample frequency updated from 2x/month to daily. This is due to better define how the flow rate is measured as flow is calculated using pump run times and pump design capacity from pump curves. Reporting of the flow rate was increased to daily to track discharge on a daily basis. On days of no flow, a result of zero will be entered (per permit standard requirement section 5.1.4).

Suspended Solids, Total – During the previous permit term, all sample points (105-108) total suspended solids (TSS) results averaged 0.05 mg/L with 97% being reported as non-detects and no reported limit violations. Using best

professional judgement (BPJ), the department has determined the sampling frequency is sufficient to verify compliance with the monthly average and daily maximum limits.

Oil & Grease – Annual results averaged 0.51 mg/L with 75% being reported as non-detects and no reported limit violations; however, the sampling frequency has been increased to quarterly to be consistent with other power generation facilities and to better verify compliance with the monthly average and daily maximum limits.

2.3 Sample Point Number: 110- OIL/WATER SEPARATOR #2; 111- OIL/WATER SEPARATOR #1

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
Oil & Grease (Hexane)	Daily Max	15 mg/L	Monthly	Grab	
BOD5, Total	Monthly Avg	20 mg/L	Annual	Grab	
BETX, Total	Monthly Avg	750 ug/L	Annual	Grab	See 'Total BETX' section in the permit.
PAHs	Monthly Avg	0.1 ug/L	Annual	Grab	See 'PAH' section in the permit.
Benzo(a)pyrene	Monthly Avg	0.1 ug/L	Annual	Grab	See 'Benzo(a)pyrene' section in the permit.
Naphthalene	Monthly Avg	70 ug/L	Annual	Grab	See 'Naphthalene' section in the permit.

2.3.1 Changes from Previous Permit

Flow Rate – Sample type updated to continuous.

2.3.2 Explanation of Limits and Monitoring Requirements

An oil and water separator at each power block provides treatment for any water that may become contaminated with oil and grease. Wastewater sources routed through the oil and water separator include the main transformer area sump, floor drains, equipment drains, and foundation drain sumps. The oil and water separator effluent is routed to the discharge tunnel and commingles with the condenser cooling water that discharges at Outfall 001. Waste oil is taken off site for recycling or disposal.

The oil and water separators are subject to the same treatment performance based effluent limits, based on best professional judgment and maintenance conditions that are used for the general permit for petroleum contaminated water (WPDES permit WI-0046531-06).

Flow Rate – Sample type updated from total daily to continuous. This is due to the presence of an inline flow meter which measures and records flow readings on a continuous basis. On days of no flow, a result of zero will be entered (per permit standard requirement section 5.1.4).

Non-detects were reported during the permit term for BETX, PAHs, and Benzo(a)pyrene but BOD, Oil & Grease, and Naphthalene reported detected results. Monitoring frequency has remained at the frequency of monthly for Oil & Grease. Similar to the general permit, the other parameters are sampled annually (same as in previous permit).

2.4 Sample Point Number: 120- FIELD BLANK

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Mercury, Total Recoverable		ng/L	Quarterly	Blank	Monitoring to occur during calendar years 2025, 2026, and 2027. See 'Mercury Monitoring' section in the permit.

2.4.1 Changes from Previous Permit

New sample point added for reporting of mercury field blanks.

2.4.2 Explanation of 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- CONDENSER COOLING WATER

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Calculated	Flow is calculated using recirculation gate position, pump run times, and pump design capacity from pump curves.
pH Field	Daily Max	9.0 su	Weekly	Grab	
pH Field	Daily Min	6.0 su	Weekly	Grab	
Temperature Average		deg F	Daily	Continuous	
Temperature Maximum		deg F	Daily	Continuous	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Heat	Daily Avg	3,320 MBTU/hr	Daily	Calculated	
Phosphorus, Total	6-Month Avg	0.2 mg/L	Monthly	24-Hr Flow Prop Comp	This is an interim limit. See the 'Phosphorus' section in the permit.
Arsenic, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	See 'Total Metals Analyses' and 'Sample Analysis' sections in the permit.
Mercury, Total Recoverable		ng/L	Quarterly	Grab	Monitoring to occur during calendar years 2025, 2026, and 2027. See 'Mercury Monitoring' section in the permit.
PFOS		ng/L	Quarterly	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need schedule.
PFOA		ng/L	Quarterly	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need schedule.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual during the permit term. See 'WET Monitoring' section in the permit for monitoring dates and WET requirements.
Chronic WET	Monthly Avg	2.0 TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual during the permit term. See 'WET Monitoring' section in the permit for monitoring dates and WET requirements.

3.1.1 Changes from Previous Permit

Flow Rate – Sample type updated to calculated.

Mercury, Total Recoverable – Quarterly monitoring was added during the last three years of the permit term.

~~**PFOS and PFOA** – Monthly monitoring is included in the permit in accordance with s. NR 106.98(2)(d), Wis. Adm. Code.~~

PFOS and PFOA – The monitoring frequency for PFOS and PFOA has been reduced from Monthly to Quarterly.

Acute and Chronic WET – Sample frequency updated from “Quarterly” to “See Listed Qtr(s)”. The units for Chronic WET were updated from rTUC to TUC, and a monthly average limit of 2.0 TUC was added.

3.1.2 Explanation of Limits and Monitoring Requirements

Outfall 001 discharges the once through noncontact condenser cooling water (no internal sample point) and the other low volume wastewater sources from the internal sampling points that commingle with the cooling water in the discharge tunnel. In addition, it receives the discharge from the auxiliary boiler water that consists of blowdown and steam line drains that only occurs during periods of start-up and shutdown or plant upset conditions.

Flow Rate – Sample type updated from total daily to calculated. This is to more precisely define how the flow rate is calculated using pump run times and pump design capacity from pump curves. On days of no flow, a result of zero will be entered (per permit standard requirement section 5.1.4).

Water Quality Based Limits and WET Requirements

Refer to the Water Quality-Based Effluent Limitations (WQBELs) memo, prepared by Nicole Krueger dated October 30, 2020 and revised on February 14, 2023, and used for this reissuance.

Temperature: Temperature limits were triggered because the effluent temperature exceeded the calculated effluent limits for 10 months, as only May and June complied with the limits. Therefore, an alternative effluent limit (AEL) for temperature, expressed as heat in millions of British Thermal Units per hour (MBTU/hr) is included in the permit in accordance with the thermal rules in subchapter VI of ch. NR 106, Wis. Adm. Code. Refer to **Attachment 2**.

Phosphorus, Total: Phosphorus requirements are based on the Phosphorus Rules that became effective 12/1/2010 as detailed in NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217 Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. The code categorically limits industrial dischargers of more than 60 pounds of phosphorus per month to 1.0 mg/L unless an alternative limit is approved. PWGS triggered the need for a technology-based limit; however, a WQBEL for phosphorus was more stringent and a 1.0 mg/L monthly average limit was not included.

Chapter NR 217, Wis. Adm. Code, also specifies WQBELs (water quality based effluent limits) for discharges of phosphorus to surface waters of the state from publicly and privately-owned wastewater facilities, noncontact cooling water discharges which contain phosphorus, concentrated animal feeding operations that discharge through alternative treatment facilities and a facility/site that is regulated under ch. NR 216, Wis. Adm. Code where the standards in chs. NR 151 and NR 216, Wis. Adm. Code are not sufficient to meet phosphorus criteria. WQBELs for phosphorus are needed whenever the discharge contains phosphorus at concentrations or loadings that will cause or contribute to an exceedance of the water quality standards. Section NR 102.06(5)(b), Wis. Adm. Code, specifies a total phosphorus criterion of 7 µg/L (0.007 mg/L) for the open and near shore waters of Lake Michigan. For discharges directly to the Great Lakes, s. NR 217.13(4), Wis. Adm. Code, states that the Department shall set effluent limits consistent with near shore or whole lake models approved by the Department. At this time there is no model available, although work is ongoing by a contractor to EPA Region 5. The six-month average interim limit of 0.2 mg/L remains in the proposed permit. The permittee shall continue to reduce phosphorus as much as practicable from their discharge and continue to minimize phosphorus in their discharge. This approach is consistent with other dischargers to Lake Michigan.

Arsenic, Total Recoverable: The Human Cancer Criteria is 0.2 ug/L; however, natural background concentrations in Lake Michigan are known to exceed this concentration. As stated in the WQBEL memo, the 30-day P₉₉ value was 1.19 ug/L, which was greater than the calculated limit of 0.2 ug/L. Section NR 106.06(6), Wis. Adm. Code, allows a facility to demonstrate that a pollutant present in intake water, which is passed through the facility and discharged does not cause, have the reasonable potential to cause, or contribute to the excursion of water quality criteria in the receiving water. The demonstration has five conditions, all of which must be met. PWGS met all five conditions of the demonstration. Quarterly arsenic monitoring has been continued into this permit to gather effluent results for the next reissuance.

Mercury, Total Recoverable: A majority of the available mercury data was taken in 2015 and will no longer be considered representative at the next permit reissuance. The data available appeared to be increasing over time and samples spread out over a larger time frame will be more representative of effluent quality. Quarterly monitoring during the last three years of the permit (2025, 2026 & 2027) has been included in the proposed permit (pursuant to s. NR 106.145, Wis. Adm. Code) in order to have more recent data available for calculating reasonable potential and potential mercury limitations.

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 industrial dischargers to be evaluated on a case-by-case basis to determine if monitoring is required pursuant to s. NR 106.98(2)(d), Wis. Adm. Code. The department evaluated the need for PFOS and PFOA monitoring taking into consideration industry type and other potential sources of PFOS or PFOA. Based on information available at the time the proposed permit was drafted, it was identified that the industrial discharger category may be a potential source of PFOS/PFOA. Therefore, monthly monitoring is included. The initial determination of need sampling shall be conducted for up to two years in order to determine if the permitted discharge has the reasonable potential to cause or contribute to an exceedance of the PFOS or PFOA standards under s. NR 102.04(8)(d)1, Wis. Adm. Code.

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.

Acute and Chronic WET: Whole Effluent Toxicity (WET) testing requirements are determined in accordance with ss. NR 106.08 and NR 106.09, Wis. Adm. Code. See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist. The WET Guidance Document was used to determine appropriate test frequencies. A completed checklist for outfall 001 is provided in the Department’s WQBEL memo dated October 30, 2020 (revised February 14, 2023) and the website <http://dnr.wi.gov/topic/wastewater/WETChecklist.html> provides the WET checklist and instructions for its use. Acute and Chronic WET tests are scheduled in the following rotating quarters:

January - March 2024; April – June 2025; July – September 2026; October – December 2027; January – March 2028

Categorical Limits (pH) – See Attachment 1.

3.2 Sample Point Number: 002- CONDENSER COOLING WATER - ALT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Calculated	Flow is calculated using recirculation gate position, pump run times, and pump design capacity from pump curves.

3.2.1 Changes from Previous Permit

Flow Rate – Sample type updated to calculated.

3.2.2 Explanation of Monitoring Requirements

Flow is the only required monitoring, which will provide data to show each time the outfall is used. The effluent from Outfall 002 is identical to Outfall 001; it's just routed to a different location as needed. Section 3.2.3.1 identifies the three purposes for use of Outfall 002, which are: deicing the water intake, controlling zebra and quagga mussels, and for backwashing the porous dike if it becomes plugged (this has been unnecessary to date). There is usually some flow in the recirculation channel year-round to prevent the build-up of silt/sand on the recirculating gate, which may prevent the gate from opening when needed.

3.3 Sample Point Number: 601- WATER INTAKE

3.3.1 Changes from Previous Permit

Sample point has been deleted.

3.3.2 Explanation of Monitoring Requirements

Sample Point 601 to 901: Monitoring requirements were moved from the previous Sample Point 601 – Intake Background to Sample Point 901 – Intake. The location of 601 and 901 were the same as both sample points were for intake water. To simplify matters, the various monitoring/reporting parameters were combined under one sampling point.

4 Schedules

4.1 Cooling Water Intake Structure (CWIS) Annual Certification Statement

Submit an annual certification statement as required by influent section 1.3.3.1 'Annual Certification Statement and Report' of the permit.

Required Action	Due Date
Annual Certification Statement: Submit an Annual Certification on the water intake structure, as required by section 1.3.3.1.	01/31/2024
Annual Certification Statement: Submit an Annual Certification on the water intake structure, as required by section 1.3.3.1.	01/31/2025
Annual Certification Statement: Submit an Annual Certification on the water intake structure, as required by section 1.3.3.1.	01/31/2026
Application Materials Exemption Request: Submit a statement by the due date on whether or not the permittee wishes to request a 316(b) application materials exemption. If no exemption is being requested, all applicable requirements in s. NR 111.40(2)(c), Wis. Adm. Code shall be submitted with the application for reissuance of this permit.	03/31/2026
Annual Certification Statement: Submit an Annual Certification on the water intake structure, as required by section 1.3.3.1.	01/31/2027
Annual Certification Statement: Submit an Annual Certification on the water intake structure, as required by section 1.3.3.1.	01/31/2028
Application Materials: Submit the application materials required in NR 111.40(2)(c), Wis. Adm. Code with the application for reissuance of this permit.	04/03/2028

4.1.1 Explanation of Schedule

Surface Water Intake

As specified in Section 1.3.3.1 of the permit, annual certification is due on January 31st of each year.

Additionally, the application materials required in NR 111.40(2)(c), Wis. Adm. Code are due with the application for permit reissuance. The permittee should collaborate with the compliance staff on the preparation of these materials in order to ensure that the permittee and department are in agreement on which studies must be submitted. This includes a potential request for application material exemption 30 months prior to permit expiration.

4.2 Temperature Alternative Effluent Limit (AEL)

The alternative effluent limit (AEL) for temperature approved in this permit may be renewed in subsequent permit reissuances. An AEL renewal request must be supported with justification in the next permit application.

Required Action	Due Date
<p>Submit AEL Request: The permittee shall submit an AEL Request with the WPDES reissuance application. This request shall demonstrate that the conditions and the assumptions included in the March 2020 study are still accurate and apply to the current discharge. If discharge conditions have significantly changed (i.e. increased/decreased flow, or increased/decreased heat loads), then a full Thermal Study, similar to the 2020 study, will need to be repeated and the findings submitted with the application.</p>	04/03/2028

4.2.1 Explanation of Schedule

The resubmittal of an AEL for temperature requests dated March 2020, submitted in accordance with Subchapter VI of ch. NR 106, Wis. Adm. Code, was found acceptable by the Department. See **Attachment 2**. The thermal limit in the permit will continue to be evaluated in future permit reissuances to account for any operational changes at the power plant or changes in environmental conditions. Because the Port Washington Generating AEL followed the §316 (a) demonstration process and Department regulations and guidance, the permit will require future studies for the continued technical support of the AEL. For this permit term, the AEL Request described in the Temperature AEL schedule is intended to provide the needed support for continuation of an AEL. If there are significant changes, a full Thermal Study will be needed. The AEL for temperature is subject to change based on the information in the request.

4.3 Phosphorus Optimization

No later than 14 days following the due date, the permittee shall notify the Department in writing of its compliance or noncompliance with the required action. If a submittal is part of the required action, then a timely submittal fulfills the written notification requirement.

Required Action	Due Date
<p>Optimization Summary Report: The permittee shall continue to implement phosphorus optimization efforts throughout the permit term and identify any new optimization efforts.</p> <p>The permittee shall submit a final report documenting successes in reducing phosphorus concentrations in the effluent. The report shall summarize the actions taken for continued optimization of phosphorus removal. The report shall also include an analysis of trends in monthly and annual total effluent phosphorus concentrations based on sampling during the current permit term and include an evaluation of collected effluent data. Any intake phosphorus data collected shall also be submitted. The final report shall also identify any possible source reduction measures and operational improvements to continue to optimize removal of phosphorus in the future.</p>	03/31/2028

4.3.1 Explanation of Schedule

Phosphorus Optimization

The 0.2 mg/L six-month average interim limit for phosphorus requires the permittee to optimize removal of this parameter in the effluent. The numerical interim limit is the Department’s strategy for dealing with the pending development of the near shore or whole lake model for direct discharges to Lake Michigan. The schedule requires the permittee to prepare an operational evaluation report that shall include an evaluation of collected effluent data, possible source reduction measures and operational improvements to optimize removal of phosphorus.

4.4 Emergency Intake Investigation

Investigation to confirm the conditional BTA determination for impingement mortality.

Required Action	Due Date
Emergency Intake Investigation Report: In accordance with section 1.2.1.2, the permittee shall submit a report to the department detailing engineering solutions to modify and/or replace the flow control gate at the harbor entrance of the emergency intake and shall select one of the options discussed to proceed with implementing.	09/30/2024
Complete Implementation: The permittee shall finish implementation of the selected engineering solution by this date.	09/30/2025
Study Plan: The permittee shall submit a plan outlining the impingement mortality study in which the impingement mortality rate is determined after the flow control gate has been modified and/or replaced is determined and compared to the impingement mortality rate prior to the flow control gate being modified or replaced. The study shall cover a 12-month period.	09/30/2026
Commence Study: The permittee shall commence monitoring associated with the study plan.	03/31/2027
Submit Study: The permittee shall submit a study in which the impingement mortality rate is determined after the flow control gate has been modified and/or replaced is determined and compared to the impingement mortality rate prior to the flow control gate being modified or replaced.	03/31/2028

4.4.1 Explanation of Schedule

Emergency Intake Investigation

As part of the chosen option for compliance with the impingement mortality BTA standards the department requires that a report be submitted within a year of the effective date of this permit. This report shall include information on all solutions to modify or replace the existing gate that were investigated and should include which of the solutions the permittee has chosen to move forward with implementing. Within two years of the effective date of this permit the permittee must finish the replacement and/or modification to the gate that was chosen as part of the report.

4.5 Entrainment BTA Feasibility and Implementation

Report on the feasibility of pumps with variable frequency drives (VFDs) and implementation of one or more VFDs if deemed feasible.

Required Action	Due Date
Progress Report: Submit a report on the progress that has been made on the feasibility report, as required by section 1.2.1.2.	09/30/2024

Submit Feasibility Report: The permittee shall submit a report in which the feasibility of installing a variable frequency drive (VFD) on at least one intake pump at PWGS is investigated.	09/30/2025
Progress Report: Unless the department notifies the permittee in writing that, after review of the Feasibility Report, the department has determined that VFDs are infeasible, the permittee shall submit a report on the progress of procurement and installation of one or more VFDs if the use of VFDs has been deemed to be feasible.	09/30/2026
Complete Implementation: Unless the department notifies the permittee in writing that, after review of the Feasibility Report, the department has determined that VFDs are infeasible, the permittee shall finish installation and the pumps shall be in operation by this date.	09/30/2027

4.5.1 Explanation of Schedule

During discussions between the permittee and the department concerns were raised with regards to the feasibility of installing and operating one or more variable speed pump at PWGS. Due to these concerns the department is requiring the permittee to submit a report within one year of the effective date of this permit in which the permittee shall include information on the feasibility of the installation and use of VFDs on intake pumps at PWGS. If the use of one or more pumps with VFDs is determined to be feasible installation of the VFD(s) shall be completed and operation of the VFD(s) shall commence within two years of the effective date of this permit.

4.6 PFOS/PFOA Minimization Plan Determination of Need

Required Action	Due Date
<p>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.</p> <p>This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results.</p>	09/30/2024
<p>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.</p> <p>This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results.</p> <p>The permittee shall also submit a request to the department to evaluate the need for a PFOS/PFOA minimization plan.</p> <p>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.</p> <p>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.</p>	09/30/2025

4.6.1 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.

Attachments:

~~Attachment 1: Effluent Limit Guidelines (ELG) and Technology Based Effluent Limits (TBEL)~~

~~Attachment 2: Temperature Alternative Effluent Limitation (AEL)~~

~~316(b) Cooling Water Intake Structure (CWIS) Evaluation – Report dated November 17, 2022 & revised May 23, 2023~~

~~Water Quality Based Effluent Limits & WET Checklist Summary – Memo dated October 30, 2020 & revised February 14, 2023~~

~~Public Notice~~

~~PFOS and PFOA Water Quality-Based Effluent Limitations for the Wisconsin Electric Power Company Port Washington Generating Station - WPDES Permit No. (WI-0000922) in Ozaukee County, by Amy Garbe, PE, Wastewater Engineer, dated October 28, 2024~~

Proposed Expiration Date:

September 31, 2028

Prepared By:

Amy Garbe, P.E - Wastewater Engineer

Date: August 1, 2023

Updated (based on public notice comments): 9/19/2023

Revised By: Sarah Donoughe, Wastewater Specialist-Adv

Date: October 28, 2024

DATE: October 28, 2024

FILE REF: 3200

TO: Sarah Donoughe – NER

FROM: Kari Fleming – WY/3

SUBJECT: PFOS and PFOA Water Quality-Based Effluent Limitations for the the Wisconsin Electric Power Company Port Washington Generating Station -WPDES Permit No. (WI-0000922) in Ozaukee County.

This is in response to your request for an evaluation of the need for PFOS and PFOA limitations for Wisconsin Electric Power Company Port Washington Generating Station (“PWGS”). This industrial facility discharges to Lake Michigan in the Sauk and Sucker Creeks Watershed in the Sheboygan River Basin.

The current permit, effective since October 2023, 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: Lake Michigan
- Classification: Cold water community, public water supply
- Flow: A ten-to-one dilution ratio will be used for calculating effluent limitations based on chronic or long-term impacts, in accordance with s. NR 106.06(4)(b)2, Wis. Adm. Code, because the receiving water a harbor and does not exhibit unidirectional flow. This is based on the results of the Alden Research Laboratory survey conducted on August 15, 1995.
- Source of background concentration data: We Energies provided PFOS and PFOA samples results from the intake water withdrawn from Lake Michigan at Sampling Point 901 as part of the “Report on Effluent Discharge and Evaluation of Need”. The average of data collected from October 2023 through August 2024 is used as the background concentration for Lake Michigan.

Effluent Information

- Flow Rate(s):
 - Maximum annual average = 511 MGD (Million Gallons per Day) in 2023
 - The average flow from 10/01/2021 to 08/31/2024 was 471 MGD
- Effluent characterization: This facility is categorized as a primary industrial discharge

The following table lists the statistics for effluent PFOS and PFOA levels from March 2021 and October 2023 through September 2024.

	PFOS ng/L	PFOA ng/L
1-day P ₉₉	14.89	4.06
4-day P ₉₉	8.19	3.06
30-day P ₉₉	4.66	2.25
Mean*	3.16	1.86



	PFOS ng/L	PFOA ng/L
Std	3.02	0.679
Sample Size	13	13
Range	1.6-13.1	<0.79-3.8

*Results below the level of detection (LOD) were included as zeroes in calculation of average.

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 s. NR 106.98(4), Wis. Adm. Code. Therefore, the effluent limit for PFOS is set equal to criteria (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) and upstream PFOA concentrations (Cs) provided below.

$$\text{Limitation} = 11(\text{WQC}) - 10(\text{Cs})$$

Where:

WQC = 20 ng/L for Lake Michigan

Cs = background concentration of PFOA in the receiving water pursuant to s. NR 106.06(4)(e), Wis. Adm. Code (1.61 ng/L)

After substituting the appropriate variables, the calculated PFOA limit is 204 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 (204 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, Wastewater Engineer

date: 10/28/24

cc: Curt Nickels, Basin Engineer – SER/Plymouth
Nate Willis – CO

Attachment 1 – PFOS P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -				
	=	=	=	=
SUBSTANCE:				
NUMBER OF				
VALUES:	-----			
TOTAL	13			
DETECTED	13			
NON-DETECTED	0			
d	0			
m	3.161538			
mean of all data	3.161538			
s	3.021737			
n	-----	-----	-----	
	1	4	30	
d^n	0	0	0	
p	0.99	0.99	0.99	
Z_p	2.326785	2.326785	2.326785	
1+(s/m)^2	1.913517	1.913517	1.913517	
(sigma_d)^2	0.648943	0.648943	0.648943	
mu_d	0.826587	0.826587	0.826587	
(sigma_dn)^2	0.648943	0.205696	0.029996	
mu_dn	0.826587	1.048211	1.136061	
P_99 exponent	2.700975	2.103494	1.539046	
P_99	-----	-----	-----	
	14.89	8.19	4.66	
	-----	-----	-----	

Data Summary	
Mar-21	2.9
Oct-23	2.2
Nov-23	2.2
Dec-23	1.6
Jan-24	1.8
Feb-24	2.4
Mar-24	2.7
Apr-24	2.1
May-24	1.7
Jun-24	3.0
Jul-24	2.5
Aug-24	2.9
Sept-24	13.1

Attachment 2 – PFOA P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -				
=	=	=	=	=
SUBSTANCE:				
NUMBER OF				
VALUES:	-----			
TOTAL	13			
DETECTED	12			
NON-DETECTED	1			
d	0.076923			
m	2.016667			
mean of all data	1.861538			
s	0.679349			
n	-----	-----	-----	
	1	4	30	
d^n	0.076923	3.5E-05	3.82E-34	
p	0.989167	0.99	0.99	
Z_p	2.296601	2.326772	2.326785	
1+(s/m)^2	1.11348	1.11348	1.11348	
(sigma_d)^2	0.10749	0.10749	0.10749	
mu_d	0.647701	0.647701	0.647701	
(sigma_dn)^2	0.10749	0.050247	0.006852	
mu_dn	0.647701	0.596315	0.617977	
P_99 exponent	1.400656	1.117879	0.810583	
P_99	-----	-----	-----	
	4.06	3.06	2.25	
	-----	-----	-----	

Data Summary	
Mar-21	2.4
Oct-23	1.9
Nov-23	1.7
Dec-23	1.7
Jan-24	1.5
Feb-24	<0.79
Mar-24	2.0
Apr-24	1.3
May-24	1.7
Jun-24	1.9
Jul-24	1.6
Aug-24	2.7
Sept-24	3.8