Permit Fact Sheet

1 General Information

Permit Number:	WI-0022926-09-0	
Permittee Name:	Burlington Water Pollution Control	
Address:	City Hall 300 N. Pine St	
City/State/Zip:	Burlington WI 53105	
Discharge Location:	2100 S. Pine Street, Burlington, WI (effluent discharges to the West bank of the Fox (IL) River approximately 1 mile south of Burlington Bypass)	
Receiving Water:	Fox (IL) River in Racine County	
StreamFlow ($Q_{7,10}$):	44 cfs	
Stream Classification:	Warm Water Sport Fishery	
Design Flow(s)	Daily Maximum	8.54 MGD
	Weekly Maximum	7.08 MGD
	Monthly Maximum	5.17 MGD
	Annual Average	3.5 MGD
Significant Industrial Loading?	Yes; Air Liquide (industrial gases), Echo Lake Farm Produce (egg products), Lavelle (molded rubber and plastics), Nestle (chocolate), Packaging Corporation (containerboard and corrugated packaging), St. Gobain (glass making), and Burlington Landfill (leachate collection)	
Operator at Proper Grade?	Yes	
Pretreatment Program Approval Date:	Not Applicable	

2 Facility Description

The City of Burlington operates a 3.50 MGD two-stage biological wastewater treatment facility, which went on line in 1992. The plant's organic capacity is 11,350 lb/day. Treatment processes include mechanical screening, grit removal (a new grit washer was installed in April 2006), primary clarification, biological treatment using attached growth media in two biotowers, intermediate clarification, activated sludge aeration for ammonia removal, final clarification, disinfection by ultraviolet light and phosphorus removal with ferrous chloride. Treated effluent is discharged into the Fox River in Racine County. Sludge produced during treatment processes is anaerobically digested, thickened in a gravity belt thickener and stored on-site in two sludge storage tanks of total capacity 3.1 million gallons. Sludge hauling and injection is subcontracted to the City of Burlington.

The facility improvements were completed in February 2014. The improvements include rehabilitation of primary and intermediate clarifiers, replacement of pumping equipment, biofilter equipment and media and aeration basin diffusers.

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Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
701	2.6 MGD Jan. 2011 – May 2014	Influent: 24-hour flow proportional composite sampler intake located after grit removal and before primary clarification - includes side stream flows.
001	2.51 MGD Jan. 2011 – May 2014	Effluent: 24-hour composite sampler intake located after the ultraviolet (UV) disinfection light system, just before Parshall flume. Grab samples shall be collected at the effluent trough, after the UV disinfection.
004	650 dry U.S. tons/yr as indicated on 2013 permit application.	Anaerobically digested liquid sludge, thickened by gravity belt. Samples shall be taken from the storage tank (with adequate prior mixing) or at the outlet pipe of storage tank during truck loading.
103		Mercury field blanks shall be collected using standard sample handling procedures.

3 Influent - Proposed Monitoring

3.1 Sample Point Number: 701- INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Mercury, Total Recoverable		ng/L	Quarterly	24-Hr Flow Prop Comp	

3.1.1 Changes from Previous Permit:

No changes.

3.1.2 Explanation of Limits and Monitoring Requirements

These are standard municipal wastewater requirements. Tracking of BOD and Suspended Solids is required for percent removal requirements. Mercury monitoring is required for all approved mercury alternative effluent limits.

4 Inplant - Proposed Monitoring and Limitations

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4.1 Sample Point Number: 103- Mercury Effluent Blanks

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Mercury, Total Recoverable		ng/L	Quarterly	Grab	See Mercury footnote

4.1.1 Changes from Previous Permit:

No Changes.

4.1.2 Explanation of Limits and Monitoring Requirements

Required field blank for Mercury monitoring per NR 106.145 requirements.

5 Surface Water - Proposed Monitoring and Limitations

5.1 Sample Point Number: 001- EFFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Monthly Avg	30 mg/L	5/Week	24-Hr Flow Prop Comp	
BOD5, Total	Weekly Avg	45 mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	5/Week	24-Hr Flow Prop Comp	
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	13 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective October only. Monitoring required year round.
Nitrogen, Ammonia (NH3-N) Total	Daily Max – Variable	mg/L	3/Week	24-Hr Flow Prop Comp	Report Ammonia effluent value on DMR.
Nitrogen, Ammonia (NH3-N) Total		mg/L	3/Week	Calculated	Report calculated variable Ammonia limit on DMR. See Maximum Ammonia Limits Table below in the

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Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					permit.
Phosphorus, Total	Monthly Avg	1.0 mg/L	3/Week	24-Hr Flow Prop Comp	This is an interim limit. See phosphorus footnotes below for final limits.
Phosphorus, Total		lbs/day	3/Week	Calculated	See phosphorus footnotes below for final mass limit.
Fecal Coliform	Geometric Mean	400 #/100 ml	Weekly	Grab	May-September only
Mercury, Total Recoverable	Daily Max	3.1 ng/L	Quarterly	Grab	See mercury footnote below.
Nitrogen, Total		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET testing footnote below.
Chronic WET		rTUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET testing footnote below.

5.1.1 Changes from Previous Permit

- **Ammonia:** A monthly average limit of 13 mg/L applies to October. (Per NR 106.33) At the request of the permittee a daily maximum pH dependent variable ammonia limit has been included.
- **Phosphorus:** The existing technology-based limit of 1.0 mg/L is retained as an interim limit and new final water quality based effluent limits are specified in conjunction with the Phosphorus compliance schedule. The final water quality based effluent limits for phosphorus are 0.1 mg/L six-month average (May-October, November-April), and 0.3 mg/L monthly average, and 3.0 lbs/day annual average. Final limits may be revised based on possible future Fox (IL) River TMDL evaluations.
- **Mercury:** The existing alternative effluent limit of 5.8 ng/L has been recalculated based on current effluent Mercury values. This has resulted in a proposed alternative effluent limit of 3.1 ng/L. (Per NR 106.145)
- Total Nitrogen monitoring has been added on a quarterly basis.
- Bis(2-ethylhexyl)phthalate permit requirements are not needed based on additional effluent data.

5.1.2 Explanation of Limits and Monitoring Requirements

Water Quality Based Limits and WET Requirements and Disinfection (if applicable)

See the Water Quality Based Effluent memo for the Burlington WWTF dated January 21, 2014 by Jim Schmidt for applicable WQBELs.

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- **BOD, Suspended Solids, pH, and fecal coliforms:** Standard municipal wastewater requirements for BOD, Suspended Solids, pH, and fecal coliforms are included based NR 210 Sewage Treatment Works requirements for discharges to fish and aquatic life streams.
- **Ammonia:** Daily maximum Ammonia limits were recalculated based on a decrease in effluent pH values, resulting in a daily maximum of 24 mg/L. The new daily max. is subject to an antidegradation review and because the permittee can comply with the existing daily max of 10 mg/L the existing daily max limit is retained in the draft permit. Ammonia limits are included in the proposed permit per Subchapter III of ch. NR 106 which establishes the procedure for calculating water quality based effluent limitations (WQBELs) (effective March 1, 2004). Effluent limitations for ammonia are calculated using the procedures in s. NR 106.32 and are shown in the WQBEL dated. Monthly average Ammonia limits were recalculated using new background values for pH and temperature. The existing daily maximum limit is more stringent than the recalculated monthly average limits for November-March. Also, the recalculated monthly average limits are greater than 20 mg/L for April - September and therefore the existing daily max limit is only applicable during November – April and a monthly average limit of 13 mg/L applies to October. (Per NR 106.33) At the request of the permittee a daily maximum pH dependent variable ammonia limit has been included.
- **Phosphorus:** Phosphorus rules for water quality based effluent limits became effective December 2010 as detailed in NR 217. For the reasons explained in the April 30, 2012 paper entitled 'Justification for Use of Monthly, Growing Season and Annual Average Periods for Expression of WPDES Permit Limits for Phosphorus Discharges in Wisconsin', WDNR has determined that it is impracticable to express the phosphorus WQBEL for the permittee as a maximum daily, weekly or monthly values. The final effluent limit for phosphorus is expressed as a six-month average. It is also expressed as a monthly average equal to three times the derived WQBEL. This final effluent limit was derived from and complies with the applicable water quality criterion. Please see the phosphorus compliance schedule included in the Schedules section.
- **Mercury:** A proposed alternative effluent limit for Mercury is included subject to negotiations with the permittee and approval by US EPA. Evaluation of effluent mercury data submitted by Burlington indicates that the level in the effluent exceeds the water quality-based effluent limit of 1.3 ng/l. In conformance with the procedure in NR 106.05(5)(a), a mercury limit is recommended in the proposed permit. Burlington has applied for a variance (an alternative limit) to the water quality based limit for mercury in conformance with s. NR 106.145(8). For additional information, see the attached WQBEL document.
- **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.
- **Whole Effluent Toxicity:** Whole effluent toxicity (WET) testing requirements and limits (if applicable) are determined in accordance with ss. NR 106.08 and NR 106.09 Wis. Adm. Code. See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist.

6 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)**
004	B	Liquid	Fecal Coliform	Injection and volatile solids reduction	Land Apply	650 dry U.S. tons

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)**
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? Yes If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in land applying sludge from this facility						
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.						

6.1 Sample Point Number: 004- Liquid Sludge

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	

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Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Zinc Dry Wt	Ceiling	7,500 mg/kg	Quarterly	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Quarterly	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Quarterly	Composite	
Phosphorus, Total		Percent	Quarterly	Composite	
Phosphorus, Water Extractable		% of Tot P	Quarterly	Composite	
Potassium, Total Recoverable		Percent	Quarterly	Composite	
Radium 226 Dry Wt		pCi/g	Annual	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Once in 2016
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once in 2016

6.1.1 Changes from Previous Permit:

Annual monitoring for Radium-226 has been included.

6.1.2 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). Radium requirements are addressed in s. NR 204.07(3)(m).

7 Compliance Schedules

7.1 Mercury Pollutant Minimization Program

The permittee shall implement or continue to implement a pollutant minimization program as defined in s. NR 106.145(7), Wis. Adm. Code.

Required Action	Due Date
Implement the Mercury Pollutant Minimization Program: The permittee shall continue to implement the PMP as approved by the Department.	
Submit Annual Status Reports: The permittee shall submit to the Department an annual status report on the progress of the PMP as required by s. NR 106.145(7), Wis. Adm. Code. Submittal of the first annual status report is required by the Date Due.	06/30/2015
Submit Annual Status Report #2: Submit second annual status report.	06/30/2016
Submit Annual Status Report #3: Submit third annual status report.	06/30/2017
Submit Annual Status Report #4: Submit fourth annual status report.	06/30/2018

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Submit Final Status Report: Submit the final status report documenting the success of the Mercury PMP. Note: If the permittee wishes to apply for an alternative mercury effluent limitation, that application is due with the application for permit reissuance by 6 months prior to permit expiration. The permittee should submit or reference the PMP plan as updated by the Annual Status Report or more recent developments as part of that application.	06/30/2019

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

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

Required Action	Due Date
Operational Evaluation Report: The permittee shall prepare and submit to the Department for approval an operational evaluation report. The report shall include an evaluation of collected effluent data, possible source reduction measures, operational improvements or other minor facility modifications that will optimize reductions in phosphorus discharges from the treatment plant during the period prior to complying with final phosphorus WQBELs and, where possible, enable compliance with final phosphorus WQBELs by January 1, 2018. The report shall provide a plan and schedule for implementation of the measures, improvements, and modifications as soon as possible, but not later than January 1,2018 and state whether the measures, improvements, and modifications will enable compliance with final phosphorus WQBELs. Regardless of whether they are expected to result in compliance, the permittee shall implement the measures, improvements, and modifications in accordance with the plan and schedule specified in the operational evaluation report. If the operational evaluation report concludes that the facility can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the permittee shall comply with the final phosphorus WQBEL by January 1, 2018 and is not required to comply with the milestones identified below for years 3 through 9 of this compliance schedule ('Preliminary Compliance Alternatives Plan', 'Final Compliance Alternatives Plan', 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet WQBELs', 'Complete Construction', 'Achieve Compliance'). STUDY OF FEASIBLE ALTERNATIVES - If the Operational Evaluation Report concludes that the permittee cannot achieve final phosphorus WQBELs with source reduction measures, operational improvements and other minor facility modifications, the permittee shall initiate a study of feasible alternatives for meeting final phosphorus WQBELs and comply with the remaining required actions of this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the Department may reopen and modify the permit to include an implementation schedule for achieving the final phosphorus WQBELs sooner than January 1, 2024.	12/31/2015
Compliance Alternatives, Source Reduction, Improvements and Modifications Status: The permittee shall submit a 'Compliance Alternatives, Source Reduction, Operational Improvements and Minor Facility Modification' status report to the Department. The report shall provide an update on the permittee's: (1) progress implementing source reduction measures, operational improvements, and minor facility modifications to optimize reductions in phosphorus discharges and, to the extent that such measures, improvements, and modifications will not enable compliance with the WQBELs, (2) status evaluating feasible alternatives for meeting phosphorus WQBELs.	12/31/2016

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Preliminary Compliance Alternatives Plan: The permittee shall submit a preliminary compliance alternatives plan to the Department. If the plan concludes upgrading of the permittee's wastewater treatment facility is necessary to achieve final phosphorus WQBELs, the submittal shall include a preliminary engineering design report. If the plan concludes Adaptive Management will be used, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 without the Adaptive Management Plan. If water quality trading will be undertaken, the plan must state that trading will be pursued.	12/31/2017
Final Compliance Alternatives Plan: The permittee shall submit a final compliance alternatives plan to the Department. If the plan concludes upgrading of the permittee's wastewater treatment is necessary to meet final phosphorus WQBELs, the submittal shall include a final engineering design report addressing the treatment plant upgrades, and a facility plan if required pursuant to ch. NR 110, Wis. Adm. Code. If the plan concludes Adaptive Management will be implemented, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 and an engineering report addressing any treatment system upgrades necessary to meet interim limits pursuant to s. NR 217.18, Wis. Adm. Code. If the plan concludes water quality trading will be used, the submittal shall identify potential trading partners. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	12/31/2018
Progress Report on Plans & Specifications: Submit progress report regarding the progress of preparing final plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	12/31/2019
Final Plans and Specifications: Unless the permit has been modified, revoked and reissued, or reissued to include Adaptive Management or Water Quality Trading measures or to include a revised schedule based on factors in s. NR 217.17, Wis. Adm. Code, the permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41, Stats., specifying treatment plant upgrades that must be constructed to achieve compliance with final phosphorus WQBELs, and a schedule for completing construction of the upgrades by the complete construction date specified below. (Note: Permit modification, revocation and reissuance, and reissuance are subject to s. 283.53(2), Stats.) Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	12/31/2020
Treatment Plant Upgrade to Meet WQBELs: The permittee shall initiate construction of the upgrades. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41. Stats. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	04/01/2021
Construction Upgrade Progress Report #1: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	04/01/2022

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Construction Upgrade Progress Report #2: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	04/01/2023
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	12/01/2023
Achieve Compliance: The permittee shall achieve compliance with final phosphorus WQBELs. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	01/01/2024

7.3 Explanation of Compliance Schedules

- **Mercury:** Permittee is required to conduct a Mercury pollutant minimization program in conjunction with their alternative effluent limit per NR 106.145.
- **Phosphorus:** The permittee has been given an extended Phosphorus schedule in consideration of the possible need for treatment modifications and other measures to meet the stringent effluent limits of 0.1 mg/L six month average and the 0.3 mg/L monthly average and 3 lbs/day annual average. The permittee may need to acquire a substantial amount of property to accommodate the needed modifications; and also develop an extensive financing plan and obtain financing for the proposed treatment plant upgrade.

8 Special Reporting Requirements

None

9 Other Comments:

None

10 Attachments:

1. Water Quality-Based Effluent Limitations Recommendations
2. Public Notice

11 Proposed Expiration Date:

December 31, 2019

Prepared By:

Laura Dietrich-Wastewater Permits Specialist

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Date: July 8, 2014

cc: **Tim Thompson – Basin Engineer**

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