

Mondovi Permit Fact Sheet, Modification #2

General Information

Permit Number:	WI-0020591-11-02
Permittee Name:	City of Mondovi, 156 S. Franklin St, Mondovi WI 54755
Discharge Location:	Mondovi Wastewater Treatment Plant, 888 Schmidtknecht Road, Mondovi, WI 54755
Receiving Water:	Harvey Creek, located in the Buffalo River Watershed of the Buffalo-Trempealeau River Basin in Buffalo County
Stream Flow (Q_{7,10}):	5.3 cfs
Stream Classification:	Warm Water Sport Fish (WWSF) community, non-public water supply
Annual Average Design Flow:	0.240 MGD
Significant Industrial Loading?	No
Operator at Proper Grade?	See Substantial Compliance Determination below for info
Approved Pretreatment Program?	N/A

Facility Description

The Mondovi Wastewater Treatment Facility (WWTF) treats domestic wastewater from the City of Mondovi. The annual average design flow of the facility is 0.240 million gallons per day (MGD); the actual annual average influent flow in 2024 was 0.148 MGD. Mondovi constructed a new WWTF in 2023.

The new facility discharges treated effluent to Harvey Creek. Primary treatment consists of a fine screen and grit removal system. Secondary treatment is achieved with a sequence batch reactor (SBR) activated sludge system and an equalization tank. Tertiary treatment is achieved by an advanced biological nutrient recovery (ABNR) system consisting of a photo bioreactor where algae removes phosphorus and nitrogen to meet total phosphorus limits. The algae is then separated via a membrane and dewatered in a centrifuge for hauling. The algae will either be hauled to Roberts Wastewater Treatment Facility for drying or taken to West Central Wisconsin Biosolids Facility for beneficial reuse/disposal. Effluent is disinfected seasonally using ultraviolet light prior to discharge to Harvey Creek. Treatment plant sludge is pumped from the SBR to two aerobic digesters before being pumped to reed beds. When treatment plant sludge is removed from the reed beds, it will be hauled or landspread on department approved fields.

Reason for permit modification #1 in 2023: It was discovered that the standard language in the land application section of the permit was accidentally omitted from the permit, therefore the permit was modified without public notice to add the appropriate language to the permit.

Reason for permit modification #2 in 2025: This permit modification lowers the sludge monitoring frequency at Outfalls 006 and 007 from annually to once (List 1), per application (List 2) and prior to land application or hauling event (Lists 3 & 4). All sludge is currently sent to the reed beds and removal of the sludge from the reed beds will not be frequent, therefore monitoring more than once a permit term is not necessary. Language was also removed from the Whole Effluent Toxicity (WET) Testing section 2.2.1.4 of the surface water section at Outfall 004 that required the permittee continue WET testing if the permit was not reissued on time.

Substantial Compliance Determination

Enforcement During Last Permit: Mondovi WWTF received an F on their operator certification on their CMAR in 2021. Corey Dregney, the current operator holds only two of the six required basic certifications. The operator is being given until 09/30/2023 to achieve the last four subclasses required. If this is not achieved, the City must find an acting operator in charge (OIC) with the correct subclasses by that date. The city received a notice of noncompliance (NON) in November 2022 for fecal coliform exceedances and under reporting. The exceedances were determined to be from improper sampling procedure for putting the sample in the sampling bottles. The under reporting was due to confusion on *E. coli* replacing fecal coliform, the facility believed this meant right away and switched to only taking *E. coli*. Once notified that both needed to be sampled, they resumed fecal coliform testing. In addition, the NON was for missing phosphorus optimization reports #3 and #4. A report was submitted in response that put them back in compliance. There have been some incidents of phosphorus exceedances in 2021 and 2022. The operator stated that this is due to the age of the existing facility and all exceedances correlate with repairs that were being done at the facility. The new facility is anticipated to replace the aging existing facility and achieve phosphorus compliance during this permit term.

Per Jenna Monahan, 1/30/2023: After a desk top review of all Discharge monitoring reports, land application reports, and compliance schedule items, and an inspection on 01/24/2023, Mondovi WWTF has been found to be in substantial compliance with their current permit. This is contingent on the current OIC, Corey Dregney, completing required operator certifications or the facility hiring a temporary OIC that holds all required certifications by 09/30/2023.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)
702	Influent flow 0.148 (2024)	Representative influent samples to the WWTF shall be collected via the composite sampler in the headworks after screening and grit removal.
004	Effluent to Harvey Creek 0.163 (2024)	Representative effluent samples from the WWTF discharge to Harvey Creek shall be collected via automatic sampler following the UV disinfection system.
005	Algal sludge: no discharge yet	Representative samples of the algal sludge shall be monitored annually for List 1 prior to shipment to the WCWBF. If sludge is sent to the Roberts WWTF List 1 shall be monitored annually and volume & total percent solids shall be reported on a quarterly basis. Prior to commencing shipment of algal sludge to Roberts WWTF, permittee shall notify the department 30 days in advance so that appropriate forms can be provided.
006	Liquid sludge after the aerobic digester: no discharge yet	Representative sludge samples shall be monitored from the aerobic digester for List 1 once during the permit term, for List 2 nutrient parameters prior to each land application event, and the requirements of Lists 3 & 4 shall be met prior to landspreading or hauling.
007	Treatment plant sludge from reed bed: no discharge yet	Representative samples of reed bed sludge shall be monitored for List 1 once during the permit term, for List 2 nutrient parameters prior to each land application event, and the requirements of Lists 3 & 4 shall be met prior to landspreading or hauling.

1 Influent - Monitoring

Sample Point Number: 702- INFLUENT to WWTF

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	

Changes from Previous Permit:

This is a new influent sample point for the upgraded facility.

Explanation of Limits and Monitoring Requirements

Monitoring of influent flow, BOD5 and total suspended solids is required by s. NR 210.04(2), Wis. Adm. Code, to assess wastewater strengths and volumes and to demonstrate the percent removal requirements in s. NR 210.05, Wis. Adm. Code, and in the Standard Requirements section of the permit. Influent monitoring requirements are in accordance with NR 206.09(2).

2 Surface Water - Monitoring and Limitations

Sample Point Number: 004- EFFLUENT to HARVEY CREEK

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Weekly Avg	27 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies May - Oct
BOD5, Total	Monthly Avg	27 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies May - Oct
BOD5, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies Nov - April
BOD5, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies Nov - April
BOD5, Total	Weekly Avg	53 lbs/day	3/Week	Calculated	Limit applies May - Oct
Suspended Solids, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Suspended Solids, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	
pH Field	Daily Max	9.0 su	Daily	24-Hr Flow Prop Comp	
pH Field	Daily Min	6.0 su	Daily	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	3/Week	24-Hr Flow Prop Comp	Daily max limit varies with effluent pH. See ammonia section below for limits.
Nitrogen, Ammonia Variable Limit		mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	38 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies Nov - March
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	17 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies Nov - March
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	24 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies in April
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies in April
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	21 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies May - Oct
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	9.8 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies May - Oct
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit effective May - Sept
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit effective May - Sept. See the E. coli Percent Limit section below. Enter the result in the DMR on the last day of the month.
Copper, Total Recoverable	Daily Max	34 ug/L	Monthly	24-Hr Flow Prop Comp	
Copper, Total Recoverable	Daily Max	0.13 lbs/day	Monthly	Calculated	
Copper, Total Recoverable	Weekly Avg	34 ug/L	Monthly	24-Hr Flow Prop Comp	
Copper, Total Recoverable	Monthly Avg	34 ug/L	Monthly	24-Hr Flow Prop Comp	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Phosphorus, Total	Monthly Avg	0.171 mg/L	3/Week	24-Hr Flow Prop Comp	
Phosphorus, Total	6-Month Avg	0.057 mg/L	3/Week	24-Hr Flow Prop Comp	
Phosphorus, Total	6-Month Avg	0.11 lbs/day	3/Week	Calculated	
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Monitoring required annually in specific quarters. See Nitrogen Series Monitoring section below for more info.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	Collect WET test samples concurrently with a monthly copper sample. See WET testing section below.

Changes from Previous Permit

This is a new outfall that to determine compliance and track effluent discharged from the new WWTF to Harvey Creek.

Explanation of Limits and Monitoring Requirements

Limits were determined for the City of Mondovi's discharge to Harvey Creek from the new, post-upgraded WWTF using chs. NR 102, 104, 105, 106, 207, 210, 212 and 217 of the Wisconsin Administrative Code (where applicable). For more information see the March 28, 2023 memo from Benjamin Hartenbower to Holly Heldstab titled "Water Quality-Based Effluent Limitations for the Mondovi Wastewater Treatment Facility WPDES Permit No. WI-0020591".

The effluent monitoring frequency for all parameters were considered. Monitoring frequencies are based on the size and type of the facility and are established to best characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Requirements in administrative code (NR 108, 205, 210 and 214 Wis. Adm. Code) and Section 283.55, Wis. Stats. were considered, where applicable, when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term. For more information see the March 22, 2021 version of the Bureau of Water Quality Program Guidance Document "Monitoring Frequencies for Individual Wastewater Permits".

Municipal Effluent Limits: In accordance with the federal regulation 40 CFR 122.45(d), and to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, limits in this permit are to be expressed as weekly average and monthly average limits whenever practicable.

Categorical Limits

BOD₅, TSS and pH—Categorical limitations for BOD₅, TSS and pH are specified in s. NR 210.05(1), Wis. Adm. Code, where the receiving water is classified as fish and aquatic life (Warm Water Sport Fish community) in s. NR 102.04 (3), Wis. Adm. Code

Water Quality Based Limits and WET Requirements and Disinfection

Disinfection – The permittee is required to disinfect the effluent discharged from the new, post-upgrade WWTF seasonally May through September to protect recreational uses in and on Harvey Creek and will be accomplished at the new, post-upgrade WWTF using ultraviolet light.

Ammonia: 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 and monthly average and daily maximum ammonia limits that vary with season apply at the effluent from the new, post-upgrade WWTF. Daily maximum ammonia limits that vary with effluent pH apply year round. See table below for the variable daily maximum limits.

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
$6.0 \leq \text{pH} \leq 6.1$	108	$7.0 < \text{pH} \leq 7.1$	66	$8.0 < \text{pH} \leq 8.1$	14
$6.1 < \text{pH} \leq 6.2$	106	$7.1 < \text{pH} \leq 7.2$	59	$8.1 < \text{pH} \leq 8.2$	11
$6.2 < \text{pH} \leq 6.3$	104	$7.2 < \text{pH} \leq 7.3$	52	$8.2 < \text{pH} \leq 8.3$	9.4
$6.3 < \text{pH} \leq 6.4$	101	$7.3 < \text{pH} \leq 7.4$	46	$8.3 < \text{pH} \leq 8.4$	7.8
$6.4 < \text{pH} \leq 6.5$	98	$7.4 < \text{pH} \leq 7.5$	40	$8.4 < \text{pH} \leq 8.5$	6.4
$6.5 < \text{pH} \leq 6.6$	94	$7.5 < \text{pH} \leq 7.6$	34	$8.5 < \text{pH} \leq 8.6$	5.3
$6.6 < \text{pH} \leq 6.7$	89	$7.6 < \text{pH} \leq 7.7$	29	$8.6 < \text{pH} \leq 8.7$	4.4
$6.7 < \text{pH} \leq 6.8$	84	$7.7 < \text{pH} \leq 7.8$	24	$8.7 < \text{pH} \leq 8.8$	3.7
$6.8 < \text{pH} \leq 6.9$	78	$7.8 < \text{pH} \leq 7.9$	20	$8.8 < \text{pH} \leq 8.9$	3.1
$6.9 < \text{pH} \leq 7.0$	72	$7.9 < \text{pH} \leq 8.0$	17	$8.9 < \text{pH} \leq 9.0$	2.6

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.

Copper: Monthly monitoring and limits are required at the new discharge from the post-upgrade WWTF to Harvey Creek. See the limits memo referenced above for more information.

Thermal: Requirements for Temperature are included in NR 102 Subchapter II Water Quality Standards for Temperature and NR 106 Subchapter V Effluent Limitations for Temperature. Thermal discharges must meet the Public Health criterion of 120 degrees F and the Fish & Aquatic Life criteria which are established to protect aquatic communities from lethal and sub-lethal thermal effects. A review of effluent temperature data from similar facilities indicate it is unlikely that effluent temperatures from the new, upgraded WWTF would exceed the calculated effluent temperature, therefore no effluent limits or monitoring are required.

Phosphorus: 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 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. The code categorically limits municipal dischargers of more than 150 pounds of phosphorus per month to 1.0 mg/L unless an alternative limit is approved. NR 217 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 that discharge through alternative treatment facilities and a facility/site that is regulated under NR 216 where the standards in NR151 and 216 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.

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.

See the 9/15/2022 WQBEL memo referenced above for more details on the phosphorus limits and calculations for Mondovi.

Total Nitrogen Monitoring (NO₂+NO₃, TKN and Total N): The Department has included annual effluent monitoring for Total Nitrogen in the permit through the authority under §§ 283.55(1)(e), Wis. Stats., which allows the department to require the permittee to submit information necessary to identify the type and quantity of any pollutants discharged from the point source, and through s. NR 200.065(1)(h), Wis. Adm. Code, which allows for this monitoring to be collected during the permit term. More information on the justification to include total nitrogen monitoring in wastewater permits can be found in the “Guidance for Total Nitrogen Monitoring in Wastewater Permits” dated October 1, 2019. Monitoring for total nitrogen, nitrite + nitrate nitrogen and TKN is required in the following quarters:

- 4th quarter (Oct-Dec) 2023
- 2nd quarter (April-June) 2024
- 1st quarter (Jan – March) 2025
- 3rd quarter (July-Sept) 2026
- 4th quarter (Oct-Dec) 2027

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

- 1st quarter (January – March) 2024
- 3rd quarter (July – Sept) 2027

PFOS and PFOA- NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. Pursuant to s. NR 106.98(3)(b), Wis. Adm. Code, the department evaluated the need for PFOS and PFOA monitoring taking into consideration the presence of potential PFOS or PFOA industrial wastes, remediation sites and other potential sources of PFOS or PFOA. Based on information available at the time the proposed permit was drafted, the department has determined the permittee does not need to sample for PFOS or PFOA as part of this permit reissuance. The department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

3 Land Application - Monitoring and Limitations

Municipal Sludge Description							
Sample Point	Waste	Sludge Class (A or B)	Sludge Type (Liquid or Cake)	Pathogen Reduction Method	Vector Attraction Method	Reuse Option	Amount Reused/Disposed (Dry Tons/Year)
005	Algal Sludge	B	Liquid	N/A	N/A	Hauled to WCWBF or Roberts WWTF	Unknown
006	Directly from aerobic digester	B	Liquid			Hauled or Landspread	Unknown
007	Reed Bed Sludge	B	Cake	Fecal Coliform, Reed Beds	Incorporation, VSR	Hauled or Landspreading	Unknown
Does sludge management demonstrate compliance? Yes							
Is additional sludge storage required? No, 180 days are provided							
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No, however radium-226 was detected at a level at or below 2 pCi/liter in September 2020. No monitoring is required, but this should be considered again at the next permit reissuance.							
Is a priority pollutant scan required? No							

Sample Point Number: 005- ALGAL SLUDGE

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		gal	Quarterly	Measure	Reporting of volume on the 3400-49 form is required quarterly only when algal sludge is shipped to the Roberts WWTF.
Solids, Total		Percent	Quarterly	Composite	Reporting of percent total solids on the 3400-49 is required quarterly only when algal sludge is shipped to the Roberts WWTF. If the sludge is shipped to the WQWBF, total solids is reported annually, along with the List 1 parameters below.
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	

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

Changes from Previous Permit:

This is a new outfall to track the algal sludge created at the new facility as a result of the advanced biological nutrient recovery (ABNR) system.

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).

**Sample Point Number: LANDSPREADING or HAULING of TREATMENT PLANT
SLUDGE at OUTFALL 006- SLUDGE after DIGESTER and OUTFALL 007 -
REED BED SLUDGE**

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Once	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Once	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Once	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Once	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Once	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Once	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Once	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Once	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Once	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Once	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Once	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Once	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Once	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Once	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Once	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Once	Composite	
Nitrogen, Total Kjeldahl		Percent	Per Application	Composite	
Nitrogen, Ammonium (NH ₄ -N) Total		Percent	Per Application	Composite	
Phosphorus, Total		Percent	Per Application	Composite	
Phosphorus, Water Extractable		% of Tot P	Per Application	Composite	
Potassium, Total Recoverable		Percent	Per Application	Composite	

Changes from Previous Permit:

Outfall 006: This a new outfall to track the land application of liquid sludge from the digester that is not sent to the reed beds.

Outfall 007: This is a new outfall to track the land application or hauling of the treatment plant sludge from the new, post-upgraded plant that's removed from the reed beds.

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.

4 Schedules

4.1 Reed Bed Phragmites Survey

An annual survey of adjacent lands for phragmites is required.

Required Action	Due Date
Submit an Annual Reed Bed Phragmites Survey: The permittee shall conduct an annual survey of adjacent lands for new Phragmites growth. Surveys shall be done at a time of the year when Phragmites are biologically active. The annual surveys shall contain the name and qualifications of the person(s) completing the inspection, the date of the survey and at a minimum include descriptions of the area(s) inspected, land use(s), dominant plant community, existing Phragmites stands, and any areas of potential concern or newly discovered Phragmites growth. Photographic documentation of the survey area(s) is also recommended. The survey area should be as large as practicable and include any area potentially susceptible to phragmites growth. Survey results shall be submitted to the Department within 60 days of survey completion. The Department shall be notified within 24 hours whenever new growths of Phragmites are discovered. The Department may require the permittee to eradicate specific stands of Phragmites in these areas.	
Annual Reed Bed Phragmites Survey #1: Permittee shall submit Annual Reed Bed Phragmites Survey #1 to the Department.	10/31/2023
Annual Reed Bed Phragmites Survey #2: Permittee shall submit Annual Reed Bed Phragmites Survey #2 to the Department.	10/31/2024
Annual Reed Bed Phragmites Survey #3: Permittee shall submit Annual Reed Bed Phragmites Survey #3 to the Department.	10/31/2025
Annual Reed Bed Phragmites Survey #4: Permittee shall submit Annual Reed Bed Phragmites Survey #4 to the Department.	10/31/2026
Annual Reed Bed Phragmites Survey #5: Permittee shall submit Annual Reed Bed Phragmites Survey #5 to the Department.	10/31/2027
Annual Phragmites Surveys After Permit Expiration: In the event that this permit is not reissued by the date the permit expires, the permittee shall continue to submit reports on the annual Phragmites surveys following the due date of Annual Phragmites Survey Reports listed above. The reports on the Annual Reed Bed Phragmites Surveys shall include the information as defined above.	

4.2 Operator in Charge Proper Certification

Required Action	Due Date
<p>Operator in Charge Proper Certification: By the due date, the permittee shall obtain an operator with proper certification for the following subclasses:</p> <ol style="list-style-type: none">1) Solids Separation (subclass B),2) Solids Treatment- Bio Solids/Sludge Handling, Processing and Reuse (Subclass C),3) Disinfection (Subclass D),4) Total Phosphorus (Subclass P),5) Attached Growth Processes (Subclass A2), and6) Sanitary Sewage Collection (Subclass SS). <p>Under Chapter NR 114, Wisconsin Administrative Code, these certifications are necessary for this facility. Within 30 days of submitting the experience form (3400-066A) and receiving certification, the permittee shall notify the department in writing of the certified operator's name and certification number.</p>	09/30/2023

4.3 Land Application Management Plan

A management plan is required for the land application system.

Required Action	Due Date
<p>Land Application Management Plan Submittal: Submit an update to the management plan to optimize the land application system performance and demonstrate compliance with ch. NR 204, Wis. Adm. Code, by the Due Date. This management plan shall 1) specify information on pretreatment processes (if any); 2) identify land application sites; 3) describe site limitations; 4) address vegetative cover management and removal; 5) specify availability of storage; 6) describe the type of transporting and spreading vehicle(s); 7) specify monitoring procedures; 8) track site loading; 9) address contingency plans for adverse weather and odor/nuisance abatement; and 10) include any other pertinent information. Once approved, all landspreading activities shall be conducted in accordance with the plan. Any changes to the plan must be approved by the Department prior to implementing the changes.</p>	09/30/2023

Explanation of Schedules

Reed Bed Phragmites Survey: Annual surveys are required to ensure confinement of phragmites to the reed beds.

Operator in Charge Proper Certification: Based on NR 114, Wis. Adm. Code the facility is required to obtain and designate a certified wastewater treatment plant operator with the aforementioned Subclasses. In December of 2020 Mondovi's operator in charge (OIC) passed away suddenly. Per Ch. NR 114.53(6), the wastewater treatment facility named Corey Dregney OIC and had a period of twelve months to complete all subclasses of the plant. Corey has completed two of his subclasses, but did not meet the required date of December 2021 for all subclasses. During the permit reissuance inspection on January 24th, 2023 the facility was notified that they were not in compliance and were being given a schedule to get back in compliance. This schedule will bring the permittee into compliance by requiring them to meet the subclass requirement within two months of the permit effective date.

Land Application Management Plan: This schedule requires the submittal of a Land Application Management Plan that documents how the permittee will manage the land application of biosolids consistent with ch. NR 204, Wis. Adm. Code.

Special Reporting Requirements: None other than what is detailed above.

Other Comments: Public Notice – publishing newspaper is the Buffalo County News, PO Box 67, Mondovi, WI 54755-0067

Attachments:

Water Quality Based Effluent Limits: March 28, 2023 memo from Benjamin Hartenbower to Holly Heldstab titled “Water Quality-Based Effluent Limitations for the Mondovi Wastewater Treatment Facility WPDES Permit No. WI-0020591”.

Proposed Expiration Date: June 30, 2028

Justification Of Any Waivers From Permit Application Requirements

N/A

Prepared By: Holly Heldstab, Wastewater Specialist

Date: June 12, 2023

Modified By: Holly Heldstab, Wastewater Specialist

Date: August 14, 2023

Modified By: Holly Heldstab, Wastewater Specialist

Date: May 6, 2025

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: March 28, 2023

TO: Holly Heldstab – WCR/Eau Claire

FROM: Benjamin Hartenbower – WCR/Eau Claire

SUBJECT: Water Quality-Based Effluent Limitations for the Mondovi Wastewater Treatment Facility
WPDES Permit No. WI-0020591

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using Chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from the Mondovie Wastewater Treatment Facility in Buffalo County. This municipal wastewater treatment facility (WWTF) discharges to the Buffalo River, located in the Lower Buffalo Watershed in the Buffalo-Trempealeau Rivers Basin. The evaluation of the permit recommendations is discussed in more detail in the attached report.

Based on our review, the following recommendations are made on a chemical-specific basis at Outfall 001:

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						2
CBOD ₅			40 mg/L	25 mg/L		1
TSS			45 mg/L	30 mg/L		1
pH	9.0 s.u.	6.0 s.u.				1
Ammonia Nitrogen	Variable		108 mg/L	108 mg/L		3,4
Bacteria						5
Interim Limit Fecal Coliform				400 #/100 mL geometric mean		
Final Limit <i>E. coli</i>				126 #/100 mL geometric mean		
Chlorine	38 µg/L		38 µg/L	38 µg/L		4
Copper	34 ug/L 0.17 lbs/day		34 ug/L	34 ug/L		4
Phosphorus						6
MDV Interim Limit				0.8 mg/L		
HAC Interim Limit				0.6 mg/L		
Final WQBEL				0.225 mg/L	0.075 mg/L 0.24 lbs/day	
TKN, Nitrate+Nitrite, and Total Nitrogen						7
Acute WET						8

The upgraded facility is proposed to discharge to Harvey Creek, located in the Lower Buffalo River Watershed. The following recommendations are made on a chemical-specific basis:

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						2
BOD ₅ May – October November – April			27 mg/L, 53 lbs/day 45 mg/L	27 mg/L 30 mg/L		4
TSS			45 mg/L	30 mg/L		
pH	9.0 s.u.	6.0 s.u.				
Ammonia Nitrogen May – October November – March April	Variable Variable Variable		21 mg/L 38 mg/L 24 mg/L	9.8 mg/L 17 mg/L 10 mg/L		3
Bacteria <i>E. coli</i>				126 #/100 mL geometric mean		5
Copper	34 ug/L 0.13 lbs/day		34 ug/L	34 ug/L		4
Phosphorus				0.171 mg/L	0.057 mg/L 0.11 lbs/day	
TKN, Nitrate+Nitrite, and Total Nitrogen						7
Acute WET						9

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. The variable daily maximum ammonia nitrogen limit table corresponding to various effluent pH values may be included in the permit in place of the single limit. These limits apply year-round.

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
6.0 ≤ pH ≤ 6.1	108	7.0 < pH ≤ 7.1	66	8.0 < pH ≤ 8.1	14
6.1 < pH ≤ 6.2	106	7.1 < pH ≤ 7.2	59	8.1 < pH ≤ 8.2	11
6.2 < pH ≤ 6.3	104	7.2 < pH ≤ 7.3	52	8.2 < pH ≤ 8.3	9.4
6.3 < pH ≤ 6.4	101	7.3 < pH ≤ 7.4	46	8.3 < pH ≤ 8.4	7.8
6.4 < pH ≤ 6.5	98	7.4 < pH ≤ 7.5	40	8.4 < pH ≤ 8.5	6.4
6.5 < pH ≤ 6.6	94	7.5 < pH ≤ 7.6	34	8.5 < pH ≤ 8.6	5.3
6.6 < pH ≤ 6.7	89	7.6 < pH ≤ 7.7	29	8.6 < pH ≤ 8.7	4.4
6.7 < pH ≤ 6.8	84	7.7 < pH ≤ 7.8	24	8.7 < pH ≤ 8.8	3.7
6.8 < pH ≤ 6.9	78	7.8 < pH ≤ 7.9	20	8.8 < pH ≤ 8.9	3.1
6.9 < pH ≤ 7.0	72	7.9 < pH ≤ 8.0	17	8.9 < pH ≤ 9.0	2.6

4. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.

5. Bacteria limits apply during the disinfection season of May through September. The fecal coliform interim limit will apply until the end of the compliance schedule when *E. coli* limits take effect. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
6. Under the phosphorus MDV, current interim limit of 0.8 mg/L should be effective upon permit reissuance. A compliance schedule may be included in the permit until the highest attainable condition (HAC) limit of 0.6 mg/L can be met. The final WQBELs at Outfall 001 remain at 0.225 mg/L as a monthly average and 0.075 mg/L as a six-month average, as well as a respective mass limit.
7. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen monitoring is recommended for all minor municipal permittees. Total Nitrogen is the sum of nitrate (NO₃), nitrite (NO₂), and total kjeldahl nitrogen (TKN) (all expressed as N).
8. Outfall 001: Three Acute WET tests are recommended in the reissued permit. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in different quarters, to collect seasonal information about this discharge and should continue after the permit expiration date (until the permit is reissued).
9. Relocation to Harvey Creek: Two Acute WET tests are recommended in the reissued permit. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in different quarters, to collect seasonal information about this discharge and should continue after the permit expiration date (until the permit is reissued).

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Benjamin Hartenbower at (715) 225-4705 or Benjamin.Hartenbower@wisconsin.gov or Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (4) – Narrative, Thermal Tables, & Map

PREPARED BY:



Benjamin Hartenbower, PE,
Water Resources Engineer

Date: 03/28/2023

E-cc: Jenna Monahan, Wastewater Engineer – Eau Claire
Geisa Thielen, Regional Wastewater Supervisor – Eau Claire
Diane Figiel, Water Resources Engineer – WY/3
Kurt Rasmussen, Water Quality Biologist– La Crosse
Kari Fleming, Environmental Toxicologist – WY/3
Michael Polkinghorn, Water Resources Engineer – NOR/Rhineland
Laura Dietrich, Wastewater Specialist – Waukesha

Attachment #1
**Water Quality-Based Effluent Limitations for
Mondovi Wastewater Treatment Facility Planning**

WPDES Permit No. WI- 0020591

Prepared by: Benjamin P. Hartenbower

PART 1 – BACKGROUND INFORMATION

Facility Description: The City of Mondovi is requesting a change in the current discharge location. At the current facility, primary treatment consists of comminution and primary clarification. Secondary treatment is accomplished using rotating biological contactors (RBCs) and secondary clarification. Ferric chloride is added for phosphorus removal. The effluent is seasonally disinfected using chlorine and is dechlorinated using sodium bisulfate prior to discharge to the Buffalo River. All sludge is hauled offsite to the West Central Wisconsin Biosolids Facility (WCWBF). Centrate from the WCWBF is then returned to Mondovi for treatment. It is stored in a concrete basin and reintroduced through the treatment plant.

At the upgraded plant, Primary treatment will consist of a fine screen and grit removal system. Secondary treatment is achieved with a sequence batch reactor (SBR) activated sludge system and an equalization tank. Tertiary treatment is achieved by an advanced biological nutrient recovery (ABNR) system consisting of a photo bioreactor where algae removes phosphorus and nitrogen to meet total phosphorus limits. The algae is then separated via a membrane and dewatered in a centrifuge for hauling. The algae will either be hauled to Roberts Wastewater Treatment Facility for drying or taken to West Central Wisconsin Biosolids Facility (WCWBF) for disposal. Effluent is disinfected seasonally using ultraviolet light prior to discharge to Harvey Creek. Sludge is pumped from SBR to two aerobic digesters before being pumped to reed beds

Attachment #4 is a map of the area showing the current location of Outfall 001 and the proposed outfall relocation.

Existing Permit Limitations: The Mondovi Wastewater Treatment Facility WPDES permit (WI-0020591) authorizes discharge to the Buffalo River at an annual average design flow of 0.385 MGD. The current permit, which expires on June 30, 2023, has the following effluent limitations.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
CBOD ₅			40 mg/L	25 mg/L		1
TSS			45 mg/L	30 mg/L		1
pH	9.0 s.u.	6.0 s.u.				1
Residual Chlorine	38 ug/L		38 ug/L	38 ug/L		2
Fecal Coliform May – September			656/#100 mL Geometric mean	400/#100 mL Geometric mean		
Copper	36 ug/L 0.17 lbs/day		36 ug/L	36 ug/L		2
Phosphorus LCA Interim Limit HAC Interim Limit				1.0 mg/L 0.8 mg/L		3

Attachment #1

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Acute WET						4
Chronic WET						5

Footnotes:

1. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.
2. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
3. Under the phosphorus MDV, a highest attainable condition (HAC) limit of 0.8 mg/L took effect October 1, 2020.
4. Acute WET Testing: October – December 2020 and April – June 2022
5. Chronic WET Testing: October – December 2020 and April – June 2022
The IWC for chronic WET was 5%

Receiving Water Information (Outfall 001)

- Name: Buffalo River
- Waterbody Identification Code (WBIC): 1813900
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q₁₀ and 7-Q₂ values are from USGS for Station 05371895, near Mondovi, where Outfall 001 is located.
7-Q₁₀ = 47 cfs (cubic feet per second)
7-Q₂ = 78 cfs
Harmonic Mean Flow = 106 cfs using a drainage area of 238 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).
- Hardness = 89 mg/L as CaCO₃. This value represents the geometric mean of 12 samples collected from 01/04/1996 to 12/02/1996.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5, Wis. Adm. Code: 25%
- Source of background concentration data: Metals data from the Chippewa River at Durand is used for this evaluation because there is no data available for the Buffalo River. The Chippewa River is within the same ecological landscape so ambient water quality characteristics are expected to be similar.]
The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations. Background data for calculating effluent limitations for ammonia nitrogen are described later.
- Multiple dischargers: SPF North America also discharges to the Buffalo River, however they are not in the immediate vicinity and the mixing zones do not overlap. Therefore, the other discharger does not impact this evaluation.
- Impaired water status: The Buffalo River is listed as impaired for Total Phosphorus.

Receiving Water Information (Relocated Outfall)

- Name: Harvey Creek
- Waterbody Identification Code (WBIC): 1819300
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q₁₀ and 7-Q₂ values are from USGS for Station 055371910 in Harvey Creek in Mondovi
 - 7-Q₁₀ = 5.3 cfs
 - 7-Q₂ = 7.6 cfs
 - Harmonic Mean Flow = 14.2 cfs using a drainage area of 37.8 mi²
- % of low flow used to calculate limits: 25%
- Multiple dischargers: None
- Impaired water status: Downstream, the Buffalo River is listed as impaired for Total Phosphorus.

Effluent Information

- Design Flow Rate(s):
 - Annual average (Outfall 001) = 0.385 MGD (Million Gallons per Day)
 - Peak daily (Outfall 001) = 0.587 MGD
 - Annual average (Relocated to Harvey Creek) = 0.240 MGD
 - Peak Daily (Relocated to Harvey Creek) = 0.450 MGD
 For reference, the actual average flow from September 2018 to January 2023 was 0.199 MGD.
- Hardness = 110 mg/L as CaCO₃. This value represents the geometric mean of effluent data collected 11/09/2022 to 11/22/2022.
- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water source: Domestic wastewater with water supply from wells
- Additives: One biocide and two water quality conditioners
- Effluent characterization: This facility is categorized as a minor municipality, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus ammonia, chloride, and hardness. The permit required chorine, copper, and phosphorus monitoring during the current permit term were used in this evaluation.

Chemical Specific Effluent Data at Outfall 001

Sample Date	Chloride mg/L
11/09/2022	161
11/14/2022	155
11/16/2022	230
11/22/2022	181
Mean	182

The following table presents the average concentrations and loadings at Outfall 001 from September 2018 to January 2023 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Averages of Parameters with Limits

	Average Measurement	Average Mass Discharged
CBOD ₅	4.3 mg/L*	
TSS	18.5 mg/L	
pH field	6.20 s.u.	
Phosphorus	0.55 mg/L	
Copper	18 µg/mL	0.03 lbs/day
Fecal Coliform	558 #/100mL	
Chlorine	<100 µg/mL	

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

PART 2 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR TOXIC SUBSTANCES – EXCEPT AMMONIA NITROGEN

Permit limits for toxic substances are required whenever any of the following occur:

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99th percentile (or P₉₉) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

Acute Limits based on 1-Q₁₀

Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm. Code. Previously daily maximum limits for toxic substances were calculated as two times the ATC. However, changes to ch. NR 106, Wis. Code, (September 1, 2016) require the Department to calculate acute limitations using the same mass balance equation as used for other limits along with the 1-Q₁₀ receiving water low flow to determine if more restrictive effluent limitations are needed to protect the receiving stream from discharges which may cause or contribute to an exceedance of the acute water quality standards. The mass balance equation is provided below.

$$\text{Limitation} = \frac{(\text{WQC}) (Q_s + (1-f) Q_e) - (Q_s - f Q_e) (C_s)}{Q_e}$$

Where:

WQC = Acute toxicity criterion or secondary acute value according to ch. NR 105, Wis. Adm. Code.

Q_s = average minimum 1-day flow which occurs once in 10 years (1-day Q₁₀)
if the 1-day Q₁₀ flow data is not available = 80% of the average minimum 7-day flow which occurs once in 10 years (7-day Q₁₀).

Q_e = Effluent flow (in units of volume per unit time) as specified in s. NR 106.06(4)(d), Wis. Adm. Code.

f = Fraction of the effluent flow that is withdrawn from the receiving water, and

C_s = Background concentration of the substance (in units of mass per unit volume) as specified in s. NR 106.06(4)(e), Wis. Adm. Code.

Attachment #1

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q₁₀ method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is not the case for the Mondovi Wastewater Treatment Facility.

The following tables list the calculated WQBELs for this discharge along with the results of effluent sampling. All concentrations are expressed in terms of micrograms per Liter (µg/L), except for hardness and chloride (mg/L)

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

(Outfall 001)

RECEIVING WATER FLOW = 37.60 cfs, (1-Q₁₀ (estimated as 80% of 7-Q₁₀)), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD. mg/L	ATC	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P ₉₉	1-day MAX. CONC.
Chlorine		19.0	38.1	7.61	<100		
Arsenic		340	680	136	<1.0		
Cadmium	110	11.5	23.0	4.6	<2		
Chromium	110	1950	3900	780	4		
Copper	110	17.0	34.0			43.5	45.0
Lead	110	117	235	47	<1		
Nickel	110	509	1018	204	9		
Zinc	110	131	262	52	11		
Chloride (mg/L)		757	1514	303	182		230

* * The 2 × ATC method of limit calculation yields a more restrictive limit than consideration of ambient concentrations and 1-Q₁₀ flow rates per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016.

(Relocation to Harvey Creek)

RECEIVING WATER FLOW = 4.24 cfs, (1-Q₁₀ (estimated as 80% of 7-Q₁₀)), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD. mg/L	ATC	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P ₉₉	1-day MAX. CONC.
Arsenic		340	680	136	<1.0		
Cadmium	110	11.5	23.0	4.6	<2		
Chromium	110	1950	3900	780	4		
Copper	110	17.0	34.0			43.5	45.0
Lead	110	117	235	47	<1		
Nickel	110	509	1018	204	9		
Zinc	110	131	262	52	11		
Chloride (mg/L)		757	1514	303	182		230

* * The 2 × ATC method of limit calculation yields a more restrictive limit than consideration of ambient concentrations and 1-Q₁₀ flow rates per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016.

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

(Outfall 001)

RECEIVING WATER FLOW = 11.75 cfs (¼ of the 7-Q₁₀), as specified in s. NR 106.06(4)(c), Wis. Adm. Code

SUBSTANCE	REF. HARD. mg/L	CTC	MEAN BACK- GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P ₉₉
Chlorine		7.3		151	30	<100	
Arsenic		152		3154	631	<1.0	
Cadmium	89	2.2	0.010	46.2	9.2	<2	
Chromium	89	120	0.500	2468	494	4	
Copper	89	9.3	1.210	169.3			29.1
Lead	89	25	0.338	509	102	<1	
Nickel	89	47		976	195	9	
Zinc	89	108	1.413	2215	443	11	
Chloride (mg/L)		395		8186	1637	182	

(Relocation to Harvey Creek, evaluated at 1/3 Assimilative Capacity)

RECEIVING WATER FLOW = 1.33 cfs (¼ of the 7-Q₁₀), as specified in s. NR 106.06(4)(c), Wis. Adm. Code

SUBSTANCE	REF. HARD. mg/L	CTC	MEAN BACK- GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P ₉₉
Arsenic		152		333	67	<1.0	
Cadmium	89	2.2	0.010	4.9	1.0	<2	
Chromium	89	120	0.500	261	52	4	
Copper	89	9.3	1.210	19.0			29.1
Lead	89	25	0.338	54	11	<1	
Nickel	89	47		103	21	9	
Zinc	89	108	1.413	235	47	11	
Chloride (mg/L)		395		865	173	182	

Monthly Average Limits based on Wildlife Criteria (WC)

The effluent characterization did not include any effluent sampling results for substances for which Wildlife Criteria exist.

Monthly Average Limits based on Human Threshold Criteria (HTC)

(Outfall 001)

RECEIVING WATER FLOW = 26.55 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HTC	MEAN BACK- GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Cadmium	370	0.010	16858	3372	<2
Chromium (+3)	3818000	0.500	173962132	34792426	4
Lead	140	0.338	6364	1273	<1
Nickel	43000		1959239	391848	9

Attachment #1

(Relocation to Harvey Creek, evaluated at 1/3 Assimilative Capacity)

RECEIVING WATER FLOW = 3.55 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HTC	MEAN BACK- GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Cadmium	370	0.010	1550	310	<2
Chromium (+3)	3818000	0.500	15993635	3198727	4
Lead	140	0.338	585	117	<1
Nickel	43000		180127	36025	9

Monthly Average Limits based on Human Cancer Criteria (HCC)

(Outfall 001)

RECEIVING WATER FLOW = 26.55 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HCC	MEAN BACK- GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	13.3		606	121	<1.0

(Relocation to Harvey Creek, evaluated at 1/3 Assimilative Capacity)

RECEIVING WATER FLOW = 3.55 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HCC	MEAN BACK- GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	13.3		56	11	<1.0

In addition to evaluating the need for limits for each individual substance for which HCC exist, s. NR 106.06(8), Wis. Adm. Code, requires the evaluation of the cumulative cancer risk. Because no effluent limits are needed based on HCC, determination of the cumulative cancer risk is not needed per s. NR 106.06(8), Wis. Adm. Code.

Conclusions and Recommendations: Based on a comparison of the effluent data and calculated effluent limitations, **effluent limitations are required for chlorine and copper.**

Total Residual Chlorine – Because chlorine is added as a disinfectant at Outfall 001, effluent limitations are recommended to assure proper operation of the de-chlorination system. Section NR 210.06(2)(b), Wis. Adm. Code, states, “When chlorine is used for disinfection, the daily maximum total residual chlorine concentration of the discharge may not exceed 0.10 mg/L.” Because the WQBELs are more restrictive, they are recommended instead. Specifically, a daily maximum limit of 38 µg/L is required. Due to revisions to s. NR 106.07(2), Wis. Adm. Code, mass limitations are no longer required. Weekly average limitations are not needed based on reasonable potential as the daily maximum limitations will provide adequate protection of the resource; however, additional limits are discussed in the expression of limits section of this memo. The method of disinfection at the upgraded facility will be ultraviolet light, therefore no chlorine limits or monitoring are recommended.

Copper – Considering available effluent data from the current permit term (September 2018 to January 2023), the 1-day P₉₉ concentration is 43.5 µg/L, with a maximum concentration of 45 µg/L. The maximum effluent concentration and the 1-day P₉₉ of the effluent data exceed the maximum limit of 34 µg/L, calculated for either outfall location, therefore concentration and mass limits, as well as monthly monitoring, are required.

For Outfall 001, the acute mass limitation of 0.17 lbs/day is based on the concentration limit and the peak daily design flow rate of 0.587 MGD (34 µg/L * 0.587 MGD * 8.34/1000) in accordance with s. NR 106.07(2)(a), Wis. Adm. Code. The acute mass limitation at the relocation to Harvey Creek is 0.13 lbs/day using the daily design flow rate of 0.450 MGD.

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98, Wis. Adm. Code. Based on the annual design flow and lack of nondomestic contributions, it is unlikely that the effluent will contain PFOS or PFOA. **Therefore, monitoring is not recommended.** If information becomes available that indicates PFOS or PFOA may be present in the effluent or source water, the monitoring requirements may change.

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR CONVENTIONAL POLLUTANTS

In establishing Biochemical Oxygen Demand (BOD₅) limitations, the primary intent is to prevent a lowering of dissolved oxygen levels in the receiving water below water quality standards as specified in ss. NR 102.04(4)(a) and (b), Wis. Adm. Codes. The 26-lb method is the most frequently used approach for calculating BOD₅ limits when resources are not available to develop a detailed water quality model. This simplified model was developed in the 1970's by the Wisconsin Committee on Water Pollution on the Fox, Wisconsin, Oconto, and Flambeau Rivers. Further studies throughout the 1970's proved this model to be relatively accurate. The model has since then been used by the Department on many occasions when resources are not available to perform a site-specific model. The "26" value stems from the following equation:

$$\frac{26 \frac{\text{lbs}}{\text{day}}}{\frac{\text{ft}^3}{\text{sec}}} * \frac{1 \text{ day}}{86,400 \text{ sec}} * \frac{454,000 \text{ mg}}{\text{lbs}} * \frac{1 \text{ ft}^3}{28.32 \text{ L}} = 4.8 = 2.4 * 2 \frac{\text{mg}}{\text{L}}$$

The 4.8 has been calculated by taking 2.4 which is the number one receives when converting 26 lbs of BOD/day/cfs into mg/L, multiplied by 2.0 which is the change in the DO level. A typical background DO level for Wisconsin waters is 7 mg/L, so a 2 mg/L decrease is allowed in order to meet the 5 mg/L standard for warm water streams. The above relationship is temperature dependent and an appropriate temperature correction factor is applied. The 26-lb method is based on a typical 24°C summer value for warm water streams. Adjustments for temperature are made using the following equation:

Attachment #1

$$k_t = k_{24} (0.967^{(T-24)})$$

Where $k_{24} = 26$ lbs of BOD/day/cfs

Calculations based on Full Assimilative Capacity at 7Q10 Conditions:

$$Limitation(mg/L) = 2.4(DO_{stream} - DO_{std}) \left(\frac{(7Q_{10} + Q_{eff})}{Q_{eff}} \right) (0.967^{(T-24)})$$

Where:

Q_{eff} = effluent design flow = 0.0240 MGD

DO_{stream} = in stream dissolved oxygen concentration

DO_{std} = dissolved oxygen criteria from s. NR 102.04(4) = 5.0 mg/L

$7-Q_{10}$ = 5.30 cfs

T = Receiving water temperature from s. NR 102.25

BOD Effluent Limitations (26 LB Method)		May-October	November-April
Background Information:	7-Q ₁₀ (cfs)	5.30	5.30
	River Temperature (°C)	25	3
Dissolved Oxygen mg/L:	Effluent	7.00	7.00
	Background	7.00	7.00
	Mix DO	7.00	7.00
	Criteria	5.00	5.00
Weekly Ave BOD Effluent Limitations	Concentration Limits (mg/L)	71	148
	Mass (lbs/d)	142	297
Limitations (1/3 AC)	Concentration Limits (mg/L)	27	56
	Mass (lbs/d)	53	112
Categorical Limits	Weekly Average	45	45
	Monthly Average	30	30

The calculated limits using the 26-lb method are more restrictive May through October and the categorical limits in ch. NR 210 are more restrictive November through April. **Therefore, the recommended effluent limitations are 27 mg/L and 53 lbs/day from May through October and 45 mg/L November through April, expressed as weekly average limits.**

Total Suspended Solids (TSS)

The TSS limitations under s. NR 210.05(1)(b), Wis. Adm. Code, require a **weekly average of 45 mg/L and a monthly average of 30 mg/L**

pH

The pH limitations under s. NR 210.05(1)(c), Wis. Adm. Code, require that the **effluent pH shall be within the range of 6.0 - 9.0 s.u.**

PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life. Given the fact that the Mondovi Wastewater Treatment Facility does not currently have ammonia nitrogen limits, the need for limits is evaluated at this time.

Daily Maximum Limits based on Acute Toxicity Criteria (ATC):

Daily maximum limitations are based on acute toxicity criteria in ch. NR 105, Wis. Adm. Code, which are a function of the effluent pH and the receiving water classification. The acute toxicity criterion (ATC) for ammonia is calculated using the following equation.

$$\text{ATC in mg/L} = [A \div (1 + 10^{(7.204 - \text{pH})})] + [B \div (1 + 10^{(\text{pH} - 7.204)})]$$

Where:

A = 0.411 and B = 58.4 for a Warm Water Sport fishery, and
pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. A total of 1614 sample results were reported from September 2018 to January 2023. The maximum reported value was 7.50 s.u. (Standard pH Units). The effluent pH was 7.10 s.u. or less 99% of the time. The 1-day P₉₉, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 6.90 s.u. The mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 6.87 s.u. Therefore, a value of 8.6 s.u. is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 7.10 s.u. into the equation above yields an ATC = 33 mg/L.

Daily Maximum Ammonia Nitrogen Effluent Limitations Calculation Method

In accordance with s. NR 106.32(2), Wis. Adm. Code daily maximum ammonia limitations are calculated using the 1-Q₁₀ receiving water low flow if it is determined that the previous method of acute ammonia limit calculation (2×ATC) is not sufficiently protective of the fish and aquatic life. The more restrictive calculated limits shall apply.

The calculated daily maximum ammonia nitrogen effluent limits using the mass balance approach with the 1-Q₁₀ (estimated as 80 % of 7-Q₁₀) and the 2×ATC approach are shown below.

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
2×ATC	66
1-Q ₁₀ (Outfall 001)	2100
1-Q ₁₀ (Harvey Creek)	408

The 2×ATC method yields the most stringent limits for the Mondovi Wastewater Treatment Facility.

Attachment #1

Presented below is a table of daily maximum limitations corresponding to various effluent pH values. Use of this table is not necessarily recommended in the permit, but it is presented herein for informational purposes.

Daily Maximum Ammonia Nitrogen Limits – WWSF, WFFF & LFF

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
$6.0 \leq \text{pH} \leq 6.1$	108	$7.0 < \text{pH} \leq 7.1$	66	$8.0 < \text{pH} \leq 8.1$	14
$6.1 < \text{pH} \leq 6.2$	106	$7.1 < \text{pH} \leq 7.2$	59	$8.1 < \text{pH} \leq 8.2$	11
$6.2 < \text{pH} \leq 6.3$	104	$7.2 < \text{pH} \leq 7.3$	52	$8.2 < \text{pH} \leq 8.3$	9.4
$6.3 < \text{pH} \leq 6.4$	101	$7.3 < \text{pH} \leq 7.4$	46	$8.3 < \text{pH} \leq 8.4$	7.8
$6.4 < \text{pH} \leq 6.5$	98	$7.4 < \text{pH} \leq 7.5$	40	$8.4 < \text{pH} \leq 8.5$	6.4
$6.5 < \text{pH} \leq 6.6$	94	$7.5 < \text{pH} \leq 7.6$	34	$8.5 < \text{pH} \leq 8.6$	5.3
$6.6 < \text{pH} \leq 6.7$	89	$7.6 < \text{pH} \leq 7.7$	29	$8.6 < \text{pH} \leq 8.7$	4.4
$6.7 < \text{pH} \leq 6.8$	84	$7.7 < \text{pH} \leq 7.8$	24	$8.7 < \text{pH} \leq 8.8$	3.7
$6.8 < \text{pH} \leq 6.9$	78	$7.8 < \text{pH} \leq 7.9$	20	$8.8 < \text{pH} \leq 8.9$	3.1
$6.9 < \text{pH} \leq 7.0$	72	$7.9 < \text{pH} \leq 8.0$	17	$8.9 < \text{pH} \leq 9.0$	2.6

Weekly and Monthly Average Limits based on Chronic Toxicity Criteria (CTC)

The ammonia limit calculation also warrants evaluation of weekly and monthly average limits based on chronic toxicity criteria for ammonia, because those limits relate to the assimilative capacity of the receiving water.

Weekly average and monthly average limits for ammonia nitrogen are based on chronic toxicity criteria in ch. NR 105, Wis. Adm. Code.

The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified as a Warm Water Sport Fish Community is calculated by the following equation, according to subchapter IV of NR 106, Wis. Adm. Code.

$$\text{CTC} = E \times \{ [0.0676 \div (1 + 10^{(7.688 - \text{pH})})] + [2.912 \div (1 + 10^{(\text{pH} - 7.688)})] \} \times C$$

Where:

pH = the pH (s.u.) of the receiving water,

E = 0.854,

C = the minimum of 2.85 or $1.45 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Present), or

C = $1.45 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Absent), and

T = the temperature (°C) of the receiving water – (Early Life Stages Present), or

T = the maximum of the actual temperature (°C) and 7 – (Early Life Stages Absent)

The 4-day criterion is equal to the 30-day criterion multiplied by 2.5. The 4-day criteria are used in a mass-balance equation with the 7-Q₁₀ (4-Q₃, if available) to derive weekly average limitations. And the 30-day criteria are used with the 30-Q₅ (estimated as 85% of the 7-Q₂ if the 30-Q₅ is not available) to derive monthly average limitations. The stream flow value is further adjusted to temperature; 100% of the flow is used if the Temperature ≥ 16 °C, 25% of the flow is used if the Temperature < 11 °C, and 50% of the flow is used if the Temperature ≥ 11 °C but < 16 °C.

Section NR 106.32 (3), Wis. Adm. Code, provides a mechanism for less stringent weekly average and monthly average effluent limitations when early life stages (ELS) of critical organisms are absent from the receiving water. This applies only when the water temperature is less than 14.5 °C, during the winter and spring months. Burbot, an early spawning species, are not believed to be present in the Buffalo River or Harvey Creek. So “ELS Absent” criteria apply from October through March, and “ELS Present” criteria will apply from April through September for a WWSF classification.

Weekly and Monthly Ammonia Nitrogen Limits – WWSF

		Summer	Winter	Summer	Winter
		Outfall 001	Outfall 001	Harvey Creek	Harvey Creek
Effluent Flow	Qe (MGD)	0.385	0.385	0.240	0.240
Background Information	7-Q ₁₀ (cfs)	47	47	5.3	5.3
	7-Q ₂ (cfs)	78	78	7.6	7.6
	Ammonia (mg/L)	0.05	0.12	0.05	0.12
	Temperature (°C)	25	3	25	3
	pH (s.u.)	7.87	7.51	7.87	7.51
	% of Flow used	100	25	100	25
	Reference Weekly Flow (cfs)	47.0	11.75	5.30	1.33
	Reference Monthly Flow (cfs)	66.3	16.58	6.46	1.62
Criteria mg/L	4-day Chronic				
	Early Life Stages Present	3.70	10.81	3.70	10.81
	Early Life Stages Absent	3.70	17.56	3.70	17.56
	30-day Chronic				
	Early Life Stages Present	1.48	4.33	1.48	4.33
	Early Life Stages Absent	1.48	7.02	1.48	7.02
Effluent Limitations mg/L	Weekly Average				
	Early Life Stages Present	292	222	56	49
	Early Life Stages Absent		362		80
	Monthly Average				
	Early Life Stages Present	161	121	26	23
	Early Life Stages Absent		199		37
Effluent Limitations mg/L (1/3 AC)	Weekly Average				
	Early Life Stages Present			21	24
	Early Life Stages Absent				38
	Monthly Average				
	Early Life Stages Present			9.8	10
	Early Life Stages Absent				17

Effluent Data

Four samples for ammonia nitrogen were submitted with the permit application, and their results were as follows:

Attachment #1

Ammonia Nitrogen Effluent Data

Sample Date	Ammonia Nitrogen mg/L
11/09/2022	25.4
11/14/2022	23.7
11/16/2022	33.1
11/22/2022	18.3

Based on the available data, daily limits are required at Outfall 001 and daily, weekly, and monthly limits are required for the relocated discharge to Harvey Creek.

Conclusions and Recommendations

In summary, after rounding to two significant figures, the following ammonia nitrogen limitations are recommended. No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm Code.

Final Ammonia Nitrogen Limits

Outfall 001

Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
Variable	108	108

Relocation to Harvey Creek

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
May – October	Variable	21	9.8
November – March	Variable	38	17
April	Variable	24	10

**PART 5 – WATER QUALITY-BASED EFFLUENT LIMITATIONS
FOR BACTERIA**

On May 1, 2020, revisions to chs. NR 102 and NR 210, Wis. Adm. Codes, became effective which replace fecal coliform limits with new *Escherichia coli* (*E. coli*) limits for protection of recreational uses. Section NR 210.06(2)(a)1, Wis. Adm. Code, includes two limits which must be included in permits for facilities which are required to disinfect:

1. The geometric mean of *E. coli* bacteria in effluent samples collected in any calendar month may not exceed 126 counts/100 mL.
2. No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 counts/100 mL.

Attachment #1

E. coli monitoring is recommended at the same frequency that fecal coliform monitoring is required in the current permit. Because the Mondovi Wastewater Treatment Facility permit requires weekly monitoring, the 410 counts/100 mL limit will effectively function as a daily maximum limit unless the facility performs additional monitoring. Any additional monitoring beyond what is required by the permit must also be reported on the DMR as required in the standard requirements section of the permit.

These limits are required at Outfall 001 and the relocation to Harvey Creek¹ during May through September. No changes are recommended to the required disinfection season.

Effluent Data

The Mondovi Wastewater Treatment Facility has monitored effluent *E. coli* from May 2022 to September 2022 and a total of 21 results are available. A geometric mean of 126 counts/100 mL was never exceeded in any of the months, with a maximum monthly geometric mean of 91 counts/100 mL. Effluent data has exceeded 410 counts/100 mL two times (which is 10% of the total sample results). The maximum reported value was 2000 counts/100 mL. Based on this effluent data it appears that the facility can't meet new *E. coli* limits and a compliance schedule is needed in the reissued permit for Outfall 001.

Interim Limit

The permit will include a compliance schedule at Outfall 001 to meet these limits. During the compliance schedule, an interim limit applies to prevent back-sliding from the current level of disinfection during the compliance schedule period. Therefore, the current **fecal coliform limit shall be included in the reissued permit as an interim limit of 400 counts/100 mL as a monthly geometric mean**. Any weekly geometric mean limit which was included in the current permit for expression of limits purposes does not need to be included in the permit as an interim limit.

PART 6 – PHOSPHORUS

Water Quality-Based Effluent Limits (WQBEL) for Outfall 001

Revisions to administrative rules regulating phosphorus took effect on December 1, 2010. These rule revisions include additions to s. NR 102.06, Wis. Adm. Code, which establish phosphorus standards for surface waters. Subchapter III of NR 217, Wis. Adm. Code, establishes procedures for determining WQBELs for phosphorus, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

Section NR 102.06(3)(a), Wis. Adm. Code, specifically names river segments for which a phosphorus criterion of 0.100 mg/L applies. For other stream segments that are not specified in s. NR 102.06(3)(a), Wis. Adm. Code, s. NR 102.06(3)(b), Wis. Adm. Code, specifies a phosphorus criterion of 0.075 mg/L. The phosphorus criterion of 0.100 mg/L applies for the Buffalo River from the confluence of Harvey Creek to the Mississippi River. Outfall 001 is located upstream of Harvey Creek, therefore, the applicable phosphorus criterion is 0.075 mg/L

The conservation of mass equation is described in s. NR 217.13(2)(a), Wis. Adm. Code, for phosphorus WQBELs and includes variables of water quality criterion (WQC), receiving water flow rate (Qs), effluent flow rate (Qe), and upstream phosphorus concentrations (Cs) provided below.

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

Where:

WQC = 0.075 mg/L for the Buffalo River

Qs = 100% of the 7-Q₂ of 78 cfs

Cs = background concentration of phosphorus in the receiving water pursuant to s. NR 217.13(2)(d), Wis. Adm. Code

Qe = effluent flow rate = 0.385 MGD = 0.596 cfs

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

Section NR 217.13(2)(d), Wis. Adm. Code, specifies that the background phosphorus concentration used in the limit calculation formula shall be calculated using the procedures specified in s. NR 102.07(1)(b) to (c), Wis. Adm. Code. The median shall be calculated with at least one year of data using samples collected once per month during the period of May through October. All representative data from the most recent five years shall be used, but data from the most recent 10 years may be used if representative of current conditions.

In stream total phosphorus data upstream of the discharge is not available however the following downstream data were considered in estimating the background phosphorus concentration:

SWIMS ID	63088
Station Name	Monitoring station at Buffalo River Segerstrom Rd
Waterbody	Buffalo River
Sample Count	9
First Sample	07/20/2005
Last Sample	09/12/2006
Mean	0.271 mg/L
Median	0.260 mg/L

Substituting a background concentration above criteria into the limit calculation equation above would result in a calculated limit that is less than the applicable criterion of 0.075 mg/L. However, s. NR 217.13(7), Wis. Adm. Code, specifies that “if the WQBEL calculated pursuant to the procedures in this section is less than the phosphorus criterion specified in s. NR 102.06, Wis. Adm. Code, for the water body, the effluent limit shall be set equal to the criterion.”

The impaired water listing of the Buffalo River from milepoint 0.00 to 67.56, including the discharge location at Outfall 001, also points towards the notion that effluent phosphorus limits equal to the water quality criterion are needed to prevent the discharge from contributing to further impairment of the receiving water. *The Guidance for Implementing Wisconsin’s Phosphorus Water Quality Standards for Point Source Discharges* (2020) suggests setting effluent limits equal to the criterion in the absence of an EPA approved total maximum daily load for discharges of phosphorus to phosphorus impaired waters.

Limit Expression

Because the calculated WQBEL is less than or equal to 0.3 mg/L, the effluent limit of 0.075 mg/L may be expressed as a six-month average. If a concentration limitation expressed as a six-month average is included in the permit, a monthly average concentration limitation of 0.225, equal to three times the

WQBEL calculated under s. NR 217.13 shall also be included in the permit. The six-month average should be averaged during the months of May – October and November – April.

Mass Limits

Because the discharge is to a surface water that is to or upstream of a phosphorus impaired water, a mass limit is also required, pursuant to s. NR 217.14(1)(a), Wis. Adm. Code. **This final mass limit shall be $0.075 \text{ mg/L} \times 8.34 \times 0.385 \text{ MGD} = 0.24 \text{ lbs/day}$ expressed as a six-month average.**

Multi-Discharge Variance Interim Limit

With the permit application, the City of Mondovi has re-applied for the phosphorus multi-discharger variance (MDV). Conditions of the phosphorus MDV require the facility to comply with an interim phosphorus limit in lieu of meeting the final WQBEL. The recommended interim limit during the 2nd permit under MDV approval, pursuant to s. 283.16 (6) (a), Wis. Stats., is 0.6 mg/L as a monthly average. A compliance schedule may be appropriate to meet this interim limit but compliance with 0.6 mg/L shall be no later than the end of the reissued permit. The previous interim limit of 0.8 mg/L should not be exceeded during the compliance schedule.

Water Quality-Based Effluent Limits (WQBEL) for the relocation to Harvey Creek

Downstream from the proposed outfall relocation, the Buffalo River is listed as impaired on Wisconsin's approved 3030(d) list for phosphorus related impairments. Section NR 217.13(8)(b) states that if a new discharger is proposing a discharge of phosphorus to a receiving or downstream water that is a phosphorus impaired water, the new discharger may not discharge phosphorus unless it can demonstrate the new discharge of phosphorus will improve water quality in the phosphorus impaired segment. The policy of established effluent limitations well below the applicable phosphorus criteria for new dischargers is supported in EPA's approval letter of NR 217 (dated 7/25/2012). At this time, it is recommended that the limit be set equal to the upper 95% confidence limit of the reference condition for wadeable streams in the Driftless Area Ecoregion (57 µg/L).

Limit Expression

Because the calculated WQBEL is less than or equal to 0.3 mg/L, the effluent limit of 0.057 mg/L may be expressed as a six-month average. If a concentration limitation expressed as a six-month average is included in the permit, a monthly average concentration limitation of 0.171, equal to three times the WQBEL calculated under s. NR 217.13 shall also be included in the permit. The six-month average should be averaged during the months of May – October and November – April.

Mass Limits

Because the discharge is to a surface water that is to or upstream of a phosphorus impaired water, a mass limit is also required, pursuant to s. NR 217.14(1)(a), Wis. Adm. Code. **This final mass limit shall be $0.057 \text{ mg/L} \times 8.34 \times 0.240 \text{ MGD} = 0.11 \text{ lbs/day}$ expressed as a six-month average.**

Multi-Discharger Variance

According to s. 283.16(4)(a)(1), the variance is only available to an existing source. New dischargers may not receive approval under the variances, therefore the proposed discharge to Harvey Creek would not be eligible for the MDV.

PART 7 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL

Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

In accordance with s. NR 106.53(2)(b), Wis. Adm. Code, the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s. NR 106.53(2)(c), Wis. Adm. Code, the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation. These values were based off actual flow reported from September 2018 to January 2023.

Monthly Temperature Limits

Month	Calculated Effluent Limit (Outfall 001)		Calculated Effluent Limit (Harvey Creek)	
	Weekly Average Effluent Limitation	Weekly Average Effluent Limitation	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(°F)
JAN	NA	120	NA	120
FEB	NA	120	NA	120
MAR	NA	120	NA	120
APR	NA	120	84	120
MAY	NA	120	91	120
JUN	NA	120	NA	120
JUL	NA	120	NA	120
AUG	NA	120	NA	120
SEP	NA	120	95	92
OCT	NA	120	106	120
NOV	NA	120	70	120
DEC	NA	120	80	120

Reasonable Potential

Permit limits for temperature are recommended based on the procedures in s. NR 106.56, Wis. Adm. Code.

- An acute limit for temperature is recommended for each month in which the representative daily maximum effluent temperature for that month exceeds the acute WQBEL. The representative daily maximum effluent temperature is the greater of the following:
 - (a) The highest recorded representative daily maximum effluent temperature
 - (b) The projected 99th percentile of all representative daily maximum effluent temperatures

Attachment #1

- A sub-lethal limitation for temperature is recommended for each month in which the representative weekly average effluent temperature for that month exceeds the weekly average WQBEL. The representative weekly average effluent temperature is the greater of the following:
 - (a) The highest weekly average effluent temperature for the month.
 - (b) The projected 99th percentile of all representative weekly average effluent temperatures for the month

Section NR 106.59(2)(b), Wis. Adm. Code, allows the use of temperature effluent data, on a case-by-case basis, from at least two other POTWs within a 100-mile radius that utilize similar wastewater treatment technology and have a similar ratio of domestic to industrial waste stream composition, or representative data of the POTW.

A review of effluent temperature data collected from the Bloomer WWTF, the Stanley WWTF, and the Taylor WWTF indicate it is unlikely that effluent temperatures from the Mondovi Wastewater Treatment Facility which operates a biological treatment system and consists primarily of domestic sewage would exceed the calculated effluent temperatures. **Therefore, no temperature limits or monitoring are required in the reissued permit for either the existing discharge to the Buffalo River or the proposed discharge to Harvey Creek.**

PART 8 – WHOLE EFFLUENT TOXICITY (WET)

WET testing is used to measure, predict, and control the discharge of toxic materials that may be harmful to aquatic life. In WET tests, organisms are exposed to a series of effluent concentrations for a given time and effects are recorded. Decisions below related to the selection of representative data and the need for WET limits were made according to ss. NR 106.08 and 106.09, Wis. Adm. Code. WET monitoring frequency and toxicity reduction evaluation (TRE) recommendations were made using the best professional judgment of staff familiar with the discharge after consideration of the guidance in the *Whole Effluent Toxicity (WET) Program Guidance Document (2022)*.

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. To assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC₅₀ (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09(2)(b), Wis. Adm Code.
- Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure. To assure that a discharge is not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid IC₂₅ (Inhibition Concentration) greater than the instream waste concentration (IWC), according to s. NR 106.09(3)(b), Wis. Adm Code. The IWC is an estimate of the proportion of effluent to total volume of water (receiving water + effluent). The IWCs of 5% at Outfall 001 (Buffalo River) and 22% at Harvey Creek shown in the WET Checklist summary below were calculated according to the following equation, as specified in s. NR 106.03(6), Wis. Adm Code:

$$\text{IWC (as \%)} = Q_e \div \{(1 - f) Q_e + Q_s\} \times 100$$

Attachment #1

Outfall 001

Q_e = annual average flow = 0.385 MGD = 0.596 cfs

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

Q_s = $\frac{1}{4}$ of the $7-Q_{10}$ = 47 cfs \div 4 = 11.75 cfs

Harvey Creek

Q_e = annual average flow = 0.240 MGD = 0.371 cfs

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

Q_s = $\frac{1}{4}$ of the $7-Q_{10}$ = 5.30 cfs \div 4 = 1.33 cfs

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), a synthetic (standard) laboratory water may be used as the dilution water and primary control in acute WET tests, unless the use of different dilution water is approved by the Department prior to use. The primary control water must be specified in the WPDES permit.
- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), receiving water must be used as the dilution water and primary control in chronic WET tests, unless the use of different dilution water is approved by the Department prior to use. The dilution water used in WET tests conducted on either outfall shall be a grab sample collected from their respective receiving water locations, upstream and out of the influence of the mixing zone and any other known discharge. The specific receiving water location must be specified in the WPDES permit.
- Shown below is a tabulation of all available WET data for Outfall 001. Efforts are made to ensure that decisions about WET monitoring and limits are made based on representative data, as specified in s. NR 106.08(3), Wis. Adm. Code. Data which is not believed to be representative of the discharge was not included in reasonable potential calculations. The table below differentiates between tests used and not used when making WET determinations.

WET Data History

Date Test Initiated	Acute Results LC ₅₀ %				Chronic Results IC ₂₅ %					Footnotes or Comments
	<i>C. dubia</i>	Fathead minnow	Pass or Fail?	Used in RP?	<i>C. dubia</i>	Fathead Minnow	Algae (IC ₅₀)	Pass or Fail?	Use in RP?	
08/05/1997	>100	>100	Pass	No	>80	30.6		Pass	No	1
11/18/1998	>100	>100	Pass	No						1
09/15/1999	>100	>100	Pass	No						1
06/26/2002	>100	>100	Pass	No						1
08/20/2003	>100	>100	Pass	No						1
06/21/2006	>100	>100	Pass	Yes						
09/09/2009	>100	>100	Pass	No						2
03/16/2011	>100	>100	Pass	No						2
10/31/2012	>100	>100	Pass	Yes						
02/20/2013	>100	>100	Pass	Yes						
08/28/2013	>100	>100	Pass	Yes						
04/06/2016	>100	>100	Pass	Yes						
12/07/2021	>100	>100	Pass	Yes	>100	>100		Pass	Yes	
06/14/2022	>100	>100	Pass	Yes	>100	>100		Pass	Yes	

Attachment #1

Footnotes:

1. *Data Not Representative.* Significant changes were made to WET test methods in 2004 and these changes were assumed to be fully implemented by certified labs by no later than June 2005.
 2. *Tests done by S-F Analytical, July 2008 – March 2011.* The DNR has reason to believe that WET tests completed by SF Analytical Labs from July 2008 through March 31, 2011 were not performed using proper test methods. Therefore, WET data from this lab during this period has been disqualified and was not included in the analysis.
- According to s. NR 106.08, Wis. Adm. Code, WET reasonable potential is determined by multiplying the highest toxicity value that has been measured in the effluent by a safety factor, to predict the likelihood (95% probability) of toxicity occurring in the effluent above the applicable WET limit. The safety factor used in the equation changes based on the number of toxicity detects in the dataset. The fewer detects present, the higher the safety factor, because there is more uncertainty surrounding the predicted value. **WET limits must be given, according to s. NR 106.08(6), Wis. Adm. Code, whenever the applicable Reasonable Potential equation results in a value greater than 1.0.**

$$\text{Acute Reasonable Potential} = [(TUa \text{ effluent}) (B)(AMZ)]$$

$$\text{Chronic Reasonable Potential} = [(TUC \text{ effluent}) (B)(IWC)]$$

According to s. NR 106.08(6)(d), Wis. Adm. Code, TUA and TUC effluent values are equal to zero whenever toxicity is not detected (i.e. when the LC_{50} , IC_{25} or $IC_{50} \geq 100\%$).

Acute Reasonable Potential = $0 < 1.0$, reasonable potential is not shown, and a limit is not required.

Chronic Reasonable Potential = $0 < 1.0$, reasonable potential is not shown, and a limit is not required.

The WET checklist was developed to help DNR staff make recommendations regarding WET limits, monitoring, and other related permit conditions. The checklist indicates whether acute and chronic WET limits are needed, based on requirements specified in s. NR 106.08, Wis. Adm. Code. The checklist steps the user through a series of questions, assesses points based on the potential for effluent toxicity, and suggests monitoring frequencies based on points accumulated during the checklist analysis. As toxicity potential increases, more points accumulate, and more monitoring is recommended to ensure that toxicity is not occurring. A summary of the WET checklist analysis completed for this permittee is shown in the table below. Staff recommendations based on best professional judgment are provided below the summary table. For guidance related to reasonable potential and the WET checklist, see Chapter 1.3 of the WET Guidance Document: <https://dnr.wisconsin.gov/topic/Wastewater/WET.html>.

WET Checklist Summary for Outfall 001

	Acute	Chronic
AMZ/IWC	Not Applicable. 0 Points	IWC = 5%. 0 Points
Historical Data	Seven tests used to calculate RP. No tests failed. 0 Points	Two tests used to calculate RP. No tests failed. 0 Points
Effluent Variability	CBOD, TSS, Copper, Phosphorus, and Fecal Coliform exceedances 5 Points	Same as Acute. 5 Points

Attachment #1

	Acute	Chronic
Receiving Water Classification	WWSF (5 pts) 5 Points	Same as Acute. 5 Points
Chemical-Specific Data	Reasonable potential for Ammonia, Chlorine, and Copper limits based on ATC; (7 pts) Chloride, Chromium, Nickel and Zinc detected. (3 pts) Additional Compounds of Concern: None 10 Points	No reasonable potential for limits based on CTC; Ammonia, Chloride, Chlorine, Chromium, Nickel and Zinc detected. (3 pts) Additional Compounds of Concern: None 3 Points
Additives	One Biocide (3 pts) and two Water Quality Conditioners added. (2 pts) SOP in place for Ferric Chloride. 5 Points	All additives used more than once per 4 days. 5 Points
Discharge Category	No Industrial Contributors. 0 Points	Same as Acute. 0 Points
Wastewater Treatment	Secondary or Better 0 Points	Same as Acute. 0 Points
Downstream Impacts	No impacts known 0 Points	Same as Acute. 0 Points
Total Checklist Points:	25 Points	18 Points
Recommended Monitoring Frequency (from Checklist):	3 tests during permit term	No Chronic WET Monitoring Recommended
Limit Required?	No	No
TRE Recommended? (from Checklist)	No	No

- After consideration of the guidance provided in the Department's WET Program Guidance Document (2022) and other information described above three Acute WET tests are recommended in the reissued permit. Tests should be done in rotating quarters to collect seasonal information about this discharge. WET testing should continue after the permit expiration date (until the permit is reissued).

WET Checklist Summary for Relocation to Harvey Creek

	Acute	Chronic
AMZ/IWC	Not Applicable. 0 Points	IWC = 22%. 0 Points
Historical Data	Seven tests used to calculate RP. No tests failed. 0 Points	Two tests used to calculate RP. No tests failed. 0 Points
Effluent Variability	CBOD, TSS, Copper, Phosphorus, and Fecal Coliform exceedances 5 Points	Same as Acute. 5 Points
Receiving Water Classification	WWSF (5 pts) 5 Points	Same as Acute. 5 Points

Attachment #1

	Acute	Chronic
Chemical-Specific Data	Reasonable potential for Ammonia and Copper limits based on ATC; (6 pts) Chloride, Chromium, Nickel and Zinc detected. (3 pts) Additional Compounds of Concern: None 9 Points	Reasonable potential for Ammonia limits based on CTC; (5 pts); Chloride, Chromium, Copper, Nickel and Zinc detected. (3 pts) Additional Compounds of Concern: None 8 Points
Additives	One Water Quality Conditioner added. (1 pt) SOP in place for Ferric Chloride. 1 Point	Additive used more than once per 4 days. 1 Point
Discharge Category	No Industrial Contributors. 0 Points	Same as Acute. 0 Points
Wastewater Treatment	Secondary or Better 0 Points	Same as Acute. 0 Points
Downstream Impacts	No impacts known 0 Points	Same as Acute. 0 Points
Total Checklist Points:	20 Points	19 Points
Recommended Monitoring Frequency (from Checklist):	2 tests during permit term	No Chronic WET Monitoring Recommended
Limit Required?	No	No
TRE Recommended? (from Checklist)	No	No

- After consideration of the guidance provided in the Department's WET Program Guidance Document (2022) and other information described above two Acute WET tests are recommended in the reissued permit. Tests should be done in rotating quarters to collect seasonal information about this discharge. WET testing should continue after the permit expiration date (until the permit is reissued).

PART 9 – EXPRESSION OF LIMITS

Revisions to chs. NR 106 and 205, Wis. Adm. Code, align Wisconsin's WQBELs with 40 CFR 122.45(d), which requires WPDES permits contain the following concentration limits, whenever practicable and necessary to protect water quality:

- Weekly average and monthly average limitations for continuous discharges subject to ch. NR 210.
- Daily maximum and monthly average limitations for all other discharges.

The Mondovi Wastewater Treatment Facility is a municipal treatment facility and is therefore subject to weekly average and monthly average limitations whenever limitations are determined to be necessary.

This evaluation provides additional limitations necessary to comply with the expression of limits in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Code. Pollutants already compliant with these rules or that have an approved impracticability demonstration, are excluded from this evaluation including water-quality based effluent limitations for phosphorus, temperature, pH, and *E. coli* among other parameters. Mass limitations are not subject to the limit expression requirements if concentrations limits are given.

Method for Calculation

The methods for calculating limitations for continuous discharges subject to ch. NR 210 to conform to 40 CFR 122.45(d) are specified in s. NR 106.07(3), Wis. Adm. Code, and are as follows:

1. Whenever a daily maximum limitation is determined necessary to protect water quality, a weekly and monthly average limitation shall also be included in the permit and set equal to the daily maximum limit unless a more restrictive limit is already determined necessary to protect water quality.
2. Whenever a weekly average limitation is determined necessary to protect water quality, a monthly average limitation shall also be included in the permit and set equal to the weekly average limit unless a more restrictive limit is already determined necessary to protect water quality.
3. Whenever a monthly average limitation is determined necessary to protect water quality, a weekly average limit shall be calculated using the following procedure and included in the permit unless a more restrictive limit is already determined necessary to protect water quality:

$$\text{Weekly Average Limitation} = (\text{Monthly Average Limitation} \times \text{MF})$$

Where:

MF= Multiplication factor as defined in Table 1

CV= coefficient of variation (CV) as calculated in s. NR 106.07(5m), Wis. Adm. Code.

n= the number of samples per month required in the permit

s. NR 106.07(3)(e)4, Table 1, Wis. Adm. Code — Multiplication Factor (for CV = 0.6)

CV	n=1	n=2	n=3	n=4	n=8	n=12	n=16	n=20	n=24	n=30
0.6	1.00	1.31	1.51	1.64	1.95	2.12	2.23	2.30	2.36	2.43

Note: This methodology is based on the *Technical Support Document for Water Quality-based Toxics Control* (March 1991). PB91-127415.

Summary of Additional Limitations:

In conclusion, the following additional limitations are required to comply with ss. NR 106.07 and NR 205.065(7), Wis. Adm. Code.

Expression of Limits Summary for Outfall 001 (existing discharge to Buffalo River)

Parameter	Daily Maximum	Weekly Average	Monthly Average	Multiplication Factor (CV)	Assumed Monitoring Frequency (n)
Ammonia Nitrogen	Variable	108 mg/L	108 mg/L		
Chlorine	38 µg/L	38 µg/L	38 µg/L		
Copper	34 ug/L	34 ug/L	34 ug/L		

Ammonia Nitrogen

The permit contains pH variable daily maximum limits and the highest daily maximum limit allowed dependent on pH is more restrictive than the calculated weekly and monthly average limits. Therefore, **monthly and weekly average limits of 108 mg/L** are recommended in the permit.

Expression of Limits Summary for Proposed Relocation to Harvey Creek

Parameter	Daily Maximum	Weekly Average	Monthly Average	Multiplication Factor (CV)	Assumed Monitoring Frequency (n)
BOD ₅					
May – October		27 mg/L	27 mg/L		
November – April		45 mg/L	30 mg/L		
Copper	34 ug/L	34 ug/L	34 ug/L		

BOD₅

For the months of May through October, the calculated weekly average of 27 mg/L is more restrictive than the categorical weekly and monthly average limits. Therefore, **monthly and weekly average BOD₅ limits of 27 mg/L** are recommended for May through October.

Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

Facility:	Mondovi WWTF		7-Q ₁₀ :	47.00	cfs	Temp Dates	Flow Dates
Outfall(s):	001		Dilution:	25%		N/A	09/01/18
Date Prepared:	02/16/2023		f:	0		N/A	01/31/23
Design Flow (Q _e):	0.385	MGD	Stream type:	Small warm water sport or forage fish communi			
Storm Sewer Dist.	0	ft	Qs:Q _e ratio:	19.7	:1		
			Calculation Needed?	YES			

Month	Water Quality Criteria		Receiving Water Flow Rate (Qs)	Representative Highest Effluent Flow Rate (Q _e)		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	T _a (default) (°F)	Sub-Lethal WQC (°F)	Acute WQC (°F)	7-day Rolling Average (MGD)	Daily Maximum Flow Rate (Q _{ea}) (MGD)		Weekly Average (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	33	49	76	0.111	0.126	0	NA	120	NA	120
FEB	34	50	76	0.111	0.227	0	NA	120	NA	120
MAR	38	52	77	0.081	0.128	0	NA	120	NA	120
APR	48	55	79	0.209	0.269	0	NA	120	NA	120
MAY	58	65	82	0.234	0.366	0	NA	120	NA	120
JUN	66	76	84	0.192	0.414	0	NA	120	NA	120
JUL	69	81	85	0.126	0.234	0	NA	120	NA	120
AUG	67	81	84	0.117	0.164	0	NA	120	NA	120
SEP	60	73	82	0.517	1.973	0	NA	120	NA	120
OCT	50	61	80	0.208	0.233	0	NA	120	NA	120
NOV	40	49	77	0.372	0.660	0	NA	120	NA	120
DEC	35	49	76	0.387	0.619	0	NA	120	NA	120

Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

Facility:

Mondovi WWTF

Outfall(s):

Relocated Outfall

Date Prepared:

02/16/2023

Design Flow (Qe):

0.240 MGD

Storm Sewer Dist.

0 ft

7-Q₁₀:

5.30 cfs

Dilution:

25%

f:

0

Temp Dates

N/A

09/01/18

Flow Dates

N/A

01/31/23

Start:

N/A

01/31/23

End:

N/A

01/31/23

Stream type:

Small warm water sport or forage fish communi

Qs:Qe ratio:

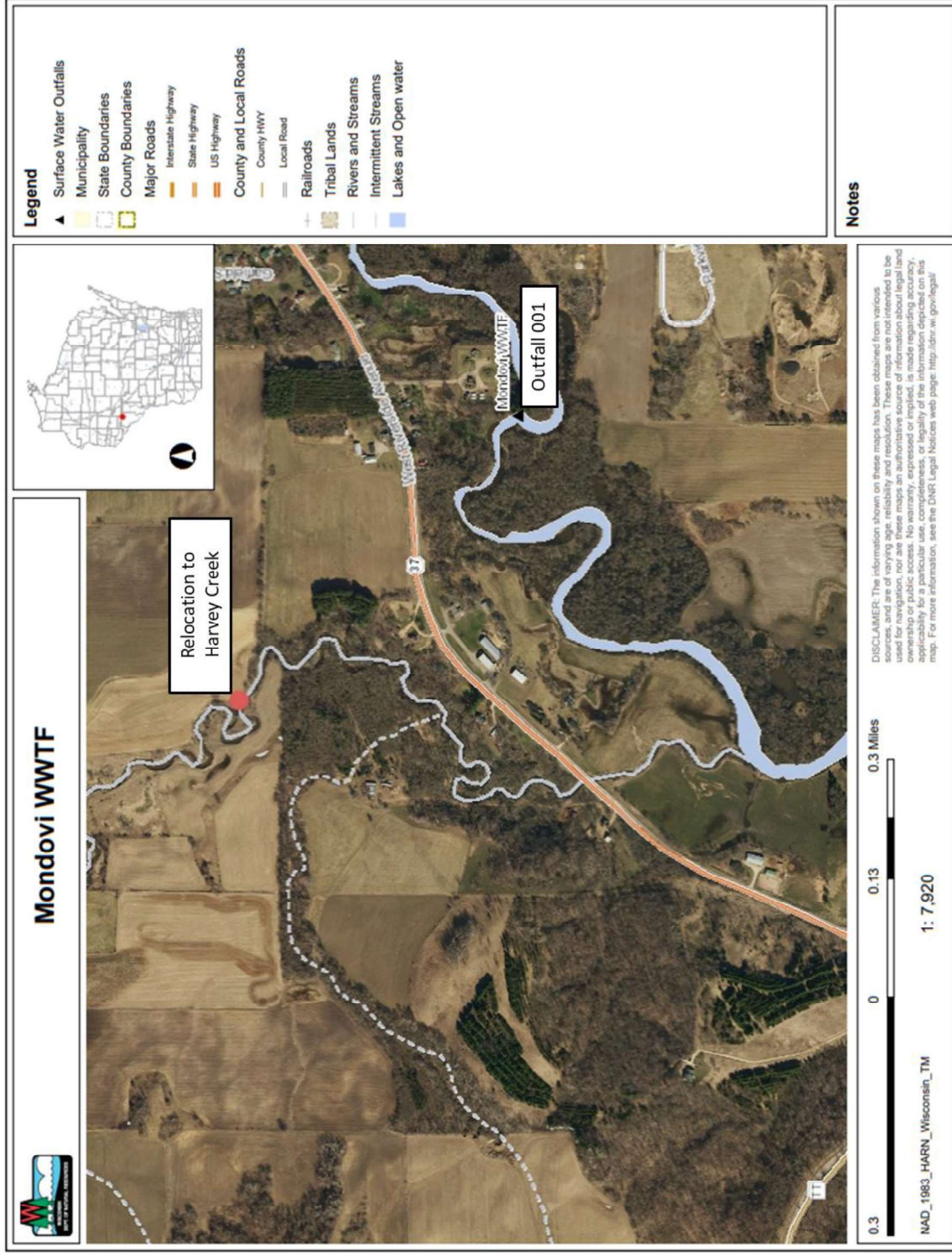
3.6 :1

Calculation Needed?

YES

Month	Water Quality Criteria			Receiving Water Flow Rate (Qs) (cfs)	Representative Highest Effluent Flow Rate (Qe)			f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Ta (default) (°F)	Sub-Lethal WQC (°F)	Acute WQC (°F)		7-day Rolling Average (Qesl) (MGD)	Daily Maximum Flow Rate (Qea) (MGD)	(°F)		Weekly Average (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	33	49	76	1.33	0.111	0.126		0	NA	120	NA	120
FEB	34	50	76	1.33	0.111	0.227		0	NA	120	NA	120
MAR	38	52	77	1.33	0.081	0.128		0	NA	120	NA	120
APR	48	55	79	1.33	0.209	0.269		0	84	120	84	120
MAY	58	65	82	1.33	0.234	0.366		0	91	120	91	120
JUN	66	76	84	1.33	0.192	0.414		0	NA	120	NA	120
JUL	69	81	85	1.33	0.126	0.234		0	NA	120	NA	120
AUG	67	81	84	1.33	0.117	0.164		0	NA	120	NA	120
SEP	60	73	82	1.33	0.517	1.973		0	95	92	95	92
OCT	50	61	80	1.33	0.208	0.233		0	106	120	106	120
NOV	40	49	77	1.33	0.372	0.660		0	70	120	70	120
DEC	35	49	76	1.33	0.387	0.619		0	80	120	80	120

Mondovi Wastewater Treatment Facility



Mondovi Wastewater Treatment Facility