Permit Fact Sheet

General Information

Permit Number	WI-0036447-08-0
Permittee Name and Address	VILLAGE OF LIME RIDGE PO Box 113, Lime Ridge, WI 53942
Permitted Facility Name and Address	Lime Ridge Wastewater Treatment Facility EAST MAPLE AVENUE, LIME RIDGE, WI
Permit Term	April 01, 2027 to March 31, 2032
Discharge Location	Narrows Creek Bridge, at Hwy S on the west bank of the creek
Receiving Water	Narrows Creek, in the Narrows Creek/Baraboo River Watershed (LW22) in the Lower Wisconsin River Basin, in Sauk County
Stream Flow ($Q_{7,10}$)	0.2 cfs
Stream Classification	Default Warm Water Sport Fish (WWSF) community, non-public water supply and recreational use
Discharge Type	Existing; Continuous
Annual Average Design Flow	0.0154 MGD
Industrial or Commercial Contributors	None
Plant Classification	A3 - Recirculating Media Filters; D - Disinfection; SS - Sanitary Sewage Collection System
Approved Pretreatment Program?	N/A

Facility Description

Lime Ridge Wastewater Treatment Facility is a recirculating sand filter wastewater treatment plant providing treatment to a combination of domestic and some commercial wastewater. Each residence has a septic tank that discharges to the sanitary sewer leading to the wastewater treatment facility. The facility includes a settling tank with wastewater pumped to a three-cell recirculating sand filter. Underdrains collect treated effluent which may be pumped back up to the sand filter with influent wastewater or the effluent is disinfected with chlorine and then dechlorinated before being discharged to the stream via a cascade step aerator and buried pipe.

Substantial Compliance Determination

Enforcement During Last Permit: A Notice of Noncompliance (NON) was sent in 2023 for several ammonia nitrogen effluent limit exceedances that occurred in 2023. The facility has completed all previously required actions as part of the enforcement process.

After a desktop review of all discharge monitoring reports, CMARs, compliance schedule items, and a site visit on 9/24/2025, this facility has been found to be in substantial compliance with their current permit.

Compliance determination made by Tanner Connors, Wastewater Engineer, on 10/27/2025.

Sample Point Descriptions

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
701	N/A	Influent: 24-Hr flow proportional composite sampler located at the inlet to the septic tank.
001	0.0155 MGD (Avg. April 2021 – June 2026)	Effluent: 24-Hr flow proportional composite sampler and flow meter located at the discharge from the splitter box. Grab samples from the bottom of the step aerator, prior to discharge to Narrows Creek.
901	N/A	Septage: Contents from the septic tank of the Recirculating Sand Filter WWTF and the community contracted individual septic tanks serviced by a licensed septage hauler.

Permit Requirements

1 Influent – Monitoring Requirements

1.1 Sample Point Number: 701- INFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
BOD5, Total		mg/L	2/Month	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	2/Month	24-Hr Flow Prop Comp	

1.1.1 Changes from Previous Permit

Influent limitations and monitoring requirements were evaluated for this permit term and no changes were required.

1.1.2 Explanation of Limits and Monitoring Requirements

Monitoring of influent BOD_5 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.

2 Surface Water - Monitoring and Limitations

2.1 Sample Point Number: 001- EFFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Weekly Avg	42 mg/L	2/Week	24-Hr Flow Prop Comp	Limit applies May-October.
BOD5, Total	Weekly Avg	45 mg/L	2/Week	24-Hr Flow Prop Comp	Limit applies November-April.
BOD5, Total	Monthly Avg	30 mg/L	2/Week	24-Hr Flow Prop Comp	
BOD5, Total	Weekly Avg	5.4 lbs/day	2/Week	Calculated	Limit applies May-October.
Suspended Solids, Total	Weekly Avg	42 mg/L	2/Week	24-Hr Flow Prop Comp	Limit applies May-October.
Suspended Solids, Total	Weekly Avg	45 mg/L	2/Week	24-Hr Flow Prop Comp	Limit applies November-April.
Suspended Solids, Total	Monthly Avg	30 mg/L	2/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	5.4 lbs/day	2/Week	Calculated	Limit applies May-October.
pH Field	Daily Max	9.0 su	5/Week	Grab	
pH Field	Daily Min	6.0 su	5/Week	Grab	
Dissolved Oxygen	Daily Min	6.0 mg/L	5/Week	Grab	
Nitrogen, Ammonia (NH3-N) Total	Daily Max	20 mg/L	Weekly	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	19 mg/L	Weekly	24-Hr Flow Prop Comp	Limit applies in April.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	5.0 mg/L	Weekly	24-Hr Flow Prop Comp	Limit applies May-October.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	20 mg/L	Weekly	24-Hr Flow Prop Comp	Limit applies November-March.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	8.0 mg/L	Weekly	24-Hr Flow Prop Comp	Limit applies April-September.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	13 mg/L	Weekly	24-Hr Flow Prop Comp	Limit applies October-March.
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Monitoring and limit apply May-September.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Monitoring and limit apply May-September. See the E. coli Percent Limit permit section. Enter the result in the DMR on the last day of the month.
Chlorine, Total Residual	Daily Max	38 ug/L	2/Week	Grab	Monitoring and limit apply May-September.
Chlorine, Total Residual	Weekly Avg	22 ug/L	2/Week	Grab	Monitoring and limit apply May-September.
Chlorine, Total Residual	Monthly Avg	22 ug/L	2/Week	Grab	Monitoring and limit apply May-September.
Copper, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	Monitoring only until the final limits become effective. See the Copper Effluent Limits Schedule.
Phosphorus, Total	Monthly Avg	5.5 mg/L	Weekly	24-Hr Flow Prop Comp	Interim limit. See the Phosphorus Variance - Implement Pollutant Minimization Program Plan permit section and the Phosphorus PMP Schedule.
Phosphorus, Total		lbs/day	Weekly	Calculated	Calculate the daily mass discharge of phosphorus on the same days phosphorus sampling occurs. Mass (lbs/day) = Concentration (mg/L) x Flow (MGD) x 8.34
Phosphorus, Total		lbs/month	Monthly	Calculated	Calculate the Total Monthly Discharge of phosphorus and report on the last day of the month on the DMR. See TMDL permit section.
Phosphorus, Total		lbs/yr	Monthly	Calculated	Calculate the 12-month rolling sum of total monthly mass of phosphorus discharged and report on the last day of the month on the DMR. See TMDL permit section.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	Quarterly	Calculated	Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Chronic WET		TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	See the Whole Effluent Toxicity (WET) Testing permit section.

2.1.1 Changes from Previous Permit

Effluent limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit.

- The monitoring frequency for BOD_5 and TSS was increased to 2/Week.
- The monitoring frequency for pH and DO was increased to 5/Week.
- Addition of copper effluent limits to become effective per the Copper Effluent Limits Schedule. Monitoring only until the limits become effective at the end of the schedule.
- The permittee has applied for an individual phosphorus variance (IPV) for this permit term. An IPV interim limit of 5.5 mg/L as a monthly average is included throughout the permit term.
- Total Nitrogen (TKN, NO_2+NO_3 and Total N) monitoring is now required quarterly.
- Addition of Chronic WET testing two times during the permit term.

2.1.2 Explanation of Limits and Monitoring Requirements

Detailed discussions of limits and monitoring requirements can be found in the attached water quality-based effluent limits (WQBEL) memo, by Sarah Luck, Water Resources Engineer, dated September 14, 2026.

Monitoring Frequencies – The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term. Monitoring frequencies have been increased for BOD_5, TSS, pH and DO.

Expression of Limits – In accordance with the federal regulation 40 CFR 122.45(d) and s. NR 205.065, Wis. Adm. Code, limits in this permit are to be expressed as weekly average and monthly average limits whenever practicable.

Copper – Copper effluent limits are required based on copper data collected during the previous permit term (September 2021 – May 2026). A schedule for complying with copper effluent limits is included in the proposed permit. Limits

become effective at the end of the schedule. However, the permittee is required to request a re-evaluation of the need for copper limits per the schedule. If the Department determines there is no reasonable potential to exceed the calculated copper limits, permit modification would be required to remove the copper effluent limits and remaining schedule actions.

Phosphorus – The permittee has applied for an individual phosphorus variance in accordance with s. 283.15, Wis. Stats. Conditions for this variance include maintaining phosphorus effluent concentrations below the interim limit of 5.5 mg/L as a monthly average, implementing the phosphorus pollutant minimization program (PMP) plan dated October 27, 2026, continued optimization for control of phosphorus, and calculating, reporting and tracking phosphorus mass discharge. If approved by EPA, compliance with state water quality standards would be met through the interim limit along with all additional phosphorus variance provisions.

Chronic WET – Testing is required during the following two quarters: April – June 2028; and July – September 2031.

3 Septage Management - Monitoring and Limitations

Septage management is required in accordance ch. NR 113, Wis. Adm. Code. Records must be kept and made available to the Department on request. Required record keeping includes volumes of septage pumped, dates when the septage was removed, land application site DNR number and method used to satisfy pathogen and vector control, and/or the treatment plant where septage is disposed. Annual reporting is required when the permittee land applies the septage. Annual reporting is also required when the permittee disposes of septage at a designated treatment facility.

3.1 Sample Point Number: 901- Septic Tank

3.1.1 Changes from Previous Permit

Limitations and monitoring requirements were evaluated for this permit term and no changes were required.

Explanation of Limits and Monitoring Requirements

Requirements for septage management are determined in accordance with ch. NR 113, Wis. Adm. Code.

4 Schedules

4.1 Phosphorus Pollutant Minimization Program

As a condition of the variance to the water quality-based effluent limitation (WQBEL) for phosphorus granted in accordance with s. 283.15, Wis. Stats., the permittee shall implement the Phosphorus PMP including any subsequent updates.

Required Action	Due Date
Annual Phosphorus Progress Report: Submit an annual progress report that shall discuss which phosphorus pollutant minimization measures have been implemented during the prior calendar year. The report shall include an analysis of trends in weekly average, monthly average and annual total influent and effluent phosphorus concentrations and mass discharge of phosphorus based on phosphorus sampling and flow data. The report shall provide an update on the permittee's: (1) progress in implementing pollutant minimization measures, operational improvements, and minor facility modifications to optimize reductions in phosphorus discharges and, (2) status of evaluating feasible alternatives for meeting phosphorus WQBELs.	01/31/2028

Note that the monthly average interim limitation listed in the permit's Surface Water section remains enforceable until new enforceable limits are established in the next permit reissuance. The first annual phosphorus progress report is to be submitted by the Date Due.	
Annual Phosphorus Progress Report #2: Submit a phosphorus progress report as defined above for the previous calendar year.	01/31/2029
Annual Phosphorus Progress Report #3: Submit a phosphorus progress report as defined above for the previous calendar year.	01/31/2030
Annual Phosphorus Progress Report #4: Submit a phosphorus progress report as defined above for the previous calendar year.	01/31/2031
Final Phosphorus Report: Submit a final report documenting the success in reducing phosphorus concentrations in the effluent, as well as the anticipated future reduction in phosphorus sources and phosphorus effluent concentrations. The report shall summarize phosphorus pollutant minimization activities that have been implemented during the current permit term and state which, if any, pollutant minimization activities from the approved pollutant minimization program plan were not pursued and why. The report shall include an analysis of trends in monthly and annual total influent and effluent phosphorus concentrations based on phosphorus sampling during the current permit term. The permittee shall also re-evaluate all available compliance options for meeting the final phosphorus WQBELs. If the report concludes Adaptive Management will be implemented, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 and an adaptive management plan. If the report concludes water quality trading will be used, the submittal shall include a Water Quality Trading Plan. Additionally, if the permittee intends to seek to re-apply for a phosphorus variance per s. 283.15, Wis. Stats for the reissued permit, a detailed pollutant minimization program plan outlining the pollutant minimization activities proposed for the upcoming permit term should be submitted along with the final report.	09/30/2031
Annual Phosphorus Progress Reports 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 for the previous calendar year following the due date of annual phosphorus progress reports listed above. Annual phosphorus progress reports shall include information as defined above.	

4.1.1 Explanation of Schedule

Phosphorus Pollutant Minimization Program – This schedule is to be implemented as a condition of the permittee's variance to the water quality standards for phosphorus. Annual phosphorus progress reports update the Department on the progress made in implementing the Pollutant Minimization Program (PMP) Plan as well as quantifying reductions achieved through plant optimization and from contributing sources within the collection system.

4.2 Copper Effluent Limits

This compliance schedule requires the permittee to achieve compliance by the specified date.

Required Action	Due Date
Report on Effluent Discharges: Submit a report on effluent discharges of copper. The report shall include an evaluation of all collected copper effluent data and a conclusion on whether current treatment, operational improvements, or a pollutant minimization program will result in compliance with the final copper effluent limits.	03/31/2028

The permittee may submit a request to re-evaluate the need for copper effluent limits. If the Department determines there is no reasonable potential to exceed the calculated copper limits, permit modification would be required to remove the copper effluent limits and remaining schedule actions, as well as, to reduce the copper monitoring frequency. If the Department determines there is still reasonable potential to exceed the calculated copper limits, the remaining schedule actions shall be completed by the Due Date(s).	
Action Plan: Submit an action plan for complying with the final copper effluent limits.	09/30/2028
Initiate Actions: Initiate the actions identified in the plan.	03/31/2029
Progress Report: Submit a progress report detailing progress made toward meeting the final copper effluent limits, including all available copper sample results, a summary of actions taken and any copper pollutant minimization activities conducted during the previous year.	03/31/2030
Final Evaluation Report: Submit a final evaluation report including all copper sampling data and a conclusion on the likelihood that copper effluent limits will still apply. The permittee shall submit a request to re-evaluate the need for copper effluent limits. If the Department determines there is no reasonable potential to exceed the calculated copper limits, permit modification would be required to remove the copper effluent limits and remaining schedule actions.	03/31/2031
Complete Actions: Complete actions necessary to achieve compliance with the final copper effluent limits.	03/31/2032

4.2.1 Explanation of Schedule

Copper Effluent Limits – Copper effluent limits are required based on copper data collected during the previous permit term. This schedule allows the permittee time to come into compliance with the calculated copper effluent limits and/or request a re-evaluation of the need for limits. Limits become effective at the end of the schedule on April 1, 2032. However, the permittee may request a re-evaluation of the need for copper limits after one year of monthly sampling and is required to request a re-evaluation of the need for copper limits in the Final Evaluation Report. If the Department determines there is no reasonable potential to exceed the calculated copper limits, permit modification would be required to reduce the copper effluent monitoring frequency, remove the copper effluent limits, and remove the remaining schedule actions before April 1, 2032.

Attachments

Water Quality-Based Effluent Limitations for the Lime Ridge Wastewater Treatment Facility WPDES Permit No. WI-0036447-08-0, by Sarah Luck, Water Resources Engineer, dated September 14, 2026

Phosphorus Variance EPA Data Sheet

Phosphorus PMP (Pollutant Minimization Program) Plan, Village of Lime Ridge, dated October 27, 2026

Justification Of Any Waivers From Permit Application Requirements

No waivers from permit application requirements were requested or granted.

Prepared By: Sarah Donoughe, Wastewater Specialist-Adv **Date:** November 2, 2026

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: September 14, 2026

TO: Sarah Donoughe – SER

FROM: Sarah Luck – SCR

SUBJECT: Water Quality-Based Effluent Limitations for the Lime Ridge Wastewater Treatment Facility
WPDES Permit No. WI-0036447-08-0

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 Lime Ridge Wastewater Treatment Facility in Sauk County. This municipal wastewater treatment facility (WWTF) discharges to Narrows Creek, located in the Narrows Creek/Baraboo River Watershed (LW22) in the Lower Wisconsin River Basin. This discharge is included in the Wisconsin River Basin (WRB) Total Maximum Daily Load (TMDL) as approved by EPA on 04/26/2019 with site-specific criteria approved by EPA on 07/09/2020. 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						1
BOD_5						2
May – October			42 mg/L 5.4 lbs/day	30 mg/L		
November – April			45 mg/L	30 mg/L		
TSS						2
May – October			42 mg/L 5.4 lbs/day	30 mg/L		
November – April			45 mg/L	30 mg/L		
pH	9.0 s.u.	6.0 s.u.				2
Dissolved Oxygen		6.0 mg/L				2
Ammonia Nitrogen						2,3
April	20 mg/L		19 mg/L	8.0 mg/L		
May – September	20 mg/L		5.0 mg/L	8.0 mg/L		
October	20 mg/L		5.0 mg/L	13 mg/L		
November – March	20 mg/L		**20 mg/L**	13 mg/L		
E. coli				126 #/100 mL		4
May – September				geometric mean		
Chlorine, Total Residual	38 µg/L		22 µg/L	**22 µg/L**		3
Copper						3,5
Concentration limit			42 µg/L	**42 µg/L**		
Mass limit			0.0054 lbs/day	-		
Wet weather mass limit			0.060 lbs/day	-		
Phosphorus						6
IPV Interim Limit				5.5 mg/L		
Final WQBELs				0.085 lb/day	0.028 lb/day	

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Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
TKN, Nitrate+Nitrite, and Total Nitrogen						7
Chronic WET						8

Footnotes:

1. Monitoring only.
2. No changes from the current permit.
3. 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.
4. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
5. These are the WQBELs for copper. It is recommended that clean sampling techniques be employed, including the use of bag inserts, to ensure that contamination is not occurring during collection and transport. The wet weather mass limit applies when the dry weather mass limit is exceeded and the facility demonstrates to the Department the exceedance occurred during a wet weather event.
6. If the phosphorus variance application that was submitted is approved by EPA, the existing interim limit of 5.5 mg/L as a monthly average may be extended beyond the end of the compliance schedule along with a requirement for a total phosphorus pollutant minimization program. The final phosphorus mass limits are based on the Total Maximum Daily Load (TMDL) for the Wisconsin River Basin to address phosphorus water quality impairments within the TMDL area.
7. The *Guidance for Total Nitrogen Monitoring in Wastewater Permits* (October 1, 2019) recommends quarterly total nitrogen monitoring for facilities with total nitrogen greater than 40 mg/L. Sections 283.37(5) and 283.55(1)(e), Wis. Stats., and ss. NR 200.065(1)(g) and NR 200.065(1)(h), Wis. Adm. Codes, provide the authority to request this monitoring during the permit term. Total Nitrogen is the sum of nitrate (NO_3), nitrite (NO_2), and total Kjeldahl nitrogen (TKN) (all expressed as N).
8. Two chronic WET tests are required. The Instream Waste Concentration (IWC) to assess chronic test results is 32%. According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), chronic testing shall be performed using a dilution series of 100%, 75%, 50%, 25% & 12.5%. The primary control water used in chronic WET tests conducted on Outfall 001 shall be a grab sample collected from Narrows Creek upstream of where the effluent enters. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Sarah Luck (Sarah.Luck@wisconsin.gov) or Diane Figiel (Diane.Figiel@wisconsin.gov).

Attachments (4) – Narrative, Site Map, Ammonia Nitrogen Calculations, and Thermal Table

PREPARED BY: Sarah Luck _____ Date: September 14, 2026

Sarah Luck
Water Resources Engineer

E-cc: Tanner Connors, Wastewater Engineer – SCR
Lisa Creegan, Regional Wastewater Supervisor – SCR
Diane Figiel, Water Resources Engineer – WY/3
Nate Willis, Wastewater Section Manager – WY/3

Attachment #1

Water Quality-Based Effluent Limitations for
Lime Ridge Wastewater Treatment Facility

WPDES Permit No. WI-0036447-08-0

PART 1 – BACKGROUND INFORMATION

Facility Description

Lime Ridge Wastewater Treatment Facility is a recirculating sand filter wastewater treatment plant providing treatment to a combination of domestic and some commercial wastewater. Each residence has a septic tank that discharges to the sanitary sewer leading to the wastewater treatment facility. The facility includes a settling tank with wastewater pumped to a three-cell recirculating sand filter. Underdrains collect treated effluent which may be pumped back up to the sand filter with influent wastewater or the effluent is disinfected with chlorine and then dechlorinated before being discharged to the stream via a cascade step aerator and buried pipe.

Attachment #2 is a map of the area showing the approximate location of Outfall 001.

Existing Permit Limitations

The current permit, which expired on March 31, 2026, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						1
BOD_5						2
May – October			42 mg/L 5.4 lbs/day	30 mg/L		
November – April			45 mg/L	30 mg/L		
TSS						2
May – October			42 mg/L 5.4 lbs/day	30 mg/L		
November – April			45 mg/L	30 mg/L		
pH	9.0 s.u.	6.0 s.u.				2
Dissolved Oxygen		6.0 mg/L				2
Ammonia Nitrogen						3
April	20 mg/L		19 mg/L	8.0 mg/L		
May – September	20 mg/L		5.0 mg/L	8.0 mg/L		
October	20 mg/L		5.0 mg/L	13 mg/L		
November – March	20 mg/L		**20 mg/L**	13 mg/L		
Bacteria						4
Interim Limit Fecal Coliform				400 #/100 mL geometric mean		
Final Limit *E. coli*				126 #/100 mL geometric mean		

Attachment #1

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Residual Chlorine	38 µg/L		22 µg/L	**22 µg/L**		3
Phosphorus Interim Final				 5.5 mg/L 0.085 lb/day	 0.028 lb/day	5
TKN, Nitrate+Nitrite, and Total Nitrogen						1
Copper						1
Acute WET						6

Footnotes:

1. Monitoring only.
2. These limitations are not being evaluated as part of this review since the water quality criteria, reference effluent flow rates, and receiving water characteristics have not changed.
3. 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.
4. *E. coli* limits became effective 04/30/2025.
5. The facility was covered under an individual phosphorus variance approved by EPA.
6. Two acute WET tests were required.

Receiving Water Information

- Name: Narrows Creek via buried pipe from the RSF
- Waterbody Identification Code (WBIC): 1276400
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Default Warm Water Sport Fish (WWSF) community, non-public water supply and recreational use.
  It should be noted that it was previously thought that the discharge was to an unnamed tributary (WBIC 5031045) that is approximately 0.1 miles long. However, based on a design plan dated January 1987, it appears that there is a buried pipe that carries effluent from the RSF to Narrows Creek via gravity flow.
  It should also be noted that the modeled natural community for Narrows Creek is cool-cold headwater. The natural community should be verified and could result in changes to the recommended limits.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q_{10} and 7-Q_2 values are estimated by U.S. Geological Survey (USGS) and Department staff using the relationship between low flow formulas generated by USGS for the Lower Wisconsin basin. The facility may request updated low flows from USGS.
  7-Q_{10} = 0.2 cfs (cubic feet per second)
  7-Q_2 = 0.3 cfs
  Harmonic Mean Flow = 0.72 cfs using a drainage area of 2.6 mi^2 (drainage area estimated using the Watershed Delineation tool L-THIA by Purdue)
  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 = 163 mg/L as $CaCO_3$. This value represents the geometric mean for the Baraboo River from five WET tests conducted by Reedsburg WWTF from 2021 through 2025 for the Baraboo River. Hardness data for the Baraboo River is assumed to be similar to Narrows Creek since it is

within the same ecological landscape so ambient water quality characteristics are expected to be similar and since no hardness data is available for Narrows Creek.

- % 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 Baraboo River at the South 23 bridge in Reedsburg is used for this evaluation because there is no data available for Narrows Creek. The Baraboo River is within the same ecological landscape so ambient water quality characteristics are expected to be similar. The average of chloride data from all stations on the Baraboo River was used. 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.
- Multiple dischargers: Loganville Wastewater Treatment Facility also discharges to Narrows Creek more than eight miles downstream of Outfall 001. Since it is not in the immediate vicinity and the mixing zones do not overlap, it does not impact this evaluation.
- Impaired water status: Narrows Creek is listed as impaired for total phosphorus (listed 4/1/2014) at the outfall location and is within an EPA-approved TMDL area.

Effluent Information

- Design flow rates:
  Annual average = 0.0154 million gallons per day (MGD)
  Peak weekly (estimated) = 0.17 MGD
  The peak weekly flow has been estimated based on actual flow rate data from the permit term and a peaking factor of 11.3.
  For reference, the actual average flow from April 2021 through June 2026 was 0.0155 MGD.
- Hardness = 307 mg/L as $CaCO_3$. This value represents the geometric mean of four samples collected in August 2025 which were reported on the permit application.
- 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).
- Wastewater source: Domestic and commercial wastewater.
- Water supply: Private wells.
- Additives: Lime Ridge Wastewater Treatment Facility has included two additives on the permit application that have the potential to be present in Outfall 001. These additives are listed below:
  - Hawkins Sodium Hypochlorite – chlorination
  - Hawkins Sodium Bisulfite – dechlorination

  An additive review is not necessary for any additives when the toxicity can be controlled by a WQBEL or are not believed to be present in the discharge. Furthermore, the facility is not requesting increased dosages or use frequencies. Therefore, an additive review is not needed at this time.
- 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 chloride and hardness.
- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2, in the column titled "MEAN EFFL. CONC.". Otherwise, substances with multiple effluent data are shown in the tables below or in their respective parts in this evaluation.

Copper Effluent Data

	Copper (µg/L)
1-day P_{99}	76
4-day P_{99}	52

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	Copper (µg/L)
30-day P_{99}	39
Mean	33
Std	13
Sample size	20
Range	15 - 65

Chloride Effluent Data

	Chloride (mg/L)
08/18/2025	140
08/21/2025	150
08/25/2021	190
08/28/2025	180
Mean	165

The following table presents the average concentrations and loadings at Outfall 001 from April 2021 through June 2026 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Parameters with Effluent Limits

	Average Measurement	Average Mass Discharged
BOD_5	4.8 mg/L[1]	0.60 lbs/day
TSS	3.5 mg/L[1]	0.51 lbs/day
pH field	6.9 s.u.	
Dissolved Oxygen	8.98 mg/L	
Ammonia Nitrogen	4.07 mg/L[1]	
Total Residual Chlorine	0.83 µg/L[2]	
Fecal Coliform	84#/100 mL[3]	
E. coli	12#/100 mL[3]	
Phosphorus	4.49 mg/L	0.56 lbs/day

Footnotes:
[1] Results below the limit of detection (LOD) were included as zeroes in calculation of average.
[2] Uncertainties on how the data was reported – potential units error (possibly reported in mg/L instead of µg/L).
[3] The average measurement for bacteria is calculated as a geometric mean.

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 P_{99}) 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-Q_{10}

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. Adm. 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-Q_{10} 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.

$$\text{Limitation} = \frac{(WQC)\,(Qs + (1-f)\,Qe) - (Qs - f\,Qe)\,(Cs)}{Qe}$$

Where:

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

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

Qe = 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

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

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q_{10} 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 Lime Ridge Wastewater Treatment Facility, and the limits are set based on two times the acute toxicity criteria.

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 (mg/L) and chloride (mg/L).

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 0.16 cfs, (1-Q_{10} (estimated as 80% of 7-Q_{10})), 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			
Arsenic		340	679.6	135.9	1.4		
Cadmium	307	37.4	74.7	14.9	<0.17		
Chromium	301	4446	8891.7	1778	<1.5		
Copper	307	44.8	89.5			76	65
Lead	307	316	632.9	126.6	<5.4		
Nickel	268	1080	2160.6	432	<4.7		

Attachment #1

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.
Zinc	307	321	642.8	128.6	35		
Chloride (mg/L)		757	1514.0	303	165		

* The indicated hardness may differ from the effluent hardness because the effluent hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the acute criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.
* * The 2 × ATC method of limit calculation yields a more restrictive limit than consideration of ambient concentrations and 1-Q_{10} 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)
RECEIVING WATER FLOW = 0.050 cfs (¼ of the 7-Q_{10}), 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		7.28		22.56	4.51		
Arsenic		152.2	3.7	464	92.8	1.4	
Cadmium	163	3.61		11.19	2.2	<0.17	
Chromium	163	197.11	1.7	607	121.4	<1.5	
Copper	163	15.72	3.1	42.2			**52**
Lead	163	44.90	2.2	134.5	26.9	<5.4	
Nickel	163	78.91		244	48.9	<4.7	
Zinc	163	184.54		572	114.4	35	
Chloride (mg/L)		395	8.0	1,207	241.4	165	

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)
RECEIVING WATER FLOW = 0.18 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		3,181	636.1	<0.17
Chromium (+3)	3,818,000	1.7	32,819,544	6,563,909	<1.5
Lead	140	2.2	1,187	237.3	<5.4
Nickel	43,000		369,628	73,926	<4.7

Monthly Average Limits based on Human Cancer Criteria (HCC)
RECEIVING WATER FLOW = 0.18 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	3.7	86.2	17.24	1.4

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 total residual chlorine and copper**. Limits and monitoring recommendations are made in the paragraphs below.

Total Residual Chlorine – Since chlorine is added as a disinfectant, effluent limitations are recommended to assure proper operation of the dechlorination 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." Since 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. The calculated **weekly average effluent limitation of 22 µg/L would also be included in the permit because it is more restrictive than the daily maximum limit.** Furthermore, s. NR 106.07(3) and NR 205.067(7), Wis. Adm. Code, require WPDES permits contain monthly average limitations for municipal dischargers whenever practicable and necessary to protect water quality. Therefore, **a monthly average limit of 22 µg/L**, equal to the weekly average limit, **would also be required** to meet expression of limits requirements.

Copper **–** Considering available effluent data from the current permit term (sampled from 9/2/21 – 5/12/26), the 4-day P_{99} concentration is 52 µg/L which exceeds the calculated weekly average limit of 42 µg/L. Therefore, **weekly and monthly average concentration limits of 42 µg/L, a weekly average mass limit of 0.0054 lbs/day, and a wet weather mass limit of 0.060 lbs/day are required.**

The chronic mass limitation is based on the concentration limit and the annual average design flow rate of 0.0154 (0.0422 mg/L × 0.0154 MGD × 8.34) in accordance with s. NR 106.07(2)(c) In addition, **a weekly average wet weather mass limit of 0.060 lbs/day** (0.0422 mg/L × 0.17 MGD × 8.34) is required using the estimated peak weekly design flow of 0.17 MGD based on s. NR 106.07(9). The wet weather mass limit applies when the dry weather mass limit is exceeded and the facility demonstrates to the Department the exceedance occurred during a wet weather event.

It is recommended that clean sampling techniques be employed, including the use of bag inserts, to ensure that contamination is not occurring during collection and transport.

Chloride **–** Considering available effluent data from the current permit term (sampled during August 2025 and reported on the permit application), the average chloride concentration is 165 mg/L. The effluent concentrations are below the calculated WQBELs for chloride; therefore, no effluent limits are needed. **No chloride monitoring is needed except for the next permit application.**

Mercury – The permit application did not require monitoring for mercury because Lime Ridge Wastewater Treatment Facility is categorized as a minor facility as defined in s. NR 200.02(8), Wis. Adm. Code. In accordance with s. NR 106.145(3)(a)3., Wis. Adm. Code, a minor municipal discharger shall monitor, and report results of influent and effluent mercury monitoring once every three months if, "there are two or more exceedances in the last five years of the high-quality sludge mercury concentration of 17 mg/kg specified in s. NR 204.07(5)." However, since Lime Ridge Wastewater Treatment Facility is

a recirculating sand filter and generates solids which are hauled away as septage, sludge sampling is not available. It is not expected that there are exceedances of the high-quality mercury concentration based on similar municipal treatment plants and the lack of industries. **No monitoring is recommended.**

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code. Based on the type of discharge, the effluent flow rate, and lack of indirect dischargers, **PFOS and PFOA monitoring is not recommended.** The Department may reevaluate 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.

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

BOD, TSS, and DO

The current biological oxygen demand (BOD), total suspended solids (TSS), and dissolved oxygen (DO) limits have been in effect since at least April 2004. Since the water quality criteria, reference effluent flow rates, and receiving water characteristics have not changed, **no changes are recommended for BOD, TSS, or DO limits.**

pH

In accordance with s. NR 102.04(4)(c), Wis. Adm. Code, **pH shall be within the range of 6.0 s.u. to 9.0 s.u.** for fish and aquatic life.

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. The current permit has daily maximum, weekly average, and monthly average limits. These limits are re-evaluated at this time due to the following change:

- The maximum expected effluent pH has changed.

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 272 sample results were reported from April 2021 through June 2026. The maximum reported value was 7.8 s.u. (Standard pH Units). The effluent pH was 7.4 s.u. or less 99% of the time. The 1-day P_{99}, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 7.2 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 7.2 s.u. Therefore, a value of 7.4 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 7.4 s.u. into the equation above yields an ATC = 22.97 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-Q_{10} 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-Q_{10} (estimated as 80 % of 7-Q_{10}) and the 2×ATC approach are shown below.

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit (mg/L)
2×ATC	46
1-Q_{10}	178

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

The calculated limit of 46 mg/L is greater than the current daily maximum limit of 20 mg/L. If Lime Ridge Wastewater Treatment Facility would like to request an increase to the existing permit limits, an assessment of their effluent data, consistent with the requirements of ss. NR 207.04(1)(a) and (c), Wis. Adm. Code, must be provided. This evaluation is on a parameter by parameter basis and includes consideration of operations, maintenance and temporary upsets. Without a demonstration of need for a higher limit in accordance with s. NR 207.04, Wis. Adm. Code, the current limits must be continued in the reissued permit.

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

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

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

The weekly and monthly average ammonia nitrogen limits calculation from the previous memo do not change because there have been no changes in the effluent and receiving water flow rates. The calculations from the previous WQBEL memo are shown in Attachment #3.

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from April 2021 through June 2026.

Ammonia Nitrogen Effluent Data

Ammonia Nitrogen (mg/L)	April	May – September	October	November – March
1-day P_{99}	10.69	22.69	11.67	12.02
4-day P_{99}	6.16	12.37	7.08	7.43
30-day P_{99}	3.74	6.80	4.77	5.11
Mean*	2.68	4.47	3.71	4.04
Std	2.15	4.64	2.25	2.29
Sample size	25 (1 ND)	117	22	108
Range	<0.12 - 7.82	0.30 - 19.6	0.27 - 6.46	0.60 - 10.2

*"<" means that the pollutant was not detected at the indicated level of detection. The mean concentration was calculated using zero in place of the non-detected (ND) result.

Reasonable Potential

The need to include ammonia limits in the Lime Ridge Wastewater Treatment Facility permit is determined by calculating 99th upper percentile (or P_{99}) values for ammonia and comparing those to the calculated limits. Based on this comparison, there is reasonable potential for the discharge to exceed the current daily maximum limit of 20 mg/L (but not the newly calculated daily maximum limit of 46 mg/L) and the weekly average limit of 5.0 mg/L during May through October. Additionally, since the permit currently has daily, weekly, and monthly average limits year-round, **the limits must be retained regardless of reasonable potential**, consistent with s. NR 106.33(1)(b), Wis. Adm. Code:

> (b) If a permittee is subject to an ammonia limitation in an existing permit, the limitation shall be included in any reissued permit. Ammonia limitations shall be included in the permit if the permitted facility will be providing treatment for ammonia discharges.

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

	Daily Maximum (mg/L)	Weekly Average (mg/L)	Monthly Average (mg/L)
April	20	19	8.0
May – September	20	5.0	8.0
October	20	5.0	13
November – March	20	**20**	13

Additional limit to meet the requirements in s. NR 106.07, Wis. Adm Code, is denoted in bold text.

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.

These limits went into effect April 30, 2025, and are **required during May through September. No changes are recommended** to the current recreational period and the required disinfection season.

PART 6 – PHOSPHORUS

Technology-Based Effluent Limit
Subchapter II of Chapter NR 217, Wis. Adm. Code, requires municipal wastewater treatment facilities that discharge greater than 150 pounds of total phosphorus per month to comply with a monthly average limit of 1.0 mg/L, or an approved alternative concentration limit.

Since Lime Ridge Wastewater Treatment Facility does not currently have an existing technology-based limit, the need for this limit in the reissued permit is evaluated in the table below.

Annual Average Mass Total Phosphorus Loading

Month	Average Phosphorus Concentration (mg/L)	Total Effluent Flow (Million Gallons)	Calculated Mass (lbs/month)
July 2025	3.83	0.388	12
August 2025	3.55	0.273	8.1
September 2025	3.59	0.292	8.8
October 2025	3.64	0.320	9.7
November 2025	4.23	0.282	9.9
December 2025	4.47	0.296	11
January 2026	3.93	0.374	12
February 2026	4.50	0.334	13
March 2026	4.55	0.514	19
April 2026	2.74	1.016	23
May 2026	4.54	0.284	11
June 2026	4.84	0.361	15
Average			**13**

Total P (lbs/month) = Monthly average (mg/L) × total flow (MG/month) × 8.34 (lbs/gallon)
Where total flow is the sum of the actual flow (MGD) for that month

The data demonstrates that the annual monthly average phosphorus loading is less than 150 lbs/month, which is the threshold for municipalities in accordance with s. NR 217.04(1)(a)1, Wis. Adm. Code, and

therefore **no technology-based limit is required.**

In addition, the need for a WQBEL for phosphorus must be considered.

TMDL Limits
Total phosphorus (TP) effluent limits in pounds per day (lbs/day) are calculated as recommended in the *TMDL Implementation Guidance for Wastewater Permits* (March 2024) and are based on the annual phosphorus wasteload allocation (WLA) given in pounds per year (lbs/yr). The WLAs found in Appendix K of the WRB TMDL report for Lime Ridge are 8 lbs/year, a maximum annual load, and 0.0219 lb/day, a maximum daily load. The WLA that implement statewide criteria found in Appendix J of the TMDL report are no longer applicable following approval of site-specific criteria for Lakes Petenwell, Castle Rock, and Wisconsin.

The monthly average limit of 0.085 lbs/day and the six-month average limit of 0.028 lbs/day were determined in the previous limit evaluation (July 2020). The six-month average multiplier of 1.30 was chosen as described in the Department TMDL Implementation guidance using a coefficient of variation (CV) of 0.6 and a weekly effluent monitoring frequency. The TMDL-based phosphorus WQBELs will be reevaluated if the annual phosphorus WLA is not being met as described in the prior stated guidance. This is done by comparing each rolling sum of twelve consecutive months of total monthly mass phosphorus discharges over the current permit term directly against the annual WLA. In this case, the TMDL limits are not effective because the facility was covered under an individual phosphorus variance, so they do not need to be reevaluated at this time. **Therefore, the monthly and six-month average limits of 0.085 and 0.028 lbs/day, respectively, remain unchanged during the reissued permit term.**

The WRB TMDL establishes TP wasteload allocations to reduce the loading in the entire watershed including WLAs to meet water quality standards, for tributaries to the Wisconsin River. Therefore, **WLA-based WQBELs are protective of immediate receiving waters and TP WQBELs derived according to s. NR 217.13, Wis. Adm. Code, are not required.**

Effluent Data
TMDL limits should be included in the permit regardless of reasonable potential. For informational purposes, the following table summarizes effluent total phosphorus monitoring data from April 2021 through June 2026.

Total Phosphorus Effluent Data

	Concentration (mg/L)	Mass (lbs/day)
1-day P_{99}	7.72	4.61
4-day P_{99}	5.95	2.61
30-day P_{99}	4.99	1.15
Mean	4.49	0.56
Std	1.12	1.06
Sample size	271	272
Range	0.15 - 8.71	0.01 - 7.32

Individual Phosphorus Variance

Lime Ridge Wastewater Treatment Facility was covered under the individual phosphorus variance (IPV) during the previous permit term with an interim limit of 5.5 mg/L as a monthly average. Lime Ridge has applied for a second term of the IPV. Eligibility for the variance is not included as part of this review. If a variance is granted and approved by US Environmental Protection Agency**, the current interim limit of 5.5 mg/L as a monthly average is recommended to continue**.

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 April 2021 through June 2026.

Lime Ridge last monitored effluent temperature from April 2013 through March 2014 (data shown below). Since there have been no changes to the treatment process or the receiving water characteristics, this data is still considered representative.

Monthly Temperature Effluent Data & Limits

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	32	34	52	84
FEB	32	34	53	84
MAR	34	36	55	84
APR	40	46	58	92
MAY	51	58	75	116
JUN	60	60	86	101
JUL	63	63	104	112
AUG	66	66	118	120
SEP	63	64	109	120
OCT	57	58	79	99
NOV	48	48	57	100
DEC	38	39	73	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
- 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

Comparing the representative highest effluent temperature to the calculated effluent limits determines the reasonable potential of exceeding the effluent limits. As shown in the table above, the highest reported value was 66ºF. Therefore, **no temperature limits or monitoring are recommended.** The complete thermal table used for this calculation is in Attachment #4.

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 LC_{50} (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 IC_{25} (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 **IWC of 32%**, shown in the WET Checklist summary below, was calculated according to the following equation, as specified in s. NR 106.03(6), Wis. Adm. Code:

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

Where:
Q_e = annual average flow = 0.0154 MGD = 0.024 cfs

f = fraction of the Q_e withdrawn from the receiving water = 0
Q_s = ¼ of the 7-Q_{10} = 0.2 cfs ÷ 4 = 0.05 cfs

- 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 Outfall 001 shall be a grab sample collected from the receiving water location, 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.

WET Data History

Date Test Initiated	Acute Results LC_{50} %			
	C. dubia	Fathead minnow	Pass or Fail?	Used in RP?
06/07/2023	>100	>100	Pass	Yes
12/03/2025	>100	>100	Pass	Yes

- 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.**

  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 **an acute 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.

Attachment #1

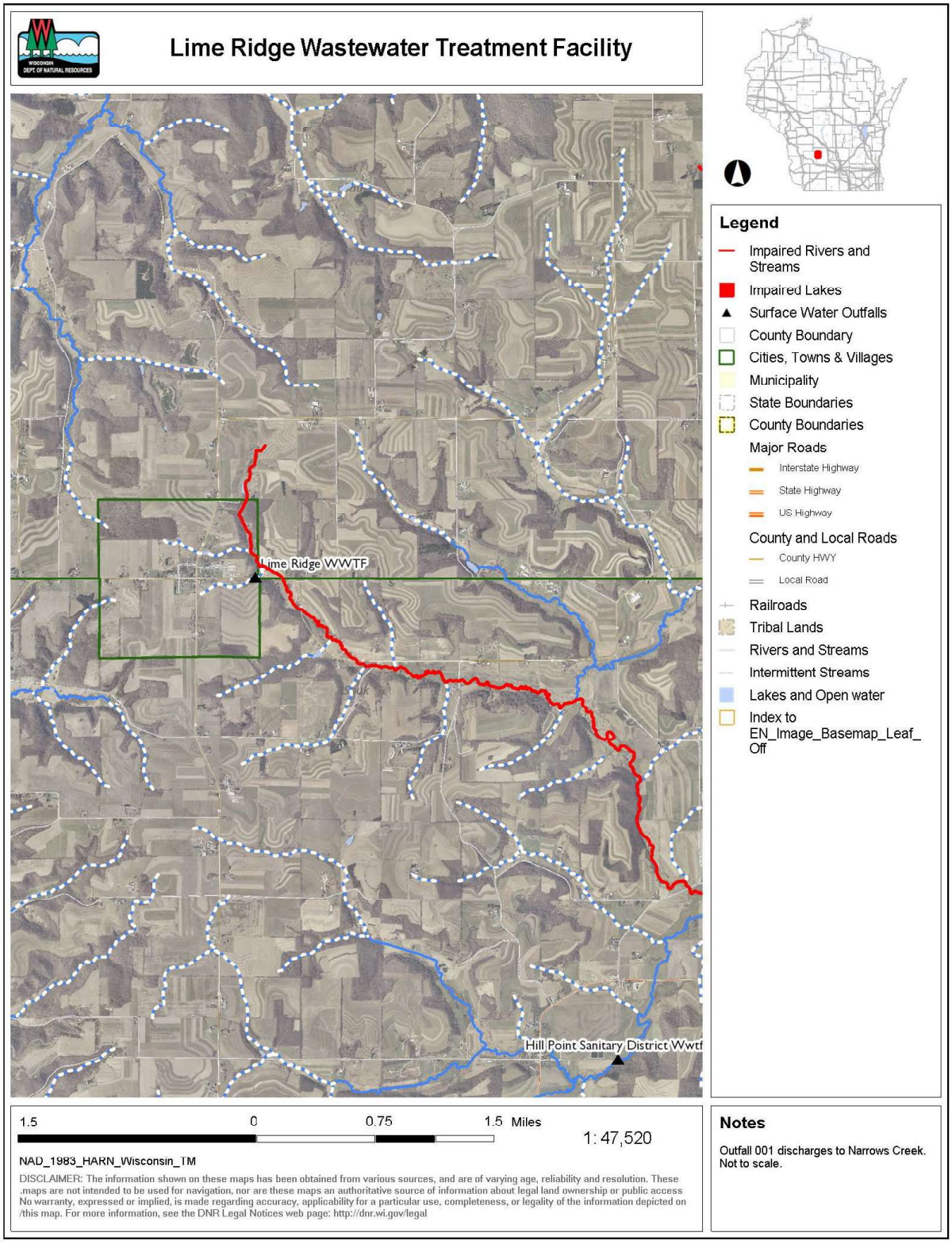
WET Checklist Summary

	Acute	Chronic
AMZ/IWC	Not Applicable. **0 Points**	IWC = 32% **0 Points**
Historical Data	2 tests used to calculate RP. No tests failed. **0 Points**	No data. **5 Points**
Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations. **0 Points**	Same as Acute. **0 Points**
Receiving Water Classification	WWSF **5 Points**	Same as Acute. **5 Points**
Chemical-Specific Data	No limits based on ATC*; ammonia, arsenic, chloride, copper, and zinc detected. Additional Compounds of Concern: None. **3 Points**	Copper and ammonia limits based on CTC; arsenic, chloride, and zinc detected. Additional Compounds of Concern: None **9 Points**
Additives	1 biocide (chlorine) and 1 water quality conditioner (sodium bisulfate) added. No phosphorus chemicals in use. **4 Points**	All additives used more than once per 4 days. **4 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:	**12 Points**	**23 Points**
Recommended Monitoring Frequency (from Checklist):	None.	2 tests during permit term.
Limit Required?	No	No
TRE Recommended? (from Checklist)	No	No

**Points were not assessed for ammonia nitrogen based on reasonable potential since the 1-day P_{99} did not exceed the limit based on actual pH during the permit term, only the limit carried over. Reasonable potential was not assessed for total residual chlorine due to uncertainties with how the data was reported.*

- After consideration of the guidance provided in the Department's *WET Program Guidance Document* (2022) and other information described above, **no acute and two chronic WET tests are recommended** in the reissued permit. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge.

Attachment #2
Site Map



Attachment #3

Ammonia Nitrogen Calculations from the WQBEL Memo Dated February 4, 2004

AMMONIA (as N) LIMITS			
CLASSIFICATION: **WARMWATER SPORTFISH, WARMWATER FORAGE FISH COMMUNITY**			
EFFLUENT FLOW (MGD):	0.0154		
EFFLUENT FLOW (cfs):	0.024		
MAX. EFFLUENT pH (s.u.):	7.92		
f (withdrawal factor)	0.00		
BACKGROUND INFORMATION:			
	summer	***winter***	
7-Q_{10} (cfs)	0.2	0.2	
7-Q_2 (cfs)			
Ammonia (mg/L)	0.06	0.12	
Temperature (deg C)	25	3	
pH (std. units)	8.21	7.97	
% of river flow used:	100	25	
Reference weekly flow:	0.2	0.05	
Reference monthly flow:	0.2	0.05	
CRITERIA (in mg/L):			
4-day Chronic (@ backgrd. pH):			
early life stages present	2.24	6.35	
early life stages absent	2.24	10.31	
30-day Chronic (@ backgrd. pH)			
early life stages present	0.90	2.54	
early life stages absent	0.90	4.12	
EFFLUENT LIMITS (in mg/L):			
Weekly average			
early life stages present	**20.58**	19.42	
early life stages absent		**31.70**	
Monthly average			
early life stages present	**7.93**	7.62	
early life stages absent		**12.53**	

The 5.0 mg/L weekly average limit from May – October has been carried over due to antidegradation and antibacksliding as specified in ch. NR 207, Wis. Adm. Code.

Attachment #4

Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

						Temp Dates	Flow Dates
Facility:	Lime Ridge WWTF		**7-Q_{10}:**	0.20	cfs		
Outfall(s):	001		**Dilution:**	25%		**Start:** Apr 2013	04/01/21
Date Prepared:	7/27/2026		**f:**	0		**End:** Mar 2014	06/30/26
Design Flow (Qe):	0.0154	MGD	**Stream type:**	Small warm water sport or forage fis			
Storm Sewer Dist.	0	ft	**Qs:Qe ratio:**	2.1	:1		
			Calculation Needed?	YES			

Month	Water Quality Criteria			Receiving Water Flow Rate (Qs)	Representative Highest Effluent Flow Rate (Qe)		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Ta (default)	Sub-Lethal WQC	Acute WQC		7-day Rolling Average (Qesl)	Daily Maximum Flow Rate (Qea)		Weekly Average	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(cfs)	(MGD)	(MGD)		(°F)	(°F)	(°F)	(°F)
JAN	33	49	76	0.20	0.167	0.176	0	32	34	52	84
FEB	34	50	76	0.20	0.171	0.176	0	32	34	53	84
MAR	38	52	77	0.20	0.173	0.176	0	34	36	55	84
APR	48	55	79	0.20	0.065	0.078	0	40	46	58	92
MAY	58	65	82	0.20	0.023	0.023	0	51	58	75	116
JUN	66	76	84	0.20	0.031	0.034	0	60	60	86	101
JUL	69	81	85	0.20	0.017	0.019	0	63	63	104	112
AUG	67	81	84	0.20	0.012	0.013	0	66	66	118	120
SEP	60	73	82	0.20	0.012	0.012	0	63	64	109	120
OCT	50	61	80	0.20	0.020	0.052	0	57	58	79	99
NOV	40	49	77	0.20	0.037	0.052	0	48	48	57	100
DEC	35	49	76	0.20	0.019	0.021	0	38	39	73	120

Facility Specific Phosphorus Variance Data Sheet

Directions: Please complete this form electronically. Record information in the space provided. Select checkboxes by double clicking on them. Do not delete or alter any fields. For citations, include page number and section if applicable. Please ensure that all data requested are included and as complete as possible. Attach additional sheets if needed.

Section I: General Information

A. Name of Permittee: Village of Lime Ridge

B. Facility Name: Lime Ridge Wastewater Treatment Facility (WWTF)

C. Submitted by: Wisconsin Department of Natural Resources

D. State: Wisconsin **Substance:** Phosphorus **Date completed:** November 2, 2026

E. Permit #: WI-0036447-08-0 **WQSTS #:** (EPA USE ONLY)

F. Duration of Variance **Start Date:** April 1, 2027 **End Date:** March 31, 2032

G. Date of Variance Application: December 1, 2025

H. Is this permit a:
☐ **First time submittal for variance**
☒ **Renewal of a previous submittal for variance** *(Complete Section X)*

I. Description of proposed variance:

The Village of Lime Ridge (Lime Ridge) is seeking an individual phosphorus variance from the total phosphorus water quality criterion (WQC) of 75 µg/L (0.075 mg/L). Total Maximum Daily Load (TMDL)-derived water quality-based effluent limits (WQBELs) of 0.085 lbs/day as a monthly average and 0.028 lbs/day as a six-month average are currently applicable for this facility. The permittee was issued a WPDES permit containing a stringent phosphorus WQBEL (ch. NR 217, Wis. Adm. Code) on October 1, 2015. The final WQBELs for Lime Ridge are TMDL-derived limits approved by U.S. EPA for the Wisconsin River Basin to address phosphorus water quality impairments within the TMDL area. This TMDL resulted in limitations for phosphorus that must be included in WPDES permits. The initial criteria and the site specific criteria allocations are equivalent for this permittee.

As part of the permit requirements, the permittee evaluated their compliance options and determined that adaptive management was not practical and plant upgrades to meet the phosphorus WQBELs were not economically feasible. The effluent phosphorus concentration for this discharge is currently 4.99 mg/L and the mass discharge is 1.15 lbs/day (30-day P99 of data from April 2021 – June 2026). Lime Ridge operates a recirculating sand filter treatment system. These systems are not designed to remove phosphorus. Chemical addition is not effective because there is minimal retention time for phosphorus precipitate to form and settle and no biosolids handling capability to remove the resulting phosphorus containing sludge. Influent to the facility is strictly domestic wastewater and significantly reducing phosphorus from such sources is not feasible.

This phosphorus concentration reflects on-site phosphorus optimization measures that occurred during the previous permit term. The proposed permit includes requirements for continued on-site phosphorus optimization measures along with an interim limit of 5.5 mg/L, expressed as a monthly average. The proposed permit also contains a requirement to implement a phosphorus pollutant minimization program (PMP).

J. List of all who assisted in the compilation of data for this form

Name	Email	Phone	Contribution
Sarah Donoughe	Sarah.Donoughe@Wisconsin.gov	920-366-6076	Permit Drafter/Variance Coordinator
Tanner Connors	Tanner.Connors@Wisconsin.gov	608-575-6891	Compliance Engineer
Sarah Luck	Sarah.Luck@Wisconsin.gov	608-843-3876	Limits Calculator
Matt Claucherty	Matt.Claucherty@Wisconsin.gov	608-400-5596	Phosphorus

Section II: Criteria and Variance Information

A. Water Quality Standard from which variance is sought: 0.075 mg/L (WQC)

B. List other criteria likely to be affected by variance: None.

C. Source of Substance: Narrows Creek is located in the Narrows Creek and Baraboo River Watershed. Land use in the watershed is primarily forest (31.7%), agricultural (30.9%), and a mix of grassland (25.8%) and other uses (11.6%). This watershed has 368 stream miles, 331 lake acres, and 4,695 wetland acres. Narrows Creek (WBIC no. 1276400) was

placed on the impaired waters list in 2014 for total phosphorus. The 2016 assessments showed continued impairment by phosphorus.

Citation: PRESTO is a statewide GIS-based tool that compares the average annual phosphorus loads originating from point and nonpoint sources within a watershed. More information about this model is available at http://dnr.wi.gov/topic/surfacewater/presto.html.

D. Ambient Substance Concentration: >0.075 mg/L ☐ **Measured** ☒ **Estimated** ☐ **Default** ☐ **Unknown**

E. If measured or estimated, what was the basis? Include citation.
Narrows Creek was last assessed during the 2016 listing cycle; the total phosphorus sample data exceeded the 2016 WisCALM listing criteria for Fish and Aquatic Life use. Narrows Creek is also part of the 2019 approved Wisconsin River TMDL addressing total phosphorus.

F. Average effluent discharge rate: 0.0155 MGD (April 2021 through June 2026) **Maximum effluent discharge rate:** 0.176 MGD (1/29/2025)

G. Effluent Substance Concentration: 1-day P99: 7.72 mg/L; 4-day P99: 5.95 mg/L; 30-day P99: 4.99 mg/L; Mean: 4.49 mg/L ☒ **Measured** ☐ **Estimated** ☐ **Default** ☐ **Unknown**

H. If measured or estimated, what was the basis? Include Citation. Effluent total phosphorus monitoring data reported from April 2021 – June 2026.

I. Type of HAC:
☐ **Type 1: HAC reflects waterbody/receiving water conditions**
☐ **Type 2: HAC reflects achievable effluent conditions**
☒ **Type 3: HAC reflects current effluent conditions**

J. Statement of HAC: The Department has determined the highest attainable condition of the receiving water is achieved through the application of the variance limit in the permit, combined with a permit requirement that the permittee implement its Phosphorus PMP Plan. Thus, the HAC at commencement of this variance is 5.5 mg/L, which reflects the greatest phosphorus reduction achievable with the current treatment processes, in conjunction with the implementation of the permittee's Phosphorus PMP Plan. The current effluent condition is reflective of on-site optimization measures that have already occurred. This HAC determination is based on the economic feasibility of available compliance options for the Lime Ridge WWTF at this time (see Economic Section below). The permittee may seek to renew this variance in the subsequent reissuance of this permit; the Department will reevaluate the HAC in its review of such a request. A subsequent HAC cannot be defined as less stringent than this HAC.

K. Variance Limit: 5.5 mg/L as a monthly average

L. Level currently achievable (LCA): 5.5 mg/L as a monthly average

M. What data were used to calculate the LCA, and how was the LCA derived? (*Immediate compliance with LCA is required.)*
Effluent total phosphorus monitoring data reported from April 2021 – June 2026 was used to determine the level at which the facility can consistently meet. Based on this monitoring data, it is recommended that the current interim limit of 5.5 mg/L continue as the LCA.

N. Explain the basis used to determine the variance limit (which must be ≤ LCA). Include citation.
The variance limit of 5.5 mg/L was set equal to the current interim limit. This is a value that the permittee is able to consistently meet with its current treatment processes and reflects on-site optimization that has already occurred.

O. Select all factors applicable as the basis for the variance provided under 40 CFR 131.10(g). Summarize justification below: ☐ **1** ☐ **2** ☐ **3** ☐ **4** ☐ **5** ☒ **6**

During the previous permit term Lime Ridge evaluated its options for meeting the phosphorus WQBELs. Currently, residential users pay approximately $50.00 per month ($600.00 annually) for sewer service. Residential sanitary sewer usage accounts for 95% of the total sanitary sewer usage in the Village. Therefore, effects on user rates for each Phosphorus Compliance Alternative were estimated by dividing 95% of the Annual Worth among 78 residential users to calculate additional pollution control costs per household. The total annual cost per user is calculated by adding the current annual residential user rate plus the additional annual pollution control cost per user. The Median Household Income (MHI) for the Village of Lime Ridge, according to the Wisconsin DNR 2020 Clean Water Fund Program, is $108,214.

Adding Tertiary Filtration is not economically feasible, as this major upgrade would increase the user rates to 2.03% of the MHI.

Citation: Final Compliance Alternatives Report (Facility Plan), prepared by Delta 3 Engineering, Inc., dated October 8, 2019

Section III: Location Information

A. Counties in which water quality is potentially impacted: Sauk

B. Receiving waterbody at discharge point: Narrows Creek

C. Flows into which stream/river? Baraboo River **How many miles downstream?** 20 miles

D. Coordinates of discharge point (UTM or Lat/Long): 43.46771˚N / 90.14863˚W

E. What are the designated uses associated with this waterbody?
Warm Water Sport Fish (WWSF) community, non-public water supply and recreational use

F. Describe downstream waters:
Narrows Creek (Narrows Creek/Baraboo River Watershed, LW22-Lower Wisconsin River Basin in Sauk County) flows into the Baraboo River which flows into the Wisconsin River. The Baraboo River and Wisconsin River are both listed as impaired and are both included in the Wisconsin River TMDL area.

Stream Classification of all waters: Warm Water Sport Fish (WWSF)

G. What is the distance from the point of discharge to the point downstream where the concentration of the substance falls to less than or equal to the applicable criterion of the substance?
Not applicable since Narrows Creek is 303(d) listed as impaired for total phosphorus (listed 4/1/2014) at the outfall location and is within an EPA-approved TMDL area which includes downstream waters that are also impaired and above phosphorus criteria.

H. Provide the equation used to calculate that distance.
Not applicable (see response above).

I. Identify all other variance permittees for the same substance which discharge to the same stream, river, or waterbody in a location where the effects of the combined variances would have an additive effect on the waterbody: None.

Please attach a map, photographs, or a simple schematic showing the location of the discharge point as well as all variances for the substance currently draining to this waterbody on a separate sheet.
See the "Lime Ridge – Current Outfall Variance(s)" map.

J. Is the receiving waterbody on the CWA 303(d) list? If yes, please list the impairments below. ☐ **Yes** ☒ **No** ☐ **Unknown**

River Mile	Pollutant	Impairment
N/A		

Section IV: Pretreatment (complete this section only for POTWs with DNR-Approved Pretreatment Programs. See w:\Variances\Templates and Guidance\Pretreatment Programs.docx)

A. Are there any industrial users contributing phosphorus to the POTW? If so, please list.
N/A

B. Are all industrial users in compliance with local pretreatment limits for phosphorus? If not, please include a list of industrial users that are not complying with local limits and include any relevant correspondence between the POTW and the industry (NOVs, industrial SRM updates and timeframe, etc.)
N/A

C. When were local pretreatment limits for phosphorus last calculated?
N/A

D. Please provide information on specific SRM activities that will be implemented during the permit term to reduce the industry's discharge of the variance pollutant to the POTW
N/A

Section V: Public Notice

A. Has a public notice been given for this proposed variance? ☒ Yes ☐ No

B. If yes, was a public hearing held as well? ☒ Yes ☐ No ☐ N/A

C. What type of notice was given?
☒ Notice of variance included in notice for permit ☐ Separate notice of variance

D. Date of public notice: TBD (by Nov. 21, 2026) **Date of hearing:** January 5, 2027

E. Were comments received from the public in regards to this notice or hearing? ☐ Yes ☐ No
(If yes, please attach on a separate sheet)

Section VI: Human Health

A. Is the receiving water designated as a Public Water Supply? ☐ Yes ☒ No

B. Applicable criteria affected by variance: N/A

C. Identify any expected impacts that the variance may have upon human health, and include any citations:
There are no direct impacts to human health related to phosphorus.

Section VII: Aquatic Life and Environmental Impact

A. Aquatic life use designation of receiving water: Warm Water Sport Fish (WWSF) community, non-public water supply

B. Applicable criteria affected by variance: 75 µg/L (0.075 mg/L), Fish and Aquatic Life Criteria

C. Identify any environmental impacts to aquatic life expected to occur with this variance, and include any citations:
The water quality and sport fisheries in the watershed are significantly affected by nonpoint sources of pollution. As a result, the watershed has been ranked as a high priority for nonpoint source pollution reduction. Lime Ridge WWTF's contributing load of phosphorus to the river is therefore not expected to adversely impact aquatic life beyond that which already results from nonpoint contributions.

D. List any Endangered or Threatened species known or likely to occur within the affected area, and include any citations:
The following list contains the Federally Endangered and Threatened Species in Sauk County, Wisconsin, from the U.S. Fish and Wildlife Service, Region 3, September 2026.

BIRDS
Piping Plover (E)
CLAMS
Higgins Eye (E)
Sheepnose Mussel (E)
Snuffbox Mussel (E)
Spectaclecase (mussel) (E)
Winged Mapleleaf (E)
MAMMALS
Indiana bat (E)
Norther Long-Eared Bat (E)
REPTILES
Eastern Massasauga (rattlesnake) (T)
SNAILS
Iowa Pleistocene snail (E)
INSECTS
Hine's emerald dragonfly (E)
Karner Blue Butterfly (E)
Poweshiek skipperling (E)
Rusty Patched Bumble Bee (E)
FLOWERING PLANTS
Dwarf lake iris (T)
Eastern prairie fringed orchid (T)
Fassett's locoweed (T)
Mead's Milkweed (T)
Northern wild monkshood (T)
Pitcher's thistle (T)

Prairie Bush-clover (T)

Citation: U.S. Fish & Wildlife Service – Environmental Conservation Online System (http://www.fws.gov/endangered/) and National Heritage Index (http://dnr.wi.gov/topic/nhi/)

Section VIII: Economic Impact and Feasibility

A. Describe the permittee's current pollutant control technologies (treatment processes):
Lime Ridge owns and operates a recirculating sand filter for treatment of domestic wastewater. The annual average design flow is 0.0154 million gallons per day (MGD) and the actual annual average from 2021-2026 was 0.0155 MGD. Each residence or business has a septic tank that discharges wastewater to the sanitary sewer system leading to the wastewater treatment facility. The WWTF includes a settling tank with wastewater pumped to a three-cell recirculating sand filter. Underdrains collect treated effluent, which may be pumped back up to the sand filter and mixed with influent wastewater or discharged as treated effluent to Narrows Creek. During summer the effluent is disinfected with chlorine and then dechlorinated before being discharged to the stream down a cascade step aerator.

B. What modifications would be necessary to comply with the current limits? List additional treatment processes and/or technologies available. Include any citations.
Lime Ridge's compliance options include alternative options such as implementing an adaptive management program designed to lower the receiving water phosphorus concentration below the water quality criterion by implementing nonpoint source reduction measures in the watershed and developing a water quality trading plan to offset the amount of phosphorus being discharged by the facility. Another option is to comply with the water quality criterion by constructing traditional phosphorus treatment such as tertiary filtration. Construction of a new regional WWTF was also evaluated however it is economically infeasible due to the high cost to construct a force main, pump stations, and facility upgrades to handle a second community's flow (Hill Point WWTF).

C. Identify any expected environmental impacts that would result from further treatment, and include any citations:
All available compliance options would reduce phosphorus concentrations in Narrows Creek, and thus have net environmental benefits. Construction of traditional phosphorus treatment would have temporary environmental impacts related to construction activities.

D. Is it technically and economically feasible for this permittee to modify the treatment process to comply with the water quality-based limits? ☐ **Yes** ☒ **No**

E. If treatment is possible, is it possible to comply with the limits on the substance? ☒ **Yes** ☐ **No**

F. If yes, what prevents this from being done? Include any citations.
Lime Ridge WWTF was not designed for phosphorus removal; the recirculating sand filters minimally treat effluent total phosphorus. Upgrades to treat for phosphorus and all evaluated compliance options are economically infeasible, as major upgrades would increase the user rates to 2.03% of the MHI.

G. List any alternatives to current practices that have been considered, and why they have been rejected as a course of action, including any citations:

Alternative I – Filtration System: In order to meet the proposed effluent total phosphorus limits, the existing WWTF would need to be upgraded with addition of chemicals and effluent filter technology. Effluent from the recirculating sand filter (RSF) would enter a coagulation/flocculation tank where coagulant for phosphorus removal would be added possibly along with polymer to aid in flocculation. Effluent from the coagulation/flocculation tank would then flow to a disk filtration, sand filtration, or ultrafiltration system where the precipitated phosphorus-containing solids would be removed. This option is not economically feasible.

Alternative II – Spray Irrigation: A spray irrigation system was investigated to eliminate the required low effluent total phosphorus limit by converting the surface water discharge from the WWTF to a groundwater discharge through the use of spray irrigation. Components would include construction of a storage lagoon, spray irrigation system, and an effluent pump station to deliver the effluent to the irrigation system. This option has potential for feasibility and PMP for the next permit term contains action items to further investigate this option and the associated costs.

Alternative III – Seepage Cells: A seepage cell system was investigated to eliminate the required low effluent total phosphorus limit by converting the surface water discharge from the WWTF to a groundwater discharge through the use of seepage cells.

The WWTF would then be required to meet additional groundwater water quality standards as provided in Table 2.2. Standards are lower than current effluent concentrations for chloride and nitrogen which would require additional treatment. Since there is no economical means to treat for chloride, seepage cells would not be a viable option.

Alternative IV – Multi-Discharger Variance (MDV): The Village may be eligible for the MDV. However, the Village is unable to meet the interim limit of 1.0 mg/L as required by the MDV. The Village would require a substantial WWTF upgrade including a chemical addition building, coagulation/flocculation tank, sludge storage tank, etc. This option is not economically feasible.

Citation: Final Compliance Alternatives Report (Facility Plan), prepared by Delta 3 Engineering, Inc., dated October 8, 2019

H. Describe the economic impacts of compliance: ***{applies only to municipalities; include other cost estimates for industries}***

Economic Factor		Source
MHI	$108,214	http://data.census.gov
Calculated preliminary screener	2.03%	Economic Evaluation Worksheet
Secondary score value	4	Guidance for Implementing WI's Multi-Discharger Variance for Phos., Appendix A – Secondary Screeners for Municipal POTWs

Section IX: Multi-Discharger Variance Feasibility *(this assumes MDV approval)*

A. Does the facility meet the economic indicators to qualify for the MDV? ☐ **Yes** ☐ **No** ☒ **Unknown**

MDV secondary indicator score: **6**

B. Is it technically and economically feasible for this permittee to comply with a phosphorus WQBEL of 1 mg/L or lower? ☐ **Yes** ☒ **No** ☐ **Unknown**

C. Justification for considering an individual variance in lieu of the MDV:

Lime Ridge is ineligible for the MDV because the facility cannot meet a phosphorus interim limit of 1.0 mg/L.

Section X: Compliance with Water Quality Standards

A. Describe all activities that have been, and are being, conducted to reduce the discharge of the substance into the receiving stream. This may include existing treatments and controls, consumer education, promising centralized or remote treatment technologies, planned research, etc. Include any citations.

The previous permit included PMP activities for reducing influent phosphorus (distributing phosphorus reduction info to residents, evaluating local businesses for potential reductions, updating the village's SUO, investigating other possible point sources, and reducing I&I), reducing effluent phosphorus at the WWTF (investigating phosphorus reductions with more frequent removal of sludge from septic tanks, performing annual O&M, and evaluating phosphorus treatment technologies), investigating reductions of watershed-based phosphorus, evaluating phosphorus compliance alternatives (WQT, facility upgrade, alternative discharge, and regionalization), and submitting annual progress reports.

B. Describe all actions that the permit requires the permittee to complete during the variance period to ensure reasonable progress towards attainment of the water quality standard. Include any citations.

As conditions of the variance, the permittee is required to (a) maintain effluent quality at or below the interim effluent limitation specified in the proposed permit, (b) implement the phosphorus pollutant minimization measures specified in the Pollutant Minimization Program (PMP) Plan dated October 27, 2026, and (c) perform the actions listed in the Phosphorus Pollutant Minimization Program Schedule (see the Schedules section in the proposed permit).

Citation: Lime Ridge Phosphorus PMP Plan dated October 27, 2026

Section XI: Compliance with Previous Permit *(Variance Reissuances Only)*

A. Date of previous submittal: February 24, 2021 **Date of EPA Approval:** March 17, 2021

B. Previous Permit #: WI-0036447-07-0 **Previous WQSTS #:** (EPA USE ONLY)

C. Effluent substance concentration: 5.95 mg/L (4-day P99) **Variance Limit:** 5.5 mg/L as a monthly average

D. Target Value(s): N/A **Achieved?** ☐ **Yes** ☐ **No** ☒ **Partial**

E. For renewals, list previous steps that were to be completed. Show whether these steps have been completed in compliance with the terms of the previous variance permit. Attach additional sheets if necessary.

Condition of Previous Variance	Compliance
1. Reduce Influent Phosphorus.	
a. Distribute information to residents regarding TP reduction measures.	☒ **Yes** ☐ **No**
b. Continue evaluation of local businesses for potential TP reduction actions.	☒ **Yes** ☐ **No**
c. Update the Village's Sewer Use Ordinance which including evaluation of a rate increase to cover the costs of future compliance alternatives.	☒ **Yes** ☐ **No**
d. Investigate other possible point sources of TP.	☒ **Yes** ☐ **No**
e. Reduce inflow & infiltration to the sanitary collection system.	☒ **Yes** ☐ **No**
2. Reduce Effluent Phosphorus at the WWTF.	
a. Investigate TP reduction with more frequent removal of sludge solids in the septic tanks.	☒ **Yes** ☐ **No**
b. Perform annual operations and maintenance to prevent regressing of current TP treatment capabilities.	☒ **Yes** ☐ **No**
c. Continue evaluation of TP treatment technologies that would require a major facility upgrade.	☒ **Yes** ☐ **No**
d. Continue evaluation of TP treatment technologies that would not require a major facility upgrade.	☒ **Yes** ☐ **No**
3. Investigate reduction of watershed-based Phosphorus.	
a. Work with the DNR wastewater engineer to determine action area for WQT projects.	☒ **Yes** ☐ **No**
b. Test Narrows Creek TP concentration monthly (May through October).	☒ **Yes** ☐ **No**
c. Continue discussion with Sauk County Land Conservation Department.	☐ **Yes** ☒ **No** **Note:** Based on the latest NRCS/County guidance, Environmental Quality Incentive Program grant funding cannot be used for WQT Projects. NRCS and County should not be used for evaluation of WQT Projects for funding going forward. Furthermore, NRCS and County also cannot disclose personal information in regard to potential properties/property owners. The Village does not intend to invest time and effort into contacting the County and NRCS moving forward.
d. Continue evaluation of potential partners within the watershed.	☒ **Yes** ☐ **No**
4. Submit DNR Phosphorus Compliance Reports as per Schedule 4.1 of the WPDES Permit.	☒ **Yes** ☐ **No**
5. Evaluate Phosphorus Compliance Alternatives for WPDES Permit Reissuance.	
a. Water Quality Trading (WQT)	☒ **Yes** ☐ **No**

b. Individual Phosphorus Variance (IPV)	☒ **Yes** ☐ **No**
c. Facility Upgrade	☒ **Yes** ☐ **No**
d. Alternative Discharge	☒ **Yes** ☐ **No**
e. Regionalization	☒ **Yes** ☐ **No**

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April 17, 2026
Revised October 27, 2026

Mr. Tanner Connors
Wisconsin Department of Natural Resources
3911 Fish Hatchery Rd.
Fitchburg, WI 53711

Re: 2026 Phosphorus Pollutant Minimization Plan – Wastewater Treatment Facility
Village of Lime Ridge, WI

Dear Tanner:

As requested, the following is the Phosphorus Pollutant Minimization Plan for the Village of Lime Ridge's Wastewater Treatment Facility (WWTF).

Phosphorus Pollutant Minimization Plan

Introduction

To meet the proposed final Effluent Total Phosphorus (TP) limits, the WWTF would require a major facility upgrade to implement traditional Phosphorus treatment. This upgrade would force user rates to exceed 2% of the median household income (MHI). The Village has determined that it is not eligible for the Multi-Discharger Variance (MDV) as the Village would be unable to meet 1.0 mg/L TP without a major facility upgrade. Therefore, the Village of Lime Ridge is pursuing an Individual Phosphorus Variance (IPV).

As part of the IPV application process, the Village is submitting a Pollutant Minimization Plan (PMP) for TP. This plan contains several key components including:

1. Reduction of Influent TP at the source.
2. Reduction of Effluent TP at the WWTF.
3. Reduction of TP in runoff from non-point sources within the watershed.

This Phosphorus Pollutant Minimization Plan evaluates proposed actions that the Village of Lime Ridge will pursue over the next Wisconsin Pollutant Discharge Elimination System (WPDES) Permit term to address each of these components. The following information indicates the actions and proposed schedule. A proposed schedule is provided in Table 1. The Village will continue its evaluation of compliance alternatives to determine which will be most economically feasible. The Village will likely take a multi-pronged approach toward ultimate TP compliance by utilizing the key components mentioned above.

Reduction of Influent Phosphorus Sources

The Village is primarily composed of residential and commercial users with no major industries that could be contributing Phosphorus. Therefore, the influent wastewater entering the WWTF is domestic-strength wastewater. Previously, the Village had contacted Branding Iron Roadhouse, Lime Ridge Agri Supply, Men Mar Auto Service, Champion Chisel Works, and local Churches and determined that they were not discharging Phosphorus-based products. However, in the event a new business develops within the Village or a business is sold to a new owner, the Village will evaluate the business for sources of phosphorus discharge. The Village may be able to further reduce TP loadings by implementing practices such as altering the Sewer Use Ordinance to further regulate wastewater discharges. The Village intends to distribute public information in an effort to educate all sewer users on Phosphorus-reduction measures. A letter to users, see attached letter, will be included with the sewer bill. The Village also plans to continue its evaluation of local businesses to identify any other potential Phosphorus-reduction measures that can be taken. The Village plans to inspect the wastewater discharge facilities at each business and determine whether a rate increase, discharge monitoring, and/or pretreatment would be warranted.

Reduction of Effluent Phosphorus Concentrations

The Village of Lime Ridge owns and operates a WWTF that utilizes a recirculating sand filter (RSF) system consisting of a septic tank, a dosing chamber, and three (3) RSF beds. Primary waste from the wastewater treatment process is stored in the septic tanks, and the contents removed and disposed by a licensed and certified septage hauler in accordance with NR113 of the Wisconsin Administrative Code. Phosphorus is currently removed from the wastewater through the settling of Phosphorus-containing solids in the septic tanks. The recirculating sand filters minimally treat effluent TP. As mentioned in previous reports, the Village had investigated adding chemical to treat for TP but would risk clogging the sand filters due to the flocs formed during chemical addition. The Village has also evaluated other systems including filtration systems, spray irrigation, and seepage cells.

A spray irrigation system was investigated in greater depth. Spray irrigation would eliminate the required low effluent Total Phosphorus limit by converting the surface discharge of the WWTF to a groundwater discharge through the use of spray irrigation. WWTF effluent would be stored in a lagoon to insure proper cycling and irrigation of croplands as required in Wisconsin Administrative Code NR 110.255 (2). The Village would need to acquire additional property to construct a lagoon for storing the wastewater effluent and acquire land for spray irrigating. Components would include construction of a storage lagoon, spray irrigation system, and an effluent pump station to deliver the effluent to the irrigation system. However, WWTF Upgrades including the spray irrigation system upgrade were not cost-effective and would result in user rates exceeding 2% of the MHI. The Village will continue to investigate potential Phosphorus treatment technologies.

The Village had evaluated outside funding sources and will continue to evaluate potential funding. The primary funding sources for the Village's WWTF Upgrade include Rural Development, Community Development Block Grant (CDBG), and Environmental Loans - Clean Water Fund (CWF) Program through the Wisconsin Department of Natural Resources. Unfortunately, the Village is only 32% low-moderate income via 2020 Census and is therefore ineligible for certain grant programs such as CDBG. Funding opportunities may change with updated Census data which will be available following the 2030 Census.

Reduction of Phosphorus Runoff within the Watershed

The Village of Lime Ridge has already evaluated potential watershed partners for TP reduction with negative results. Potential partners are identified through local contacts or on a County Parcels Map. Aerial maps, contour maps, GIS, windshield survey, on site visits etc. are used to evaluate which partners should be evaluated. The Village would prefer partners to be located upstream of the WWTF and must be located within the Village's HUC-12 Watershed. Potential partners are first contacted by phone or in person to provide them with background information and evaluate interest. If interested, a Village representative will schedule and lead a meeting with the property. The meetings will typically occur on site and will evaluate the site for potential trading practices. At these meetings, the Village will provide potential partners the proposed practices, pros/cons of water quality trading, overall goal of the proposed partnership, and Village contact information.

Once a potential watershed project is identified, the Village will perform the following items:

- Calculate potential trading credits.
- Evaluate preliminary project costs.
- Contact the DNR regarding the project.
- If trading is determined to generate enough credits, a water quality trading plan will be prepared for DNR review.
- Develop Water Quality Trade Agreements.
- Register Trading Credits.
- Achieve compliance with final Phosphorus Limit through Water Quality Trading.

*Note: The timing of these items will vary depending on when the potential watershed project is identified.

The Village of Lime Ridge had preliminarily evaluated watershed reductions within the community's limited storm sewer system and did not appear to be a viable option for TP compliance. The Village's storm sewer collects runoff from approximately 10 acres of residential development.

The Village intends to register with the Wisconsin Water Quality Trading Clearinghouse. If a trade is available through the Clearinghouse, the Village will further evaluate this option. The Village intends to pursue a trade through the Clearinghouse is economically feasible.
The Village will continue to evaluate watershed opportunities. If a WQT opportunity is identified, the Village would then commence investigation and implementation of Best Management Practices (BMPs) for optimal TP reduction at the site. The Village would need to pursue Water Quality Trading (WQT) credits and develop a Trading Plan, which would involve:

1. Soil sampling to determine TP concentration in the soil.
2. Computer modeling to determine the pounds of TP in the runoff.
3. Developing a Trade Agreement.
4. Installing Best Management Practices (BMPs) to reduce TP runoff.
5. Applying for Trading Credits with the DNR.
6. Monitoring to maintain the Trading Credits.

Alternatively, the Village could pursue Adaptive Management (AM) which would require in-stream monitoring combined with BMP installations within the watershed. The Village would be responsible for demonstrating reduction of TP concentrations within the Narrows Creek from the BMP installations. Compliance is ultimately achieved by meeting the Water Quality Criteria (WQC) within the Narrows Creek. However, Adaptive Management requires a the WWTF to meet an Effluent TP Limit of 0.6 mg/L which would not be attainable without a significant upgrade at the WWTF.

Table 1 – Proposed PMP Schedule

Action Items	Year 1	Year 2	Year 3	Year 4	Year 5
1. Reduce Influent Phosphorus.					
a. Distribute information to residents regarding TP reduction measures.	X				
b. Continue evaluation of local businesses for potential TP reduction actions.	X				
c. Update the Village's Sewer Use Ordinance which including evaluation of a rate increase to cover the costs of future compliance alternatives.					X
d. Investigate other possible point sources of TP.	X	X	X	X	X
e. Reduce inflow & infiltration to the sanitary collection system.	X	X	X	X	X
2. Reduce Effluent Phosphorus at the WWTF.					
a. Perform annual operations and maintenance to prevent regressing of current TP treatment capabilities.	X	X	X	X	X
b. Continue evaluation of TP treatment technologies that would require a major facility upgrade.	X	X	X	X	X
c. Continue evaluation of TP treatment technologies that would not require a major facility upgrade.	X	X	X	X	X
3. Investigate reduction of watershed-based Phosphorus.					
a. Test Narrows Creek TP concentration monthly (May through October).					X
b. Register on Water Quality Trading Clearinghouse, investigate possible trades, and evaluate economic feasibility.	X				
c. Pursue trade through Water Quality Trading Clearinghouse if economically feasible.		X			
d. Continue evaluation of potential partners within the watershed.	X	X	X	X	X
4. Submit DNR Phosphorus Compliance Reports as per Schedule 4.1 of the WPDES Permit.	X	X	X	X	X
5. Evaluate Phosphorus Compliance Alternatives for WPDES Permit Reissuance.					
a. Water Quality Trading (WQT)					X
b. Individual Phosphorus Variance (IPV)					X
c. Facility Upgrade					X
d. Alternative Discharge					X
e. Regionalization					X
f. Land Application (e.g. Spray Irrigation, Seepage Cell, etc.)					X
g. Funding Sources (e.g. Rural Development, CDBG, CWF, etc.)					X



If you have any questions, please feel free to contact me at (608) 348-5355. Thank you.

Sincerely,
DELTA 3 Engineering, Inc.

Logan Hoppman

Logan Hoppman, P.E.
Civil-Environmental Engineer

LMH:lh
Enclosures
Cc: Jordan Fure – Delta 3 Engineering, Inc.
Bart Nies – Delta 3 Engineering, Inc.
Corene Sklar – Village Sanitary Sewer Committee
Dave Huth – WWTF Operator