

STATE OF MISSOURI  
**DEPARTMENT OF NATURAL RESOURCES**  
MISSOURI CLEAN WATER COMMISSION



## MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law (Chapter 644 RSMo, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92<sup>nd</sup> Congress) as amended,

Permit No.: MO-0140007

Owner: Azul Waters LLC  
Address: 184 Oakmont Ave, Lake Ozark, MO 65049

Continuing Authority: Same as above  
Address: Same as above

Facility Name: Azul Waters WWTF  
Facility Address: 91 Hollow Oak Court, Sunrise Beach, MO 65079

Legal Description: Section 23 T40N R16W  
UTM Coordinates: X = 524888; Y = 4218597

Receiving Stream: Lake of the Ozarks (L2)  
First Classified Stream and ID: Lake of the Ozarks (L2) (7205) 303(d) List  
USGS Basin & Sub-watershed No.: (10290109-0401)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

### FACILITY DESCRIPTION

Outfall #001 – Non-POTW

STEP collection / lift stations / Membrane Bioreactor / sludge hauled by contract hauler  
Design population equivalent is 40.  
Design flow is 4,000 gallons per day.  
Design sludge production is 0.66 dry tons/year.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas.

September 1, 2024

Effective Date

August 31, 2029

Expiration Date

  
\_\_\_\_\_  
John Hoke, Director, Water Protection Program

OUTFALL #001	TABLE A-1. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
	The permittee is authorized to discharge from outfall number(s) as specified in the application for this permit. The final effluent limitations in <b>Table A-1</b> shall become effective on <b>September 1, 2024</b> . Such discharges shall be controlled, limited, and monitored by the permittee as specified below:					
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<b>eDMR Limit Set: Q</b>						
Flow	MGD	*		*	once/weekday**	24 hr. estimate
Biochemical Oxygen Demand <sub>5</sub>	mg/L		20	15	once/quarter****	grab
Total Suspended Solids	mg/L		20	15	once/quarter****	grab
<i>E. coli</i> (Note 1)	#/100mL	630		126	once/quarter****	grab
Ammonia as N (Jan 1 – Mar 31)	mg/L	12.7		2.8	once/quarter****	grab
Ammonia as N (Apr 1 – Jun 30)	mg/L	12.7		2.8	once/quarter****	grab
Ammonia as N (Jul 1 – Sep 30)	mg/L	12.7		2.8	once/quarter****	grab
Ammonia as N (Oct 1 – Dec 31)	mg/L	7.2		1.6	once/quarter****	grab
Total Phosphorus	mg/L	*		1.0	once/quarter****	grab
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units***	SU	6.5		9.0	once/quarter****	grab
MONITORING REPORTS SHALL BE SUBMITTED <b>QUARTERLY</b> ; THE FIRST REPORT IS DUE <u>October 28, 2024</u> .						

- \* Monitoring requirement only.
- \*\* Once each weekday means: Monday, Tuesday, Wednesday, Thursday, and Friday.
- \*\*\* pH is measured in pH units and is not to be averaged.
- \*\*\*\* See below for quarterly sampling.

Quarterly Minimum Sampling Requirements				
Quarter	Months	<i>E. coli</i>	All Other Parameters	Report is Due
First	January, February, March	Not required to sample.	Sample at least once during any month of the quarter	April 28 <sup>th</sup>
Second	April, May, June	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	July 28 <sup>th</sup>
Third	July, August, September	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	October 28 <sup>th</sup>
Fourth	October	<b>Sample once during <u>October</u></b>	Sample at least once during any month of the quarter	January 28 <sup>th</sup>
	November & December	Not required to sample.		

**Note 1** – Effluent limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean.

## **B. STANDARD CONDITIONS**

In addition to specified conditions stated herein, this permit is subject to the attached Parts I & III standard conditions dated August 1, 2014, and August 1, 2019, and hereby incorporated as though fully set forth herein. Annual reports required per Standard Conditions Part III Section K shall be submitted online to the Department via the Department's eDMR system as an attachment. This supersedes Standard Conditions Part III Section K #4. EPA reports shall continue to be submitted online via the Central Data Exchange system.

## **C. SPECIAL CONDITIONS**

1. Electronic Discharge Monitoring Report (eDMR) Submission System. Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent monitoring data and any report required by the permit (unless specifically directed otherwise by the permit) shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data about the NPDES program. All reports uploaded into the system shall be reasonably named so they are easily identifiable, such as "WET Test Chronic Outfall 002 Jan 2023," or "Outfall 004 Daily Data Mar 2025."
  - (a) eDMR Registration Requirements. The permittee must register with the Department's eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before the first report is due. Registration and other information regarding MoGEM can be found at <https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-mogem>. Information about the eDMR system can be found at <https://dnr.mo.gov/water/business-industry-other-entities/reporting/electronic-discharge-monitoring-reporting-system-edmr>. The first user shall register as an Organization Official and the association to the facility must be approved by the Department. Regarding Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit unless a waiver is granted by the Department. See paragraph (c) below.
  - (b) Electronic Submissions. To access the eDMR system, use the following link in your web browser: <https://apps5.mo.gov/mogems/welcome.action>. If you experience difficulties with using the eDMR system you may contact [edmr@dnr.mo.gov](mailto:edmr@dnr.mo.gov) or call 855-789-3889 or 573-526-2082 for assistance.
  - (c) Waivers from Electronic Reporting. The permittee must electronically submit compliance monitoring data and reports unless a waiver is granted by the Department in compliance with 40 CFR Part 127. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: <https://dnr.mo.gov/document-search/electronic-discharge-monitoring-report-waiver-request-form-mo-780-2692>. The Department will either approve or deny this electronic reporting waiver request within 120 calendar days.
2. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with all applicable federal and state statutes and regulations in accordance with §644.051.19, RSMo, and the Clean Water Act (CWA) section 402(k); however, this permit may be reopened and modified, or alternatively revoked and reissued:
  - (a) To comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:
    - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
    - (2) controls any pollutant not limited in the permit.
3. All outfalls must be clearly marked in the field.
4. Report as no-discharge when a discharge does not occur during the report period.
5. Reporting of Non-Detects:
  - (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
  - (b) See sufficiently sensitive test method requirements in Standard Conditions Part I, Section A, No. 4 regarding proper testing and method minimum levels used for sample analysis.
  - (c) The permittee shall not report a sample result as "Non-Detect" without also reporting the method minimum level of the test. Reporting as "Non Detect" without also including the method minimum level, will be considered failure to report, which is a violation of this permit.
  - (d) The permittee shall provide the "Non-Detect" sample result using the less than symbol and the method minimum level (e.g., <50 µg/L, if the method minimum level for the parameter is 50 µg/L).
  - (e) Where the permit contains a Department determined Minimum Quantification Level (ML) and the permittee is granted authority in the permit to report zero in lieu of the < ML for a specified parameter (conventional, priority pollutants, metals, etc.), then zero (0) is to be reported for that parameter.
  - (f) For the daily maximum, the facility shall report the highest value. If the highest value was a non-detect, use the less than "<" symbol and the laboratory's highest method minimum level.

**C. SPECIAL CONDITIONS (continued)**

- (g) For reporting an average based on all non-detected values, remove the “<” sign from the values, average the values, and then add the “<” symbol back to the resulting average.
  - (h) For reporting an average based on a mix of detected and non-detected values (not including *E. coli*), assign a value of “0” for all non-detects for that reporting period and report the average of all the results.
  - (i) When *E. coli* is not detected above the method minimum level, the permittee must report the data qualifier signifying less than detection limit for that parameter (e.g., <1 #/100mL, if the method minimum level is 1 #/100mL). For reporting a geometric mean based on a mix of detected and non-detected values, use one-half of the detection limit (instead of zero) for non-detects when calculating geometric means.
  - (j) See the Fact Sheet Appendix - Non-Detect Example Calculations for further guidance.
6. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3), and with Standard Condition Part I, Section B, subsection 2. Bypasses are to be reported to the Southwest Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: <https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-mogem> or the Environmental Emergency Response spill-line at 573-634-2436 outside of normal business hours. Once an electronic reporting system compliant with 40 CFR Part 127, the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, is available all bypasses must be reported electronically via the new system. Blending, which is the practice of combining a partially treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.
7. The facility must be sufficiently secured to restrict entry by children, livestock, and unauthorized persons as well as to protect the facility from vandalism.
8. An Operation and Maintenance (O & M) manual shall be maintained by the permittee and made available to the operator. The O & M manual shall include key operating procedures and a brief summary of the operation of the facility.
9. An all-weather access road to the treatment facility shall be maintained.
10. The outfall sewer shall be protected and maintained against the effects of floodwater, ice, or other hazards as to reasonably ensure its structural stability, freedom from stoppage, and that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.
11. Renewal Application Requirements.
- (a) This facility shall submit an appropriate and complete application to the department no less than 180 days prior to the expiration date listed on Page 1 of the permit.
  - (b) Application materials shall include a completed Form B.
    - (1) For Part B, Additional Application Information #14 Effluent Testing Data, the permittee shall submit at a minimum, effluent testing data based on at least three samples for each outfall through which effluent is discharged. The samples must be no more than four and one-half years apart.
      - i. Sufficiently sensitive analytical methods must be used. A method is “sufficiently sensitive” when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility’s discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031.

**D. NOTICE OF RIGHT TO APPEAL**

If you were adversely affected by this decision, you may be entitled to pursue an appeal before the administrative hearing commission (AHC) pursuant to Sections 621.250 and 644.051.9 RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Any appeal should be directed to:

Administrative Hearing Commission  
U.S. Post Office Building, Third Floor  
131 West High Street, P.O. Box 1557  
Jefferson City, MO 65102-1557  
Phone: 573-751-2422  
Fax: 573-751-5018  
Website: <https://ahc.mo.gov>

**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**FACT SHEET**  
**FOR THE PURPOSE OF ISSUANCE**  
**OF**  
**MO-0140007**  
**AZUL WATERS WWTF**

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollutant Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of stormwater from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five years unless otherwise specified.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)(A)2.], a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below. A Factsheet is not an enforceable part of an operating permit.

**Part I – Facility Information**

Application Date: 09/08/2022

Facility Type and Description: Non-POTW

STEP collection / lift stations / Membrane Bioreactor / sludge hauled by contract hauler

Design population equivalent is 40.

Design flow is 4,000 gallons per day (gpd).

Design sludge production is 0.66 dry tons/year.

**OUTFALL(S) TABLE:**

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
001	0.006	Secondary	Domestic

Comments:

This is a new facility. The proposed wastewater treatment facility will serve 10 single family residences on Lake of the Ozarks. The selected technology is a BioMicrobics BioBarrier HSMBR 3.0 membrane bioreactor. Collection is by 1,000-gal STEP tank and gravity flow to a 3' x 6' pump station at each residence; and a 2,000-gal equalization tank. Construction was covered under CP0002329, with a statement of work complete received May 22, 2024.

Azul Waters, LLC is registered and in good standing with the Secretary of State's Office as of July 29, 2024, under Charter No: LC1792072.

**Part II – Effluent Limitations and Monitoring Requirements**

**OUTFALL #001 – MAIN FACILITY OUTFALL**

Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including effluent limitations, of this operating permit.

**OUTFALL #001 - RECEIVING STREAM INFORMATION****RECEIVING STREAM(S) TABLE:**

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Lake of the Ozarks	L2	7205	AQL, WBC-A, SCR, IRR, HHP, LWV	10290109-0401	0

\*As per 10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission's water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and 1<sup>st</sup> classified receiving stream's beneficial water uses to be maintained are in the receiving stream table in accordance with [10 CSR 20-7.031(1)(C)].

Uses found in the receiving streams table, above: 10

CSR 20-7.031(1)(C)1.:

**AHP** = Aquatic Habitat Protection - To ensure the protection and propagation of fish, shellfish, and wildlife. AHP is further subcategorized as:

**WVH** = Warm Water Habitat; **CLH**

= Cool Water Habitat; **CDH**= Cold

Water Habitat;

**EAH** = Ephemeral Aquatic Habitat;

**MAH** = Modified Aquatic Habitat; **LAH**

= Limited Aquatic Habitat.

This permit uses Aquatic Life Protection effluent limitations in 10 CSR 20-7.031 Table A for all aquatic habitat designations unless otherwise specified.

10 CSR 20-7.031(1)(C)2.: Recreation in and on the water

**WBC** = Whole Body Contact recreation where the entire body is capable of being submerged. WBC is further subcategorized as:

**WBC-A** = Whole body contact recreation that supports swimming uses and has public access;

**WBC-B** = Whole body contact recreation that supports swimming;

**SCR** = Secondary Contact Recreation (like fishing, wading, and boating).

10 CSR 20-7.031(1)(C)3. to 7.:

**HHP** = Human Health Protection as it relates to the consumption of fish;

**IRR** = Irrigation - Application of water to cropland or directly to cultivated plants that may be used for human or livestock consumption;

**LWP** = Livestock and wildlife protection - Maintenance of conditions in waters to support health in livestock and wildlife;

**DWS** = Drinking water supply;

**IND** = Industrial water supply

10 CSR 20-7.031(1)(C)8-11.: Wetlands (10 CSR 20-7.031 Table A currently does not have corresponding habitat use criteria for these defined uses)

**WSA** = Storm- and flood-water storage and attenuation;

**WHP** = Habitat for resident and migratory wildlife species;

**WRC** = Recreational, cultural, educational, scientific, and natural aesthetic values and uses;

**WHC** = Hydrologic cycle maintenance.

10 CSR 20-7.031(6):

**GRW** = Groundwater

**MIXING CONSIDERATIONS**

**Zone of Initial Dilution: Not Allowed [10 CSR 20-7.031(5)(A)4.B.(IV)(b)].**

**Mixing Zone:**

Mixing Zone (MZ) Parameters: The planned outfall is at the very end of a small arm of the lake. The mainstem lake width at the edifice, a small private boat dock, nearest the new facility outfall location is approximately 100 feet, the same as the maximum allowed distance. Therefore MZ = 100 feet [10 CSR 20-7.031(5)(A)5.B.(IV)(a)].

Mixing Zone Volume: The flow volume approximates a triangular prism because of the slope of the lake bottom, where the formula is Volume = L\*W\*(D\*0.5). The distance (L) from the outfall to the boat dock is 225 feet, so the maximum allowed length is 100 ft. The prism dimensions are length (L) = 100 ft., width (W) = 100 ft., and depth (D) = 5 ft. Depth was obtained from other WQARs for other facilities at the lake with outfalls on similar small arms.

$$\text{Volume} = L * W * (D * (0.5)) = (100') * (100') * (5' * (0.5)) = 25,000 \text{ ft}^3.$$

The flow volume of 25,000 ft<sup>3</sup> is assumed as the daily mixing zone. Therefore;

$$30Q_{10} = (25,000 \text{ ft}^3/\text{day}) * (1 \text{ day}/86,400 \text{ sec}) = 0.29 \text{ ft}^3/\text{sec}.$$

**Zone of Initial Dilution: Not Allowed [10 CSR 20-7.031(5)(A)4.B.(IV)(b)].**

### Receiving Water Body's Water Quality

Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation.

- ✓ This facility discharges to a 303(d) listed lake. Lake of the Ozarks is listed on the 2021 Missouri 303(d) List for chlorophyll-a for aquatic life.
  - This facility is not considered to be a source of the above listed pollutant(s) or considered to contribute to the impairment of the Lake of the Ozarks.

### OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Flow**. In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.
- **Biochemical Oxygen Demand (BOD<sub>5</sub>)**. Effluent limits of 15 mg/L average monthly and 20 mg/L average weekly were established as a result of a discharging technology alternatives analysis conducted by the applicant. These limits are at least as stringent as the minimum effluent regulations established in 10 CSR 20-7.015(3)(A)1.A. (See attached Antidegradation Review Sheet).
- **Total Suspended Solids (TSS)**. Effluent limits of 15 mg/L average monthly and 20 mg/L average weekly were established as a result of a discharging technology alternatives analysis conducted by the applicant. These limits are at least as stringent as the minimum effluent regulations established in 10 CSR 20-7.015(3)(A)1.A. (See attached Antidegradation Review Sheet).
- **Escherichia coli (E. coli)**. Monthly average of 126 per 100 mL as a geometric mean and Daily Maximum of 630 per 100 mL as a geometric mean during the recreational season (April 1 – October 31), for discharges within two miles upstream of segments or lakes with Whole Body Contact Recreation (A) designated use of the receiving stream, as per 10 CSR 20-7.015(9)(B). The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected. For example: Five *E. coli* samples were collected with results of 1, 4, 6, 10, and 5 (#/100mL). Geometric Mean = 5<sup>th</sup> root of (1)(4)(6)(10)(5) = 5<sup>th</sup> root of 1,200 = 4.1 #/100mL.
- **Total Ammonia Nitrogen**. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L. No Zone of Initial Dilution allowed [10 CSR 20-7.031(5)(A)4.B.(IV)(b).

The Department previously followed the 2007 Ammonia Guidance method for derivation of ammonia limits. However, the EPA's Technical Support Document for Water Quality-based Toxic Controls (TSD) establishes other alternatives to limit derivation. The Department has determined that the approach established in Section 5.4.2 of the TSD, which allows for direct application of both the acute and chronic wasteload allocations (WLA) as permit limits for toxic pollutants, is more appropriate limit derivation approach. Using this method for a discharge to a waterbody where mixing is not allowed, the criterion continuous concentration (CCC) and the criterion maximum concentration (CMC) will equal the chronic and acute WLA respectively. The WLAs are then applied as effluent limits, per Section 5.4.2 of the TSD, where the CMC is the Daily Maximum and the CCC is the Monthly Average. The direct application of both acute and chronic criteria as WLA is also applicable for facilities that discharge into receiving waterbodies with mixing considerations. The CCC and CMC will need to be calculated into WLA with mixing considerations using the mass-balance equation:



$$C_e = \frac{(Q_e + Q_s)C - (Q_s \times C_s)}{(Q_e)}$$

Where C = downstream concentration      C<sub>e</sub> = effluent concentration  
 C<sub>s</sub> = upstream concentration            Q<sub>e</sub> = effluent flow  
 Q<sub>s</sub> = upstream flow

In the event that mixing considerations derive an AML less stringent than the MDL, the AML and MDL will be equal and based on the MDL.

Quarter	Temp (°C)*	pH (SU)*	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)
1 <sup>st</sup>	11.0	7.8	2.3	12.7
2 <sup>nd</sup>	21.2	7.8	2.3	12.7
3 <sup>rd</sup>	26.0	7.8	2.1	12.7
4 <sup>th</sup>	15.5	7.8	1.2	7.2

\* Ecoregion Data (Ozark Highlands)

**1<sup>st</sup> Quarter**

Chronic WLA:

$$C_e = ((0.001 + 0.29)2.3 - (0.0 * 0.01))/0.001 = 669.3 \text{ mg/L}$$

Acute WLA:

$$C_e = ((0.001 + 0.0)12.7 - (0.0 * 0.01))/0.001 = 12.7 \text{ mg/L}$$

Chronic WLA = AML = **12.7 mg/L**

Acute WLA = MDL = **12.7 mg/L**

**2<sup>nd</sup> Quarter**

Chronic WLA:

$$C_e = ((0.001 + 0.29)2.3 - (0.0 * 0.01))/0.001 = 669.3 \text{ mg/L}$$

Acute WLA:

$$C_e = ((0.001 + 0.0)12.7 - (0.0 * 0.01))/0.001 = 12.7 \text{ mg/L}$$

Chronic WLA = AML = **12.7 mg/L**

Acute WLA = MDL = **12.7 mg/L**

**3<sup>rd</sup> Quarter**

Chronic WLA:

$$C_e = ((0.001 + 0.29)2.1 - (0.0 * 0.01))/0.001 = 611.1 \text{ mg/L}$$

Acute WLA:

$$C_e = ((0.001 + 0.0)12.7 - (0.0 * 0.01))/0.001 = 12.7 \text{ mg/L}$$

Chronic WLA = AML = **12.7 mg/L**

Acute WLA = MDL = **12.7 mg/L**

**4<sup>th</sup> Quarter**

Chronic WLA:

$$C_e = ((0.001 + 0.29)1.2 - (0.0 * 0.01))/0.001 = 349.2 \text{ mg/L}$$

Acute WLA:

$$C_e = ((0.001 + 0.0)7.2 - (0.0 * 0.01))/0.001 = 7.2 \text{ mg/L}$$

Chronic WLA = AML = **7.2 mg/L**

Acute WLA = MDL = **7.2 mg/L**

The applicant proposed seasonal monthly ammonia limits of 2.8 mg/L in its Antidegradation application. Since the proposed limit is more protective than the WQBEL chronic limit of 12.7 mg/L, the monthly ammonia limit in this permit is the proposed limit scaled for quarterly sampling and reporting.

- **pH.** 6.5-9.0 SU. pH limitations of 6.0-9.0 SU [10 CSR 20-7.015] are not protective of the in-stream Water Quality Standard, which states that water contaminants shall not cause pH to be outside the range of 6.5-9.0 SU.
- **Total Phosphorus.** Phosphorus limit of 1.0 mg/L for discharge to Lake of the Ozarks, which recently received a 303(d) listing.

**OUTFALL #001 – GENERAL CRITERIA CONSIDERATIONS:**

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into the permit for those pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. The rule further states that pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above a narrative criterion within an applicable State water quality standard, the permit shall contain a numeric effluent limitation to protect that narrative criterion. In order to comply with this regulation, the permit writer will complete reasonable potential determinations on whether the discharge will violate any of the general criteria listed in 10 CSR 20-7.031(4). These specific requirements are listed below followed by derivation and discussion (the lettering matches that of the rule itself, under 10 CSR 20-7.031(4)). It should also be noted that Section 644.076.1, RSMo as well as Section D – Administrative Requirements of Standard Conditions Part I of this permit states that it shall be unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri that is in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule or regulation promulgated by the commission.

- (A) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses. The discharge from this facility is made up of treated domestic wastewater. This facility will utilize secondary treatment technology and there has been no indication to the Department that the stream has had issues maintaining beneficial uses as a result of this discharge. Based on the information reviewed during the drafting of this permit, these final effluent limitations appear to have protected against the excursion of this criterion in the past. Therefore, the discharge does not have the reasonable potential to cause or contribute to an excursion of this criterion.
- (B) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
- (C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
- (D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life. This permit contains final effluent limitations which are protective of both acute and chronic toxicity for various pollutants that are either expected to be discharged by domestic wastewater facilities or that were disclosed by this facility on the application for permit coverage. Based on the information reviewed during the drafting of this permit, it has been determined if the facility meets final effluent limitations established in this permit, there is no reasonable potential for the discharge to cause an excursion of this criterion.
- (E) Waters shall provide for the attainment and maintenance of water quality standards downstream including waters of another state. Please see (D) above as justification is the same.
- (F) There shall be no significant human health hazard from incidental contact with the water. Please see (D) above as justification is the same.
- (G) There shall be no acute toxicity to livestock or wildlife watering. Please see (D) above as justification is the same.
- (H) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community. Please see (A) above as justification is the same.
- (I) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247. The discharge from this facility is made up of treated domestic wastewater. No evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, any solid wastes received or produced at this facility are wholly contained in appropriate storage facilities, are not discharged, and are disposed of offsite. This discharge is subject to Standard Conditions Part III, which contains requirements for the management and disposal of sludge to prevent its discharge. Therefore, this discharge does not have reasonable potential to cause or contribute to an excursion of this criterion.

### **Part III – Rationale and Derivation of Effluent Limitations & Permit Conditions**

#### **ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:**

As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream, and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

- ✓ The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(40)] & [10 CSR 20-7.031(1)(O)].

#### **ANTI-BACKSLIDING:**

A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(o); 40 CFR Part 122.44(l)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

- ✓ This is a new facility; therefore, backsliding does not apply.

#### **ANTIDEGRADATION:**

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)], for domestic wastewater discharge with new, altered, or expanding discharges, the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. In accordance with Missouri's water quality regulations for antidegradation [10 CSR 20-7.031(3)], degradation may be justified by documenting the socio-economic importance of a discharge after determining the necessity of the discharge. Facilities must submit the antidegradation review request to the Department prior to establishing, altering, or expanding discharges. See <https://dnr.mo.gov/document-search/antidegradation-implementation-procedure>.

- ✓ This permit contains new and/or expanded discharge; please see **APPENDIX FOR ANTIDEGRADATION ANALYSIS**.

**AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:**

As per [10 CSR 20-6.010(2)(C)], an applicant may utilize a lower preference continuing authority when a higher-level authority is available by submitting information as part of the application to the Department for review and approval, provided it does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

**BIOSOLIDS & SEWAGE SLUDGE:**

Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works.

✓ Permittee is not authorized to land apply biosolids. Sludge/biosolids are removed by contract hauler.

**COMPLIANCE AND ENFORCEMENT:**

Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

**Facility Performance History:**

✓ The facility is not currently under Water Protection Program enforcement action.

**CONTINUING AUTHORITY:**

Each application for an operating permit shall identify the person, as that term is defined in section 644.016(15), RSMo, that is the owner of, operator of, or area-wide management authority for a water contaminant source, point source, wastewater treatment facility, or sewer collection system. This person shall be designated as the continuing authority and shall sign the application. By doing so, the person designated as the continuing authority acknowledges responsibility for compliance with all permit conditions.

10 CSR 20-6.010(2) establishes preferential levels for continuing authorities: Levels 1 through 5 (with Level 1 as the highest level), and generally requires permits to be issued to a higher preference continuing authority if available. A Level 3, 4, or 5 applicant may constitute a continuing authority by showing that Level 1 and Level 2 authorities are not available; do not have jurisdiction; are forbidden by state statute or local ordinance from providing service to the person; or that the Level 3, 4, or 5 applicant has met one of the requirements listed in paragraphs (2)(C)1.-7. of 10 CSR 20-6.010(2). The seven options in paragraphs (2)(C)1.-7. for a lower-level authority to demonstrate that it is the valid continuing authority are:

1. A waiver from the existing higher authority declining the offer to accept management of the additional wastewater or stormwater;
2. A written statement or a demonstration of non-response from the higher authority;
3. A to-scale map showing all parts of the legal boundary of the facility's property are beyond 2,000 feet from the collection (sewer) system operated by the higher preference authority;
4. A proposed connection or adoption charge by the higher authority that would equal or exceed what is economically feasible for the applicant, which may be in the range of 120 percent of the applicant's cost for constructing or operating a wastewater treatment system;
5. A proposed service fee on the users of the system by the higher authority that is above what is affordable for existing homeowners in that area;
6. Terms for connection or adoption by the higher authority that would require more than two years to achieve full sewer service; or
7. A demonstration that the terms for connection or adoption by the higher authority are not viable or feasible to homeowners in the area.

Permit applicants that are Levels 3, 4, and 5 must, as part of their application, identify their method of compliance with this regulation. The following are the methods to comply.

- No higher level authorities are available to the facility;
- No higher level authorities have jurisdiction;

- Higher level authorities are forbidden by state statute or local ordinance from providing service to the person;
- The existing higher level authority is available to the facility, however the facility has proposed the use of a lower preference continuing authority and has submitted one of the following as part of their application provided it does not conflict with any area-wide management plan approved under section 208 of the Clean Water Act or by the Missouri Clean Water Commission.
  - A waiver from the existing higher authority;
  - A written statement or a demonstration of non-response from the higher authority;
  - A to-scale map showing all parts of the legal boundary of the facility's property are beyond 2,000 feet from the collection (sewer) system operated by the higher preference authority;
  - Documentation that the proposed connection or adoption charge by the higher authority would equal or exceed what is economically feasible for the applicant, which may be in the range of 120 percent of the applicant's cost for constructing or operating a wastewater treatment system;
  - Documentation that the proposed service fee on the users of the system by the higher authority is above what is affordable for existing homeowners in that area;
  - Documentation that the terms for connection or adoption by the higher authority would require more than two years to achieve full sewer service;
  - A demonstration that the terms for connection or adoption by the higher authority are not viable or feasible to homeowners in the area;
- ✓ The continuing authority listed on the application is a person contractually obligated to collectively act as a wastewater collection and treatment service, Section 393.825, RSMo nonprofit company. The continuing authority listed on the application form is for a business entity which is incorporated under the laws of Missouri. The business entity is registered with the Missouri Secretary of State's office and is assigned Charter Number LC179072 per the Secretary of State's webpage. The owner of the corporation name with that charter number was verified by the permit writer to match the name on the application form. The corporation has a status of "Good Standing" on the Secretary of State's webpage at the time of the drafting of this permit, and therefore a Level 4 Authority. The applicant has shown that:
- A higher level authority is not available to the facility;
  - ✓ As part of the 2022 Antidegradation Report, the proposed facility is located 4.5 miles from City of Sunrise Beach's collection system.
  - ✓ The proposed connection or adoption fee for connection was more than the economically feasible or affordable for the facility. The facility submitted documentation during the Antidegradation review that the cost to connect was estimated to be \$1.5 million, more than 8 times the expected cost for constructing a new treatment plant.

#### **ELECTRONIC DISCHARGE MONITORING REPORT (EDMR) SUBMISSION SYSTEM:**

The U.S. Environmental Protection Agency (EPA) promulgated a final rule on October 22, 2015, to modernize Clean Water Act reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. This final rule requires regulated entities and state and federal regulators to use information technology to electronically report data required by the National Pollutant Discharge Elimination System (NPDES) permit program instead of filing paper reports. To comply with the federal rule, the Department is requiring all permittees to begin submitting discharge monitoring data and reports online. In an effort to aid facilities in the reporting of applicable information electronically, the Department has created several new forms including operational control monitoring forms and an I&I location and reduction form. These forms are optional and can be provided upon request to the Department.

Per 40 CFR 127.15 and 127.24, permitted facilities may request a temporary waiver for up to five years or a permanent waiver from electronic reporting from the Department. To obtain an electronic reporting waiver, a permittee must first submit an eDMR Waiver Request Form: <https://dnr.mo.gov/document-search/electronic-discharge-monitoring-report-waiver-request-form-mo-780-2692>. Each facility must make a request. If a single entity owns or operates more than one facility, then the entity must submit a separate request for each facility based on its specific circumstances. An approved waiver is non-transferable.

The Department must review and notify the facility within 120 calendar days of receipt if the waiver request has been approved or rejected [40 CFR 124.27(a)]. During the Department review period as well as after a waiver is granted, the facility must continue submitting a hard-copy of any reports required by their permit. The Department will enter data submitted in hard-copy from those facilities allowed to do so and electronically submit the data to the EPA on behalf of the facility.

- ✓ The permittee/facility is not currently using the eDMR data reporting system. The permittee is required to register with the Department's eDMR system through MoGEM before the first report is due.

**FEES:**

It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).

**NUMERIC LAKE NUTRIENT CRITERIA:**

This facility discharges into a lake watershed (Lake of the Ozarks) where numeric lake nutrient criteria are applicable, and a Water Quality and Antidegradation Review has established nutrient limits.

**OPERATOR CERTIFICATION REQUIREMENTS:**

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], the permittee shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators at regulated wastewater treatment facilities shall be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation. As per [10 CSR 20-9.020(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems with population equivalents greater than 200 and are owned or operated by or for municipalities, public sewer districts, counties, public water supply districts, private sewer companies regulated by the Public Service Commission and state or federal agencies.

- ✓ This facility is not required to have a certified operator as it doesn't have a PE greater than 200 and is not owned or operated by or for a municipality, public sewer district, county, public water supply district, private sewer company regulated by the PSC, state or federal agency.

**OPERATIONAL CONTROL TESTING:**

Missouri Clean Water Commission regulation 10 CSR 20-9.010 requires certain publicly owned treatment works and privately owned facilities regulated by the Public Service Commission to conduct internal operational control monitoring to further ensure proper operation of the facility and to be a safeguard or early warning for potential plant upsets that could affect effluent quality. This requirement is only applicable if the publicly owned treatment works, and privately owned facilities regulated by the Public Service Commission has a calculated Population Equivalent greater than 200.

10 CSR 20-9.010(3) allows the Department to modify the monitoring frequency required in the rule based upon the Department's judgement of monitoring needs for process control at the specified facility.

- ✓ As per [10 CSR 20-9.010(4)], the facility is not required to conduct operational monitoring.

**PRETREATMENT PROGRAM:**

The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

Pretreatment programs are required at any POTW (or combination of POTW operated by the same authority) and/or municipality with a total design flow greater than 5.0 MGD and receiving industrial wastes that interfere with or pass through the treatment works or are otherwise subject to the pretreatment standards. Pretreatment programs can also be required at POTWs/municipals with a design flow less than 5.0 MGD if needed to prevent interference with operations or pass through.

- ✓ The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

**REASONABLE POTENTIAL (RP):**

Federal regulation [40 CFR Part 122.44(d)(1)(i)] and State Regulation [10 CSR 20-7.015(9)(A)2] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard.

In accordance with [40 CFR Part 122.44(d)(1)(iii)] if the permit writer determines that any given pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

A reasonable potential analysis (RPA) is a numeric RP decision calculated using effluent data provided by the facility for parameters that have a numeric Water Quality Standard (WQS).

Reasonable potential determinations (RPD) are based on physical conditions of the site as provided in Sections 3.1.2, 3.1.3, and 3.2 of the TSD using best professional judgement. An RPD consists of evaluating visual observations for compliance with narrative criteria, non-numeric information, or small amounts of numerical data (such as 3 data points supplied in the application). Narrative criteria with RP typically translate to a numeric WQS, so a parameter's establishment being based on narrative criteria does not necessarily make the decision an RPD vs RP—how the data is collected does, however. When insufficient data is received to make a determination on RP based on numeric effluent data, the RPD decisions are based on best professional judgment considering the sources of influent wastewater, type of treatment, and historical overall management of the site.

- ✓ An RPA was not conducted for this facility. Ammonia is a constituent of domestic wastewater. A RPD was made, that a potential to violate water quality standards exists. Please see Derivation and Discussion of Limits.

**REMOVAL EFFICIENCY:**

Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD<sub>5</sub>) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals.

- ✓ Influent monitoring is not being required to determine percent removal.

**SANITARY SEWER OVERFLOWS (SSO) AND INFLOW AND INFILTRATION (I&I):**

Sanitary Sewer Overflows (SSOs) are defined as untreated sewage releases and are considered bypassing under state regulation [10 CSR 20-2.010(12)] and should not be confused with the federal definition of bypass. SSOs result from a variety of causes including blockages, line breaks, and sewer defects that can either allow wastewater to backup within the collection system during dry weather conditions or allow excess stormwater and groundwater to enter and overload the collection system during wet weather conditions. SSOs can also result from lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs include overflows out of manholes, cleanouts, broken pipes, and other into waters of the state and onto city streets, sidewalks, and other terrestrial locations.

Inflow and Infiltration (I&I) is defined as unwanted intrusion of stormwater or groundwater into a collection system. This can occur from points of direct connection such as sump pumps, roof drain downspouts, foundation drains, and storm drain cross-connections or through cracks, holes, joint failures, faulty line connections, damaged manholes, and other openings in the collection system itself. I&I results from a variety of causes including line breaks, improperly sealed connections, cracks caused by soil erosion/settling, penetration of vegetative roots, and other sewer defects. In addition, excess stormwater and groundwater entering the collection system from line breaks and sewer defects have the potential to negatively impact the treatment facility.

Missouri RSMo §644.026.1(13) mandates that the Department issue permits for discharges of water contaminants into the waters of this state, and also for the operation of sewer systems. Such permit conditions shall ensure compliance with all requirements as established by sections 644.006 to 644.141. Standard Conditions Part I, referenced in the permit, contains provisions requiring proper operation and maintenance of all facilities and systems of treatment and control. Missouri RSMo §644.026.1(15) instructs the Department to require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities. To ensure that public health and the environment are protected, any noncompliance which may endanger public health or the environment must be reported to the Department within 24 hours of the time the permittee becomes aware of the noncompliance. Standard Conditions Part I, referenced in the permit, contains the reporting requirements for the permittee when bypasses and upsets occur.

- ✓ This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state.

**SCHEDULE OF COMPLIANCE (SOC):**

Per 644.051.4 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section 502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit may include interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1), 10 CSR 20-7.031(11), and 10 CSR 20-7.015(9), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

- For effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3.
- For a newly constructed facility in most cases. Newly constructed facilities must meet applicable effluent limitations when discharge begins, because the facility has installed the appropriate control technology as specified in a permit or antidegradation review. A SOC is allowed for a new water quality based effluent limit that was not included in a previously public noticed permit or antidegradation review, which may occur if a regulation changes during construction.
- To develop a TMDL, UAA, or other study that may result in site-specific criteria or alternative effluent limits. A facility is not prohibited from conducting these activities, but a SOC may not be granted for conducting these activities.

In order to provide guidance to Permit Writers in developing SOC's, and attain a greater level of consistency, on April 9, 2015, the Department issued an updated policy on development of SOC's. This policy provides guidance to Permit Writers on the standard time frames for schedules for common activities, and guidance on factors that may modify the length of the schedule such as a Cost Analysis for Compliance.

- ✓ This permit does not contain an SOC.

**SEWER EXTENSION AUTHORITY SUPERVISED PROGRAM:**

In accordance with [10 CSR 20-6.010(6)(A)], the Department may grant approval of a permittee's Sewer Extension Authority Supervised Program. These approved permittees regulate and approve construction of sanitary sewers and pump stations, which are tributary to this wastewater treatment facility. The permittee shall act as the continuing authority for the operation, maintenance, and modernization of the constructed collection system. See <https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/wastewater/construction-engineering>.

- ✓ The permittee does not have a Department approved Sewer Extension Authority Supervised Program.

**VARIANCE:**

As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

- ✓ This operating permit is not drafted under premises of a petition for variance.

**WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:**

As per [10 CSR 20-2.010(86)], the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant that may be discharged into that stream without endangering its water quality.

- ✓ Wasteload allocations were calculated where applicable using water quality criteria or water quality model results and the dilution equation below:

$$C_e = \frac{(Q_e + Q_s)C - (Q_s \times C_s)}{(Q_e)} \quad (\text{EPA/505/2-90-001, Section 4.5.5})$$

Where C = downstream concentration Ce = effluent concentration  
Cs = upstream concentration Qe = effluent flow  
Qs = upstream flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

**Number of Samples "n":**

Additionally, in accordance with the TSD for water quality-based permitting, effluent quality is determined by the underlying distribution of daily values, which is determined by the Long Term Average (LTA) associated with a particular Wasteload Allocation (WLA) and by the Coefficient of Variation (CV) of the effluent concentrations. Increasing or decreasing the monitoring frequency does not affect this underlying distribution or treatment performance, which should be, at a minimum, be targeted to comply with the values dictated by the WLA. Therefore, it is recommended that the actual planned frequency of monitoring normally be used to determine the value of "n" for calculating the AML. However, in situations where monitoring frequency is once per month or less, a higher value for "n" must be assumed for AML derivation purposes. Thus, the statistical procedure being employed using an assumed number of samples is "n = 4" at a minimum. For Total Ammonia as Nitrogen, "n = 30" is used.

### **WLA MODELING:**

There are two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality-based effluent limits (WQBELs). If TBELs do not provide adequate protection for the receiving waters, then WQBEL must be used.

- ✓ A WLA study was either not submitted or determined not applicable by Department staff.

### **WHOLE EFFLUENT TOXICITY (WET) TEST:**

A WET test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with or through synergistic responses when mixed with receiving stream water.

Under the federal Clean Water Act (CWA) §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits for discharges to waters of the state issued under the National Pollutant Discharge Elimination System (NPDES). WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures that the provisions in the 10 CSR 20-6.010(8)(A) and the Water Quality Standards 10 CSR 20-7.031(4)(D),(F),(G),(J)2.A & B are being met. Under [10 CSR 20-6.010(8)(B)], the Department may require other terms and conditions that it deems necessary to assure compliance with the Clean Water Act and related regulations of the Missouri Clean Water Commission. In addition, the following MCWL apply: §§644.051.3 requires the Department to set permit conditions that comply with the MCWL and CWA; 644.051.4 specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc...); and 644.051.5 is the basic authority to require testing conditions.

- ✓ At this time, the permittee is not required to conduct WET test for this facility.

### **40 CFR 122.41(M) - BYPASSES:**

The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from “bypassing” untreated or partially treated sewage (wastewater) beyond the headworks. A bypass is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-7.015(9)(G) states a bypass means the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending, to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri’s Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar devices designed for peak wet weather flows.

- ✓ This facility does not anticipate bypassing.

## **Part IV – Cost Analysis for Compliance**

Pursuant to Section 644.145, RSMo, when issuing permits under this chapter that incorporate a new requirement for discharges from publicly owned combined or separate sanitary or storm sewer systems or publicly owned treatment works, or when enforcing provisions of this chapter or the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., pertaining to any portion of a publicly owned combined or separate sanitary or storm sewer system or [publicly owned] treatment works, the Department of Natural Resources shall make a “finding of affordability” on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the Federal Water Pollution Control Act. This process is completed through a cost analysis for compliance. Permits that do not include new requirements may be deemed affordable.

- ✓ The Department is not required to complete a cost analysis for compliance because the facility is not a combined or separate sanitary sewer system for a publicly-owned treatment works.

## **Part V – Administrative Requirements**

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.



**WATER QUALITY STANDARD REVISION:**

In accordance with section 644.058, RSMo, the Department is required to utilize an evaluation of the environmental and economic impacts of modifications to water quality standards of 25 percent or more when making individual site-specific permit decisions.

- ✓ Nutrient criteria for lakes are environmentally necessary to ensure the beneficial uses of lakes (water supply, recreation in and on the water, and human health) are guarded from the effects of eutrophication and subsequent algal blooms.

**PUBLIC NOTICE:**

The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing. The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit. For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- ✓ The Public Notice period for this operating permit was from November 4, 2022, to December 5, 2022. No responses were received.

**DATE OF FACT SHEET:** SEPTEMBER 27, 2022

**FINALIZED BY:**

**REFAAT MEFRAKIS, PERMIT WRITER  
MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM  
ENGINEERING SECTION  
(573) 751-1714  
[Refaat.Mefrakis@dnr.mo.gov](mailto:Refaat.Mefrakis@dnr.mo.gov)**

## Appendices

### APPENDIX – Non-Detect Example Calculations:

**Example:** Permittee has four samples for Pollutant X which has a method minimum level of 5 mg/L and is to report a Daily Maximum and Monthly Average.

Week 1 = 11.4 mg/L

Week 2 = Non-Detect or <5.0 mg/L

Week 3 = 7.1 mg/L

Week 4 = Non-Detect or <5.0 mg/L

For this example, use subpart (h) - For reporting an average based on a mix of detected and non-detected values (not including *E. coli*), assign a value of "0" for all non-detects for that reporting period and report the average of all the results.

$$11.4 + 0 + 7.1 + 0 = 18.5 \div 4 \text{ (number of samples)} = 4.63 \text{ mg/L.}$$

The Permittee reports a Monthly Average of 4.63 mg/L and a Daily maximum of 11.4 mg/L (Note the < symbol was dropped in the answers).

**Example:** Permittee has five samples for Pollutant Y that has a method minimum level of 9 µg/L and is to report a Daily Maximum and Monthly Average.

Day 1 = Non-Detect or <9.0 µg/L

Day 2 = Non-Detect or <9.0 µg/L

Day 3 = Non-Detect or <9.0 µg/L

Day 4 = Non-Detect or <9.0 µg/L

Day 5 = Non-Detect or <9.0 µg/L

For this example, use subpart (g) - For reporting an average based on all non-detected values, remove the "<" sign from the values, average the values, and then add the "<" symbol back to the resulting average.

$$(9 + 9 + 9 + 9 + 9) \div 5 \text{ (number of samples)} = <9 \text{ µg/L.}$$

The Permittee reports a Monthly Average of <9.0 µg/L (retain the 'less than' symbol) and a Daily Maximum of <9.0 µg/L.

**Example:** Permittee has four samples for Pollutant Z where the first two tests were conducted using a method with a method minimum level of 4 µg/L and the remaining two tests were conducted using a different method that has a method minimum level of <6 µg/L and is to report a Monthly Average and a Weekly Average.

Week 1 = Non-Detect or <4.0 µg/L

Week 2 = Non-Detect or <4.0 µg/L

Week 3 = Non-Detect or <6.0 µg/L

Week 4 = Non-Detect or <6.0 µg/L

For this example, use subpart (g) - For reporting an average based on all non-detected values, remove the "<" sign from the values, average the values, and then add the "<" symbol back to the resulting average.

$$(4 + 4 + 6 + 6) \div 4 \text{ (number of samples)} = <5 \text{ µg/L. (Monthly)}$$

The facility reports a Monthly Average of <5.0 µg/L and a Weekly Average of <6.0 µg/L.

#### APPENDIX – Non-Detect Example Calculations (Continued):

**Example:** Permittee has five samples for Pollutant Z where the first two tests were conducted using a method with a method minimum level of 4 µg/L and the remaining three tests were conducted using a different method that has a method minimum level of <6 µg/L and is to report a Monthly Average and a Weekly Average.

Week 1 = Non-Detect or <4.0 µg/L

Week 2 = Non-Detect or <4.0 µg/L

Week 2 = Non-Detect or <6.0 µg/L

Week 3 = Non-Detect or <6.0 µg/L

Week 4 = Non-Detect or <6.0 µg/L

For this example, use subpart (g) - For reporting an average based on all non-detected values, remove the “<” sign from the values, average the values, and then add the “<” symbol back to the resulting average.

$(4 + 4 + 6 + 6 + 6) \div 5$  (number of samples) = <5.2 µg/L. (Monthly)

$(4 + 6) \div 2$  (number of samples) = <5 µg/L. (Week 2)

The facility reports a Monthly Average of <5.2 µg/L and a Weekly Average of <6.0 µg/L (report highest Weekly Average value)

**Example:** Permittee has four samples for Pollutant Z where the tests were conducted using a method with a method minimum level of 10 µg/L and is to report a Monthly Average and Daily Maximum. The permit lists that Pollutant Z has a Department determined Minimum Quantification Level (ML) of 130 µg/L.

Week 1 = 12 µg/L

Week 2 = 52 µg/L

Week 3 = Non-Detect or <10 µg/L

Week 4 = 133 µg/L

For this example, use subpart (h) - For reporting an average based on a mix of detected and non-detected values (not including *E. coli*), assign a value of “0” for all non-detects for that reporting period and report the average of all the results.

For this example,  $(12 + 52 + 0 + 133) \div 4$  (number of samples) =  $197 \div 4 = 49.3$  µg/L.

The facility reports a Monthly Average of 49.3 µg/L and a Daily Maximum of 133 µg/L.

**Example:** Permittee has five samples for *E. coli* which has a method minimum level of 1 #/100mL and is to report a Weekly Average (seven (7) day geometric mean) and a Monthly Average (30-day geometric mean).

Week 1 = 102 #/100mL

Week 2 (Monday) = 400 #/100mL

Week 2 (Friday) = Non-Detect or <1 #/100mL

Week 3 = 15 #/100mL

Week 4 = Non-Detect or <1 #/100mL

For this example, use subpart (i) - When *E. coli* is not detected above the method minimum level, the permittee must report the data qualifier signifying less than detection limit for that parameter (e.g., <1 #/100mL, if the method minimum level is 1 #/100mL). For reporting a geometric mean based on a mix of detected and non-detected values, use one-half of the detection limit (instead of zero) for non-detects when calculating geometric means. The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected.

The Monthly Average (30 day Geometric Mean) = 5th root of  $(102)(400)(0.5)(15)(0.5) = 5$ th root of 153,000 = 10.9 #/100mL.

The 7 day Geometric Mean = 2nd root of  $(400)(0.5) = 2$ nd root of 200 = 14.1 #/100mL. (Week 2)

The Permittee reports a Monthly Average (30 day Geometric Mean) of 10.9 #/100mL and a Weekly Average (7 day geometric mean) of 102 #/100mL (report highest Weekly Average value)

APPENDIX – ANTIDegradation ANALYSIS:



April 20, 2022

Jessica Bruce  
Azul Waters WWTF  
184 Oakmont Ave  
Lake of the Ozarks, MO 65049

**RE: Water Quality and Antidegradation Review for Azul Waters WWTF**

Dear Jessica Bruce:

In accordance with the Missouri Antidegradation Rule and Implementation Procedure (AIP), your proposed discharge is subject to an Antidegradation Review. The enclosed Water Quality and Antidegradation Review (WQAR) summarizes this preliminary determination based upon the Antidegradation Review Report, dated November 4, 2021, which proposed to build a new wastewater treatment facility for ten single-family houses.

The WQAR contains pertinent antidegradation review information based on the use of existing water quality, effluent limitations and monitoring requirements for the facility discharge. It was developed in accordance with 10 CSR 20-7.031, the Clean Water Commission approved Missouri Antidegradation Rule and Implementation Procedure (AIP) dated July 13, 2016, U.S. Environmental Protection Agency (US EPA) guidance, the applicant-supplied antidegradation review documentation, and the State of Missouri's effluent regulations (10 CSR 20-7.015). Please refer to the General Assumptions of the Water Quality and Antidegradation Review section of the enclosed WQAR. The WQAR is preliminary and subject to change as new information becomes available during future permit application processing.

Based on the Missouri Department of Natural Resources (Department) initial review, preliminary determination is that the applicant-supplied antidegradation review documentation satisfies the requirements of the AIP. This WQAR may be appealed within 30 days of this letter in accordance with the AIP Section II.F.4. The WQAR would also allow you to pursue construction of one of the other approved reasonable alternatives without the need to modify this Antidegradation review.

You may proceed with submittal of an application for an operating permit and antidegradation review public notice, an engineering report, or a facility plan. These submittals must reflect the design flow, facility description, and general treatment components of this WQAR or this preliminary determination may have to be revisited. To reduce cost and time spent scanning permit applications, plans, and specification, the Water Protection Program's Engineering Section has begun asking for electronic copies of submitted documents in addition to paper copies. Please remember that 10 CSR 20-6.010 now requires that a copy of these documents be submitted electronically on a compact disc or other removable electronic media.





Following the Department's public notice of draft Missouri State Operating Permit including the antidegradation review findings and preliminary determination, the Department will review any public notice comments received. If significant comments are made, the project may require another public notice and potentially another antidegradation review. If no comments are received or comments are resolved without another public notice, these findings and determinations will be considered final.

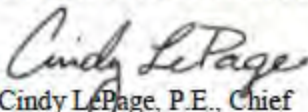
Following issuance of the construction permit and completion of the actual facility construction, the Department will proceed with the issuance of the operating permit.

Some projects are eligible for funding through the Department's Clean Water State Revolving Fund (CWSRF) Program. Applications for funding and guidance documents can be found at <https://dnr.mo.gov/env/wpp/srf/wastewater-project-guidance.htm>. Project eligibility determinations are made, in accordance with 10 CSR 20-4.040. Projects that are eligible for funding are listed on the Intended Use Plan, provided additional CWSRF requirements are met, including but not limited to environmental review requirements, public hearing requirements, user charge requirements and approval of construction plans and specifications. For questions related to the CWSRF Program, please contact Joan Doerhoff, Financial Assistance Center Coordinator Unit Chief, at 573-526-0940.

If you should have questions, please feel free to contact Bern Johnson by phone at 573-751-1714, by email at [bern.johnson@dnr.mo.gov](mailto:bern.johnson@dnr.mo.gov), or by mail at P.O. Box 176, Jefferson City, Missouri 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM



Cindy LePage, P.E., Chief  
Engineering Section

CL:bjt

Enclosure

c: Ethan Shackelford, P.E., R. Miller Companies, LLC.

# Water Quality and Antidegradation Review

For the Protection of Water Quality  
and Determination of Effluent Limits for Discharge to

Lake of the Ozarks by  
Azul Waters WWTF



April 2022

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**Purpose of Antidegradation Review Report**

The proposed new facility will serve a planned ten single family homes at Lake of the Ozarks. A recirculating rock filter is the initial technology selected. The projected design flow is 3,750 gallons per day (gpd).

Ethan Shackelford, P.E. of R. Miller Companies, LLC, prepared the application and Antidegradation Review.

The applicant elected to assume that all pollutants of concern (POC) significantly degrade the receiving water body in the absence of existing water quality. An alternatives analysis was conducted to fulfill the requirements of the Antidegradation Implementation Policy (AIP).

**Facility Information**

Facility Name:	Azul Waters WWTF
Address:	Hollow Oak Court
Permit #:	New Facility
County:	Camden
Facility Type:	Domestic
Owner:	Jessica Bruce
Continuing Authority:	same
UTM Coordinates:	X = 524855 ; Y = 4218389 (general area)
Legal Description:	Section 23 T40N R16W
Ecological Drainage Unit:	Ozark / Osage

**Facility History**

This is a new facility and has no history.

Facility performance History:

There is no performance history for this facility since it is a new and proposed discharging facility.

Receiving Waterbody Information

**OUTFALL(S) TABLE:**

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
001	0.006	Secondary	Domestic



**RECEIVING STREAM(S) TABLE:**

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Lake of the Ozarks	L2	7205	AQL, WBC-A, SCR, IRR, HHP, LWV	10290109-0401	0

\* Protection of Warm Water Aquatic Life (AQL), Cold Water Fishery (CDF), Cool Water Fishery (CLF), Whole Body Contact Recreation – Category A (WBC-A), Whole Body Contact Recreation – Category B (WBC-B), Secondary Contact Recreation (SCR), Human Health Protection (HHP), Irrigation (IRR), Livestock & Wildlife Watering (LWW), Drinking Water Supply (DWS), Industrial (IND), Groundwater (GRW).

**RECEIVING STREAM(S) LOW-FLOW VALUES:**

RECEIVING STREAM	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Lake of the Ozarks		6.9	7.5

Receiving Water Body Segment Outfall #1:		
Upper end segment* UTM coordinates:	X = 524892 ; Y = 4218703	outfall
Lower end segment* UTM coordinates:	X = 524892 ; Y = 4218703	cove meets main lake body

Note – exact location of facility, outfall, and confluence with lake are yet to be determined.

\*Segment is the portion of the stream where discharge occurs. Segment is used to track changes in assimilative capacity and is bound at a minimum by existing sources and confluences with other significant water bodies.

A Geohydrologic Evaluation was submitted with the request and the receiving stream is gaining for discharge purposes (see Appendix B).

**Existing Water Quality**

No existing water quality data was submitted. The facility discharges to Lake of the Ozarks, which is on the 303(d) list for fish trauma, but not for any POC.

**Mixing Considerations**

**MIXING CONSIDERATIONS**

Mixing Zone (MZ) Parameters: The planned outfall is at the very end of a small arm of the lake. The mainstem lake width at the edifice, a small private boat dock, nearest the new facility outfall location is approximately 100 feet (ft), the same as the maximum allowed distance. Therefore MZ = 100 feet [10 CSR 20-7.031(5)(A)5.B.(IV)(a)].

Mixing Zone Volume: The flow volume approximates a triangular prism because of the slope of the lake bottom, where the formula is Volume = L\*W\*(D\*0.5). The distance (L) from the outfall to the boat dock is 225 feet, so the maximum allowed length is 100 ft. The prism dimensions are length (L) = 100 ft., width (W) = 100 ft., and depth (D) = 5 ft. Depth was obtained from other WQARs for other facilities at the lake with outfalls on similar small arms.

$$\text{Volume} = L*W*(D*(0.5)) = (100')*(100')*(5'*(0.5)) = 25,000 \text{ ft}^3.$$

The flow volume of 25,000 ft<sup>3</sup> is assumed as the daily mixing zone. Therefore;  
30Q10 = (25,000 ft<sup>3</sup>/day)\*(1 day/86,400 sec) = 0.29 ft<sup>3</sup>/sec.

**Zone of Initial Dilution:** Not Allowed [10 CSR 20-7.031(5)(A)4.B.(IV)(b)].

**Permit Limits and Monitoring Information**

## Proposed Monitoring Parameters and Effluent Limits

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Flow	MGD		*		*				
BOD <sub>5</sub>	mg/L	PEL	20		15				
TSS	mg/L	PEL	20		15				
<i>Escherichia coli</i> **	#/100mL	WQBEL	630		126**				
Ammonia as N (Jan 1 – Mar 31)	mg/L	PEL / WQBEL	12.7		2.3				
(Apr 1 – Jun 30)			12.7		2.3				
(Jul 1 – Sep 30)			12.7		2.1				
(Oct 1 – Dec 31)			7.2		1.2				
Oil & Grease	mg/L								
Total Phosphorus	mg/L		*		1.0				
Total Kjeldahl Nitrogen	mg/L								
PARAMETER	Unit	Basis for Limits	Minimum		Maximum	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
pH	SU		6.0		9.0				
PARAMETER	Unit	Basis for Limits	Daily Minimum		Monthly Avg. Min	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
Dissolved Oxygen (DO)	mg/L								
BOD <sub>5</sub> Percent Removal	%								
TSS Percent Removal	%								

\* - Monitoring requirement only

\*\* - #/100mL; the Monthly Average for *E. coli* is a geometric mean.

\*\*\* - Parameter not previously established in previous state operating permit.

**Basis for Limitations Codes:**

MDEL – Minimally Degrading Effluent Limit

TBEL – Technology-Based Effluent Limit

NDEL – Non-Degrading Effluent Limit

WQBEL – Water Quality-Based Effluent Limit

PEL – Preferred Effluent Limit

**Receiving Water Monitoring Requirements**

No receiving water monitoring requirements recommended at this time.

**Antidegradation Review Information**

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)] and federal antidegradation policy at Title 40 Code of Federal Regulation (CFR) Section 131.12 (a), the department developed a statewide antidegradation policy and corresponding procedures to implement the policy. A proposed discharge to a water body will be required to undergo a level of Antidegradation Review, which documents that the use of a water body's available assimilative capacity is justified. Effective August 30, 2008, and revised July 13, 2016, a facility is required to use Missouri's AIP for new and expanded wastewater discharges.

The AIP specifies that if the proposed activity results in significant degradation, then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required.

The following is a review of the Antidegradation Review Report for Azul Waters WWTF dated November 4, 2021.

**A. Tier Determination**

Waterbodies are assigned Tier 1, 2, or 3 protection levels.

Tier 1 protection is applied to a waterbody on a pollutant-by-pollutant basis for pollutants may cause or contribute to the impairment of a beneficial use or violation of Water Quality Criteria (WQC); and prohibit further degradation of Existing Water Quality (EWQ) where additional pollutants of concern (POCs) would result in the water being included on the 303(d) List.

Tier 2 level protection is assigned to the waterbody on a pollutant-by-pollutant basis that prohibits the degradation of water quality of a surface water unless a review of reasonable alternatives and social and economic considerations justifies the degradation in accordance with the methods presented in the AIP.

Tier 3 protection prohibits any degradation of water quality of Outstanding National Resource Waters and Outstanding State Resource Waters as identified in Tables D and E of the Water Quality Standards (WQS). Temporary degradation of water receiving Tier 3 protection may be allowed by the Department on a case-by-case basis as explained in Section VI of the AIP.

Below is a list of POCs reasonably expected and identified by the permittee in their application to be in the discharge. Pollutants of concern are defined as those pollutants “proposed for discharge that affect beneficial use(s) in waters of the state.” They include pollutants that “create conditions unfavorable to beneficial uses in the water body receiving the discharge or proposed to receive the discharge” (AIP, Page 6).

The pollutants of concern; BOD, ammonia, and *E. coli*, were assumed to be Tier 2 because no water quality study was performed. Other pollutants, TSS, pH, and phosphorus are not assigned a tier but do have proposed limits.

**Pollutants of Concern and Tier Determination**

Pollutants of Concern	Tier	Degradation	Comment
Biological Oxygen Demand (BOD <sub>5</sub> )/DO	2*	Significant	
Total Suspended Solids (TSS)	**		
Ammonia as N	2*	Significant	
<i>Escherichia coli</i> ( <i>E. coli</i> )	2*	Significant	
pH	***		
Total Phosphorus	2		

\* Tier assumed.

\*\* Tier determination not possible: No in-stream standards for these parameters.

\*\*\* Standards for these parameters are ranges.

**B. Necessity of Degradation**

The AIP specifies that if the proposed activity does result in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required. Part of that analysis as shown below is the evaluation of non-degrading alternatives, such as regionalization or no discharge systems.

The applicant has the option of assuming discharge will be significant and proceeding directly to the alternatives analysis, thereby avoiding the determination of the assimilative capacity of the receiving water. The applicant has elected this option.

**Regionalization**

The closest regional collection system is the City of Sunrise Beach, MO. There are currently no plans for extending the existing collection system to the area is currently being considered. The distance from the proposed sewer main (not considering possible requirements for lift stations, upgrading to accommodate all properties along the available path, or monthly sewer bills) is 24,113 ft and is estimated to cost \$1,567,345. This is far in excess of other treatment options and was not further considered.

**No Discharge Evaluation**

Two options for no discharge were considered: hold & transport and subsurface irrigation. Hold and transport would cost an estimated \$328,500 and was not considered practical. Subsurface irrigation was not possible due to lack of sufficient area; the ten lots are not large enough to construct onsite systems.

**Alternatives to No discharge**

The alternatives analysis included four options of three different technologies. The technologies were package plant, recirculating rock filter, and membrane bioreactor. The rock filter was evaluated with and without chlorination.

The package plant and recirculating rock filters were too large for the available space, regardless of cost or efficacy. The membrane bioreactor was described as a newer technology and therefore not having the same track record as the other options, but also mentioned that several other smaller systems at the Lake used membrane bioreactors with acceptable performance at a competitive cost.

The membrane bioreactor was selected as the base case and only practical option.

Alternatives Analysis Comparison

Pollutant	Membrane Bioreactor (Base Case)	Recirculating Rock Filter	Recirculating Rock Filter w/ Chlorination	Package Plant
BOD <sub>5</sub>	15 mg/l	20 mg/l	20 mg/l	20 mg/l
TSS	15 mg/l	20 mg/l	20 mg/l	20 mg/l
Ammonia as N	1.2 mg/l	4 mg/l	2.8 mg/l	4.6 mg/l
Escherichia coli (E. coli)	≤ 126 CFU/100ml	≤ 126 CFU/100ml	≤ 126 CFU/100ml	≤ 126 CFU/100ml
Total Phosphorus	1.0 mg/L	1.0 mg/L	1.0 mg/L	1.0 mg/L
Life Cycle Cost**	\$245,660	\$245,688	\$245,688	\$525,289
Ratio	100%	100%	100%	214%

\* monitoring requirement

\*\*Life cycle cost at 20 year design life and 1 percent interest

C. Social and Economic Importance

The affected community consists of the ten homes directly connected to the proposed system and the Lake of the Ozarks region in general. Lake front property in the area is one of the largest sectors when evaluating tax base revenue. This project, and others like it, are essential to protecting property values in the region until residential population density is sufficient to expand larger regional infrastructure systems into remote areas. This project is directly funded by the developers, allowing local governments to focus its resources on developing regional infrastructure.

D. Natural Heritage Review

A Missouri Department of Conservation Natural Heritage Review was obtained by the applicant. There are no known species of concern within the defined project area (see Appendix C).

Receiving Water Monitoring Requirements

No receiving water monitoring requirements recommended at this time.

Derivation and Discussion of Parameters and Limits

Wasteload allocations and limits were calculated using two methods:

1) Water quality-based – Using water quality criteria or water quality model results and the dilution equation below:

$$C = \frac{(C_s \times Q_s) + (C_e \times Q_e)}{(Q_e + Q_s)} \quad (\text{EPA/505/2-90-001, Section 4.5.5})$$

Where C = downstream concentration  
 C<sub>s</sub> = upstream concentration  
 Q<sub>s</sub> = upstream flow  
 C<sub>e</sub> = effluent concentration  
 Q<sub>e</sub> = effluent flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality-based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA’s “Technical Support Document For Water Quality-based Toxics Control” (EPA/505/2-90-001).

2) Alternative Analysis-based – Using the preferred alternative’s treatment capacity for conventional pollutants such as BOD<sub>5</sub> and TSS that are provided by the consultant as the WLA, the significantly-degrading effluent average monthly and average weekly

limits are determined by applying the WLA as the average monthly (AML) and multiplying the AML by 1.5 to derive the average weekly limit (AWL).

Note: Significantly-degrading effluent limits have been based on the authority included in Section I.A. of the AIP. Also under 40 CFR 133.105, permitting authorities shall require more stringent limitations than equivalent to secondary treatment limitations for 1) existing facilities if the permitting authority determines that the 30-day average and 7-day average BOD<sub>5</sub> and TSS effluent values could be achievable through proper operation and maintenance of the treatment works, and 2) new facilities if the permitting authority determines that the 30-day average and 7-day average BOD<sub>5</sub> and TSS effluent values could be achievable through proper operation and maintenance of the treatment works, considering the design capability of the treatment process.

**Outfall #001 – Main Facility Outfall**

- **Flow.** Though not limited itself, the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations [40 CFR Part 122.44(i)(1)(ii)]. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the department, which may require the submittal of an operating permit modification. Influent monitoring has been and will be required for this facility in its Missouri State Operating Permit.
- **Biochemical Oxygen Demand (BOD<sub>5</sub>).** Effluent limits of 15 mg/L average monthly and 20 mg/L average weekly maximum were established as a result of a discharging technology alternatives analysis conducted by the applicant. These limits are at least as stringent as the minimum effluent regulations established in 10 CSR 20-7.015(3)(A)1.A..
- **Total Suspended Solids (TSS).** Effluent limits of 15 mg/L average monthly and 20 mg/L average weekly maximum were established as a result of a discharging technology alternatives analysis conducted by the applicant. These limits are at least as stringent as the minimum effluent regulations established in 10 CSR 20-7.015(3)(A)1.A..
- **Escherichia coli (E. coli).** Effluent limits of 126 CFU per 100 mL monthly average and 630 CFU per 100 mL as a daily max of geometric mean during the recreation season (April 1 – October 31) were established as a result of a discharging technology alternatives analysis conducted by the applicant. Disinfection to meet whole body contact requirements is not required because the manufacturer guarantees the system will meet the limit. (10 CSR 20-7.031(9)(J)1.
- **Total Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L

Quarter	Temp (°C)*	pH (SU)*	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)
1 <sup>st</sup>	11.0	7.8	2.3	12.7
2 <sup>nd</sup>	21.2	7.8	2.3	12.7
3 <sup>rd</sup>	26.0	7.8	2.1	12.7
4 <sup>th</sup>	15.5	7.8	1.2	7.2

\* Ecoregion Data (Ozark Highlands)

**1st Quarter**

Chronic WLA:  $C_e = ((0.001 + 0.0)2.3 - (0.0 * 0.01)) / 0.001 = 2.3 \text{ mg/L}$   
 Acute WLA:  $C_e = ((0.001 + 0.0)12.7 - (0.0 * 0.01)) / 0.001 = 12.7 \text{ mg/L}$   
 AML = 2.3 mg/L  
 MDL = 12.7mg/L

**2nd Quarter**

Chronic WLA:  $C_e = ((0.001 + 0.0)2.3 - (0.0 * 0.01)) / 0.001 = 2.3 \text{ mg/L}$   
 Acute WLA:  $C_e = ((0.001 + 0.0)12.7 - (0.0 * 0.01)) / 0.001 = 12.7 \text{ mg/L}$   
 AML = 2.3 mg/L  
 MDL = 12.7mg/L

**3rd Quarter**

Chronic WLA:  $C_e = ((0.001 + 0.0)2.1 - (0.0 * 0.01)) / 0.001 = 2.1 \text{ mg/L}$   
 Acute WLA:  $C_e = ((0.001 + 0.0)12.7 - (0.0 * 0.01)) / 0.001 = 12.7 \text{ mg/L}$

AML = 2.1 mg/L  
MDL = 12.7mg/L

#### **4th Quarter**

Chronic WLA:  $C_e = ((0.001 + 0.0)1.2 - (0.0 * 0.01)) / 0.001 = 1.2 \text{ mg/L}$

Acute WLA:  $C_e = ((0.001 + 0.0)12.7 - (0.0 * 0.01)) / 0.001 = 12.7 \text{ mg/L}$

AML = 1.2 mg/L

MDL = 12.7mg/L

- **Oil & Grease.** Conventional pollutant, [10 CSR 20-7.031(4)(B)]. Waters shall be free from oil, scum, and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses.
- **Nutrients.** The preferred alternative selected for ammonia treatment serves as the base case for total phosphorus. Effluent limits of 1.0 mg/L average monthly was established as a result of a discharging technology alternatives analysis conducted by the applicant.
- **pH.** The preferred alternative selected for ammonia treatment serves as the base case for pH with effluent limit range of 6.0-9.0 SU. Technology based limits, 6.0/9.0 SU [10 CSR 20-7.015] are protective of the water quality standard [10 CSR 20-7.031(5)(E)], due to the buffering capacity of the mixing zone.

#### **General Assumptions of the Water Quality and Antidegradation Review**

- A. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(3) Continuing Authorities and 10 CSR 20-6.010(4) (D), consideration for no discharge] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
- B. A WQAR does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.
- C. Changes to Federal and State Regulations (FSR) made after the drafting of this WQAR may alter Water Quality Based Effluent Limits (WQBEL).
- D. Effluent limitations derived from FSR may be WQBEL or Effluent Limit Guidelines (ELG).
- E. WQBEL supersede ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
- F. A WQAR does not allow discharges to waters of the State, and shall not be construed as a National Pollution Discharge Elimination System (NPDES) or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
- G. Limitations and other requirements in a WQAR may change as Water Quality Standards (WQS), Methodology, and Implementation procedures change.
- H. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.
- I. The operating permit may contain additional requirements to evaluate the effectiveness of the technology once the facility is in operation. This Antidegradation Review is based on the information provided by the facility and is not a comprehensive review of the proposed treatment technology. If the review engineer determines the proposed technology will not consistently meet proposed effluent limits, the permittee will be required to revise their Antidegradation Report.

#### **Antidegradation Review Preliminary Determination**

The proposed new facility discharge location will result in significant degradation of a small cove on Lake of the Ozarks. A membrane bioreactor was found to be cost effective and provided slightly better pollutant reductions than the recirculating rock filters.

Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to attain the highest statutory and regulatory requirements. The Department has determined that the submitted review is sufficient and meets the requirements of the AIP. No further analysis is needed for this discharge.

Reviewer: Bern Johnson  
Date: April 2022  
Unit Chief: John Rustige, P.E.

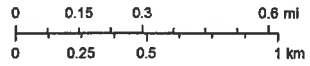
# Azul Waters WWTF



November 3, 2021

- Project Boundary
- Buffered Project Boundary

1:19,890



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

12. Appendix B: Geohydrologic Evaluation



September 07, 2021

Ethan Shackelford  
PO Box 282  
Onaga Beach, MO 65065

RE: Azul Flats WWTF

Dear Ethan Shackelford:

On August 19, 2021, the Missouri Geological Survey received a request to perform a geohydrologic evaluation for the above referenced project located in Camden County. Included with this letter is a report that details the geologic and hydrologic conditions at the site and the potential for groundwater contamination in the event of wastewater treatment failure.

Thank you for the evaluation request. If you are in need of further assistance or have questions regarding this report, please contact our office at P.O. Box 350, Rolla, Mo 65402-0250, by telephone at 573-368-2100 or [geogool@dmr.mo.gov](mailto:geogool@dmr.mo.gov).

Sincerely,

MISSOURI GEOLOGICAL SURVEY


Kirsten Schaefer  
Geologist  
Environmental Geology Section


cc: Jessica Brent  
WPP  
Southwest Regional Office



09/07/2021



	<b>Missouri Department of Natural Resources</b> Missouri Geological Survey Geological Survey Program Environmental Geology Section	<b>Project ID Number</b> LWE22019 <b>County</b> Camden
<b>Request Details</b>		
<b>Project:</b> Azul Flats WWTF  <b>Organization Official</b> Name: Jessica Bruce Address: 184 Oakmont Ave City: Lake Ozark State: MO Zip: 65049 Phone: 785-768-8090 Email: jessbruce25@gmail.com	<b>Legal Description:</b> 17 T30N R16W <b>Quadrangle:</b> CAMDENTON <b>Latitude:</b> 36.6 52.1 <b>Longitude:</b> -92.42 59.15  <b>Empire</b> Name: Ethan Shackelford Address: PO Box 282 City: Osage Beach State: MO Zip: 65065 Phone: 573-348-9799 Email: ethan@themillerco.com	
<b>Project Details</b>		
<b>Report Date:</b> 08/07/2021 <b>Date of Field Visit:</b> 08/25/2021	<b>Previous Reports:</b> Not Applicable	
<b>Facility Type</b> <input type="checkbox"/> Mechanical treatment plant <input checked="" type="checkbox"/> Recirculating filter bed <input type="checkbox"/> Land application <input type="checkbox"/> Lagoon or storage basin <input type="checkbox"/> Subsurface soil absorption system <input type="checkbox"/> Lagoon or storage basin W/Land App <input type="checkbox"/> Lagoon or storage basin W/SBAS <input type="checkbox"/> Other type of facility	<b>Type of Waste</b> <input type="checkbox"/> Animal <input checked="" type="checkbox"/> Human <input type="checkbox"/> Process or industrial <input type="checkbox"/> Leachate <input type="checkbox"/> Other waste type	<b>Funding Source</b> <input checked="" type="checkbox"/> IWT <input type="checkbox"/> WWL-SRF  <b>Additional Information</b> <input type="checkbox"/> Plans were submitted <input type="checkbox"/> Site was investigated by NRCS <input type="checkbox"/> Soil or geotechnical data were submitted
<b>Geologic Stream Classification:</b> <input checked="" type="checkbox"/> Gaining <input type="checkbox"/> Losing <input type="checkbox"/> No discharge		
<b>Overall Geologic Limitations</b> <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Severe	<b>Collapse Potential</b> <input checked="" type="checkbox"/> Not applicable <input type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Severe	<b>Topography</b> <input type="checkbox"/> <4% <input checked="" type="checkbox"/> 4% to 8% <input checked="" type="checkbox"/> 8% to 15% <input type="checkbox"/> >15%
<b>Landscape Position</b> <input type="checkbox"/> Broad uplands <input type="checkbox"/> Floodplain <input type="checkbox"/> Ridgtop <input type="checkbox"/> Alluvial plain <input checked="" type="checkbox"/> Hillslope <input type="checkbox"/> Terrace <input type="checkbox"/> Narrow ravine <input type="checkbox"/> Sinkhole		
<b>Bedrock:</b>	Bedrock consists of approximately 100 feet of highly permeable Ordovician-age Gasconade Dolomite	
<b>Surficial Materials:</b>	Surficial materials are comprised of highly permeable silt loam with approximately 40 percent pebble to gravel sized clasts	

 Missouri Department Of Natural Resources Missouri Geological Survey Geological Survey Program Environmental Geology Section		Project ID Number <b>LWE22019</b> County <b>Camden</b>
<b>Recommended Construction Procedures for Barthen Facility</b> <input type="checkbox"/> Installation of clay pad and Compaction <input type="checkbox"/> Diversion of subsurface flow <input type="checkbox"/> Artificial sealing <input type="checkbox"/> Rock excavation <input type="checkbox"/> Limit excavation depth	<b>Determine Overburden Properties</b> <input type="checkbox"/> Particle size analysis <input type="checkbox"/> Atterberg limits <input type="checkbox"/> 95% Max. dry density test method <input type="checkbox"/> Overburden thickness <input type="checkbox"/> Permeability coefficient-undisturbed <input type="checkbox"/> Permeability coefficient-remolded	<b>Determine Hydrologic Conditions</b> <input type="checkbox"/> Groundwater elevation <input type="checkbox"/> Direction of groundwater flow <input type="checkbox"/> 25-Year flood level <input type="checkbox"/> 100-Year flood level

**Remarks:**

On August 25, 2021, a geologist from the Missouri Geological Survey (MGS) conducted a geohydrologic evaluation for a proposed discharging wastewater treatment facility in Camden County, Missouri. The site is situated on a hillside north of the intersection of Hollow Oak Court and Hollow Oak Road on Susan Court in Sunrise Beach, Missouri. The purpose of the site visit was to observe the geologic and hydrologic elements and determine the potential for groundwater contamination in the event of wastewater treatment failure.

According to logs of nearby wells, previous mapping, and field observations, bedrock onsite consists of approximately 100 feet of solution weathered, highly permeable Ordovician-age Gasconade Dolomite. The Gasconade is a coarsely crystalline dolomite with high secondary porosity. Surficial materials are comprised of silt loam with approximately 40 percent pebbles to gravel sized clasts. However, the proposed method does not rely on existing soils for treatment.

The proposed facility will discharge to the Lake of the Ozarks, adjacent to the site, which exhibited gaining characteristics. The site receives a slight overall geologic limitation rating. In the event of wastewater treatment failure, the local groundwater, and the surface waters of the Lake of the Ozarks, may be adversely impacted.

## Appendix C: Natural Heritage Review



### Missouri Department of Conservation

Missouri Department of Conservation's Mission is to protect and manage the forest, fish, and wildlife resources of the state and to facilitate and provide opportunities for all citizens to use, enjoy and learn about these resources.

### **Natural Heritage Review Level Three Report: Species Listed Under the Federal Endangered Species Act**

There are records of species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

**Foreword:** Thank you for accessing the Missouri Natural Heritage Review Website developed by the Missouri Department of Conservation with assistance from the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, Missouri Department of Transportation and NatureServe. The purpose of this website is to provide information to federal, state and local agencies, organizations, municipalities, corporations and consultants regarding sensitive fish, wildlife, plants, natural communities and habitats to assist in planning, designing and permitting stages of projects.

#### **PROJECT INFORMATION**

**Project Name and ID Number:** Azul Waters WWTF #9922

**Project Description:** New domestic wastewater treatment facility for ten residential houses. Lat 38.065213 Long -92.425822

**Project Type:** Waste Transfer, Treatment, and Disposal, Liquid waste/Effluent, Effluent Discharge, New outfall/discharge (e.g., NPDES) to stream

**Contact Person:** Ethan Shackelford

**Contact Information:** ethan@themillercos.com or 573-348-9799

**Disclaimer:** The NATURAL HERITAGE REVIEW REPORT produced by this website identifies if a species tracked by the Natural Heritage Program is known to occur within or near the area submitted for your project, and shares suggested recommendations on ways to avoid or minimize project impacts to sensitive species or special habitats. If an occurrence record is present, or the proposed project might affect federally listed species, the user must contact the Department of Conservation or U.S. Fish and Wildlife Service for more information. The Natural Heritage Program tracks occurrences of sensitive species and natural communities where the species or natural community has been found. Lack of an occurrence record does not mean that a sensitive plant, animal or natural community is not present on or near the project area. Depending on the project, current habitat conditions, and geographic location in the state, surveys may be necessary. Additionally, because land use conditions change and animals move, the existence of an occurrence record does not mean the species/habitat is still present. Therefore, Reports include information about records near but not necessarily on the project site.

The Natural Heritage Report is not a site clearance letter for the project. It provides an indication of whether or not public lands and sensitive resources are known to be (or are likely to be) located close to the proposed project. Incorporating information from the Natural Heritage Program into project plans is an important step that can help reduce unnecessary impacts to Missouri's sensitive fish, forest and wildlife resources. However, the Natural Heritage Program is only one reference that should be used to evaluate potential adverse project impacts. Other types of information, such as wetland and soils maps and on-site inspections or surveys, should be considered. Reviewing current landscape and habitat information, and species' biological characteristics would additionally ensure that Missouri Species of Conservation Concern are appropriately identified and addressed in planning efforts.

**U.S. Fish and Wildlife Service – Endangered Species Act (ESA) Coordination:** Lack of a Natural Heritage Program occurrence record for federally listed species in your project area does not mean the species is not present, as the area may never have been surveyed. Presence of a Natural Heritage Program occurrence record does not mean the project will result in negative impacts. The information within this report is not intended to replace Endangered Species Act consultation with the U.S. Fish and Wildlife Service (USFWS) for listed species. Direct contact with the USFWS may be necessary to complete consultation and it is required for actions with a federal connection, such as federal funding or a federal permit; direct contact is also required if ESA concurrence is necessary. Visit the USFWS information for Planning and Conservation (IPaC) website at <https://ecos.fws.gov/ipac/> for further information. This site was developed to help streamline the USFWS environmental review process and is a first step in ESA coordination. The Columbia Missouri Ecological Field Services Office may be reached at 573-234-2132, or by mail at 101 Park Deville Drive, Suite A, Columbia, MO 65203.

**Transportation Projects:** If the project involves the use of Federal Highway Administration transportation funds, these recommendations may not fulfill all contract requirements. Please contact the Missouri Department of Transportation at 573-526-4778 or visit <http://www.mdot.org/> for additional information on recommendations.

Appendix D: Antidegradation Review Summary Attachments



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**ANTIDEGRADATION REVIEW SUMMARY / REQUEST**

FOR DEPARTMENT USE ONLY	
APP NO.	
FEE RECEIVED	CHECK NO.
DATE RECEIVED	

1. FACILITY			
NAME Azul Waters WWTF		COUNTY Camden	
ADDRESS (PHYSICAL) TBD Hollow Oak Court	CITY Sunrise Beach	STATE MO	ZIP CODE 65079
PERMIT NUMBER	PROPOSED DESIGN FLOW 0.003750MGD	SIC / NAICS CODE	
2. OWNER			
NAME Jessica Bruce			
ADDRESS 184 Oakmont Ave	CITY Lake Ozark	STATE MO	ZIP CODE 65049
EMAIL ADDRESS jessbruce25@gmail.com		TELEPHONE NUMBER WITH AREA CODE 785-766-8090	
3. CONTINUING AUTHORITY			
The regulatory requirement regarding continuing authority is found in 10 CSR 20-6.010(2).			
NAME Same as Above		SECRETARY OF STATE CHARTER NUMBER	
ADDRESS	CITY	STATE	ZIP CODE
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE	
4. CONSULTANT			
PREPARER NAME Ethan Shackelford		COMPANY NAME R. Miller Companies, LLC	
ADDRESS PO Box 282	CITY Osage Beach	STATE MO	ZIP CODE 65065
EMAIL ADDRESS ethan@themillercos.com		TELEPHONE NUMBER WITH AREA CODE 573-348-9799	
5. RECEIVING WATER BODY SEGMENT #1			
NAME Lake of the Ozarks			
5.1 Upper end of segment – Location of discharge UTM: X= _____, Y= _____ OR Lat <u>38.065213</u> , Long <u>-92.425822</u>			
5.2 Lower end of segment – UTM: X= _____, Y= _____ OR Lat _____, Long _____			
Per the Missouri Antidegradation Implementation Procedure (AIP), the definition of a segment, "a segment is a section of water that is bound, at a minimum, by significant existing sources and confluences with other significant water bodies."			
6. WATER BODY SEGMENT #2 (IF APPLICABLE, Use another form if a third segment is needed)			
NAME NA			
6.1 Upper end of segment – End of Segment #1 UTM: X= _____, Y= _____ OR Lat _____, Long _____			
6.2 Lower end of segment – UTM: X= _____, Y= _____ OR Lat _____, Long _____			
7. DECHLORINATION			
If chlorination and dechlorination is the existing or proposed method of disinfection treatment, will the effluent discharged be equal to or less than the Water Quality Standards for Total Residual Chlorine stated in Table A1 of 10 CSR 20-7.031?			
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No – What is the proposed method of disinfection?			
Based on the disinfection treatment system being designed for total removal of Total Residual Chlorine, minimal degradation for Total Residual Chlorine is assumed and the facility will be required to meet the water quality based effluent limits. These compliance limits for Total Residual Chlorine are much less than the method detection limit of 0.13 mg/L.			

**8. SUMMARIZE THE FEASIBILITY OF CONSTRUCTING A NO-DISCHARGE TREATMENT WASTEWATER FACILITY**

According to the Antidegradation Implementation Procedure Sections I.B. and II.B.1., the feasibility of no-discharge alternatives must be considered. No-discharge alternatives may include connection to a regional treatment facility, surface land application, subsurface land application, and recycle or reuse.

N/A

**9. ADDITIONAL REQUIREMENTS**

Complete and submit the following with this submittal:

- Copy of the Geohydrologic Evaluation – Submit request through the Missouri Geological Survey website
- Copy of the Missouri Natural Heritage from the Missouri Department of Conservation website
- Attach your Antidegradation Review Report and all supporting documentation as these forms are only a summary.
- If applicable, submit a copy of any Existing Water Quality data used in this process. Include the date range of the data, source(s) of the data, and location of data collection relative to the outfall. If using your own collected water quality data, submit a copy of the Quality Assurance Project Plan (QAPP) approved by the department's Watershed Protection Section. For more detailed information, see the Missouri Antidegradation Implementation Procedure (AIP), Section II.A.1.

**10. PATH / TIER REVIEW ATTACHMENTS ENCLOSED**

- Path A: Tier 2 – Non-Degradation Mass Balance  Yes  No
- Path B: Tier 2 – Minimal Degradation  Yes  No
- Path C: Tier 2 – Significant Degradation  Yes  No
- Path D: Tier 1 – Preliminary Review Request  Yes  No
- Path E: Temporary Degradation  Yes  No

**11. APPLICANT PROPOSED ANTIDEGRADATION REVIEW EFFLUENT LIMITS**

Preliminary effluent limits for the proposed project are dependent upon the path selected:

Applicable Pollutants of Concern	Concentration*		Path / Tier Review Attachment Used for POC Evaluation	Average Monthly Limit	Daily Maximum Limit or Average Weekly Limit
	mg/L	µg/L			
BOD <sub>5</sub>	X		2	20	
TSS	X		2	20	
Ammonia (Summer)	X		2	2.8	
Ammonia (Winter)	X		2	2.8	
Total Phosphorus	X				
Bacteria (E-Coli)			2	126	
TRC	X		2	0.019	

\* Place an X in appropriate box for the concentration units for each Pollutant of Concern.





MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**ANTIDEGRADATION REVIEW SUMMARY**  
**PATH C: TIER 2 – SIGNIFICANT DEGRADATION**

1. FACILITY				
NAME			COUNTY	
Azul Waters WWTF			Camden	
2. SUMMARY OF THE POLLUTANTS OF CONCERN				
Pollutants of Concern to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II.A, and assumed or demonstrated to cause significant degradation. The tier protection levels are specified and defined in rule at 10 CSR 20-7.031(2).				
What are the proposed pollutants of concern and their respective effluent limits that the selected treatment option will comply with:				
Pollutants of Concern*	Concentration*		Base Case Limit	Basis (WQS, WLA, ELG, Other)**
	mg/L	µg/L		
BOD <sub>5</sub>	X		20	Other
TSS	X		20	Other
Ammonia (Summer)	X		2.8	Other
Ammonia (Winter)	X		2.8	Other
Total Nitrogen	X		2.8	Other
Total Phosphorus	X			
Bacteria (EColi)			125	Other
TRC	X		0.019	Other
* Place an X in appropriate box for the concentration units for each Pollutant of Concern				
** Provide the Basis for the Base Case Limit: WQS – Water Quality Standard, WLA – Wasteload Allocation, ELG – Effluent Limit Guidelines, or describe other.				
3. IDENTIFYING ALTERNATIVES				
Supply a summary of the non-discharging alternatives considered. "For Discharges likely to cause significant degradation, an analysis of non-degrading and less-degrading alternatives must be provided," as stated in the Antidegradation Implementation Procedure Section II.B.1. These alternatives include no-discharge. Attach all supportive documentation in the Antidegradation Review report.				
Feasibility of non-discharging alternatives (regionalization, land application, subsurface irrigation, and recycling or reuse):				
No Non Degrading alternatives were found.				

Minimum of three (preferably five or more) discharging alternatives\* ranging from less-degrading to degrading including Preferred Alternative (All treatment levels for POCs must at a minimum meet water quality standards):

Discharging Alternative #	Treatment Type	Description
1	Package Plant	Collection plant with multiple chambers in which air is introduced.
2	Recirculating Rock Filter w/ chlorin	Rock Filter with chlorination on the end.
3	Recirculating Rock Filter	Rock filters the domestic waste prior to discharge.
4	Membrane Bio Reactor	Membrane Filters are used to clean domestic waste water
5		
6		

\* Same technology may be multiple alternatives as you have the base unit and add to it with more capacity to provide additional treatment.

**4. DETERMINATION OF THE REASONABLE ALTERNATIVE**

Per the Antidegradation Implementation Procedure Section II.B.2, "a reasonable alternative is one that is practicable, economically efficient and affordable." Provide basis and supporting documentation in the Antidegradation Review report. **Please do not write "See Report" for any box below.**

**Practicability Summary:**

"The practicability of an alternative is considered by evaluating the effectiveness, reliability, and potential environmental impacts," according to the Antidegradation Implementation Procedure Section II.B.2.a. Examples of factors to consider, including secondary environmental impacts, are given in the Antidegradation Implementation Procedure Section II.B.2.a.

All less-degrading alternatives were found to be practicable.

**Economic Efficiency Basis:**

What is the design life cycle for the comparison? 20

What interest rate was used in the present worth calculations? 1%

**Economic Efficiency Summary:**

Alternatives that are deemed practicable must undergo a direct cost comparison in order to determine economic efficiency. Means to determine economic efficiency are provided in the Antidegradation Implementation Procedure Section II.B.2.b.

A present worth comparison of alternatives revealed the Membrane Bio Reactor to have a cost ratio of 1 and the package plant to have a cost ratio of 2.14 when compared to a Recirculating Rock Filter with chlorination.



TABLE OF THE ALTERNATIVES EVALUATION (Attach additional page if necessary)						
PARAMETERS	Alternatives #					
	1	2	3	4	5	6
BODs – mg/L	20	20	20	15		
TSS – mg/L	20	20	20	15		
Ammonia (Summer) – mg/L	4.6	2.8	4	1.2		
Ammonia (Winter) – mg/L	4.6	2.8	4	1.2		
E. Coli – #/100 mL	126	126	126	126		
Total Nitrogen – mg/L						
Total Phosphorus – mg/L						
TRC - MGL	0.019	0.019	0.019	0		
Construction Cost – \$	328500	180000	180000	165000		
Operating Cost – \$	196788.76	65688.40	65688.40	80659.50		
Present Worth – \$	525288.76	245688.40	245688.40	245659.50		
Ratio present worth to base case	2.14	1	1	1		
<p><b>Affordability Summary:</b></p> <p>Alternatives identified as most practicable and economically efficient are considered affordable if the applicant does not supply an affordability analysis. An affordability analysis per the Antidegradation Implementation Procedure Section II.B.2.c, "may be used to determine if the alternative is too expensive to reasonably implement."</p> <p>All less-degrading alternatives are affordable besides Package Plant.</p>						
<p><b>Justification for Preferred Alternative:</b></p> <p>The Recirculating Rock Filter was chosen due to the larger available area to place the plant. The cost is a little higher than the Membrane Bio Reactor.</p>						
<p><b>Reasons for Rejecting the other Evaluated Alternatives:</b></p> <p>The Membrane Bio Reactor is another viable Alternative, but the Recirculating Rock Filter was the Engineer and Owner's first preference.</p>						
<p><b>Comments/Discussion:</b></p>						

**5. SOCIAL AND ECONOMIC IMPORTANCE OF THE PREFERRED ALTERNATIVE**

If the preferred alternative will result in significant degradation, then it must be demonstrated that it will allow important economic and social development in accordance to the Antidegradation Implementation Procedure Section II.E. Social and Economic Importance is defined as the social and economic benefits to the community that will occur from any activity involving a new or expanding discharge.

**Identify the affected community:**

The affected community is defined in 10 CSR 20-7.031(2)(B) as the community "in the geographical area in which the waters are located. Per the Antidegradation Implementation Procedure Section II.E.1, "the affected community should include those living near the site of the proposed project as well as those in the community that are expected to directly or indirectly benefit from the project."

Affected community are those living in the Lake of the Ozarks region.

**Identify relevant factors that characterize the social and economic conditions of the affected community:**

Examples of social and economic factors are provided in the Antidegradation Implementation Procedure Section II.E.1, but specific community examples are encouraged.

Protecting property values for home owners and property tax tax revenue of properties with structures built prior to zoning ordinances, on-site sewage treatment system regulations.

Improving waste treatment by eliminating on-site sewage treatment systems that were constructed prior minimum design standards.

**Describe the important social and economic development associated with the project:**

Determining benefits for the community and the environment should be site specific and in accordance with the Antidegradation Implementation Procedure Section II.E.1.

Monitored wastewater treatment facilities ensure minimum levels of treatment are being obtained before effluent reaches public waters. Privately funded small scale projects raise public awareness and add no funding burden to public entities.

**PROPOSED PROJECT SUMMARY:**

Construct a STEP collection system and collection basins will pump to a Recirculating Rock Filter (RRFC)with Breakpoint Chlorine. The RRFC will treat the domestic waste from 10 proposed single family residence. The effluent will then be treated through a chlorination and dechlorination system prior to discharge.

Attach the Antidegradation Review report and all supporting documentation. This is a technical document, which must be signed, sealed and dated by a registered professional engineer of Missouri.



STANDARD CONDITIONS FOR NPDES PERMITS  
ISSUED BY  
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES  
MISSOURI CLEAN WATER COMMISSION  
REVISED  
NOVEMBER 1, 2013

These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

## Part I – General Conditions

### Section A – Sampling, Monitoring, and Recording

1. **Sampling Requirements.**
  - a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
  - b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.
2. **Monitoring Requirements.**
  - a. Records of monitoring information shall include:
    - i. The date, exact place, and time of sampling or measurements;
    - ii. The individual(s) who performed the sampling or measurements;
    - iii. The date(s) analyses were performed;
    - iv. The individual(s) who performed the analyses;
    - v. The analytical techniques or methods used; and
    - vi. The results of such analyses.
  - b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.
3. **Sample and Monitoring Calculations.** Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.
4. **Test Procedures.** The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is “sufficiently sensitive” when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility’s discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.
5. **Record Retention.** Except for records of monitoring information required by the permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

6. **Illegal Activities.**
  - a. The Federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than four (4) years, or both.
  - b. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

### Section B – Reporting Requirements

1. **Planned Changes.**
  - a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
    - i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
    - ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1);
    - iii. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
    - iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.
2. **Twenty-Four Hour Reporting.**
  - a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.



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- b. The following shall be included as information which must be reported within 24 hours under this paragraph.
    - i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
    - ii. Any upset which exceeds any effluent limitation in the permit.
    - iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.
  - c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.
3. **Sanitary Sewer Overflow Reporting.** The following requirements solely reflect reporting obligations, and reporting does not necessarily reflect noncompliance, which may depend on the circumstances of the incident reported.
- a. **Twenty-Four Hour (24-Hour) Reporting.** The permittee or owner shall report any incident in which wastewater escapes the collection system such that it reaches waters of the state or it may pose an imminent or substantial endangerment to the health or welfare of persons. Relevant information shall be provided orally or via the current electronic method approved by the Department within 24 hours from the time the permittee becomes aware of the incident. A written submission shall also be provided within five (5) business days of the time the permittee or owner becomes aware of the incident. The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours. The five (5) day reports may be provided via the current electronic method approved by the Department.
  - b. **Incidents Reported via Discharge Monitoring Reports (DMRs).** The permittee or owner shall report any event in which wastewater escapes the collection system, which does not enter waters of the state and is not expected to pose an imminent or substantial endangerment to the health or welfare of persons, which occur typically during wet weather events. Relevant information shall be provided with the permittee's or owner's DMRs.
4. **Anticipated Noncompliance.** The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.
5. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.
6. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, 4, and 7 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.
7. **Other Information.** Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.
8. **Discharge Monitoring Reports.**
- a. Monitoring results shall be reported at the intervals specified in the permit.
  - b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
  - c. Monitoring results shall be reported to the Department no later than the 28<sup>th</sup> day of the month following the end of the reporting period.

## Section C – Bypass/Upset Requirements

1. **Definitions.**
  - a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility.
  - b. *Severe Property Damage*: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
  - c. *Upset*: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
2. **Bypass Requirements.**
  - a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.
  - b. Notice.
    - i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
    - ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).
  - c. Prohibition of bypass.
    - i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
      1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
      2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
      3. The permittee submitted notices as required under paragraph 2. b. of this section.
    - ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.
3. **Upset Requirements.**
  - a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
  - b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
    - i. An upset occurred and that the permittee can identify the cause(s) of the upset;
    - ii. The permitted facility was at the time being properly operated; and
    - iii. The permittee submitted notice of the upset as required in Section B – Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
    - iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
  - c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.



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Section D – Administrative Requirements

1. **Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
  - a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
  - b. The Federal Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed \$25,000 per day for each violation. The Federal Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.
  - c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.
  - d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed \$10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.
2. **Duty to Reapply.**
  - a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
  - b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
  - c. A permittees with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
5. **Proper Operation and Maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
6. **Permit Actions.**
  - a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
    - i. Violations of any terms or conditions of this permit or the law;
    - ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
    - iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
    - iv. Any reason set forth in the Law or Regulations.
  - b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.





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7. **Permit Transfer.**
- Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
  - The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law or the Federal Clean Water Act.
  - The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.
8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.
10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.
11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
- Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
  - Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
  - Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
  - Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.
12. **Closure of Treatment Facilities.**
- Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
  - Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.
13. **Signatory Requirement.**
- All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
  - The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
14. **Severability.** The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.

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**PART III – BIOSOLIDS AND SLUDGE FROM DOMESTIC TREATMENT FACILITIES**

**SECTION A – GENERAL REQUIREMENTS**

1. PART III Standard Conditions pertain to biosolids and sludge requirements under the Missouri Clean Water Law and regulations for domestic and municipal wastewater and also incorporates federal sludge disposal requirements under 40 CFR Part 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR Part 503 for domestic biosolids and sludge.
2. PART III Standard Conditions apply only to biosolids and sludge generated at domestic wastewater treatment facilities, including public owned treatment works (POTW) and privately owned facilities.
3. Biosolids and Sludge Use and Disposal Practices:
  - a. The permittee is authorized to operate the biosolids and sludge generating, treatment, storage, use, and disposal facilities listed in the facility description of this permit.
  - b. The permittee shall not exceed the design sludge/biosolids volume listed in the facility description and shall not use biosolids or sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
  - c. For facilities operating under general operating permits that incorporate Standard Conditions PART III, the facility is authorized to operate the biosolids and sludge generating, treatment, storage, use and disposal facilities identified in the original operating permit application, subsequent renewal applications or subsequent written approval by the department.
4. Biosolids or Sludge Received from other Facilities:
  - a. Permittees may accept domestic wastewater biosolids or sludge from other facilities as long as the permittee's design sludge capacity is not exceeded and the treatment facility performance is not impaired.
  - b. The permittee shall obtain a signed statement from the biosolids or sludge generator or hauler that certifies the type and source of the sludge
5. Nothing in this permit precludes the initiation of legal action under local laws, except to the extent local laws are preempted by state law.
6. This permit does not preclude the enforcement of other applicable environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.
7. This permit may (after due process) be modified, or alternatively revoked and reissued, to comply with any applicable biosolids or sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Act or under Chapter 644 RSMo.
8. In addition to Standard Conditions PART III, the Department may include biosolids and sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Exceptions to Standard Conditions PART III may be authorized on a case-by-case basis by the Department, as follows:
  - a. The Department may modify a site-specific permit following permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR § 124.10, and 40 CFR § 501.15(a)(2)(ix)(E).
  - b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR Part 503.

## **SECTION B – DEFINITIONS**

1. Best Management Practices are practices to prevent or reduce the pollution of waters of the state and include agronomic loading rates (nitrogen based), soil conservation practices, spill prevention and maintenance procedures and other site restrictions.
2. Biosolids means organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge.
3. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food, feed or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
4. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR Part 503.
5. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with 40 CFR Part 503.
6. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a (POTW) or a privately owned facility.
7. Feed crops are crops produced primarily for consumption by animals.
8. Fiber crops are crops such as flax and cotton.
9. Food crops are crops consumed by humans which include, but is not limited to, fruits, vegetables and tobacco.
10. Industrial wastewater means any wastewater, also known as process wastewater, not defined as domestic wastewater. Per 40 CFR Part 122.2, process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product. Land application of industrial wastewater, residuals or sludge is not authorized by Standard Conditions PART III.
11. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological contact systems, and other similar facilities. It does not include wastewater treatment lagoons or constructed wetlands for wastewater treatment.
12. Plant Available Nitrogen (PAN) is nitrogen that will be available to plants during the growing seasons after biosolids application.
13. Public contact site is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
14. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks or equivalent facilities. Sludge does not include carbon coal byproducts (CCBs), sewage sludge incinerator ash, or grit/screenings generated during preliminary treatment of domestic sewage.
15. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen or concrete lined basin that receives sludge that has been removed from a wastewater treatment facility. It does not include a wastewater treatment lagoon or sludge treatment units that are not a part of a mechanical wastewater treatment facility.
16. Septage is the sludge pumped from residential septic tanks, cesspools, portable toilets, Type III marine sanitation devices, or similar treatment works such as sludge holding structures from residential wastewater treatment facilities with design populations of less than 150 people. Septage does not include grease removed from grease traps at a restaurant or material removed from septic tanks and other similar treatment works that have received industrial wastewater. The standard for biosolids from septage is different from other sludges. See Section H for more information.

## **SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES**

1. Biosolids or sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and the requirements of Standard Conditions PART III or in accordance with Section A.3.c., above.
2. The permittee shall operate storage and treatment facilities, as defined by Section 644.016(23), RSMo, so that there is no biosolids or sludge discharged to waters of the state. Agricultural storm water discharges are exempt under the provisions of Section 644.059, RSMo.
3. Mechanical treatment plants shall have separate biosolids or sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove biosolids or sludge from these storage compartments on the required design schedule is a violation of this permit.

## **SECTION D – BIOSOLIDS OR SLUDGE DISPOSED AT OTHER TREATMENT FACILITY OR BY CONTRACT HAULER**

1. Permittees that use contract haulers, under the authority of their operating permit, to dispose of biosolids or sludge, are responsible for compliance with all the terms of this permit. Contract haulers that assume the responsibility of the final disposal of biosolids or sludge, including biosolids land application, must obtain a Missouri State Operating Permit unless the hauler transports the biosolids or sludge to another permitted treatment facility.
2. Testing of biosolids or sludge, other than total solids content, is not required if biosolids or sludge are hauled to a permitted wastewater treatment facility, unless it is required by the accepting facility.



## **SECTION E – INCINERATION OF SLUDGE**

1. Please be aware that sludge incineration facilities may be subject to the requirements of 40 CFR Part 503 Subpart E, Missouri Air Conservation Commission regulations under 10 CSR 10, and solid waste management regulations under 10 CSR 80, as applicable.
2. Permittee may be authorized under the facility description of this permit to store incineration ash in lagoons or ash ponds. This permit does not authorize the disposal of incineration ash. Incineration ash shall be disposed in accordance with 10 CSR 80; or, if the ash is determined to be hazardous, with 10 CSR 25.
3. In addition to normal sludge monitoring, incineration facilities shall report the following as part of the annual report, mass of sludge incinerated and mass of ash generated. Permittee shall also provide the name of the ash disposal facility and permit number if applicable.

## **SECTION F – SURFACE DISPOSAL SITES AND BIOSOLIDS AND SLUDGE LAGOONS**

1. Please be aware that surface disposal sites of biosolids or sludge from wastewater treatment facilities may be subject to other laws including the requirements in 40 CFR Part 503 Subpart C, Missouri Air Conservation Commission regulations under 10 CSR 10, and solid waste management regulations under 10 CSR 80, as applicable.
2. Biosolids or sludge storage lagoons are temporary facilities and are not required to obtain a permit as a solid waste management facility under 10 CSR 80. In order to maintain biosolids or sludge storage lagoons as storage facilities, accumulated biosolids or sludge must be removed routinely, but not less than once every two years unless an alternate schedule is approved in the permit. The amount of biosolids or sludge removed will be dependent on biosolids or sludge generation and accumulation in the facility. Enough biosolids or sludge must be removed to maintain adequate storage capacity in the facility.
  - a. In order to avoid damage to the lagoon seal during cleaning, the permittee may leave a layer of biosolids or sludge on the bottom of the lagoon, upon prior approval of the Department; or
  - b. Permittee shall close the lagoon in accordance with Section I.

## **SECTION G – LAND APPLICATION OF BIOSOLIDS**

1. The permittee shall not land apply biosolids unless land application is authorized in the facility description, the special conditions of the issued NPDES permit, or in accordance with Section A.3.c., above.
2. This permit only authorizes “Class A” or “Class B” biosolids derived from domestic wastewater to be land applied onto grass land, crop land, timber, or other similar agricultural or silviculture lands at rates suitable for beneficial use as organic fertilizer and soil conditioner.
3. Class A Biosolids Requirements: Biosolids shall meet Class A requirements for application to public contact sites, residential lawns, home gardens or sold and/or given away in a bag or other container.
4. Class B biosolids that are land applied to agricultural and public contact sites shall comply with the following restrictions:
  - a. Food crops that touch the biosolids/soil mixture and are totally above the land surface shall not be harvested for 14 months after application of biosolids.
  - b. Food crops below the surface of the land shall not be harvested for 20 months after application of biosolids when the biosolids remain on the land surface for four months or longer prior to incorporation into the soil.
  - c. Food crops below the surface of the land shall not be harvested for 38 months after application of biosolids when the biosolids remain on the land surface for less than four months prior to incorporation into the soil.
  - d. Animal grazing shall not be allowed for 30 days after application of biosolids.
  - e. Food crops, feed crops, and fiber crops shall not be harvested for 30 days after application of biosolids.
  - f. Turf shall not be harvested for one year after application of biosolids if used for lawns or high public contact sites in close proximity to populated areas such as city parks or golf courses.
  - g. After Class B biosolids have been land applied to public contact sites with high potential for public exposure, as defined in 40 CFR § 503.31, such as city parks or golf courses, access must be restricted for 12 months.
  - h. After Class B biosolids have been land applied public contact sites with low potential for public exposure as defined in 40 CFR § 503.31, such as a rural land application or reclamation sites, access must be restricted for 30 days.
5. Pollutant limits
  - a. Biosolids shall be monitored to determine the quality for regulated pollutants listed in Table 1, below. Limits for any pollutants not listed below may be established in the permit.
  - b. The number of samples taken is directly related to the amount of biosolids or sludge produced by the facility (See Section J, below). Samples should be taken only during land application periods. When necessary, it is permissible to mix biosolids with lower concentrations of biosolids as well as other suitable Department approved material to achieve pollutant concentration below those identified in Table 1, below.
  - c. Table 1 gives the ceiling concentration for biosolids. Biosolids which exceed the concentrations in Table 1 may not be land applied.

**TABLE 1**

Biosolids ceiling concentration	
Pollutant	Milligrams per kilogram dry weight
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7,500

- d. Table 2 below gives the low metal concentration for biosolids. Because of its higher quality, biosolids with pollutant concentrations below those listed in Table 2 can safely be applied to agricultural land, forest, public contact sites, lawns, home gardens or be given away without further analysis. Biosolids containing metals in concentrations above the low metals concentrations but below the ceiling concentration limits may be land applied but shall not exceed the annual loading rates in Table 3 and the cumulative loading rates in Table 4. The permittee is required to track pollutant loading onto application sites for parameters that have exceeded the low metal concentration limits.

**TABLE 2**

Biosolids Low Metal Concentration	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2,800

- e. Annual pollutant loading rate.

**Table 3**

Biosolids Annual Loading Rate	
Pollutant	Kg/ha (lbs./ac) per year
Arsenic	2.0 (1.79)
Cadmium	1.9 (1.70)
Copper	75 (66.94)
Lead	15 (13.39)
Mercury	0.85 (0.76)
Nickel	21 (18.74)
Selenium	5.0 (4.46)
Zinc	140 (124.96)

- f. Cumulative pollutant loading rates.

**Table 4**

Biosolids Cumulative Pollutant Loading Rate	
Pollutant	Kg/ha (lbs./ac)
Arsenic	41 (37)
Cadmium	39 (35)
Copper	1500 (1339)
Lead	300 (268)
Mercury	17 (15)
Nickel	420 (375)
Selenium	100 (89)
Zinc	2800 (2499)

6. Best Management Practices. The permittee shall use the following best management practices during land application activities to prevent the discharge of biosolids to waters of the state.
- Biosolids shall not be applied to the land if it is likely to adversely affect a threatened or endangered species listed under § 4 of the Endangered Species Act or its designated critical habitat.
  - Apply biosolids only at the agronomic rate of nitrogen needed (see 5.c. of this section).
  - The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop

nitrogen removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kgTN; or 2) When biosolids are land applied at an application rate greater than two dry tons per acre per year.

- i. PAN can be determined as follows:  
(Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor<sup>1</sup>).  
<sup>1</sup> Volatilization factor is 0.7 for surface application and 1 for subsurface application. Alternative volatilization factors and mineralization rates can be utilized on a case-by-case basis.
  - ii. Crop nutrient production/removal to be based on crop specific nitrogen needs and realistic yield goals. **NOTE:** There are a number of reference documents on the Missouri Department of Natural Resources website that are informative to implement best management practices in the proper management of biosolids, including crop specific nitrogen needs, realistic yields on a county by county basis and other supporting references.
  - iii. Biosolids that are applied at agronomic rates shall not cause the annual pollutant loading rates identified in Table 3 to be exceeded.
- d. Buffer zones are as follows:
- i. 300 feet of a water supply well, sinkhole, water supply reservoir or water supply intake in a stream;
  - ii. 300 feet of a losing stream, no discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstanding state resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;
  - iii. 150 feet of dwellings or public use areas;
  - iv. 100 feet (35 feet if biosolids application is down-gradient or the buffer zone is entirely vegetated) of lake, pond, wetlands or gaining streams (perennial or intermittent);
  - v. 50 feet of a property line. Buffer distances from property lines may be waived with written permission from neighboring property owner.
  - vi. For the application of dry, cake or liquid biosolids that are subsurface injected, buffer zones identified in 5.d.i. through 5.d.iii above, may be reduced to 100 feet. The buffer zone may be reduced to 35 feet if the buffer zone is permanently vegetated. Subsurface injection does not include methods or technology reflective of combination surface/shallow soil incorporation.
- e. Slope limitation for application sites are as follows:
- i. For slopes less than or equal to 6 percent, no rate limitation;
  - ii. Applied to a slope 7 to 12 percent, the applicator may apply biosolids when soil conservation practices are used to meet the minimum erosion levels;
  - iii. Slopes > 12 percent, apply biosolids only when grass is vegetated and maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less.
  - iv. Dry, cake or liquid biosolids that are subsurface injected, may be applied on slopes not to exceed 20 percent. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation.
- f. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.
- g. Biosolids may be land applied to sites with soil that are snow covered, frozen, or saturated with liquid when site restrictions or other controls are provided to prevent pollutants from being discharged to waters of the state during snowmelt or stormwater runoff. During inclement weather or unfavorable soil conditions use the following management practices:
- i. A maximum field slope of 6% and a minimum 300 feet grass buffer between the application site and waters of the state. A 35 feet grass buffer may be utilized for the application of dry, cake or liquid biosolids that are subsurface injected. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation;
  - ii. A maximum field slope of 2% and 100 feet grass buffer between the application site and waters of the state. A 35 feet grass buffer may be used for the application of dry, cake or liquid biosolids that are subsurface injected. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation;
  - iii. Other best management practices approved by the Department.

## SECTION H – SEPTAGE

1. Haulers that land apply septage must obtain a state permit. An operating permit is not required for septage haulers who transport septage to another permitted treatment facility for disposal.
2. Do not apply more than 30,000 gallons of septage per acre per year or the volume otherwise stipulated in the operating permit.
3. Septic tanks are designed to retain sludge for one to three years which will allow for a larger reduction in pathogens and vectors, as compared to mechanical treatment facilities.
4. Septage must comply with Class B biosolids regarding pathogen and vector attraction reduction requirements before it may be applied to crops, pastures or timberland. To meet required pathogen and vector reduction requirements, mix 50 pounds of hydrated lime for every 1,000 gallons of septage and maintain a septage pH of at least 12 pH standard units for 30 minutes or more prior to application.
5. Lime is to be added to the pump truck and not directly to the septic tanks, as lime would harm the beneficial bacteria of the septic tank.
6. As residential septage contains relatively low levels of metals, the testing of metals in septage is not required.

## SECTION I – CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical and lagoons) and sludge or biosolids storage and treatment facilities. It does not apply to land application sites.
2. Permittees of a domestic wastewater facility who plan to cease operation must obtain Department approval of a closure plan which addresses proper removal and disposal of all sludges and/or biosolids. Permittee must maintain this permit until the facility is closed in accordance with the approved closure plan per 10 CSR 20 – 6.010 and 10 CSR 20 – 6.015.
3. Biosolids or sludge that are left in place during closure of a lagoon or earthen structure or ash pond shall not exceed the agricultural loading rates as follows:
  - a. Biosolids and sludge shall meet the monitoring and land application limits for agricultural rates as referenced in Section G, above.
  - b. If a wastewater treatment lagoon has been in operation for 15 years or more without sludge removal, the sludge in the lagoon qualifies as a Class B biosolids with respect to pathogens due to anaerobic digestion, and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B biosolids limitations. In order to reach Class B biosolids requirements, fecal coliform must be less than 2,000,000 colony forming units or 2,000,000 most probable number. All fecal samples must be presented as geometric mean per gram.
  - c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. For a grass cover crop, the allowable PAN is 300 pounds/acre. Alternative, site-specific application rates may be included in the closure plan for department consideration.
    - i. PAN can be determined as follows:  
(Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor<sup>1</sup>).  
<sup>1</sup> Volatilization factor is 0.7 for surface application and 1 for subsurface application. Alternative volatilization factors and mineralization rates can be utilized on a case-by-case basis
4. Domestic wastewater treatment lagoons with a design treatment capacity less than or equal to 150 persons, are “similar treatment works” under the definition of septage. Therefore the sludge within the lagoons may be treated as septage during closure activities. See Section B, above. Under the septage category, residuals may be left in place as follows:
  - a. Testing for metals or fecal coliform is not required.
  - b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at a rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
  - c. The amount of sludge that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If 100 dry tons/acre or more will be left in the lagoon, test for nitrogen and determine the PAN using the calculation above. Allowable PAN loading is 300 pounds/acre.
5. Biosolids or sludge left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, and unless otherwise approved, the lagoon berm shall be demolished, and the site shall be graded and contain  $\geq 70\%$  vegetative density over 100% of the site so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion. Alternative biosolids or sludge and soil mixing ratios may be included in the closure plan for department consideration.
6. Lagoon and earthen structure closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed one acre in accordance with 10 CSR 20-6.200.
7. When closing a mechanical wastewater plant, all biosolids or sludge must be cleaned out and disposed of in accordance with the Department approved closure plan before the permit for the facility can be terminated.
  - a. Land must be stabilized which includes any grading, alternate use or fate upon approval by the Department, remediation, or other work that exposes sediment to stormwater per 10 CSR 20-6.200. The site shall be graded and contain  $\geq 70\%$  vegetative density over 100% of the site, so as to avoid ponding of storm water and provide adequate

- surface water drainage without creating erosion.
  - b. Hazardous Waste shall not be land applied or disposed during mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations pursuant to 10 CSR 25.
  - c. After demolition of the mechanical plant, the site must only contain clean fill defined in Section 260.200.1(6) RSMo as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill, reclamation, or other beneficial use. Other solid wastes must be removed.
8. If biosolids or sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or I, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR Part 503, Subpart C.

**SECTION J – MONITORING FREQUENCY**

1. At a minimum, biosolids or sludge shall be tested for volume and percent total solids on a frequency that will accurately represent sludge quantities produced and disposed. Please see the table below.

**TABLE 5**

Biosolids or Sludge produced and disposed (Dry Tons per Year)	Monitoring Frequency (See Notes 1, and 2)		
	Metals, Pathogens and Vectors, Total Phosphorus, Total Potassium	Nitrogen TKN, Nitrogen PAN <sup>1</sup>	Priority Pollutants <sup>2</sup>
319 or less	1/year	1 per month	1/year
320 to 1650	4/year	1 per month	1/year
1651 to 16,500	6/year	1 per month	1/year
16,501+	12/year	1 per month	1/year

<sup>1</sup>Calculate plant available nitrogen (PAN) when either of the following occurs: 1) when biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.

<sup>2</sup> Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) are required only for permit holders that must have a pre-treatment program. Monitoring requirements may be modified and incorporated into the operating permit by the Department on a case-by-case basis.

Note 1: Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids. This data shall be used to calculate the dry tons of sludge applied per acre.

Note 2: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

- 2. Permittees that operate wastewater treatment lagoons, peak flow equalization basins, combined sewer overflow basins or biosolids or sludge lagoons that are cleaned out once a year or less, may choose to sample only when the biosolids or sludge is removed or the lagoon is closed. Test one composite sample for each 319 dry tons of biosolids or sludge removed from the lagoon during the reporting year or during lagoon closure. Composite sample must represent various areas at one-foot depth.
- 3. Additional testing may be required in the special conditions or other sections of the permit.
- 4. Biosolids and sludge monitoring shall be conducted in accordance with federal regulation 40 CFR § 503.8, Sampling and analysis.

**SECTION K – RECORD KEEPING AND REPORTING REQUIREMENTS**

- 1. The permittee shall maintain records on file at the facility for at least five years for the items listed in Standard Conditions PART III and any additional items in the Special Conditions section of this permit. This shall include dates when the biosolids or sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
- 2. Reporting period
  - a. By February 19<sup>th</sup> of each year, applicable facilities shall submit an annual report for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and biosolids or sludge disposal facilities.
  - b. Permittees with wastewater treatment lagoons shall submit the above annual report only when biosolids or sludge are removed from the lagoon during the report period or when the lagoon is closed.
- 3. Report Form. The annual report shall be prepared on report forms provided by the Department or equivalent forms approved by the Department.
- 4. Reports shall be submitted as follows:  
Major facilities, which are those serving 10,000 persons or more or with a design flow equal to or greater than 1 million gallons per day or that are required to have an approved pretreatment program, shall report to both the Department and EPA if the facility land applied, disposed of biosolids by surface disposal, or operated a sewage sludge incinerator. All other facilities shall maintain their biosolids or sludge records and keep them available to Department personnel upon request. State reports shall be submitted to the address listed as follows:

DNR regional or other applicable office listed in the permit (see cover letter of permit)

ATTN: Sludge Coordinator

Reports to EPA must be electronically submitted online via the Central Data Exchange at: <https://cdx.epa.gov/>.  
Additional information is available at: <https://www.epa.gov/biosolids/compliance-and-annual-biosolids-reporting>.

5. Annual report contents. The annual report shall include the following:
  - a. Biosolids and sludge testing performed. If testing was conducted at a greater frequency than what is required by the permit, all test results must be included in the report.
  - b. Biosolids or sludge quantity shall be reported as dry tons for the quantity produced and/or disposed.
  - c. Gallons and % solids data used to calculate the dry ton amounts.
  - d. Description of any unusual operating conditions.
  - e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
    - i. This must include the name and address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
    - ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
  - f. Contract Hauler Activities:

If using a contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate biosolids or sludge use permit.
  - g. Land Application Sites:
    - i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest ¼, ¼, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
    - ii. If the “Low Metals” criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
    - iii. Report the method used for compliance with pathogen and vector attraction requirements.
    - iv. Report soil test results for pH and phosphorus. If no soil was tested during the year, report the last date when tested and the results.



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM

**APPLICATION FOR CONSTRUCTION PERMIT –  
WASTEWATER TREATMENT FACILITY**

**FOR DEPARTMENT USE ONLY**

APP NO.	CP NO.
FEE RECEIVED	CHECK NO.
DATE RECEIVED	

**APPLICATION OVERVIEW**

The Application for Construction Permit – Wastewater Treatment Facility form has been developed in a modular format and consists of Part A and B. **All applicants must complete Part A.** Part B should be completed for applicants who currently land-apply wastewater or propose land application for wastewater treatment. **Please read the accompanying instructions before completing this form. Submittal of an incomplete application may result in the application being returned.**

**PART A – BASIC INFORMATION**


**1.0 APPLICATION INFORMATION** (Note – If any of the questions in this section are answered NO, this application may be considered incomplete and returned.)

- 1.1 Is this a Federal/State funded project?  YES  N/A Funding Agency: \_\_\_\_\_ Project #: \_\_\_\_\_
- 1.2 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?  
 YES Date of Approval: \_\_\_\_\_  N/A
- 1.3 Has the department approved the proposed project's facility plan\*?  
 YES Date of Approval: \_\_\_\_\_  NO (If No, complete No. 1.4.)
- 1.4 [Complete only if answered No on No. 1.3.] Is a copy of the facility plan\* for wastewater treatment facilities included with this application?  
 YES  NO  Exempt because \_\_\_\_\_
- 1.5 Is a copy of the appropriate plans\* and specifications\* included with this application?  
 YES Denote which form is submitted:  Hard copy  Electronic copy (See instructions.)  NO
- 1.6 Is a summary of design\* included with this application?  YES  NO
- 1.7 Has the appropriate operating permit application (A, B, or B2) been submitted to the department?  
 YES Date of submittal: \_\_\_\_\_  
 Enclosed is the appropriate operating permit application and fee submittal. Denote which form:  A  B  B2  
 N/A: However, In the event the department believes that my operating permit requires revision to permit limitation such as changing equivalent to secondary limits or adding total residual chlorine limits, please share a draft copy prior to public notice?  YES  NO
- 1.8 Is the facility currently under enforcement with the department or the Environmental Protection Agency?  YES  NO
- 1.9 Is the appropriate fee or JetPay confirmation included with this application?  YES  NO  
See Section 7.0

\* Must be affixed with a Missouri registered professional engineer's seal, signature and date.

**2.0 PROJECT INFORMATION**

2.1 NAME OF PROJECT Azul Waters WWTF	2.2 ESTIMATED PROJECT CONSTRUCTION COST \$ 185,000
2.3 PROJECT DESCRIPTION A STEP collection system for 10 proposed single family houses. They system will consist of solids tanks at each house, lift station per house, pressure line to a Membrane Bio Reactor Treatment Facility	
2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION Pump and Haul to permitted Facility	
2.5 DESIGN INFORMATION A. Current population: _____; Design population: <u>40</u> B. Actual Flow: _____ gpd; Design Average Flow: <u>4000</u> gpd; Actual Peak Daily Flow: _____ gpd; Design Maximum Daily Flow: _____ gpd; Design Wet Weather Event: _____	
2.6 ADDITIONAL INFORMATION A. Is a topographic map attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO B. Is a process flow diagram attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	

3.0 WASTEWATER TREATMENT FACILITY				
NAME Azul Waters WWTF		TELEPHONE NUMBER WITH AREA CODE 785-766-8090		E-MAIL ADDRESS jessbruce25@gmail.com
ADDRESS (PHYSICAL) 184 Oakmont Avenue		CITY Lake Ozark	STATE MO	ZIP CODE 65049
COUNTY Camden				
Wastewater Treatment Facility: Mo- (Outfall Of )				
3.1 Legal Description: _____ ¼, _____ ¼, _____ ¼, Sec. <u>18</u> , T <u>39N</u> , R <u>16W</u> (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): _____ Northing (Y): _____ For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: <u>Lake of the Ozarks</u>				
4.0 PROJECT OWNER				
NAME Azul Waters LLC		TELEPHONE NUMBER WITH AREA CODE 785-766-8090		E-MAIL ADDRESS jessbruce25@gmail.com
ADDRESS 184 Oakmont Avenue		CITY Lake Ozark	STATE MO	ZIP CODE 65049
5.0 CONTINUING AUTHORITY: A continuing authority is a company, business, entity or person(s) that will be operating the facility and/or ensuring compliance with the permit requirements.				
NAME Same as above		TELEPHONE NUMBER WITH AREA CODE		E-MAIL ADDRESS
ADDRESS		CITY	STATE	ZIP CODE
5.1 A letter from the continuing authority, if different than the owner, is included with this application. <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A				
5.2 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A MISSOURI PUBLIC SERVICE COMMISSION REGULATED ENTITY.				
A. Is a copy of the certificate of convenience and necessity included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
5.3 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A PROPERTY OWNERS ASSOCIATION.				
A. Is a copy of the as-filed restrictions and covenants included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
B. Is a copy of the as-filed warranty deed, quitclaim deed or other legal instrument which transfers ownership of the land for the wastewater treatment facility to the association included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
C. Is a copy of the as-filed legal instrument (typically the plat) that provides the association with valid easements for all sewers included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
6.0 ENGINEER				
ENGINEER NAME / COMPANY NAME Ethan K. Shackelford / R. Miller Companies, LLC		TELEPHONE NUMBER WITH AREA CODE 573-348-9799		E-MAIL ADDRESS ethan@themillercos.com
ADDRESS PO Box 282		CITY Osage Beach	STATE MO	ZIP CODE 65065
7.0 APPLICATION FEE				
<input type="checkbox"/> CHECK NUMBER <input checked="" type="checkbox"/> JETPAY CONFIRMATION NUMBER 20034821				
8.0 PROJECT OWNER: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.				
PROJECT OWNER SIGNATURE 				
PRINTED NAME Jessica Bruce			DATE 6/28/2022   10:27 AM CDT	
TITLE OR CORPORATE POSITION Owner		TELEPHONE NUMBER WITH AREA CODE 785-766-8090		E-MAIL ADDRESS jessbruce25@gmail.com
Mail completed copy to: MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM P.O. BOX 176 JEFFERSON CITY, MO 65102-0176				
END OF PART A. REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHETHER PART B NEEDS TO BE COMPLETE.				



**PART B – LAND APPLICATION ONLY****(Submit only if the proposed construction project includes land application of wastewater.)****8.0 FACILITY INFORMATION**

8.1 Type of wastewater to be irrigated:  Domestic  State/National Park  Seasonal business  
 Municipal  Municipal with a pretreatment program or significant industrial users  
 Other (explain) \_\_\_\_\_

8.2 Months when the business or enterprise will operate or generate wastewater:  
 12 months per year  Part of the year (list months): \_\_\_\_\_

8.3 This system is designed for:  
 No-discharge.  
 Partial irrigation when feasible and discharge rest of time.  
 Irrigation during recreational season, April – October, and discharge during November – March.  
 Other (explain) \_\_\_\_\_.

**9.0 STORAGE BASINS**

9.1 Number of storage basins: \_\_\_\_\_ (Use additional pages if greater than three basins.)

9.2 Type of basins:  Steel  Concrete  Fiberglass  Earthen  Earthen with membrane liner

9.3 Storage basin dimensions at inside top of berm (feet). Report freeboard as feet from top of berm to emergency spillway or overflow pipe.  
 Basin #1: Length \_\_\_\_\_ Width \_\_\_\_\_ Depth \_\_\_\_\_ Freeboard \_\_\_\_\_ Depth \_\_\_\_\_ Safety \_\_\_\_\_ % Slope \_\_\_\_\_ Basin  
 #2: Length \_\_\_\_\_ Width \_\_\_\_\_ Depth \_\_\_\_\_ Freeboard \_\_\_\_\_ Depth \_\_\_\_\_ Safety \_\_\_\_\_ % Slope \_\_\_\_\_ Basin  
 #3: Length \_\_\_\_\_ Width \_\_\_\_\_ Depth \_\_\_\_\_ Freeboard \_\_\_\_\_ Depth \_\_\_\_\_ Safety \_\_\_\_\_ % Slope \_\_\_\_\_

9.4 Storage Basin operating levels (report as feet below emergency overflow level).  
 Basin #1: Maximum operating water level \_\_\_\_\_ ft Minimum operating water level \_\_\_\_\_ ft  
 Basin #2: Maximum operating water level \_\_\_\_\_ ft Minimum operating water level \_\_\_\_\_ ft  
 Basin #3: Maximum operating water level \_\_\_\_\_ ft Minimum operating water level \_\_\_\_\_ ft

9.5 Design depth of sludge in storage basins.  
 Basin #1: \_\_\_\_\_ ft Basin #2: \_\_\_\_\_ ft Basin #3: \_\_\_\_\_ ft

9.6 Existing sludge depth, if the basins are currently in operation.  
 Basin #1: \_\_\_\_\_ ft Basin #2: \_\_\_\_\_ ft Basin #3: \_\_\_\_\_ ft

9.7 Total design sludge storage: \_\_\_\_\_ dry tons and \_\_\_\_\_ cubic feet

**10.0 LAND APPLICATION SYSTEM**

10.1 Number of irrigation sites \_\_\_\_\_ Total Acres \_\_\_\_\_ Maximum % field slopes \_\_\_\_\_  
 Location: \_\_\_\_\_ ¼, \_\_\_\_\_ ¼, \_\_\_\_\_ ¼, \_\_\_\_\_ Sec. \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ County \_\_\_\_\_ Acres  
 Location: \_\_\_\_\_ ¼, \_\_\_\_\_ ¼, \_\_\_\_\_ ¼, \_\_\_\_\_ Sec. \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ County \_\_\_\_\_ Acres  
 Location: \_\_\_\_\_ ¼, \_\_\_\_\_ ¼, \_\_\_\_\_ ¼, \_\_\_\_\_ Sec. \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ County \_\_\_\_\_ Acres  
 (Use additional pages if greater than three irrigation sites.)

10.2 Type of vegetation:  Grass hay  Pasture  Timber  Row crops  
 Other (describe) \_\_\_\_\_

10.3 Wastewater flow (dry weather) gallons per day: Average annual \_\_\_\_\_ Seasonal \_\_\_\_\_ Off-season \_\_\_\_\_

10.4 Land application rate (design flow including 1-in-10 year storm water flows):  
 Design: \_\_\_\_\_ inches/year \_\_\_\_\_ inches/hour \_\_\_\_\_ inches/day \_\_\_\_\_ inches/week  
 Actual: \_\_\_\_\_ inches/year \_\_\_\_\_ inches/hour \_\_\_\_\_ inches/day \_\_\_\_\_ inches/week

10.5 Total irrigation per year (gallons): Design: \_\_\_\_\_ gal Actual: \_\_\_\_\_ gal

10.6 Actual months used for irrigation (check all that apply):  
 Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec

10.7 Land application rate is based on:  
 Hydraulic Loading  Other (describe) \_\_\_\_\_  
 Nutrient Management Plan (N&P) If N&P is selected, is the plan included?  YES  NO

## INSTRUCTIONS FOR COMPLETING APPLICATION FOR CONSTRUCTION PERMIT – WASTEWATER TREATMENT FACILITIES

All blanks must be filled in when the application is submitted to the Missouri Department of Natural Resources. This includes the **required signature**.

**Note:** Use the form Application for Construction Permit – Sewer Extension, MO 780-1632, if only collection system component(s) are to be constructed.

A land disturbance permit is required if construction will result in the disturbance of one or more acres of land. A land disturbance permit is available through the department's ePermitting system at [dnr.mo.gov/env/wpp/epermit/help.htm](http://dnr.mo.gov/env/wpp/epermit/help.htm). A permit fee in accordance with 10 CSR 20-6.011 is required.

After receiving a complete application, the Department enters the application information into the Missouri Clean Water Information System. You may search for the status of a construction permit online at [dnr.mo.gov/mocwis\\_public/applicationInprocessSearch.do](http://dnr.mo.gov/mocwis_public/applicationInprocessSearch.do).

### Part A – Basic Application Information

- 1.0 If the answer to any of the questions in this section is no, this application may be considered incomplete and returned to the applicant.
- 1.1 Check the appropriate box. If the project is funded with federal or state monies, supply the funding agency name and project number.
- 1.2 Check the appropriate box. Provide the date of department approval for the antidegradation report. Include a copy of the approved *Water Quality and Antidegradation Review* with this application. Not every construction project may require an antidegradation review. For more information, guidance documents and forms concerning antidegradation visit [dnr.mo.gov/env/wpp/permits/antideg-implementation.htm](http://dnr.mo.gov/env/wpp/permits/antideg-implementation.htm).
- 1.3 Check the appropriate box and provide the date of department approval. Per 10 CSR 20-8.110(2), a facility plan must be submitted to the department prior to the submittal of a construction permit application. The department has developed a fact sheet to aid in the development of an approvable facility plan, Facility Plan Guidance for Wastewater Treatment Facilities, Fact Sheet--PUB2416.
- 1.4 Complete only if No. 1.3 is answered No. Check the appropriate box. Include the exemption reason from 10 CSR 20-6.010(4)(B).
- 1.5 Check the appropriate box. Provide a copy of the appropriate plans and specifications for department review when applying for a construction permit per 10 CSR 20-8.110 and 10 CSR 20-6.010. A Missouri registered professional engineering seal, signature and date is required on each sheet of the plans and the cover of the technical specifications. An electronic copy of the construction permit application and the information listed below in Portable Document Format (PDF) searchable format or department approved equivalent per 10 CSR 20-6.010(5)(G), along with one (1) paper copy for projects not seeking department funding or two (2) paper copies for projects seeking department funding under 10 CSR 20-4.
- 1.6 Check the appropriate box. A summary of design shall accompany the plans and specifications when applying for a construction permit per 10 CSR 20-6.010(5)(G) and 10 CSR 20-8.110(8). The department has developed a fact sheet to aid in the development of an acceptable summary of design. This document is available online at [dnr.mo.gov/pubs/pub2417.htm](http://dnr.mo.gov/pubs/pub2417.htm).
- 1.7 Check the appropriate box if an operating permit modification is needed. Include the applicable operating permit application. New outfalls, discharges, projects converting to land application, or a lagoon upgrade require an operating permit modification application. Contact the Department for clarification. Projects that may not need an operating permit modification check the N/A box and indicate whether you want to review the draft prior to public notice should the Department determine a modification is required. The Department can modify your operating permit without an application for projects that are adding chlorine disinfection, constructing to meet current operating permit limits, or constructing to meet limits in a schedule of compliance.
  - Form A is available online at [dnr.mo.gov/forms/780-1479-f.pdf](http://dnr.mo.gov/forms/780-1479-f.pdf).
  - Form B is available online at [dnr.mo.gov/forms/780-1512-f.pdf](http://dnr.mo.gov/forms/780-1512-f.pdf).
  - Form B2 is available online at [dnr.mo.gov/forms/780-1805-f.pdf](http://dnr.mo.gov/forms/780-1805-f.pdf).
- 1.8 Check the appropriate box. More information about the Compliance and Enforcement Water Protection Program is available online at [dnr.mo.gov/env/wpp/enf/index.html](http://dnr.mo.gov/env/wpp/enf/index.html).

- 1.9 Check the appropriate box. Include payment or payment confirmation for the fee with your application. See 10 CSR 20-6.011(2) and Wastewater Treatment Facility Permit Fees -- PUB2564.  
**Note:** The department returns incomplete construction permit applications and related engineering documents and the application forfeits the fees. See 10 CSR 20-6.011(5)(A). The applicant forfeits the fees when the applicant withdraws construction applications. See 10 CSR 20-6.011(5)(B).
- 2.1 Provide the name of the proposed construction project.
- 2.2 Provide the estimated project construction cost. The estimated and final project construction cost will be useful to the department in conducting affordability analyses.
- 2.3 Briefly describe the construction project by providing the number and capacity of each new unit.
- 2.4 Briefly describe the method of sludge handling, use and disposal at the treatment facility.
- 2.5 Provide the project design information and when required in the units specified.
  - A. Provide the current population and the design population to be served by the wastewater treatment facility.
  - B. Provide the estimated design flow information in accordance with 10 CSR 20-8.110(3).
- 2.6 Provide the additional project information in accordance with 10 CSR 20-8.110(5).
  - A. Attach a topographic map of the area extending at least one mile beyond the facility property boundaries. This map must show the outline of the facility and the following information. A topographic map is available online at [dnr.mo.gov/internetmapviewer](http://dnr.mo.gov/internetmapviewer) or from the Department of Natural Resources' Missouri Geological Survey in Rolla, Mo., at 573-368-2125. (Submittals of more than one map may be necessary to show the entire area.)
    1. The area surrounding the wastewater treatment facility, including all unit processes.
    2. The major pipes or other structures through which wastewater enters the treatment facility and the pipes or other structures through which treated wastewater is discharged from the treatment facility. Include outfalls from bypass piping, if applicable.
    3. The actual point of discharge.
    4. Wells, springs, other surface water bodies and drinking water wells that are: 1) within ¼ mile of the property boundaries of the treatment facility and 2) listed in public record or otherwise known to the applicant.
    5. Any areas where biosolids produced by the treatment facility are treated, stored, or disposed.
    6. If the treatment facility receives waste classified as hazardous under the Resource Conservation and Recovery Act, or RCRA, by truck, rail, or special pipe, show on the map where hazardous waste enters the treatment works and where it is treated, stored or disposed.
    7. Outline any wastewater land application sites.
  - B. Provide a process flow diagram with the influent and effluent design average flow and peak flow capabilities. Also, depict all of the treatment facility components and the corresponding hydraulic capacities of each component. In addition, include all recycle flows in the diagram. If land application is used, depict all irrigation equipment and application sites.
- 3.0 Complete the Wastewater Treatment Facility information. Include the Missouri State Operation Permit number, outfall number, physical location, and other appropriate contact information.
- 3.1 Provide the project legal description. The department's mapping system is available online at [dnr.mo.gov/internetmapviewer](http://dnr.mo.gov/internetmapviewer).
- 3.2 A Global Positioning System, or GPS, is a satellite-based navigation system. The department prefers that a GPS receiver is used and the displayed coordinates submitted. If access to a GPS receiver is not available, use a mapping system to approximate the coordinates.
- 3.3 Provide the name of the receiving stream(s) to which the discharge is directed and any subsequent tributary until a continuous flowing stream is reached.
- 4.0 Complete Project Owner information. Include the legal name, address, phone number with area code and email address.
- 5.0 Complete Continuing Authority contact information. If same as the Project Owner, write "Same as above". A continuing authority is a company, business, entity or person(s) that will be operating the facility and/or ensuring compliance with the permit requirements. A continuing authority is not, however, an entity or individual that is contractually hired by the permittee to sample or operate and maintain the system for a defined time period, such as a certified operator or analytical laboratory. To access the regulatory requirement regarding continuing authority, 10 CSR 20-6.010(2), please visit <https://s1.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c20-6.pdf>. A continuing authority's name must be listed exactly as it appears on the Missouri Secretary of State's (SoS's) webpage: <https://bsd.sos.mo.gov/BusinessEntity/BESearch.aspx?SearchType=0>, unless the continuing

authority is an individual(s), government, or otherwise not required to register with the SoS. See 10 CSR 20-6.010(2) for the regulatory requirement regarding continuing authority.

- 5.1 Check the appropriate box. Include a letter signed by the continuing authority (if not same as the project owner) stating they will “accept, operate and maintain” the wastewater treatment facility after successful construction. If the continuing authority will not accept and agree to operate and maintain the wastewater treatment facility, this application will be considered incomplete.
- 5.2 Complete if the continuing authority is a Missouri Public Service Commission, or PSC, regulated entity. See 10 CSR 20-6.010(2)(B)3 for more information. This information is not necessary for existing wastewater treatment facilities currently permitted with a PSC entity as owner and continuing authority.
- 5.3 Complete if the continuing authority is a property owners association. See 10 CSR 20-6.010(2)(B)5 for more information. This information is not necessary for existing wastewater treatment facilities currently permitted with the property owners association as owner and continuing authority.
- 6.0 Complete Engineer contact information.
- 7.0 Check the appropriate box and include check or confirmation number. Applicants can pay fees online by credit card or eCheck through a system called JetPay.
- Per Section 37.001, RSMo, a transaction fee will be included. The transaction fee is paid to the third party vendor JetPay, not the Department of Natural Resources.
  - Be sure to select the correct fee type and corresponding URL to ensure your payment is applied appropriately. If you are unsure what type of fee to pay, please contact the Water Protection Program’s Budget, Fees, and Grants Management Unit by phone at (573) 522-1485 for assistance.
  - Upon successful completion of your payment, JetPay provides a payment confirmation. Submit this form with a copy of the payment confirmation if requesting a new permit or a permit modification. For permit renewals of active permits, the Department will invoice fees annually in a separate request.
  - If you are unable to make your payment online, but want to pay with credit card, you may email your name, phone number, and invoice number, if applicable, [WPPFEES@dnr.mo.gov](mailto:WPPFEES@dnr.mo.gov). The Budget, Fees, and Grants Management Unit will contact you to assist with the credit card payment. **Please do not include your credit card information in the email.**
  - Applicants can find fee rates in 10 CSR 20-6.011 and Wastewater Treatment Facility Permit Fees -- PUB2564 (<https://dnr.mo.gov/pubs/pub2564.htm>).

WP 04 Construction Permits: <https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/592/>

- 8.0 The owner of the construction project must sign the application.

## Part B – Land Application

Complete Part B only if the proposed construction project includes land application of wastewater from a treatment facility.

- 8.0 Provide the applicable Facility Information land application information. Check the appropriate boxes.
- 9.0 Provide the applicable Storage Basins information. Check the appropriate boxes.
- Freeboard – The depth from the top of the berm to the emergency spillway. Minimum depth • is one foot.
  - Safety Volume – The depth to contain the 25-year, 24-hour storm event. Minimum depth is • one foot.
  - Maximum Operating Water Level – The water level at the bottom of the safety volume. • Minimum depth is two feet below the top of the berm.
  - Minimum Operating Water Level – The water level above the bottom of the lagoon basin for • seal protection. Minimum depth is two feet and may be greater when additional treatment volume is included.
  - Total Depth is from the top of the berm to the bottom of the lagoon basin including freeboard. •
- 10.0 Provide the applicable Land Application System information. Check the appropriate boxes.
- 10.7 Check the appropriate box. If the land application rate is based on a Nutrient Management Plan, or N and P, include the plan with this application for department review.

Mail the completed form and applicable fee to the department.

If there are any questions concerning this form, please contact the Department of Natural Resources, Water Protection Program at 800-361-4827 or 573-751-1300 or visit [dnr.mo.gov/env/wpp](http://dnr.mo.gov/env/wpp).