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 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0138835
Owner:	David Welch
Address:	4967 Sunset Oaks Lane, St. Louis, MO 63128
Continuing Authority:	same as above
Address:	same as above
Facility Name:	Wa Ma Ha Wastewater Treatment Plant
Facility Address:	517 Wa Ha Ma Rd., Camdenton, MO 65020
Legal Description:	SW ¼, NW ¼, SW ¼, Sec. 21, T38N, R17W, Camden County
UTM Coordinates:	X = 516547, Y = 4207708
Receiving Stream:	Lake of the Ozarks (L2)
First Classified Stream and ID:	Lake of the Ozarks (L2) (7205)
USGS Basin & Sub-watershed No.:	(10290110-0403)

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

FACILITY DESCRIPTION

<u>Outfall #001</u> – Residential Subdivision – SIC #8641 Septic Tank / recirculating media filter / UV disinfection / sludge disposal by contract hauler. Design population equivalent is 7.4. Design flow is 555 gallons per day. Design sludge production is approximately 0.03 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. This permit may be appealed in accordance with Section 621.250 RSMo, Section 640.013 RSMo and Section 644.051.6 of the Law.

May 1, 2019 Effective Date

Edward B. Galbraith, Director Division of Environmental Quality

Chris Wieberg, Director Program

April 30, 2024 Expiration Date OUTFALL <u>#001</u>

TABLE A. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

PAGE NUMBER 2 of 4

PERMIT NUMBER MO-0138835

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on <u>May 1, 2019</u> and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

	LINUTS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS		
EFFLUENT PAKAMETER(S)	UNITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE	
Flow	MGD	*		*	once/quarter***	24 hr. estimate	
Biochemical Oxygen Demand ₅	mg/L		15	10	once/quarter***	grab	
Total Suspended Solids	mg/L		20	15	once/quarter***	grab	
E. coli (Note 1, Page 2)	#/100mL	630		126	once/quarter***	grab	
Ammonia as N (Apr 1 – Sept 30) (Oct 1 – Mar 31)	mg/L	3.7 7.5		1.4 2.9	once/quarter***	grab	
MONITORING REPORTS SHALL BE SUBMI DISCHARGE OF FLOATING SOLIDS OR VIS	ITTED <u>QUAR</u> SIBLE FOAM I	<u>TERLY;</u> THE IN OTHER TH	FIRST REPO	ORT IS DUE <u>J</u> AMOUNTS.	<u>ULY 28, 2019</u> . THEI	RE SHALL BE NO	
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE	
pH – Units **	SU	6.0		9.0	once/quarter	grab	
MONITOPING DEDORTS SHALL BE SUBMITTED OLIAPTED V. THE EIDST DEDORT IS DUE ILIU V 28, 2010							

* Monitoring requirement only.

** pH is measured in pH units and is not to be averaged.

*** See table below for quarterly sampling.

	Quarterly Minimum Sampling Requirements						
Quarter	Months	E. coli	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 th			
Second	ondApril, May, JuneSample at least once during any month of the quarter		Sample at least once during any month of the quarter	July 28 th			
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 th			
October Sample once during October		Sample at least once during	Laurana 29th				
rourth	November & December	Not required to sample.	any month of the quarter	January 28 th			

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 March 1, 2015, and hereby incorporated as though fully set forth herein.

C. SPECIAL CONDITIONS

1. Electronic Discharge Monitoring Report (eDMR) Submission System.

The permittee shall submit an eDMR Permit Holder and Certifier Registration form within **60 days** of the effective date of this permit. Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent limits and monitoring shall be submitted by the permittee via an electronic system to ensure a timely, complete, accurate, and nationally-consistent set of data. Visit <u>http://dnr.mo.gov/pubs/pub2474.pdf</u> to access the Facility Participation Package which contains the eDMR Permit Holder and Certifier Registration form.

Once the permittee is activated in the eDMR system:

- (a) Discharge Monitoring Reporting Requirements. The permittee must electronically submit compliance monitoring data via the eDMR system. In regards to Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit.
- (b) Programmatic Reporting Requirements. The following reports (if required by this permit) must be electronically submitted as an attachment to the eDMR system until such a time when the current or a new system is available to allow direct input of the data:
 - (1) Sludge/Biosolids Annual Reports; and
 - (2) Any additional report required by the permit excluding bypass reporting.

After such a system has been made available by the Department, required data shall be directly input into the system by the next report due date.

- (c) Other actions. The following shall be submitted electronically after such a system has been made available by the Department:
 - (1) Notices of Termination (NOTs);
 - (2) Bypass reporting, See Special Condition #8 for 24-hr. bypass reporting requirements.
- (d) Electronic Submissions. To access the eDMR system, use the following link in your web browser: <u>https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx</u>.
- (e) 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: <u>http://dnr.mo.gov/forms/780-2692-f.pdf</u>. The Department will either approve or deny this electronic reporting waiver request within 120 calendar days. Only permittees with an approved waiver request may submit monitoring data and reports on paper to the Department for the period that the approved electronic reporting waiver is effective.
- 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 §644.051.16, RSMo, and the 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 Clean Water Act, 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. Permittee will cease discharge by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(2)(B) within the timeframe allotted by the continuing authority with its notice of its availability. The permittee shall obtain Department approval for closure according to section 10 CSR 20-6.010(12) or alternate use of these facilities.
- 5. Report as No Discharge when a discharge does not occur during the report period.

C. SPECIAL CONDITIONS (continued)

- 6. 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) The permittee shall not report a sample result as "Non-Detect" without also reporting the detection limit of the test. Reporting as "Non Detect" without also including the detection limit will be considered failure to report, which is a violation of this permit.
 - (c) The permittee shall provide the "Non-Detect" sample result using the less than sign and the minimum detection limit (e.g. <10).
 - (d) Where the permit contains a Minimum 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.
 - (e) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
 - (f) When calculating monthly averages, one-half of the method detection limit (MDL) should be used instead of a zero. Where all data are below the MDL, the "<MDL" shall be reported as indicated in item (c).
- 7. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).
- 8. 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.b. Bypasses are to be reported to the South West Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: http://dnr.mo.gov/mogem/ or the Environmental Emergency Response hotline 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.
- 9. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.
- 10. 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.
- 11. An all-weather access road shall be provided to the treatment facility.
- 12. The discharge from the wastewater treatment facility shall be conveyed to the receiving stream via a closed pipe or a paved or rip-rapped open channel. Sheet or meandering drainage is not acceptable. The outfall sewer shall be protected against the effects of floodwater, ice or other hazards as to reasonably insure its structural stability and freedom from stoppage. The outfall shall be maintained so 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.

MISSOURI DEPARTMENT OF NATURAL RESOURCES FACT SHEET FOR THE PURPOSE OF A NEW FACILITY OF MO-0138835 WA MA HA 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 <u>five</u> (5) 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.

This Factsheet is for a Minor.

Part I – Facility Information

Facility Type: NON-POTW - Residential Subdivision- SIC #8641

Facility Description:

Septic tank / Recirculating media filter / UV disinfection / Sludge disposal by contract hauler

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation? \square - No

Application Date: 04/17/2017

Note: Revised application was submitted 08/01/2017 to reflect change in ownership of property.

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001	0.000859	Secondary	Domestic

Facility Performance History:

New discharging facility; no existing performance history.

Part II – Operator Certification Requirements

 \boxtimes - This facility is not required to have a certified operator.

Part III- Operational Monitoring

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

Part IV – Receiving Stream Information

RECEIVING STREAM(S) TABLE: OUTFALL #001

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Lake of the Ozarks	L2	7205	AQL, IRR, LWW, SCR, WBCA, HHP	10290110- 0403	0.0

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 1st 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 which may be found in the receiving streams table, above:

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

AQL = Protection of aquatic life (Current narrative use(s) are defined to ensure the protection and propagation of fish shellfish and wildlife, which is further subcategorized as: WWH = Warm Water Habitat; CDF = Cold-water fishery (Current narrative use is cold-water habitat.); CLF = Cool-water fishery (Current narrative use is cold-water habitat.); EAH = Ephemeral Aquatic Habitat; MAH = Modified Aquatic Habitat; LAH = Limited Aquatic Habitat. This permit uses AQL effluent limitations in 10 CSR 20-7.031 Table A for all 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-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 (formerly HHF) = Human Health Protection as it relates to the consumption of fish;

IRR = Irrigation for use on crops utilized for human or livestock consumption;

LWW = Livestock and wildlife watering (Current narrative use is defined as LWP = Livestock and Wildlife Protection); **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: According to the USGS 1:24,000K Quadrangle, the mainstem lake width near the new facility outfall location is approximately 900 feet (ft.). Using "normal" water levels of 900 ft. wide and one-quarter of this width equals 225ft. Therefore, because 100 feet is less than 225 ft., 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). Assuming that the width will be either side of the discharge (MZ) length (100 feet) to form the plume effect, the box dimensions are length (L) = 100 ft., width (W) = 100 ft., and depth (D) = 7.78 ft. Depth was obtained using mixing zone length projected 100 ft. from shoreline to the intersecting contour on 7.5' USGS topographic map (shoreline contour=660 ft. and lake depth contour at 100 ft. from shore = 625 ft.).

Volume = $L^*W^*(D^*(0.5)) = (100')^*(100')^*(7.78'^*(0.5)) = 38,900 \text{ ft}^3$.

The flow volume of 38,900 ft³ is assumed as the daily mixing zone. Therefore; $30Q10 = (38,900 \text{ ft}^3/\text{day})*(1 \text{ day}/86,400 \text{ sec}) = 0.45 \text{ ft}^3/\text{sec}.$

RECEIVING STREAM MONITORING REQUIREMENTS:

No receiving water monitoring requirements recommended at this time.

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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.

 \square - 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)], or is an existing facility.

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.

All limits in this operating permit are at least as protective as those previously established; therefore, backsliding does not apply.

ANTIDEGRADATION:

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)], the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. Degradation is justified by documenting the socio-economic importance of a discharging activity after determining the necessity of the discharge.

- 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 by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver 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.

 \boxtimes - The facility is not currently under Water Protection Program enforcement action.

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 for optional use and can be found on the Department's website at the following locations:

Operational Monitoring Lagoon: <u>http://dnr.mo.gov/forms/780-2801-f.pdf</u> Operational Monitoring Mechanical: <u>http://dnr.mo.gov/forms/780-2800-f.pdf</u> I&I Report: <u>http://dnr.mo.gov/forms/780-2690-f.pdf</u> Wa Ma Ha WWTF MO-0138835, Camden County Fact Sheet, Page #4

Per 40 CFR 127.15 and 127.24, permitted facilities may request a temporary waiver for up to 5 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: <u>http://dnr.mo.gov/forms/780-2692-f.pdf</u>. A request must be made for each facility. If more than one facility is owned or operated by a single entity, 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.

 \square - The permittee/facility is not currently using the eDMR data reporting system. The permittee shall submit an eDMR Permit Holder and Certifier Registration form within **60 days** of the effective date of this permit.

NUMERIC LAKE NUTRIENT CRITERIA

This facility discharges into a lake watershed where numeric lake nutrient criteria are applicable. However, regulations established in 10 CSR 20-7.015 as well as the Department's lake nutrient criteria implementation plan do not require nutrient monitoring for facilities with design flows less than or equal to 0.1 MGD. Should the lake within this watershed be identified as impaired due to nutrient loading, the Department will conduct watershed modeling to determine if this facility has reasonable potential to cause or contribute to the impairment. Consequently, monitoring or effluent limitations may be established at a later date based on the modeling results. For more information, please see the Department's Nutrient Criteria Implementation Plan at: https://dnr.mo.gov/env/wpp/rules/documents/nutrient-implementation-plan-final-072618.pdf

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 ANALYSIS (RPA):

Federal regulation [40 CFR Part 122.44(d)(1)(i)] 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.

 \square - A RPA was not conducted for this facility.

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 (BOD₅) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals.

 \boxtimes - 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.

 \square - 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 includes 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) and 10 CSR 20-7.031(11), 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 associated with development of a site specific criterion. 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 SOCs, and attain a greater level of consistency, on April 9, 2015 the Department issued an updated policy on development of SOCs. 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.

 \boxtimes - This permit does not contain a SOC.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities: (2) Authorized under section 402(p) of the CWA for the control of stormwater discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

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In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in February 2009], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

 \boxtimes - At this time, the permittee is not required to develop and implement a SWPPP.

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.

 \boxtimes - 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(78)], 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:

$$Ce = \frac{(Qe + Qs)C - (Qs \times Cs)}{(Qe)}$$
 (EPA/505/2-90-001, Section 4.5.5)

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

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.

WATER QUALITY STANDARDS:

Per [10 CSR 20-7.031(4)], General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

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)7. 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.

 \boxtimes - 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.

 \boxtimes - This facility does not anticipate bypassing.

303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):

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

 \boxtimes - This facility does not discharge to a 303(d) listed stream.

Part VI – Effluent Limits Determination

CATEGORIES OF WATERS OF THE STATE:

As per Missouri's Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall's Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

Missouri or Mississippi River [10 CSR 20-7.015(2)] Metropolitan No-Discharge [10 CSR 20-7.015(5)]

Lake or Reservoir [10 CSR 20-7.015(3)] Losing [10 CSR 20-7.015(4)] Metropolitan No-Discharge [10 CSR 20-7.015(5)]
 Subsurface Water [10 CSR 20-7.015(7)]
 All Other Waters [10 CSR 20-7.015(8)]

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.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Sampling Frequency	Reporting Frequency	Sample Type ****
Flow	MGD	1	*		*	Quarterly	Quarterly	Е
BOD ₅	mg/L	1		15	10	Quarterly	Quarterly	G
TSS	mg/L	1		20	15	Quarterly	Quarterly	G
Escherichia coli **	#/100mL	1, 3	630		126	Quarterly	Quarterly	G
Ammonia as N (Apr 1 – Sept 30)	mg/L	4	3.7		1.4	Quarterly	Quarterly	G
Ammonia as N (Oct 1 – Mar 31)	mg/L	4	7.5		2.9	Quarterly	Quarterly	G
PARAMETER	Unit	Basis for Limits	Minimum		Maximum	Reporting Frequency	Reporting Frequency	Sample Type
рН	SU	1	6.0		9.0	Quarterly	Quarterly	G
* - Monitoring requirement only.								

* - 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:

- State or Federal Regulation/Law 1
- Water Quality Standard (includes RPA) 2.
- Water Quality Based Effluent Limits 3
- 4 Antidegradation Review
- Antidegradation Policy 5. Water Quality Model
- 6. Best Professional Judgment 7

8

- TMDL or Permit in lieu of TMDL
- 9 WET Test Policy
- 10. Multiple Discharger Variance

NOTE: THE EFFLUENT LIMITS GIVEN FOR AMMONIA, IN THE EFFLUENT LIMITATIONS TABLE, ARE MORE STRINGENT COMPARED TO WATER QUALITY BASED EFFLUENT LIMITS FOR THE LAKE OF THE OZARKS. THE FACILITY PROPOSED DIFFERENT LIMITS AS PART OF THE ANTIDEGRADATION REPORT AND THE DEPARTMENT HAS ACCEPTED THE PROPOSED LIMITS AS THEY ARE MORE PROTECTIVE OF WATER QUALITY.

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 (BOD5).

□ - 15 mg/L as a Weekly Average and 10 mg/L as a Monthly Average. Please see the APPLICABLE DESIGNATION OF WATERS OF THE STATE sub-section of the Effluent Limits Determination.

Total Suspended Solids (TSS).

20 mg/L as a Weekly Average and 15 mg/L as a Monthly Average. Please see the APPLICABLE DESIGNATION OF WATERS OF THE STATE sub-section of the Effluent Limits Determination.

Escherichia coli (E. coli). Monthly average of 126 per 100 mL as a geometric mean and Daily Maximum of 630 per 100 mL during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (A) designated use of the receiving stream, as per 10 CSR 20-7.031(5)(C). An effluent limit for both monthly average and daily maximum is required by 40 CFR 122.45(d). 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 = 5th root of (1)(4)(6)(10)(5) = 5th root of 1,200 = 4.1 #/100mL.

- G = GrabT = 24-hr. total E = 24-hr. estimate

• <u>Total Ammonia Nitrogen</u>. 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).

	Season	Temp (°C)	pH (SU)	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)			
	Summer	26	7.8	1.5	12.1			
	Winter	6	7.8	3.1	12.1			
<u>Sun</u> Chr	nmer: April 1 – Se ronic WLA: Ce Ce	eptember 30 ₉ = ((0.000859 + 0 ₉ = 782.1 mg/L	.45)1.5 – (0.45 * (0.01))/0.000859				
Act	ute WLA: C _e C _e	$f_{2} = ((0.000859 + 0))$ $f_{2} = 12.1 \text{ mg/L}$.0)12.1 - (0.0 * 0.	01))/0.000859				
LTA LTA	$A_c = 782.1 \text{ mg/L}$ ($A_a = 12.1 \text{ mg/L}$ (0	(0.780) = 610 mg/I (0.321) = 3.9 mg/L	L	[CV = 0.6, 99] $[CV = 0.6, 99^{th} Percen$	th Percentile, 30 day avg.] tile]			
Use	Use most protective number of LTA _c or LTA _a .							
$ \begin{array}{ll} \text{MDL} = 3.9 \ \text{mg/L} \ (3.11) = 12.1 \ \text{mg/L} \\ \text{AML} = 3.9 \ \text{mg/L} \ (1.19) = 4.6 \ \text{mg/L} \\ \end{array} \qquad \begin{bmatrix} \text{CV} = 0.6, \ 99^{\text{th}} \ \text{Percentile} \end{bmatrix} \\ \begin{bmatrix} \text{CV} = 0.6, \ 95^{\text{th}} \ \text{Percentile}, \ n = 30 \end{bmatrix} $								
<u>Wir</u> Chr	Winter: October 1 – March 31 Chronic WLA: $C_e = ((0.000859 + 0.45)3.1 - (0.45 * 0.01))/0.000859$ $C_e = 1,621.8 \text{ mg/L}$							
Acu	ute WLA: C _e C _e	$h_{e} = ((0.000859 + 0))$ $h_{e} = 12.1 \text{ mg/L}$.0)12.1 - (0.0 * 0.	01))/0.000859				
LTA LTA	$A_c = 1,621.8 \text{ mg/L}$ $A_a = 12.1 \text{ mg/L} (0)$	L (0.780) = 1,265.0 (0.321) = 3.9 mg/L) mg/L	$[CV = 0.6, 99^{th} Percen $ $[CV = 0.6, 99^{th} Percen$	tile, 30 day avg.] tile]			
Use	e most protective n	number of LTA _c of	r LTA _a .					
MD AM	DL = 3.9 mg/L (3.1 IL = 3.9 mg/L (1.1 IL = 3.9 mg/L (3.1 IL = 3.1 IL = 3.9 mg/L (3.1 IL = 3.1 mg/L (3.1 mg/L (3.1 mg/L = 3.1 mg/L (3.1 mg/L (3.1 mg/L = 3.1 mg/L =	11) = 12.1 mg/L 19) = 4.6 mg/L		$[CV = 0.6, 99^{th} Percen$ $[CV = 0.6, 95^{th} Percen$	tile] tile, n =30]			
<u>Tec</u> AN	<u>Sechnology Based Effluent Limits</u> AML = 1.4/2.9							
Sur LT. ME	nmer: Ac = AML / 1.19 DL = 1.2 mg/L (3	9 = 1.4/1.19 = 1. 3.11) = 3.7 mg/L	2 mg/L	$[CV = 0.6, 99^{th} Percentile]$ $[CV = 0.6, 99^{th} Percentile]$				
Win LT. ME	nter: Ac = AML / 1.19 DL = 2.4 mg/L (3	9 = 2.9/1.19 = 2. 3.11) = 7.5 mg/L	4 mg/L	$[CV = 0.6, 99^{th} Percentile]$ $[CV = 0.6, 99^{th} Percentile]$				

NOTE: THE AMMONIA AS N LIMITS IN THE EFFLUENT LIMITS TABLE REPRESENT TECHNOLOGY BASED EFFLUENT LIMITS (TBELS). THESE LIMITS ARE MORE STRINGENT COMPARED TO WATER QUALITY BASED EFFLUENT LIMIT (WQBEL) CALCULATIONS. SEASONAL AVERAGE MONTHLY LIMITS OF 3.0/3.0 Mg/L were presented in the antidegradation report submitted to DNR but do not represent TBELS or WQBELS.

• <u>pH</u>. - ≥ 6.0-9.0 SU. pH limitations [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.

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 is a new facility and the permittee 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, this facility utilizes secondary treatment technology and is required to meet effluent limitations more stringent than the secondary treatment technology based effluent limits established in 40 CFR 133. 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.
- (B) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of <u>beneficial uses</u>. 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) <u>There shall be no significant human health hazard from incidental contact with the water</u>. Please see (D) above as justification is the same.
- (F) <u>There shall be no acute toxicity to livestock or wildlife watering</u>. Please see (D) above as justification is the same.
- (G) <u>Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community</u>. Please see (A) above as justification is the same.
- (H) 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 VII - Cost Analysis for Compliance

Pursuant to Section 644.145, RSMo., the Department is required to determine whether a permit or decision is affordable and makes a "finding of affordability" for certain permitting and enforcement decisions. This requirement applies to discharges from combined or separate sanitary sewer systems or publically-owned treatment works.

• 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 publically-owned treatment works.

Part VIII – 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.

PERMIT SYNCHRONIZATION:

The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the Department to explore a watershed based permitting effort at some point in the future. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit. With permit synchronization, this permit will expire in the 2st Quarter of calendar year 2024.

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.

 \boxtimes - The Public Notice period for this operating permit was from 10/20/17 to 11/20/17 with no comments received.

DATE OF FACT SHEET: 10/06/2017

COMPLETED BY:

AARON SAWYER, ENVIRONMENTAL ENGINEER MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM ENGINEERING SECTION 573-526-4589 aaron.sawyer@dnr.mo.gov Wa Ma Ha WWTF MO-0138835, Camden County Fact Sheet, Page #12

APPENDIX A – DISCHARGE LOCATION MAP



APPENDIX B – ANTIDEGRADATION ANALYSIS: (INCLUDE ANTIDEGRADATION ANALYSIS HERE VIA COPY/PASTE. THE FORMAT SHOULD BE ACCEPTABLE WITH THIS DOCUMENT)

Water Quality and Antidegradation Review

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

by Wa Ma Ha Wastewater Treatment Plant



October, 2017

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1. FACILITY INFORMATION

Ε ΔCII ITY ΝΔΜΕ·	Wa Ma Ha WWTP	NPDES #·	NEW FACILITY
FACILITI NAME.		NI DES π .	NEW FACILITI

FACILITY TYPE: NON-POTW- Residential Subdivision - SIC #4952

FACILITY DESCRIPTION: As a result of the submitted alternative analysis, the applicant's preferred alternative is an Advantex Recirculating Fabric Filter with UV disinfection. The design flow will be 0.000555 MGD.

COUNTY:	Camden	UTM COORDINATES:	X = 516557.9/ Y = 4207695.6
12- DIGIT HUC:	10290110-0403	LEGAL DESCRIPTION:	SE ¹ / ₄ , NW ¹ / ₄ , Section 21, T 38N, R 17W
EDU*:	Ozark/Osage	ECOREGION:	Ozark/Highlands
* - Ecological Drainage U	nit	-	

Ecological Drainage Unit

2. WATER QUALITY 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 Missouri Department of Natural Resources (MDNR) 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 Antidegradation* Implementation Procedure (AIP) for new and expanded wastewater discharges.

2.1. WATER QUALITY HISTORY:

This will be a newly operating facility; therefore no discharge history for this facility is available. The receiving water body, Lake of the Ozarks, is not on the 303(d) or 305(b) lists as being impaired. No receiving water information.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.000859	Secondary	Lake of the Ozarks	0.0

3. RECEIVING WATERBODY INFORMATION

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			Designated Uses**
WATERBODT NAME	CLASS	WDID	1Q10	7Q10	30Q10	DESIGNATED USES
Lake of the Ozarks	L2	7205	-	-	-	AQL, IRR, LWW, SCR,WBC(A), HHP

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

RECEIVING WATER BODY SEGMENT #1:	Lake of the Ozarks
Upper end segment* UTM coordinates:	X = 516557, Y = 4207695 (Outfall)
Lower end segment* UTM coordinates:	X = 515852, Y = 4207670 (main channel)

*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.

4. GENERAL COMMENTS

Lake Professional Engineering Services, Inc., prepared, on behalf of David Welch and Willis Martin, the *Antidegradation Report for Proposed Wa Ma Ha Waste Water Treatment Plant* dated April 17, 2017 and revised August 1, 2017. Applicant elected to assume that all pollutants of concern (POC) are significantly degrading the receiving stream in the absence of existing water quality. Please see 10 CSR 20-7.015(3) and 10 CSR 20-7.031 Table A and B for applicable water quality standards and effluent regulations for lakes. An alternative analysis was conducted to fulfill the requirements of the AIP. Information that was provided by the applicant in the submitted report and summary forms in Appendix D was used to develop this review document.

Geohydrological Evaluation was submitted with the request and the receiving stream is gaining for discharge purposes (Appendix A: Map).

A Missouri Department of Conservation Natural Heritage Review was obtained by the applicant; and no records of endangered species were found for the project area. However, the review identified Indiana Bats (*Myotis sodalist*), Gray Bats (*Myotis grisescens*) and Northern long-eared bats (*Myotis septentrionalis*) as hibernating during the winter in caves and mines, Bald Eagles (*Haliaeetus leucocephalus*) as nesting in the area during winter months as species in the vicinity of the project area. The applicant should follow recommendations given in the Natural Heritage Review (Appendix B).

Orenco Advantex Recirculating Fabric Filter system performance data is included in Appendix F. The selected technology is not covered in 10 CSR 20-8, Design Guides; the Department's review engineer will review to ensure the treatment system is sized appropriately. As this treatment technology is not listed in the Design Guides, the permit writer may increase monitoring frequency to ensure effluent limits are met.

5. ANTIDEGRADATION REVIEW INFORMATION

The following is a review of the Antidegradation Report for Wa Ma Ha Waste Water Treatment Plant dated April 17, 2017 and revised August 1, 2017.

5.1. TIER DETERMINATION

Below is a list of pollutants of concern reasonably expected to be in the discharge (see Appendix D), Pollutants of concern are defined as those pollutants "proposed for discharge that affects beneficial use(s) in waters of the state. POCs include pollutants that create conditions unfavorable to beneficial uses in the water body receiving the discharge or proposed to receive the discharge." (AIP, Page 7). Tier 2 was assumed for all POCs (see Appendix D).

POLLUTANTS OF CONCERN	TIER*	DEGRADATION	COMMENT
BOD ₅ /DO	2	Significant	
Total Suspended Solids (TSS)	**	Significant	
Ammonia	2	Significant	
pH	***	Significant	Permit limits applied
Escherichia coli (E. coli)	2	Significant	

Table 1. Pollutants of Concern and Tier Determination

* Tier assumed. Tier determination not possible: ** No in-stream standards for these parameters. *** Standards for these parameters are ranges

The following Antidegradation Review Summary attachments in Appendix D were used by the applicant:

For pollutants of concern, the attachments are: Attachment A, Tier 2 with significant degradation.

5.2. EXISTING WATER QUALITY

No existing water quality data was submitted. All POCs were considered to be Tier 2 and significantly degrading in the absence of existing water quality.

5.3. NO DISCHARGE EVALUATION

According to 10 CSR 20-6.010 (4)(D), reports for the purpose of constructing a wastewater treatment facility shall consider the feasibility of constructing and operating a no discharge facility. Missouri's antidegradation implementation procedures specify 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. Part of that analysis, as shown below, is the non-degrading or no discharge evaluation. See Section 5.4.1 discussion for the regionalization alternative. Four non-discharging alternatives were evaluated for this site.

- 1. Land Application Distributing the treated effluent to land surface eliminates point source discharge. In-situ soils that are capable of incorporating the flow rates are determined by soil survey. Due to the sizing requirements for land application areas, this alternative is not practicable when compared to the area of the lots available for use.
- 2. Subsurface Irrigation Effluent is disbursed through drip lines buried in the subsurface to qualified soils. The size of the irrigation area is directly impacted by design flows. In this situation, the necessary area for subsurface irrigation exceeds the area available on the lots thus making it not practicable.
- Recycling/Reuse Treated grey water can be used to water grass and gardens and for washing cars. This
 alternative was deemed not practicable due to estimated soil capacity to incorporate 24 inches of water per year.
 Calculations show there is insufficient land availability on the lots to process the estimated volume of treated grey
 water.
- 4. Holding Tanks Wastewater is stored in holding tanks and periodically pumped and hauled to a facility for treatment. In the event of excessive high flows, it is possible the holding tanks would overflow and resulting in a bypass of untreated wastewater to the lake waters: thus making this alternative undesirable.

5.4. DEMONSTRATION OF NECESSITY AND SOCIAL AND ECONOMIC IMPORTANCE

Missouri's antidegradation implementation procedures specify 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. Six alternative discharging methods were examined.

 <u>Recirculating Sand Filter</u> – Untreated waste water is collected in septic tank where the sludge settles and the scum rises to the water surface. Wastewater from the relatively clear middle of the tank is moved by gravity or pump action to the recirculation tank. Pumps in the recirculation tank transport the effluent to the sand filter bed where a diffuser distributes the wastewater evenly over the media surface. Collection lines in the bottom of the sand filter return filtered waste water to the recirculation tank where 80% is recirculated to the system during normal flow and 100% during low flow periods. The remaining 20% discharges flows to the UV lights for disinfection. Due to the remaining area of each lot this alternative is likely to consume much of the available footprint. The aesthetics of this system are not desirable to the property owners.

- 2. <u>Zabel SCAT Recirculating Fabric Filter</u> The SCAT Filter utilizes foam like media to facilitate microbial growth for treatment. The system process is very similar to the recirculating sand filter as it employs a septic tank, recirculation tank, media based filtration and disinfection. During normal operational flows, a 4:1 recirculation ratio is used prior to distribution to the UV disinfection. Aesthetic preference again played a role in the owner's decision not to use this treatment method.
- 3. <u>Extended Aeration</u> A series of concrete tanks are placed in series which are fed by gravity or by pumping action. The untreated waste water enters the aeration chamber of the treatment plant where air is blown into the water through diffusers. The air that is blown into the sewage provides oxygen to the bacterial colonies which break down the solids. The aerated sewage then flows to the clarifier, where the solids settle out. The layer of sludge that accumulates on the base of the clarifier is removed for disposal. From the clarifier the waste water flows to the disinfection tank that utilizes UV lights or chlorination. Effluent is discharged after passing through the disinfection stage. While extended aeration is feasible it is anticipated to produce lower quality effluent in terms of BOD and TSS removal when compared to the recirculating media filter systems.
- 4. <u>Orenco Advantex</u> Wastewater enters the treatment system through a septic tank(s). Sludge and scum are retained in the septic while the middle layer of relatively clear water leaves the tank. The effluent from the septic tank is transported to the recirculation tank from where it is then directed to the plastic box containing a felt like material media that treats the wastewater as it passes through the media. Diffusers at the top of the Advantex filter distribute the influent over the filter media. Collection lines at the bottom of the filter tank return the wastewater to the recirculation tank where 80% is returned to the system and 20% is allowed to discharge to the UV light disinfection prior to final discharge.
- 5. <u>Membrane BioReactor</u> Of the proposed alternatives, the Membrane BioReactor system produces the highest removal of BOD and TSS; thus generating higher quality effluent. Untreated wastewater is broken down in the primary treatment tank with the microfilter in the reactor chamber blocking the passage of solids and biologic micro-organisms. The estimated cost of the Membrane BioReactor system is more than twice the cost of the other treatment options or approximately three times the cost of the base case.
- 6. <u>Lagoon</u> Current limits on the Lake of the Ozarks are 20mg/L for both BOD and TSS. A lagoon system is not anticipated to be able to meet those standards of treatment. Sizing a lagoon system that can accommodate the design flow while also considering setback regulations make this option not practicable.

Alternative 4 was selected after analysis of the 6 discharging options was investigated. The six (6) less degrading to degrading alternatives considered by Lake Professional Engineering were recirculation sand filter, Zabel Scat, Extended Air, Orenco Advantex, Membrane Bioreactor and a Lagoon. All of the less degrading to degrading treatments are considered practicable except a lagoon. Although other alternatives are estimated to produce similar effluent quality at a lower cost (table 2), the owner has selected the Advantex filter system due to aesthetics and footprint constraints due to sizing and setbacks.

Pollutant	Alternative 1:	Alternative 2:	Alternative 3:	Alternative 4:	Alternative 5:
	Recirculating	Zabel Scat	Extended Air	Orenco	Membrane
	Sand Filter			Advantex	Bioreactor
BOD	10	10	20	10	5
TSS	15	15	20	15	5
E. Coli	126	126	126	126	126
Fecal Coliform	400	400	400	400	400
Ammonia	2.0/3.0	3.0/3.0	1.2/4.4	1.4/2.9	1.0/2.5
CL2	0	0	0	0	0
Practical	Y	Y	Y	Y	Y
Economical	Y	Y	Y	Y	Ν
Life Cycle Cost*	53,004.00	58,004.00	60,672.00	66,838.00	152,016.00
Ratio	1:1	1.09:1	1.14 : 1	1.26 : 1	2.87:1

Table 2: Alternatives Analysis Comparison

* Life cycle cost at 20 year design life and x% interest

5.4.1. REGIONALIZATION ALTERATIVE

Within Section II B 1. of the AIP, discussion of the potential for discharge to a regional wastewater collection system is mentioned. The applicant provided discussion of this alternative. The nearest regional connection is the existing treatment facility at the City of Camdenton which is over 5 miles away from the homes being serviced. In order to connect the developer would need approval for easements from approximately 35 land owners. As a result of the location and easement requirements it is not practicable for the homeowners to pursue regionalization.

Needs a Waiver to prevent conflict with area wide management plan approved under Section 208 of the Clean Water Act and/or under 10 CSR 20-6.010(3) (B) 1 or 2 Continuing Authorities? (Y or N) <u>N</u>

5.3.2 LOSING STREAM ALTERNATIVE DISCHARGE LOCATION

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

The Discharge does not discharge to a losing stream segment or will not discharge within 2 miles of a losing stream segment.

5.3.3 SOCIAL AND ECONOMIC IMPORTANCE EVALUATION

The applicant first identified the community that will be affected by the proposed degradation of water quality. The removal of a failed on-site septic system will help improve the water quality of the Lake of the Ozarks overall by discontinuing run-off into the lake.

The affected community includes Camden County, Camdenton R-3 schools, and the Mid County Fire Protection District. The loss in tax revenue if the current homes are condemned and the lots are returned to the bank will be approximately \$9,000 per year. This funding is needed in the area due to an estimated 20% reduction in tax revenue by the county over the last two years. The estimated financial loss to the local bank would be approximately \$500,000.00 between the two lots. This project will also provide construction jobs to a local contractor to build the facility.

6. General Assumptions of the Water Quality and Antidegradation Review

- 1. 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.
- 2. 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.
- 3. Changes to Federal and State Regulations made after the drafting of this WQAR may alter Water Quality Based Effluent Limits (WQBEL).
- 4. Effluent limitations derived from Federal or Missouri State Regulations (FSR) may be WQBEL or Effluent Limit Guidelines (ELG).
- 5. WQBEL supersede ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
- 6. A WQAR does not allow discharges to waters of the state, and shall not be construed as a National Pollution Discharge Elimination System or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
- 7. Limitations and other requirements in a WQAR may change as Water Quality Standards, Methodology, and Implementation procedures change.
- 8. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.
- 9. If the proposed treatment technology is not covered in 10 CSR 20-8 Design Guides, the treatment process may be considered a new technology. As a new technology, the permittee will need to work with the review engineer to ensure equipment is sized properly. 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.

7. 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: According to the USGS 1:24,000K Quadrangle, the mainstem lake width near the *new* facility outfall location is approximately 900 feet (ft.). Using "normal" water levels of 900 ft. wide and one-quarter of this width equals 225 ft. Therefore, because 100 feet is less than 225 ft., MZ = 100 feet [10 CSR 20-7.031(5)(A)4.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 = $L^*W^*(D^*0.5)$. Assuming that the width will be either side of the discharge (MZ) length (100 feet) to form the plume effect, the box dimensions are length (L) = 100 ft., width (W) = 100 ft., and depth (D) = 7.78 ft. Depth was obtained using mixing zone length projected 100 ft.

Volume = $L^*W^*(D^*(0.5)) = (100')^*(100')^*(7.78'^*(0.5)) = 38,900 \text{ ft}^3$.

The flow volume of 38,900 ft³ is assumed as the daily mixing zone. Therefore; $(38,900 \text{ ft}^3/\text{day})*(1 \text{ day}/86,400 \text{ sec}) = 0.45 \text{ ft}^3/\text{sec}.$

8. PERMIT LIMITS AND MONITORING INFORMATION

Ν

WASTELOAD ALLOCATION STUDY CONDUCTED (Y OR N):

USE ATTAINABILITY ANALYSIS CONDUCTED (Y OR N):

WHOLE BODY CONTACT USE RETAINED (Y OR N):



OUTFALL #001

TABLE 3. EFFLUENT LIMITS OUTFALL #001

	LINUTO	DAILY	WEEKLY	MONTHLY	BASIS FOR	MONITORING
PARAMETER	UNITS	MAXIMUM	AVERAGE	AVERAGE	LIMIT (NOTE 2)	FREQUENCY
FLOW	MGD	*		*	FSR	ONCE/MONTH
BIOCHEMICAL OXYGEN DEMAND ₅ ***	MG/L		15	10	PEL	ONCE/MONTH
TOTAL SUSPENDED SOLIDS	MG/L		20	15	PEL	ONCE/MONTH
PH	SU	6.0-9.0		6.0 - 9.0	FSR	ONCE/MONTH
Ammonia as N (Apr 1 – Sept 30)	MG/L	3.7		1.4	PEL	ONCE/MONTH
Ammonia as N (Oct 1 – Mar 31)	MG/L	7.5		2.9	PEL	ONCE/MONTH
ESCHERICHIA COLIFORM (E. COLI)	NOTE 1	630**		126**	FSR	ONCE/MONTH

Note 1 - Colonies/100 mL

NOTE 2– WATER QUALITY-BASED EFFLUENT LIMITATION – WQBEL; OR MINIMALLY DEGRADING EFFLUENT LIMIT – MDEL; OR PREFERRED ALTERNATIVE EFFLUENT LIMIT – PEL; OR TECHNOLOGY-BASED EFFLUENT LIMIT – TBEL; OR NO DEGRADATION EFFLUENT LIMIT – NDEL; OR FEDERAL/STATE REGULATION – FSR; OR NOT APPLICABLE – N/A. ALSO, PLEASE SEE THE GENERAL ASSUMPTIONS OF THE WQAR #4 & #5.

- * Monitoring requirements only.
- ** The Monthly and Weekly Average for *E. coli* shall be reported as a Geometric Mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

9. RECEIVING WATER MONITORING REQUIREMENTS

No receiving water monitoring requirements recommended at this time.

10. DERIVATION AND DISCUSSION OF 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:

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

Where C = downstream concentration

 C_s = upstream concentration

 $Q_s = upstream$ flow

 $C_e = effluent concentration$

 $Q_e = effluent flow$

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and applicable lake mixing zone volumes calculated using the prism method. Acute wasteload allocations were determined using applicable water quality criteria only due to the fact that a zone of initial dilution is not allowed for lakes.

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_5 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). For toxic and nonconventional pollutant such as ammonia, the treatment capacity is applied as the significantly-degrading effluent monthly average (AML). A maximum daily can be derived by dividing the AML by 1.19 to determine the long-term average (LTA). The LTA is then multiplied by 3.11 to obtain the maximum daily limitation. This is an accepted procedure that is defined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Note: Significantly-degrading effluent limits have been based on the authority included in Section III. Permit Consideration 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 BOD₅ 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 BOD₅ and TSS effluent values could be achievable through proper operation and maintenance of the treatment works, considering the design capability of the treatment process.

10.1. OUTFALL #001 - MAIN FACILITY OUTFALL

- <u>Flow</u>. 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.
- <u>Biochemical Oxygen Demand (BOD₅)</u>. The applicant proposed preferred alternative effluent limits of 10 mg/L monthly average and 15 mg/L average weekly limits for BOD₅ was proposed in the Antidegradation Report. The proposed limits are more stringent than lakes effluent limits of 20 mg/L monthly average and 30 mg/L weekly average found in 10 CSR 20-7.015(3)(B).

Per the Biochemical Oxygen Demand and Dissolved Oxygen Policy, dated December 31, 2009, the BOD effluent limits are protective of water quality and dissolved oxygen modeling and effluent limits are not required at this time.

As a result of this analysis, MDNR staff concludes that the above mentioned effluent limits are protective of beneficial uses and existing water quality.

Influent monitoring may be required for this facility in its Missouri State Operating Permit.

- <u>Total Suspended Solids (TSS)</u>. The applicant proposed preferred alternative effluent limits of 15 mg/L monthly average and 20 mg/L average weekly limits for TSS was proposed in the Antidegradation Report. The proposed limits are more stringent than lakes effluent limits of 20 mg/L monthly average and 30 mg/L weekly average found in 10 CSR 20-7.015(3)(B).
- <u>**pH**</u>. 6.0-9.0 SU. Technology based limits [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.

• <u>Total Ammonia Nitrogen.</u> 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

Season	Temp (°C)	pH (SU)	Total Ammonia Nitrogen CCC (mg N/L)	Total Ammonia Nitrogen CMC (mg N/L)
Summer	26	7.8	1.5	12.1
Winter	6	7.8	3.1	12.1

Summer: April 1 – September 30, Winter: October 1 – March 31.

Summer

$$\begin{split} & C_{e} = (((Q_{e}+Q_{s})^{*}C) - (Q_{s}^{*}C_{s}))/Q_{e} \\ & Chronic WLA: \quad C_{e} = ((0.000859 + 0.45)1.5 - (0.45 * 0.01))/0.000859 \\ & C_{e} = 782.1 \text{ mg/L} \\ & Acute WLA: \quad C_{e} = ((0.000859 + 0.0)12.1 - (0.0 * 0.01))/0.000859 \\ & C_{e} = 12.1 \text{ mg/L} \\ & LTA_{c} = 782.1 \text{ mg/L} (0.780) = 610 \text{ mg/L} \\ & LTA_{a} = 12.1 \text{ mg/L} (0.321) = 3.9 \text{ mg/L} \\ & ICV = 0.6, 99^{th} \text{ Percentile}, 30 \text{ day avg.}] \\ & ICV = 0.6, 99^{th} \text{ Percentile}] \\ & MDL = 3.9 \text{ mg/L} (3.11) = 12.1 \text{ mg/L} \\ & AML = 3.9 \text{ mg/L} (1.19) = 4.6 \text{ mg/L} \\ \end{split}$$

Winter not calculated due to acute value being more protective than the chronic value. Winter chronic value is higher than the summer value used.

Season	Maximum Daily Limit (mg/l)	Average Monthly Limit (mg/l)
Summer	12.1	4.6
Winter	12.1	4.6

Technology Based Effluent Limits

Summer:

LTAc = AML / 1.19 = 1.4/1.19 = 1.2 mg/L	[CV = 0.6, 99 th Percentile]
MDL = 1.2 mg/L (3.11) = 3.7 mg/L	[CV = 0.6, 99 th Percentile]

Winter:

LTAc = AML / 1.19 = 2.9/1.19 = 2.4 mg/L	$[CV = 0.6, 99^{th} Percentile]$
MDL = 2.4 mg/L (3.11) = 7.5 mg/L	$[CV = 0.6, 99^{th} Percentile]$

The Technology Based Effluent Limits are **1.4** mg/L AML and **3.7** mg/L MDL for summer and **2.9** mg/L AML and **7.5** mg/L MDL during winter. These limits are more protective when compare to the derived Water Quality Based Effluent Limits.

• <u>Escherichia coli (E. coli)</u>. Monthly average of 126 per 100 mL as a geometric mean and Daily Maximum of 630 during the recreational season (April 1 – October 31)., to protect Whole Body Contact Recreation (A) designated use of the receiving stream, as per 10 CSR 20-7.031(5)(C). An effluent limit for both monthly average and daily maximum is required by 40 CFR 122.45(d).

For facilities less than 100,000 gpd: Per the effluent regulations the *E. coli* sampling/monitoring frequency shall be set to match the monitoring frequency of wastewater and sludge sampling program for the receiving water category in 7.015(1)(B)3. during the recreational season (April 1 – October 31), with compliance to be determined by calculating the geometric mean of all samples collected during the reporting period (samples collected during the calendar week for the weekly average, and samples collected during the calendar month for the monthly average). The weekly average requirement is consistent with EPA federal regulation 40 CFR 122.45(d). Please see **GENERAL ASSUMPTIONS OF THE WQAR #7**

11. ANTIDEGRADATION REVIEW PRELIMINARY DETERMINATION

It is assumed that the pollutants of concern (POCs) for the proposed Wa Ma Ha Wastewater Facility will result in significant degradation to the receiving water body due to lack of existing water quality data. A recirculation sand filter was determined to be the base case technology (lowest cost alternative that meets technology and water quality based effluent limitations). The cost effectiveness of the other technologies was evaluated, and Orenco Advantex Recirculating Fabric Filter was found to be cost effective and was determined to be the preferred alternative.

It has also been determined that the other treatment options presented (Sand Filter, Zabel Scat, Extended Air, and Membrane Bioreactor) may also be considered reasonable alternatives provided they are designed to be capable of meeting the effluent limitations developed based on the preferred alternative. If any of these options are selected, you may proceed with the appropriate facility plan, construction permit application, or other future submittals without the need to modify this Antidegradation review document.

Reviewer: Aaron Sawyer Date: 10/02/2017 Unit Chief: John Rustige, P.E. JR Appendix A: Map of Discharge Location





Appendix B: Natural Heritage Review

(Applicant must check for rare and endangered aquatic species that may be affected by the discharge by using the following web link: <u>http://mdcgis.mdc.mo.gov/heritage/</u>. The results of the survey must indicate whether there are known endangered species on the site.)



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 <u>https://ecos.fws.gov/ipac/</u> for further information. This site was developed to help streamline the USFWS envices 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 <u>www.modot.mo.gov/ehp/index.htm</u> for additional information on recommendations.

Missouri Department of Conservation

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Species or Communities of Conservation Concern within the Area:

There are records for state-listed Endangered Species, or Missouri Species or Natural Communities of Conservation Concern within or near the defined Project Area. <u>Please contact the Missouri Department of Conservation for further coordination</u>.

MDC Natural Heritage Review Resource Science Division P.O. Box 180 Jefferson City, MO 65102-0180 Phone: 573-522-4115 ext. 3182 NaturalHeritageReview@mdc.mo.gov

Other Special Search Results:

No results have been identified for this project location.

Project Type Recommendations:

Waste Transfer, Treatment, and Disposal - Wastewater treatment plant: New or Maintenance. Recommendations to help avoid and minimize impacts to fish, forest and wildlife resources are under development.

Project Location and/or Species Recommendations:

Endangered Species Act Coordination - Indiana bats (*Myotis sodalis*, federal- and state-listed endangered) and Northern long-eared bats (*Myolis septentrionalis*, federal-listed threatened) may occur near the project area. Both of these species of bats hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in wooded areas, often riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Indiana bats or Northern long-eared bats, especially from September to April. If any trees need to be removed for your project, please contact the U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 ext. 100 for Ecological Services) for further coordination under the Endangered Species Act.

The project location submitted and evaluated is within the geographic range of nesting Bald Eagles in Missouri. Bald Eagles (*Haliaeetus leucocephalus*) may nest near streams or water bodies in the project area. Nests are large and fairly easy to identify. Adults begin nesting activity in late December and January and young birds leave the nest in late spring to early summer. While no longer listed as endangered, eagles continue to be protected by the federal government under the Bald and Golden Eagle Protection Act. Work managers should be alert for nesting areas within 1500 meters of project activities, and follow federal guidelines at: http://www.fws.gov/midwest/MidwestBird/EaglePermits/index.html if eagle nests are seen.

The project location submitted and evaluated is within the range of the Gray Myotis (i.e., Gray Bat) in Missouri. Depending on habitat conditions of your project's location, Gray Myotis (*Myotis grisescens*, federal and state-listed endangered) could occur within the project area, as they forage over streams, rivers, lakes, and reservoirs. Avoid entry or disturbance of any cave inhabited by Gray Myotis and when possible retain forest vegetation along the stream and from the cave opening to the stream. See http://mdc.mo.gov/104 for best management recommendations.

Missouri Department of Conservation

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- Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment. Please inspect and clean equipment thoroughly before moving between project sites. See http://mdc.mo.gov//9633 for more information.
 - · Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
 - Drain water from boats and machinery that have operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
 - When possible, wash and rinse equipment thoroughly with hard spray or HOT water (?140° F, typically available at do-it-yourself car wash sites), and dry in the hot sun before using again.

Streams and Wetlands – Clean Water Act Permits: Streams and wetlands in the project area should be protected from activities that degrade habitat conditions. For example, soil erosion, water pollution, placement of fill, dredging, in-stream activities, and riparlan corridor removal, can modify or diminish aquatic habitats. Streams and wetlands may be protected under the Clean Water Act and require a permit for any activities that result in fill or other modifications to the site. Conditions provided within the U.S. Army Corps of Engineers (USACE) Clean Water Act Section 404 permit (http://www.nwk.usace.army.mil/Missions/RegulatoryBranch.aspx) and the Missouri Department of Natural Resources (DNR) issued Clean Water Act Section 401 Water Quality Certification (http://dnr.mo.gov/env/wpp/401/index.html), if required, then whether within the law mention is more provided to the subject to the subj

should help minimize impacts to the aquatic organisms and aquatic habitat within the area. Depending on your project type, additional permits may be required by the Missouri Department of Natural Resources, such as permits for stormwater, wastewater treatment facilities, and confined animal feeding operations. Visit http://dnr.mo.gov/env/wpp/permits/index.html for more information on DNR permits. Visit both the USACE and DNR for more information on Clean Water Act permitting.

For further coordination with the Missouri Department of Conservation and the U.S. Fish and Wildlife Services, please see the contact information below.

MDC Natural Heritage Review Resource Science Division P.O. Box 180 Jefferson City, MO 65102-0180 Phone: 573-522-4115 ext. 3182 NaturalHeritageReview@mdc.mo.gov U.S. Fish and Wildlife Service Ecological Service 101 Park Deville Drive Suite A Columbia, MO 65203-0007 Phone: 573-234-2132

Miscellaneous Information

FEDERAL Concerns are species/habitats protected under the Federal Endangered Species Act and that have been known near enough to the project site to warrant consideration. For these, project managers must contact the U.S. Fish and Wildlife Service Ecological Services (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132; Fax 573-234-2181) for consultation.

STATE Concerns are species/habitats known to exist near enough to the project site to warrant concern and that are protected under the Wildlife Code of Missouri (RSMo 3 CSR 1 0). "State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, with requirements expressed in the Missouri Wildlife Code, rule 3CSR 1 0-4.111. Species tracked by the Natural Heritage Program have a "State Rank" which is a numeric rank of relative rarity. Species tracked by this program and all native Missouri wildlife are protected under rule 3CSR 10-4.110 General Provisions of the Wildlife Code.

Additional information on Missouri's sensitive species may be found at http://mdc.mo.gov/discover-nature/field-guide/endangered-species . Detailed information about the animals and some plants mentioned may be accessed at http://mdc4.mdc.mo.gov/discover-nature/field-guide/endangered-species . Detailed information about the animals and some plants mentioned may be accessed at http://mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx . If you would like printed copies of best management practices cited as internet URLs, please contact the Missouri Department of Conservation.

Missouri Department of Conservation

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Appendix C: Ammonia Calculations



NOTE: While the conclusion for AML and MDL are correct, the calculations provided for LTA_c are not accurate due to incorrect value used for the mixing zone width and depth. The project review engineer performed the calculations using a width of 100 ft. as dictated by 10 CSR 20-7.031(5)(A)4.B.(IV)(a) to verify the final average monthly and maximum daily limits as correct.

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Appendix D: Antidegradation Review Summary Attachments

The attachments that follow contain summary information provided by the applicant, Wa Ma Ha WWTP., MDNR staff determined that changes must be made to the information contained within these attachments. The following were modified and can be found within the MDNR WQAR:

1) Attachment A: No changes nee	ded.
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TSS	mg/L		15	
Dissolved Oxygen	mg/L		5	
Ammonia			3.0/3.0	
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Fecal	#Col/100mg		400	
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ADDRESS		CITY	STATE	ZIP CODE
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	MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH
٢	ANTIDEGRADATION REVIEW SUMMARY FOR PUBLIC NOTICE ATTACHMENT A: TIER 2 – SIGNIFICANT DEGRADATION

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Water Protection Program

NAME				
vva Ma	Ha WWTP		TELEPHONE	NUMBER WITH AREA CODE
ADDRES:	5 (PHYSICAL)	CITY	STATE	70.0005
Wa Ma	Ha Road	Camdenton	MO	65020
2. OW	NER			
NAME AN	D OFFICIAL TITLES			
David	veich - Owner			
ADDRESS 515 Wa	a Ma Ha Road	Camdenton	MO	ZIP CODE 65020
тецерно (314) 6	NE NUMBER WITH AREA CODE 91-0135	E-MAIL ADDRESS		
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Lake of 4.1 4.2 Per the I existing : 5. WA' 5.1 5.2 6. WE' If an ap feasibil includii What is Wet W No Ip	the Ozarks UPPER END OF SEGMENT (Location of dis UTMORAt, LOWER END OF SEGMENT UTMOR, Alssourd Antidegradation Implementation Procedure, o sources and confluences with other significant water b TER BODY SEGMENT #2 (IF APPLICAB UPPER END OF SEGMENT UTMOR, LOWER END OF SEGMENT UTMOR, TWEATHER ANTICIPATIONS Diplicant anticipates excessive inflow or infility analysis is required. The feasibility an ing 40 CFR 122.41(m)(4). Attach the feasi is the Wet Weather Flow Peaking Factor in eather Design Summary: filtration		section of water that is bound, ant is needed) department to bypass se Il applicable state and fe iew report.	at a minimum, by significan econdary treatment, a ederal regulations

Page 1

EVICTING WATER OUAL IT	DATA OR MODE	SUMMARY				
Obtaining Existing Water Qualit II.A.1.: (1) using previously coll data approved by the Missouri I QAPPs must be submitted to th appropriate corresponding data Information needed with the I Section, 2) Approval date by the appropriate POCs.	y is possible by thre ected data with an a Department of Nature e department for ap and reports which the EWQ data includes a Watershed Protect	e methods acco appropriate Qual ral Resources m proval well in ac were approved b s: 1) Date existin tion Section of th	rding to the A ity Assurance ethodology or lvance (six mo y the departn g water qualit he QAPP, pro	ntidegradation Implemen Project Plan, or QAPP (3) using an appropriate onths) of the proposed a nent Watershed Protecti y data was provided by ject sampling plan, and	(2) collecting wa e water quality r ctivity. Provide on Section. Add the Watershed I data collected for	re Section Iter quality nodel. all the It itional Protection or all
Comments/Discussion:						
8 SUMMARY OF THE POLLU	TANTS OF CONCI	RN AND THE	ROPOSED	FFLUENT LIMITS		
Pollutants of Concern to be cor Antidegradation Implementation The tier protection levels are sp	sidered include tho Procedure Sectior ecified and defined	se pollutants rea II.A. and assun in rule at 10 CS	isonably expe ned or demon R 20-7.031 (2	cted to be present in the strated to cause significant ?).	e discharge per ant degradation	the
What are the proposed pollutar	ts of concern and t	heir respective e	ffluent limits t	hat the selected treatme	nt option will co	mply with:
Pollutants of Concern*	Units	Wasteload A	llocation	Average Monthly Limit	Daily Maxin	num Limit
BOD5	MG/L			10		
TSS	MG/L			15		
DISSOLVED OXYGEN	MG/L			5		
AMMONIA	MG/L			3.0/3.0		
BACTERIA (E. COLI)	CFUS			126		
Proposed limits must not violate w requirements. *Assumed Tier 2.	ater quality standards,	be protective of b	eneficial uses, a	and achieve the highest sta	tutory and regula	tory
9. IDENTIFYING ALTERNATI Supply a summary of the alternative significant degradation, an analysis implementation Procedure Section supportive documentation in the A Applicants choosing to use a new alternative analysis must comply w http://dnr.mo.gov/pubs/pub2453.pu	VES res considered and the s of non-degrading an h II.B.1. Per 10 CSR 2 ntidegradation Review wastewater technolog with the requirements of dif.	e level of treatmen d less-degrading a 20-6.010(4)(D)1., ti v report. y that are conside set forth in the Neu	t attainable with alternatives mus he feasibility of red an *unprove v Technology D	n regards to the alternative. at be provided," as stated in a no-discharge system mut an technology" in Missouri i lefinitions and Requirement	"For Discharges the Antidegradat at be considered. In their Tier 2 Revi ts Factsheet that of	likely to cause lon Attach all ews with can be found at:
Non-degrading alternatives: La	and Application; On	-site Septic Syst	em			
Alternatives ranging from less (All treatment levels for POCs	 degrading to degra must at a minimum 	ding including P meet water qua	lity standards):		
Alternatives	Level of Treatme	ent Attainable fo	or each Pollu	tant of Concern		
Anathauree	BOD5	TSS	AMMONIA AS N	E. Coli	DO	
	(MG/L)	MG/L	MG/L	#/100mL	mg/L	
Membrane Reactor	1	2	1.0/2.5	126	5	
Orenco Advantex	10	15	1.4/2.9	126	5	
Extended Aeration	20	20	1.2/4.4	126	5	
Sand Filter	10	15	2.0/3.0	126	5	
Zabel SCAT	10	15	3.0/3.0	126	5	
M0.780.3728 ((2)13)						Page 2

10. 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.
Land application, on-site treatment, subsurface irrigation, and subsurface treatment was found to be not technically feasible. EcoPOD and Microfast were also found to be not technically feasible. Fabric filter, sand filter, and extended aeration were all found to meet effective and reliability issues as well as environmental factors.
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.
Present worth economic analysis showed the cost effective alternative to be sand filtration. However, the Orenco Advantex is the Preferred Alternative.
Affordability Summany:
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."
Not Performed
Preferred Chosen Alternative:
Advantex fabric filter
Reasons for Rejecting the other Evaluated Alternatives:
Size of available area needed and aesthetics
Comments/Discussion:
All alternatives are capable of meeting water quality standards.
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11. SOCIAL AND ECONOMIC IMPORTANCE OF THE PREFERRED A	ITEDMATIVE	
If the preferred alternative will result in significant degradation, then it mu social development in accordance to the Antidegradation Implementation is defined as the social and economic benefits to the community that will discharge.	ist be demonstrated that it will allow important ec Procedure Section II.E. Social and Economic I occur from any activity involving a new or expan	importance iding
Identify the affected community:		
The affected community is defined in 10 CSR 20-7.031(2)(B) as the co are located.: Per the Antidegradation Implementation Procedure Sect living near the site of the proposed project as well as those in the com from the project.*	ommunity "in the geographical area in which the ion II.E.1, "the affected community should includ munity that are expected to directly or indirectly	waters le those benefit
/acationers and people who enjoy the Lake of the Ozarks as well as the Ozarks.	landowners adjoining and surrounding the Lake	of the
Identify relevant factors that characterize the social and economic	conditions of the affected community:	
Examples of social and economic factors are provided in the Antidegr specific community examples are encouraged.	adation Implementation Procedure Section II.E.1	l., but
Maintaining and possibly increasing the tax base to the community.		
Describe the important social and economic development associat Determining benefits for the community and the environment should to Implementation Procedure Section II.E.1.	ed with the project: be site specific and in accordance with the Antide	egradation
Removal of two failed septic systems.		
PROPOSED PROJECT SUMMARY:		
Provide treatment for two houses for working class families. Provide mo utilizing Orenco's Advantex fabric filter.	onitored sewage treatment at acceptable dischar	ge levels
Attach the Antidegradation Review report and all supporting documenta	ation. This is a technical document, which must	be signed,
Attach the Antidegradation Review report and all supporting documenta sealed and dated by a registered professional engineer of Missouri.	ation. This is a technical document, which must	be signed,
Attach the Antidegradation Review report and all supporting documenta sealed and dated by a registered professional engineer of Missouri. CONSULTANT: I have prepared or reviewed this form and all attached consistent with the Antidegradation Implementation Pr	ation. This is a technical document, which must reports and documentation. The conclusion pro ocedure and current state and federal regulation	be signed, >posed is 15.
Attach the Antidegradation Review report and all supporting documenta sealed and dated by a registered professional engineer of Missouri. CONSULTANT: I have prepared or reviewed this form and all attached consistent with the Antidegradation Implementation Pro- SIGNATURE	ation. This is a technical document, which must reports and documentation. The conclusion pro- ocedure and current state and federal regulation DATE $7/3//2$	be signed, oposed is 15.
Attach the Antidegradation Review report and all supporting documenta sealed and dated by a registered professional engineer of Missouri. CONSULTANT: I have prepared or reviewed this form and all attached consistent with the Antidegradation Implementation Pr signature NAME AND OFFICIAL TITLES / LICENSE #	ation. This is a technical document, which must reports and documentation. The conclusion pro- ocedure and current state and federal regulation DATE 7/3//2	be signed, oposed is 15.
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Attach the Antidegradation Review report and all supporting documenta sealed and dated by a registered professional engineer of Missouri. CONSULTANT: I have prepared or reviewed this form and all attached consistent with the Antidegradation Implementation Pr SIGNATURE NAME AND OFFICIAL TITLES / LICENSE # James O. Jackson, Jr., PE PE-2003014984 ADDRESS DO Rev 27	ation. This is a technical document, which must reports and documentation. The conclusion pro ocedure and current state and federal regulation DATE 7/3//2 COMPANY NAME Lake Professional Engineering Services, Inc Camdenton MO	be signed, posed is is. ZD [] ZIP CODE 65020
Attach the Antidegradation Review report and all supporting documenta sealed and dated by a registered professional engineer of Missouri. CONSULTANT: I have prepared or reviewed this form and all attached consistent with the Antidegradation Implementation Pr SIGNATURE NAME AND OFFICIAL TITLES / LICENSE # James O. Jackson, Jr., PE PE-2003014984 ADDRESS PO Box 27	ation. This is a technical document, which must reports and documentation. The conclusion pro- ocedure and current state and federal regulation DATE 7/3//2 OOMPANY NAME Lake Professional Engineering Services, Inc Carry Camdenton MO	be signed, pposed is 15. ZD 1 ZIP CODE 65020
Attach the Antidegradation Review report and all supporting documents sealed and dated by a registered professional engineer of Missouri. CONSULTANT: I have prepared or reviewed this form and all attached censistent with the Antidegradation Implementation Pr signature NAME AND OFFICIAL TITLES / LICENSE # James O. Jackson, Jr., PE PE-2003014984 ADDRESS PO Box 27 TELEPHONE NUMBER WITH AREA CODE (573) 873-3898	ation. This is a technical document, which must reports and documentation. The conclusion pro ocedure and current state and federal regulation DATE 7/3//2 COMPANY NAME Lake Professional Engineering Services, Inc CITY Camdenton MO	be signed, poosed is is. ZIP CODE 65020
Attach the Antidegradation Review report and all supporting documents sealed and dated by a registered professional engineer of Missouri. CONSULTANT: I have prepared or reviewed this form and all attached consistent with the Antidegradation Implementation Pr signature NAME AND OFFICIAL TITLES / LICENSE # James O. Jackson, Jr., PE PE-2003014984 ADDRESS PO Box 27 TELEPHONE NUMBER WITH AREA CODE (573) 873-3898 OWNER: I have read and reviewed the prepared documents and agree	ation. This is a technical document, which must reports and documentation. The conclusion pro- ocedure and current state and federal regulation DATE 7/3//2 COMPANY NAME Lake Professional Engineering Services, Inc Carry Camdenton E-MAIL ADDRESS e with this submittal.	be signed, poosed is 15. ZIP CODE 65020
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Appendix E: Orenco Advantex Performance

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Orenco Advantex Performance Summaries available from <u>www.orenco.com</u> including summarization of BOD, TSS, fecal coliform performance, total nitrogen, total phosphorus, and ammonia removal.

			Dr-	MO	-6138835
с. Э́л			NECEIVED	50	78157
	-NT OF NATURAL F	RESOURC	FS HAR A	F	
WATER PROTECTION	PROGRAM		Water - ///9	CHECK	
FORM B: APPLICATIO RECEIVE PRIMARILY	IN FOR OPERATING	3 PERMIT : AND HAN PER DAY	FOR FACILITIES THAT /E A DESIGN FLOW LESS 9/		
READ THE ACCOMPANYING INSTR	UCTIONS BEFORE	COMPLE	TING THIS FORM	- AL	FELIPISU.00
1. THIS APPLICATION IS FOR:					
An operating permit for a new or u	unpermitted facility.	Construc	tion Permit # <u>CP0001914</u>		
(Include completed antidegradation	on review or request f	for antideg	radation review, see instruc	tions)	
A new site-specific operating perm	nit formerly general p	permit #MC)G		
A site-specific operating permit ren	newal: Permit #	4MO	Expiration Dat	e	
A site-specific operating permit mo	odification: Permi	t #MO	Reason:	_ _	
General permit (MOGD – Non PO	TWs discharging < 5	0,000 GPE) or MOG823 – Land Applic	ation of Dom	estic Wastewater):
Permit #MO Expiratio	on Date				
1.1 Is the annronriate fee included	with the application	(see instru	ctions for appropriate feel?	[7] v¤	
NAME				TELEPHO	NE NUMBER WITH AREA CODE
Wa Ma Ha Wastewater Treatment Plan	nt			(314) 69	91-0135
515 Wa Ma Ha Road		Camdent	on	MO	65020
2.1 Legal description: SW	14, NW 14, SW	¹ / ₄ , Sec. 2 ⁻	, T 38 , R 17	County Ca	mden
2.2 UTM Coordinates Easting (X)): Nort	hing (Y):		1	
For Universal Transverse Mercator (UTM),	Zone 15 North reference	ced to North	American Datum 1983 (NAD8	3)	
2.3 Name of receiving stream: La	ake if the Ozarks				
2.4 Number of outfalls: 1	Wastewater outfal	<u>ls: 1</u>	Stormwater outfalls: 0	Instream	monitoring sites:
3. OWNER NAME			EMAIL ADDRESS	TELEPHO	NE NUMBER WITH AREA CODE
David Welch				(314) 69	01-0135
ADDRESS 4967 Sunset Oaks Lane		St. Louis		MO	ZIP CODE 63126 63128
3.1 Request review of draft perm	it prior to public notic	i xe?	YES INO	l	
3.2 Are you a publicly owned tre	atment works?		YES INO		
If yes, is the Financial Questi	onnaire attached?		🗌 YES 🗹 NO		
3.3 Are you a privately owned tre	eatment works?		VES NO		
3.4 Are you a privately owned tre	eatment facility regula	ated by the	Public Service Commissio	n? YES	☑ NO
4. CONTINUING AUTHORITY: Perma maintenance and modernization of	anent organization the facility	that will s	erve as the continuing au	thority for th	e operation,
NAME			EMAIL ADDRESS	TELEPHO	NE NUMBER WITH AREA CODE
David Welch				(314) 69	11-0135
4967 Sunset Oaks Lane		St. Louis		MO	63126
If the continuing authority is different the	nan the owner, incluc	le a copy o	of the contract agreement b	etween the tw	o parties and a
description of the responsibilities of bo	th parties within the	agreement	t.		
NAME	TITLE		CERTIFICATE NUMBER		
Lake of the Ozarks Water and Sewer			6284		
EMAIL ADDRESS			IELEPHONE NUMBER WITH AREA ((573) 346-2092	JODE	
6. FACILITY CONTACT			L		
NAME Dovid Molob			TITLE		
			TELEPHONE NUMBER WITH AREA (CODE	
		İ	(314) 691-0135		
ADDRESS			· /		
1007 Ourset Oaks Lana		CITY	, ,	STATE	ZIP CODE

MO 780-1512 (09-16)

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7. DESCRIPTION OF FACILITY

7.1 Process Flow Diagram or Schematic: Provide a diagram showing the processes of the treatment plant. Show all of the treatment units, including disinfection (e.g. – chlorination and dechlorination), influents, and outfalls. Specify where samples are taken. Indicate any treatment process changes in the routing of wastewater during dry weather and peak wet weather. Include a brief narrative description of the diagram.

Attach sheets as necessary.

7.2 Attach an aerial photograph or USGS topographic map showing the location of the facility and outfall.

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8.2	Facility SIC code: <u>4952</u> Discharge SIC code: <u>4952</u>	
Q11	Number of people presently connected or population equivalent (P.E.) 7.4 Design P.E. 7.4
8.3	Connections to the facility:	
Numb	er of units presently connected:	
Home	s 2 Trailers 0 Apartments o Other (incl	uding industrial)
Numh	er of commercial establishments: 0	· · · · · · · · · · · · · · · · · · ·
8.4	Design flow: 555 GPD Actual	I flow: 555GPD
8.5 Discha	Will discharge be continuous through the year? arge will occur during the following months: All 12 months	
Hown	nony days of the work will discharge occurs. All 7 days	
8.6	Is industrial wastewater discharged to the facility?	
0.0	If yes, attach a list of the industries that discharge to your facility	
8.7	Does the facility accept or process leachate from landfills?	TYes 💋 No
8.8	Is wastewater land applied?	TYes 🛿 No
	If yes, is Form I attached?	TYes 🗖 No
8.9	Does the facility discharge to a losing stream or sinkhole?	Yes 🛛 No
8.10	Has a wasteload allocation study been completed for this facility?	Yes 🗋 No
9. LAI	BORATORY CONTROL INFORMATION	
LABO	RATORY WORK CONDUCTED BY PLANT PERSONNEL	
_		
Lab w	ork conducted outside of plant.	Yes No
Push-	button or visual methods for simple test such as pH, settlable solids.	. 🛛 🗍 Yes 🛄 No
Additi	onal procedures such as dissolved oxygen, chemical	
oxyge	n demand, biological oxygen demand, titrations, solids, volatile cont	ent. 🔄 Yes 🔲 No
More	advanced determinations such as BOD seeding procedures,	
tecal o	colitorm, nutrients, total oils, phenols, etc.	
Highly	/ sophisticated instrumentation, such as atomic absorption and gas of	cnromatograph. LYes LI No
	가는 것은 것은 것은 것은 것은 것은 것은 <u>것은 것은 것은 것</u> 을 것이 하지 않는 것은 것은 것은 것은 것을 가지 않는 것을 하지 않는 것을 하는 것을 수 있다. 것을 하는 것을 수 있다. 것을 하는 것을 하는 것을 수 있다. 것을 하는 것을 하는 것을 수 있다. 것을 수 있 같이 같이 같	
10. C	OLLECTION SYSTEM	
10. C 10.1	COLLECTION SYSTEM Length of pipe in the sewer collection system? 200 Fetters	eet, or Miles (either unit is appropriate)
10. C 10.1 10.2	Constraints Constraints Length of pipe in the sewer collection system? 200 Does significant infiltration occur in the collection system? TYe	eet, or Miles (either unit is appropriate)
10. C 10.1 10.2	COLLECTION SYSTEM Length of pipe in the sewer collection system? 200 Fe Does significant infiltration occur in the collection system? Ye If ves, briefly explain any steps underway or planned to minimize in	eet, or Miles (either unit is appropriate) es 🔽 No nflow and infiltration:
10. C 10.1 10.2	Constraint of pipe in the sewer collection system? 200 Fe Does significant infiltration occur in the collection system? Type If yes, briefly explain any steps underway or planned to minimize in	eet, or Miles (either unit is appropriate) s 🔽 No nflow and infiltration:
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10. C 10.1 10.2	Content of pipe in the sewer collection system? 200 Fe Does significant infiltration occur in the collection system? Type If yes, briefly explain any steps underway or planned to minimize in	eet, or Miles (either unit is appropriate)
10. C 10.1 10.2	EXAMPLE COLLECTION SYSTEM Length of pipe in the sewer collection system? 200 Fe Does significant infiltration occur in the collection system? Ye If yes, briefly explain any steps underway or planned to minimize in	eet, or Miles (either unit is appropriate)
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10. C 10.1 10.2	Contraction System Length of pipe in the sewer collection system? 200 Does significant infiltration occur in the collection system? Type If yes, briefly explain any steps underway or planned to minimize in	eet, or Miles (either unit is appropriate)
10. C 10.1 10.2	EXAMPLE COLLECTION SYSTEM Length of pipe in the sewer collection system? 200 Fe Does significant infiltration occur in the collection system? Ye If yes, briefly explain any steps underway or planned to minimize in	eet, or Miles (either unit is appropriate)
10. C 10.1 10.2	Content of pipe in the sewer collection system? 200 Fe Does significant infiltration occur in the collection system? Type If yes, briefly explain any steps underway or planned to minimize in BYPASSING	eet, or Miles (either unit is appropriate)
10. C 10.1 10.2 11. B Does	EOLLECTION SYSTEM Length of pipe in the sewer collection system? 200 Does significant infiltration occur in the collection system? TYe If yes, briefly explain any steps underway or planned to minimize in EYPASSING any bypassing occur in the collection system or at the treatment fac	eet, or Miles (either unit is appropriate) Is ☑ No Inflow and infiltration: ility? □Yes ☑ No
10. C 10.1 10.2 11. B Does If yes.	EXPLASSING Any bypassing occur in the collection system or at the treatment fac any bypassing occur in the collection system or at the treatment fac percent of the collection system or at the treatment fac percent of the collection system or at the treatment fac percent of the collection system or at the treatment fac percent of the collection system or at the treatment fac percent of the collection system or at the treatment fac percent of the collection system or at the treatment fac percent of the collection system or at the treatment fac percent of the collection system or at the treatment fac percent of the collection system or at the treatment fac	eet, or Miles (either unit is appropriate) s
10. C 10.1 10.2 11. B Does If yes,	Contention System Length of pipe in the sewer collection system? 200 Fe Does significant infiltration occur in the collection system? Ye If yes, briefly explain any steps underway or planned to minimize in SYPASSING any bypassing occur in the collection system or at the treatment fac , explain:	eet, or Miles (either unit is appropriate) Is I No Inflow and infiltration: ility? Yes No
10. C 10.1 10.2 11. B Does If yes,	Contention system 200 Feed Does significant infiltration occur in the collection system? Type If yes, briefly explain any steps underway or planned to minimize in SYPASSING any bypassing occur in the collection system or at the treatment fac , explain:	eet, or Miles (either unit is appropriate) Is
10. C 10.1 10.2 11. B Does If yes,	EXPLASSING any bypassing occur in the collection system or at the treatment fac , explain:	eet, or Miles (either unit is appropriate) ss I No nflow and infiltration:
10. C 10.1 10.2 11. B Does If yes,	Content of pipe in the sewer collection system? 200 Fe Does significant infiltration occur in the collection system? Fe If yes, briefly explain any steps underway or planned to minimize in PYPASSING any bypassing occur in the collection system or at the treatment fac, explain:	eet, or Miles (either unit is appropriate) is INO inflow and infiltration: illity? Yes No
10. C 10.1 10.2 11. B Does If yes,	Ength of pipe in the sewer collection system? 200 Fe Does significant infiltration occur in the collection system? Type If yes, briefly explain any steps underway or planned to minimize in EYPASSING any bypassing occur in the collection system or at the treatment fac , explain:	eet, or Miles (either unit is appropriate) as I No Inflow and infiltration:
10. C 10.1 10.2 11. B Does If yes,	Explain:	eet, or Miles (either unit is appropriate) as I No aflow and infiltration:

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12.1	is the sludge a hazardous					
	to the sladge a hazar dede	waste as defined by 10) CSR 25? 🗍 Yes	💋 No		
12.2	Sludge production, includin	g sludge received fron	n others: .021 Desigr	n dry tons/year . <u>C</u>	021_Actua	al dry tons/year
12.3 Sludge ☑ No :	Capacity of sludge holding storage provided: cut sludge storage is provided.	structures: bic feet; days o DSludge is stored in	f storage; averag lagoon.	e percent solids o	of sludge;	
12.4	Type of Storage:	 Holding tank Basin Concrete Page 	☐ Buildir ☐ Lagoo ☐ Other	ng in (Describe)		
12.5	Sludge Treatment: Anaerobic Digester Storage Tank Lime Stabilization	Lagoon Aerobic Dige Air or Heat D	ster Dother	osting (Attach descriptio	on)	
12.6 ☐ Lar ☑ Cor ☐ Inci ☐ Sol	Sludge Use or Disposal: nd Application ntract Hauler ineration lid waste landfill	 Surface Dispo Hauled to An Sludge Retain 	osal (Sludge Disposal La other treatment facility ned in Wastewater treatn	ngoon, Sludge hei nent lagoon	ld for more	than two years)
12.7	Person responsible for hauli	ng sludge to disposal f	facility:			
	applicant V By others ((complete below)		EMAIL ADDRESS	·	
A and A	A Septic					
ADDRESS 200 N L	ake Street		Linn Creek		MO	2IP CODE 65052
CONTACT	PERSON		TELEPHONE NUMBER WITH A	REA CODE).
				e		
12.8	Sludge use or disposal facili	ty III By others (Comple	ete below)			
NAME				EMAIL ADDRESS		
A and A	Septic					
ADDRESS	<u>}</u>		CITY	·	STATE	ZIP CODE
	CON KI LAKA CAA	not	Linn Ord	ook	MO	65052
CONTACT	200 N. Lake Stre	eet		eek REA CODE		65052 D.
	200 N. Lake Stre	eet	Linn Cre	eek REA CODE	MO PERMIT NO MO-	65052
CONTACT 12.9	200 N. Lake Stre PERSON Does the sludge or biosolic ☑Yes ☐ No (Explain)	eet ds disposal comply with)	Linn Cre TELEPHONE NUMBER WITH A	eek REA CODE DINS UNDER 40 CFF	MO PERMIT NO MO- R 503?	65052
CONTACT 12.9 13. ELI	200 N. Lake Stre PERSON Does the sludge or biosolic ☑Yes □ No (Explain) ECTRONIC DISCHARGE M	eet ds disposal comply with) ONITORING REPORT	Linn Cre TELEPHONE NUMBER WITH AI h federal sludge regulatio	eek REA CODE DINS UNDER 40 CFF SYSTEM	MO PERMIT NG MO- R 503?	65052
12.9 13. EL Per 40 and mc consist visit htt	200 N. Lake Stre PERSON Does the sludge or biosolic	eet ds disposal comply with) ONITORING REPORT itant Discharge Elimina y the permittee via an following must be ch r.htm to access the Fa	Linn Cre TELEPHONE NUMBER WITH AN n federal sludge regulation (eDMR) SUBMISSION ation System (NPDES) E electronic system to ens ecked in order for this a icility Participation Packa	eek REA CODE Ons under 40 CFF SYSTEM Electronic Reportin sure timely, compl application to be age.	MO PERMIT NO MO- R 503?	65052), porting of effluent li ate, and nationally red complete. Plea
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12.9 13. ELI Per 40 and mc consist visit htt - Yo eDMR Q - Yo waivers 14. CE I certify informa regulat	200 N. Lake Stree PERSON Does the sludge or biosolic	eet ds disposal comply with ONITORING REPORT itant Discharge Elimina by the permittee via an following must be ch r.htm to access the Fa itted with this permit a the required document equest for a waiver from formation contained in courate, and if granted bubject to any legitimat	Linn Cre TELEPHONE NUMBER WITH A n federal sludge regulation (eDMR) SUBMISSION ation System (NPDES) E electronic system to ens ecked in order for this ecked in order for this incility Participation Packa pplication the required do tation to participate in the m electronic reporting. S the application, that to the this permit, I agree to ab e appeal available to app	eek REA CODE SYSTEM Electronic Reporting application to be age. occumentation to pe e eDMR system a See instructions for he best of my know bide by the Misson policant under the best	MO PERMIT NO MO- R 503? Pg Rule, re lete, accura e consider participate i and/or you participate i and/or you por further in powledge an uri Clean W Missouri Cl	65052 porting of effluent li ate, and nationally red complete. Plea in the eDMR system are currently using iformation regarding belief such vater Law and all ru lean Water Law.
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